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Di Gessa, Giorgio (2011) 'Active ageing' and health: an exploration of longitudinal data for four European countries. PhD thesis, London School of Hygiene & Tropical Medicine. DOI: <https://doi.org/10.17037/PUBS.00682446>

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# **‘Active ageing’ and health: An exploration of longitudinal data for four European countries**

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December 2011  
Academic Year 2010-2011



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## ACKNOWLEDGMENTS

I would like to thank the Bloomsbury Consortium for providing me with funding to carry out this research. I hope that my work will prove useful and will prompt helpful discussion in the future. I would also like to thank my supervisors Professor Emily Grundy and Dr Anne Jamieson for their help and guidance. A special thanks to my advisory committee member Professor Bianca De Stavola, whose encouragement, invaluable support, advice and patience in clarifying my statistics-related problems were crucial in the production of this thesis. I would also like to thank Bianca for her help on a personal level in difficult times. Your support was much appreciated.

Finally I would like to thank both my family and my friends for trusting me just the way I am. Thanks for pushing me with an enormous dose of impudent optimism and uncontrollable passion. You all know how to regenerate and rejuvenate me. Thanks for your disarming patience and both your cynicism and encouragement that keep my feet 'almost' on the ground. You all taught me that there is not much of a hurry to become 'mature and wise'. "There's a lot to be said about the freshness of youth ... Great strength is often born of vulnerability, new vision from unwearied eyes". Words cannot express my gratitude to my friends (you know who you are, no need to mention names!): you contributed your time, energy, vision, passion and support. Chatting over coffees and beers (mainly about anything but this research study) has kept my sanity. Or at least I like to believe so. Thanks for keeping my spirits up and pushing me to learn the extent of my wings! I love you all. You are all family to me!

# ABSTRACT

'Active Ageing' has been promoted by the World Health Organisation (WHO) as a strategy for promoting the health and well-being of older people. Keeping active and involved in a range of activities not restricted to those associated with labour market participation may, it has been suggested, be beneficial for older people. In this research three domains of 'engagement' were considered: paid work, formal involvement (i.e. activities such as voluntary work, attendance at training courses and participation in political organisations) and informal involvement (i.e. activities such as providing care and help to family, and looking after grandchildren). Using the first two waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) and the English Longitudinal Study of Ageing (ELSA), this thesis investigated both the cross-sectional association between socio-economic, demographic and health-related variables and engagement at baseline, and the longitudinal association between engagement at baseline and self-rated health (SRH) and depressive symptoms at follow-up (controlling for baseline measures of health). The analysis was based on sample members aged 50-69 at baseline in Denmark, France, Italy and England, countries selected to represent different welfare regimes.

Cross-sectional findings showed that levels of engagement in paid work and formal activities varied across countries, whereas socio-economic, demographic and health-related characteristics were similarly associated with engagement in all countries under study. This suggested that country-specific factors, such as retirement policies, might play an important role in determining older people's level of engagement in paid work. Cross-sectional results also suggested that work and formal engagement were associated with good health, whereas –among certain subpopulations –informal activities were associated with bad health. Longitudinal analyses showed that, in all countries, respondents in paid work at baseline were more likely to improve their SRH and less likely to become depressed than those who were 'inactive'. Formal and informal engagement were not significantly associated with health at follow-up. Longitudinal results and associations found, however, might have been biased by the high rates of attrition, as multiple imputation techniques and sensitivity analyses suggested.

The current research study confirms that engagement in work is an important pathway to health in late life. More attention, however, should be paid to people's working lives, the quality of work and work conditions as these may influence participation in, and withdrawal from, the labour market.



# STATEMENT OF AUTHORSHIP

The thesis titled “Active Ageing and Health: an exploration of longitudinal data for four European countries” has been submitted for the degree of Doctor of Philosophy. I, the undersigned, hereby declare that:

- I am the sole author of this thesis.
- I am solely responsible for all quantitative data management, including checks on internal consistency (within and between waves), data quality (validating data with external sources), item non-response, file merging and the development of new variables and indicators to capture longitudinal changes. I also carried out both the cross-sectional and the longitudinal analyses.
- I have read and understood the London School of Hygiene & Tropical Medicine definitions of plagiarism given in the Assessment Irregularity Procedures. I have fully and appropriately acknowledged and referenced the ideas and work of others, whether published or unpublished, in my thesis.
- I have prepared my thesis specifically for the degree of Doctor of Philosophy while under supervision by Professor Emily Grundy (London School of Hygiene and Tropical Medicine) and Anne Jamieson (Reader at Birkbeck, University of London). My two supervisors defined the broad topic area and secured funding for my work from the Bloomsbury Consortium.
- My thesis does not contain work extracted from a thesis, dissertation or research paper previously presented for another degree or diploma at this or any other university.

Signatures

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# 1. INTRODUCTION

## 1.1 AIM AND CONTEXT

This study intends to determine the socio-economic and demographic characteristics associated with engagement of older people in four European countries and to assess whether activities older people engage in are complementary or whether they substitute for each other. It also aims to assess whether their level of engagement varies by country. This cross-national comparative individual-level data approach, however, focuses mainly on whether older people engage differently across countries because of differences in their personal and household characteristics, without studying in details specific policies or programmes. Moreover, this thesis analyses whether engagement at baseline is associated with health at follow-up (once baseline health is controlled for), helping us determine whether similar forms of engagement play a similar role in different countries. Finally, this study investigates whether such longitudinal associations might be biased by sample attrition.

Consistently low fertility levels combined with extended longevity have resulted in demographic ageing of the European population. Population ageing raises concerns about the social and economic changes associated with it, yet older people can also make positive contributions to society. The World Health Organization (WHO) adopted in 2002 the term 'active ageing' to express the process for achieving the vision of longer life accompanied by continuing opportunities for health and participation. 'Active ageing' has nowadays achieved widespread currency, largely thanks to the efforts of the WHO: this emphasises the connection between a broader range of activities than those normally associated with production and the labour market and emphasises the participation and inclusion of older people as full citizens. Extending participation beyond the labour market has the potential to help ensure that more people continue to play a full and active role in the society, with a strong emphasis on mental and physical well-being. WHO suggests activity as a strategy for the preservation of health as people age (Walker, 2002, WHO, 2002).

Several cross-sectional studies suggest that older people who are active have better health than those less engaged. However, health status may affect participation in various activities and this, rather than beneficial effects of activity, may account for reported associations between activity and health. Moreover, since ‘active ageing’ is a relative newcomer in Europe, comparative studies are lacking in order to assess both whether the level of engagement in various activities and factors associated with it vary across countries and whether activity is indeed longitudinally positively associated with health equally across these different settings.

## **1.2 STRUCTURE OF THESIS**

The following chapter (Two) provides an overview of the study’s conceptual framework and assesses arguments and evidence around the association between activity and health. Even though European countries are facing similar demographic challenges (as described in chapter Four), chapter Three will discuss how retirement and social policies continue to differ in different European welfare state regimes, comparing the four countries that are the focus of this study, namely Denmark, France, Italy and England.

This study used data drawn from the first two waves of two parallel European longitudinal surveys, the Surveys of Health and Retirement in Europe (SHARE) and the English Longitudinal Study of Ageing (ELSA). The rationale, designs and implementations of both surveys are briefly described in chapter Five. Chapter Six presents some descriptive statistics and quality checks on socio-economic, demographic and health characteristics of the surveys’ respondents, focusing on the four European countries under study.

There are three quantitative results chapters. Chapter Seven presents baseline cross-sectional findings of level of engagement among cohort participants aged 50-69 at baseline in each of the countries under study, separately for men and women. Three domains of engagement were considered: paid work, formal involvement (i.e. activities such as voluntary work, attendance at training courses and participation in political or religious organisations) and informal involvement (i.e. activities such as providing care and help to family, friends and neighbours and looking after grandchildren). Chapter

Eight explores attrition and analyses patterns of missing data using simple logistic regression. Chapter Nine presents longitudinal analyses in order to better understand whether engagement is beneficial for older people's health. This chapter uses the first two waves of both ELSA and SHARE, focusing on self-rated health and symptoms of depression. Chapter Nine also explores multiple imputations techniques to take account of attrition in the surveys.

The discussion chapter (Ten) seeks to bring together the findings from the cross-sectional and longitudinal analyses, and assesses the strengths and limitations of this work, the implications of the study findings and the possible influence of policy context.

### **1.3 ETHICAL CLEARANCE**

Ethical approval for this work was provided by the London School of Hygiene & Tropical Medicine Ethics Committee.

## **2. THE ‘ACTIVE AGEING’ MANIFESTO**

Being actively engaged with wider society has been linked with well-being and good health in later life. This chapter introduces the recent concept of ‘active ageing’ which has broadened the idea of engagement by including a wide range of activities other than just paid work; the theoretical background explaining this association is also explored.

Evidence shows that a positive association between ‘engagement’ in different forms of activities and health exists. Most previous studies, however, are not fully comparable with each other: very specific samples of older people have been investigated and the lack of common measurements of activities and health makes the comparisons of results problematic. Moreover, very few studies tend to consider participation in its most inclusive and holistic definition and are limited to specific activities. Further investigation of the longitudinal association between engagement and health which is truly comparable between nationally-representative samples is therefore necessary to further knowledge on the importance of remaining active and to assess whether different contexts might affect either participation in various forms of activities or the direction of their association with health.

### **2.1 ‘ACTIVE AGEING’ POLICIES – A FOCUS ON THE WHO DEFINITION**

The concept of ‘active ageing’ has recently achieved widespread acknowledgement in Europe becoming a policy priority in the European Union (Commission of the EC, 1999a, b) and being promoted by a number of bodies such as the Organisation for Economic Co-operation and Development (OECD, 2000) and the World Health Organisation (WHO, 2002).

In particular, the World Health Organisation (WHO) identifies participation as one of the key pillars of the active ageing policy together with health and security (WHO, 2001a, 2002). Proponents believe that ageing well can be achieved by keeping fit, active and involved in both work and leisure activities in their own homes and communities. Extending participation beyond the labour market has the potential to help ensure that more people continue to play a full and active role in the society, especially in light of

the fact that work participation is low among people over 65 (Eurostat, 2008). People who retire from work as well as those who are ill or have disabilities can still actively contribute to their families, peers and communities. The WHO active ageing policy framework broadens most of the pre-existing approaches, including all meaningful activities which are common among older people (Hutchison et al., 2006). “The word ‘active’ refers to continuing participation in social, economic, cultural, spiritual and civic affairs, not just the ability to be physically active or to participate in the labour force” (WHO, 2002)(pg. 12). Moreover, WHO explicitly accounts for the heterogeneity of older people and their individual life experiences, shifting the focus of ageing research from older people to the process of human development over the life-course. The importance of earlier life experiences as well as the complex interaction of a wide variety of factors such as education, employment and family life, material security and health are all acknowledged under the WHO approach (Ney, 2005). Such a holistic approach avoids the narrower previous terms for ageing well such as ‘positive’, ‘productive’, ‘healthy’ and ‘successful’ (Hutchison et al., 2006). Despite the fact that these approaches all consider ageing as a lifelong process rather than a static period of time, they mainly focus their attention on specific facets of such processes, such as the maintenance of health, the preservation of autonomy, engagement in activities which generate goods or services or the counterbalance of negative perceptions of ageing and retirement (Davey, 2002).

The WHO ‘active ageing’ framework should not be confused with the OECD and EU ones. By the early 2000s, the latter international bodies were also promoting policies labelled under the same terminology even though, de facto, they both adopted a ‘productivist’ approach (Davey, 2002, Ervik, 2006, Hutchison et al., 2006). OECD, in fact, defines ‘active ageing’ as “the capacity of people, as they grow older, to lead productive lives in society and the economy. This means that people can make flexible choices in the way they spend time over life – learning, working, and partaking in leisure activities and giving care” (OECD, 2000; pg. 126). According to the European commission, “active ageing is about adjusting our life practices to the fact that we live longer and are more resourceful and in better health than ever before, and about seizing the opportunities offered by these improvements. In practice it means adopting healthy

life styles, working longer, retiring later and being active after retirement” (Commission of the EC, 1999b, a). Both bodies, despite using the same terminology as WHO, stress particularly the promotion of the maintenance of a productive life as people grow older (Ervik, 2006, Hutchison et al., 2006) and approach ageing as a challenge rather than a conquest and an opportunity for all people, as the WHO clearly states (WHO, 2002). Moreover, the OECD narrows the core of attention down to the critical transition from work to retirement and to older people as a specific group instead of adopting a life-course based approach as the EU does (Avramov and Maskova, 2003, Ervik, 2006, Kasneci, 2007). Finally, both the OECD and the EU assume that older people are in the position of being able to make the ‘right’ choices to optimise their working lifespan and increase their level of activity, somehow also prescribing what good life is (Ervik, 2006, Hutchison et al., 2006).

The WHO, on the contrary, recognises that older people can find personal satisfaction and fulfilment through a variety of activities such as work and volunteering; taking care of their grandchildren and other family members and having positive relationships with friends or simply stimulating their minds through hobbies, travels or reading books. People can enjoy and experience an active life throughout their lives, given their personal capabilities, interests and preferences. WHO also promotes a more inclusive society without intergenerational conflicts, shifting the focus of policy from older people as a separate group to the entire society. Older people are an integral part of society and, as such, they have the same rights as the rest of the society to meet their needs for independence, equality, participation and security. Potential ‘activation’ throughout life is argued to be beneficial not only for personal health, autonomy and self fulfilment but also contributes to the well being of other individuals and the larger society, promoting community participation and solidarity.

The WHO ‘active ageing’ umbrella is also not exempt from critiques. As with most terminology, faults in the semantics of the term have been pointed out. Just as successful implies a contest in which there are winners and losers –and therefore unsuccessful people (Strawbridge et al., 2002) –, the holistic and multifaceted ‘active’ term may further marginalise people who do not conform to images of vigorous, healthy and independent agers almost denying ageing to a certain extent (Westerhof and Tulle,



2007), whereas limits to 'activeness' do exist (Avramov and Maskova, 2003, Ervik, 2006). This new political discourse, moreover, still stresses too much the role that personal choices play, making older people the main actors responsible for their own health and life. Certain opportunities, such as access to education or medical care, depend largely upon the society rather than on individuals. Similarly, gender, economic and social differences exist and should not be ignored when framing policies and strategies (Ervik, 2006). Finally, if on the one hand WHO acknowledges the fact that not all older people will necessarily be active in the same way (activities may differ by country, culture or socio-economic characteristics), on the other keeping the definition of activity deliberately vague renders the concept –and in particular its operationalisation –more complicated and difficult to study.

## **2.2 THE 'ACTIVE AGEING' CONCEPT: ITS HISTORICAL EVOLUTION AND INTERTWINING WITH AGEING THEORIES**

The WHO 'active ageing' vision was developed using a number of diverse theoretical assumptions and is the legacy of a complex interplay of policies, theories, historical and economic events. Even though this policy achieved widespread adherence in the late 1990s, its initial traces date back to the early 1960s and were developed in the 1970s and 1980s. The following section briefly presents the interwoven linkages between developments in gerontological theory, history and policies.

According to Phillipson and Baars (2007), 3 main phases characterised European and North-American perspectives on ageing. Between World War II and the 1960s, ageing became synonymous with retirement and was approached as an individual and social problem. In the 1970s and 1980s, ageing became viewed as mainly an economic and employment problem, whereas from the 1990s onwards ageing became a global challenge.

The period after World War II witnessed the emergence of the 'social problem perspective': old age was seen as a distinct phase of individuals' life characterised by inevitable functional decline, physical decay and capability loss. Old age represented both a demographic, economic and medical burden (Victor, 2005, Phillipson and Baars,

2007). During the 1950s and 1960s, ageing became synonymous with retirement which was assumed to be a critical but necessary turning point. Retirement involved an inevitable but, in some perspectives, a beneficial loss of social roles (Cumming and Henry, 1961): disengagement theorists envisaged that in order to maintain equilibrium within society older people should withdraw from society to preserve its energy, youthfulness and ideas. ‘Disengagement theory’ also argued that older people withdrawing from social participation would be relieved of the social responsibilities and pressures faced by younger adults, in a functional mutual separation<sup>1</sup>. Such gradual withdrawal was also believed to be the natural response to lessened capabilities, diminished interests and expectations as well as medical conditions and illnesses. Such theory –which viewed disengagement from society as a beneficial, natural, and desirable outcome for both the individual and the social system –spread rapidly also because of relatively shorter life expectancy, earlier onset of disability, physically demanding work roles and few organized activities for older adults (Victor, 2005, Künemund and Kolland, 2007, Phillipson and Baars, 2007).

The theory of disengagement was diametrically opposed by the so-called ‘activity theory’, developed by Havighurst (1963). According to ‘activity theory’, when people age they give up many roles which usually contribute to their life satisfaction and sense of identity. Therefore, when people retire from work, become widowed or drop out of professional organisations, it is believed that they need to engage themselves in other activities that develop substitute roles for those that have been abandoned (Roy and Russell, 2005). It was argued that the maintenance in old age of the activity patterns typical of middle age and the compensation for the loss of roles by taking on new activities were the key to successful ageing (Walker, 2002, Avramov and Maskova, 2003, Victor, 2005).

Despite their diametrical perspectives, both the activity and the disengagement theories believed that “growing older represented a significant degree of discontinuity from prior life events and experiences” (Phillipson and Baars, 2007)(pg. 72).

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<sup>1</sup> This argument has its roots in theories of functionalism developed by Parsons (1951). The functionalist approach “views the elements of society as being functionally interdependent, with the individual and society always seeking to maintain a state of equilibrium between them” (Victor, 2005)(pg. 18); different groups function and adapt in order to ensure that the society remains both unified and stable.

During the 1970s and 1980s, continuity theory (Atchley, 1971) surfaced as an important concept and a challenge to activity and disengagement theories. This theory assumed that humans tend to maintain patterns of their former lifestyle, their sense of self-esteem and their values throughout their lives, even after retirement from paid work. Thus success is where continuity in social roles, activities of importance to the individual or personal goals is achieved, including leisure activities. The surfacing of life-course perspectives which no longer considered old age as a distinct phase of life unrelated to previous experiences slowly pushed policies to also focus on those activities of importance to the individual which were not necessarily related to the production of valued goods and services (Künemund and Kolland, 2007), such as childcare, voluntary activities, informal help, time spent for personal development, cultural expression or (self) education as well as leisure activities such as travel, sports or hobbies. It was argued that older people can stay active not only through employment but also through participating in the community as well as through hobbies and leisure activities (Clarke et al., 2005).

In the same decades, a tendency to view life after retirement as an expanded 'active leisure' phase started to become popular. Neugarten (1974) first described an emerging group of older people –called the young-old –who were relatively healthier, more educated and affluent than the previous generations and who were to challenge the ageist conceptions of what was possible in later life. Laslett (1989) further developed this concept describing it as "Third Age"<sup>2</sup>. Laslett observed a series of demographic and sociological changes in contemporary Western societies and predicted the appearance of The Third Age, a new life-course stage. The emergence of retirement and pensions as a social institutions, the increase in longevity and health combined with the increased opportunities for leisure participation resulted in the great majority of older people in industrialized countries spending many healthy, active, and potentially self-fulfilling

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<sup>2</sup> Laslett represented the 'First Age' as the period of childhood dependency and education, the 'Second Age' as the time of independence, employment and maturity, the 'Third Age' as the period during which people are freed from work and family constraints and have time to pursue a good quality of life. Finally, he saw the 'Fourth Age' as characterised by dependence and declines in health.

years, i.e. the Third Age<sup>3</sup>. The Third Age was conceptualized as a new conceptual (rather than age-based)<sup>4</sup> life-course stage of extended and self-fulfilling leisure and community participation following retirement (Carr and Komp, 2011, Chatzitheochari and Arber, 2011). Later life began to be associated with many opportunities for remaining productive and engaging in valued social roles. While earlier approaches conceived later life as a period of frailty, dependency and disengagement, the Third Age theoretical strand presented a more positive perception of later life and ageing which became associated with personal growth and meaningful engagement. The Third Age is “the age of personal achievement and fulfilment”, where people are freed from work and family obligations and have both time and material conditions to “attain their personal objectives” (Laslett, 1987)(pg 135). This new paradigm, however, did not emphasise social divisions among older people, who are neither socially nor economically homogeneous: material disparities, disadvantages experiences in previous life-course stages, and social factors (such as class and gender) are unlikely to create similar opportunities of engagement and self-satisfaction in later life (Phillipson, 2002a, Carr and Komp, 2011). Despite these critiques, the Third Age shifted the perception of old age introducing a *new* phase in life where people have opportunities for continuing participation in the society and can pursue their interests through a range of activities. This was reflected in the development of theories about productive and successful ageing.

‘Productive ageing’ (Butler and Gleason, 1985) soon became a term to describe what some saw a more positive approach to ageing (Walker, 2002), particularly in the late 1980s when consensus on the possible negative implications of an ageing population on health-care and pension expenditure was growing (Hutchison et al., 2006). It was no longer believed that a reduction of the labour supply through early withdrawal and incentives to disengagement started in the mid-1970s’ as a response to high unemployment would be an appropriate strategy to tackle an ageing and declining

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<sup>3</sup> Until the first half of the 20<sup>th</sup> century, adults spent virtually all their lives in the Second Age, working and caring for family. They then entered the Fourth Age, a period of dependency and decrepitude prior to death.

<sup>4</sup> “The divisions between the four ages do not come at birthdays, nor do they even lie within clusters of years surrounding birthdays” (Laslett, 1987)(pg 143).

workforce (Walker, 2001). Governments began to recognise the costs of failing to use older workers and started to incentivise older people to work longer or to continue to contribute to their communities through voluntary activities (Davey, 2002). It was argued that older people had both the physical and mental abilities to perform jobs or to participate more actively in society (Avramov and Maskova, 2003). Butler and Gleason (1985) defined productive ageing as “the capacity of an individual or a population to serve in the paid workforce, to serve in volunteer activities, to assist in the family and to maintain himself or herself as independently as possible” (pg. 73-74), irrespective of impairments. Bass and Caro (2001) offered a definition of productive ageing “as activities that produce goods and services, whether paid or not, or develops the capacity to produce goods or services” (pg. 39), restricting activities to those that can be quantified with some form of economic value. Third-agers were considered the ideal candidates for productive ageing activities, thanks to their good health (Komp, 2011).

During the 1990s, the strategy of ‘activeness’ started to embrace a wider concept other than the mere economic one (Hao, 2008). Social activity became a crucial component of the model of ‘successful aging’. Rowe and Kahn (1997) defined “successful ageing as including three components: low probability of disease and disease-related disability, high cognitive and physical capacity, and active engagement with life” (pg. 433) whose two major and most important factors were ‘interpersonal relations’ and ‘productive activity’ because they both involve contact with others as well as emotional support. Traditional definitions of successful aging emphasized absence of physical and cognitive disabilities, limiting successful aging to an objective judgment which did not account older people’s perceptions (Strawbridge et al., 2002, Phelan et al., 2004, Bowling and Dieppe, 2005, Bowling and Iliffe, 2006).

Despite the fact that ‘successful’ and ‘productive’ ageing challenged previous assumptions and expectations for the roles of older people, both paradigms suggested a “best way, an only way” to age well. In the same decades, however, awareness around the non-existence of a ‘normal ageing’ paradigm arose (Ray, 2008). Also, civil rights and women’s movements started to criticise the centrality of paid work, given that a large number of people (mainly women) had never been in paid employment. Older

people, it was believed, could age differently and had a variety of patterns they could choose from –compared to the prescription assumed by previous theories (Phillipson and Baars, 2007). Individuals are influenced by the society, the institutional and organisational structures and processes and their experiences: this creates both heterogeneity and inequality among ageing individuals.

The policy slogan 'active ageing' –which came to the fore during the UN Year of Older People in 1999 and was subsequently promoted by the WHO –summarises this wider concept and the complexity of interacting factors affecting individual and population ageing. The WHO concept of active ageing was in fact meant to convey a more inclusive message than 'productive' and 'successful' ageing', "and not just to the ability to be physically active or to participate in the labour force". The World Health Organisation (2002) defined active ageing as "the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age" (WHO, 2002)(pg 12). The WHO movement for active ageing emphasises the connection between activity and health, focusing though on a broader range of activities than those normally associated with production and the labour market. Older people became full citizens who represent an asset and not a burden to society, thanks to their accumulated wealth of knowledge and experience. As such, older people are recognised as an integral part of families and communities and they are valued and acknowledged for their contributions and their participation (Walker and Maltby, 1997), even though they have less to give in a strictly economic sense (Victor, 2005). This implies that the concept of active ageing is also applicable to older people who have retired from paid work or who are ill or live with disabilities. The WHO definition of health, moreover, is a much more comprehensive concept which includes physical, mental as well as social wellbeing. Furthermore, under the WHO approach, ageing is not a homogeneous experience. People age together with the rest of society: they influence the wider community but their experiences are in turn shaped by social factors, culture and society. The latter might determine the resources that older people bring to later life with possible differences both within and between age-groups (Victor, 2005, Phillipson and Baars, 2007). Under the WHO definition, later life is nowadays considered as a continuation of

earlier phases of life: therefore, older people are not a homogenous group but rather a complex group with its own specificities.

### **2.3 WHY ENGAGEMENT AND HEALTH ARE CONNECTED**

The WHO active ageing concept assumes that active life is positively associated with enhanced health. Engagement in social and productive activities has long been considered an important factor in the study of health among older people in most gerontology theories. Such a connection between activity and health has been linked to the role gained through the activity, to the increased social relationships and their consequences on health.

In particular, Lemon et al. (1972) first proposed a theoretical framework for understanding the positive relationship between activity and health; this rests on the idea of role enhancement. Whereas the role strain theory postulates that multiple roles are associated with poor health outcomes because of the burden caused by cumulative roles (Goode, 1960), the role enhancement framework suggests that occupying several roles is expected to have direct and indirect positive effects on people's health (Sieber, 1974) thanks to complementary and buffering resources shared across different role domains. Taking part in activity promotes support in the role which in turn enhances and reinforces self-esteem, personal well-being, and personal satisfaction helping people to maintain a positive self-concept (Lemon et al., 1972). Activity, it is argued, provides individuals with a sense of usefulness and competence, enhancing control and reinforcing meaning in later life (Van Willigen, 2000). In particular, community participation offers a way of gaining approval, prestige and public recognition. Productive activities –such as work –can be attached to power, to material resources, to new developed skills or knowledge as well as to greater access to social networks, contributing towards boosting people's self-image and mental outlooks, and extending opportunities for self-expression. Social and family engagement provide people with a sense of belonging, value and attachment (Lemon et al., 1972, Berkman et al., 2000).

Activity also provides people with opportunities for companionship and sociability. The social component of activity and interpersonal relations received renewed interest in the late 1990s (Rowe and Kahn, 1997) when both contact with others and emotional support

emerged as crucial factors to ageing well. Social support and social networks are believed to have a positive impact on physical health and psychological well-being through the main effect hypothesis (i.e. social support promotes healthy behaviours) and the buffering hypothesis. Friends, family and contacts act as a cushioning mechanism of support which facilitates coping with stressful life events and ‘times of transition’ such as retirement and bereavement (Cobb, 1976), providing occasions for positive emotional exchanges which positively influence self-esteem and increase perceived-well-being (Askham et al., 2007). Productive activities as well as social activities within associations, local communities or family are an important channel for maintaining or developing personal relationships useful to combat loneliness and to maintain sense of meaning and purpose in life (Jerrome and Wenger, 1999, Stevens, 2001, Walker et al., 2005).

There are also plausible physiological mechanisms whereby activity may influence health (Cohen, 1988, Umberson and Montez, 2010). Firstly, there is evidence supporting the beneficial effect of engagement in activities which require moderate-to-vigorous physical activity. Numerous studies confirm that regular activity is effective in prevention of several chronic diseases and conditions, such as cardiovascular and respiratory diseases, hypertension and obesity (Bouchard, 2001, Warburton et al., 2006), with meta-analyses reporting significant protection against the occurrence of coronary heart diseases as well as cardiovascular disease mortality (Nocon et al., 2008, Sofi et al., 2008). Previous studies have also consistently found that physical activity is associated with improved well-being, and better physical health and cognitive function as well as decreased symptoms of anxiety and depression (Goodwin, 2003). More generally, for those activities which do not necessarily require physical engagement, it is believed that social activities may influence physiological processes (Umberson and Montez, 2010). The role as well as social relationships gained through activities influence the nervous system and levels of hormones, which in turn affect blood pressure and the immune system (Holmes and Joseph, 2011). For instance, Uchino et al. (1996) reviewed 81 studies to examine the evidence linking the positive aspects of social relationships to physiological processes, focusing in particular on aspects of the cardiovascular, endocrine and immune systems as potential physiological pathways by which social



relationships influence physical health. Their meta-analytical study revealed that social relationships and social support were important factors in reducing cardiovascular reactivity to psychosocial stressors, and in regulating blood pressure. Higher social support was also associated with better immune system functioning. The results of the review “suggest that social support has beneficial effects on physiological processes across different age-groups. The net effect may be to biologically age the individual at a slower rate” (Uchino, 1996)(pg. 525). Therefore, engagement of older people may provide not only occasions for positive emotional exchanges and new opportunities for self-expression, but also moderate the physiological processes typically associated with chronological ageing. Exposure to social activities may produce both psychological and physiological effects that could help prevent morbidity and postpone mortality.

### **2.3.1 EMPIRICAL EVIDENCE**

Empirical research supports the linkages between activity and health, despite the little consistency in the usage and definition of engagement, activity and participation (Bath and Deeg, 2005). Social, productive, instrumental, political, solitary, formal, low and high demand leisure activities, active and passive leisure, help and care-giving are only a few of the numerous labels used to describe various facets of social engagement (House et al., 1982, Herzog and Morgan, 1992, Glass et al., 1999, Bukov et al., 2002, Menec, 2003). Because of the absence of a homogeneous definition, studies also tend to mix up the same or similar activities under different categories of engagement (Wahrendorf et al., 2006). Just as an example, informal caring provided to people to whom the carer owes no familial obligations is labelled as volunteering by some authors (Van Willigen, 2000, Erlinghagen and Hank, 2006), whereas others categorise it separately from volunteering (Burr et al., 2007, Choi et al., 2007).

Despite differences in the way activities are labelled and participation is defined, if we delineate engagement as an umbrella concept covering activities ranging from paid work to informal volunteering and caring, empirical evidence tends to support the idea that engagement among older people is an important factor positively associated with better health (Zedlewski and Butrica, 2007). Older people who remain active tend to be in better health than those disengaged from society

Older people who *work*, for instance, are cross-sectionally associated with better physical and mental health, better perceived well-being and good self-rated health when compared to retired, unemployed people or homemakers (Debrand and Lengagne, 2007, Siegrist et al., 2007, Alavinia and Burdorf, 2008). Longitudinal studies seem to confirm that being in paid work is also positively associated with better health over time. Calvo (2006), using data drawn from the longitudinal US representative Health and Retirement Study, found that those who worked at baseline reported greater wellbeing, higher mood indicators and lower mortality at follow-up than those who did not work at baseline. Decreased mortality was also found among non-nationally representative populations such as the Swedish construction workers who participated in health monitoring between 1971 and 1993 (Hult et al., 2010) or all the past employees of the Shell Oil company in the United States who retired between 1973 and 2003 (Tsai et al., 2005). These studies showed that workers who retired at younger ages had a significantly higher mortality compared with the ones who retired at older age, even controlling for confounders that could affect subsequent mortality. Using longitudinal data from the Survey of Health, Ageing and Retirement in Europe (SHARE), Börsch-Supan et al. (2009) found that workers with functional limitations at baseline were more likely to retire at follow-up, showing that health plays an important role in explaining exit from employment though health limitations themselves do not explain the cross-national differences in Europe. Retirement, however, may also come as a relief to some workers (Clarke et al., 2005, Westerlund et al., 2009, Phillipson and Ogg, 2010, Westerlund et al., 2010). Westerlund and colleagues studied employees of the French national gas and Electricity Company, analysing the influence of retirement on health. Findings showed that the prevalence of depressive symptoms and physical fatigue decreased greatly one year after retirement compared with one year before retirement, particularly among workers with a chronic disease. They also found that the prevalence of workers assessing their health as less than good decreased substantially over the time period of retirement (Westerlund et al., 2009, Westerlund et al., 2010).

As regards *non-work related activities*, most studies focusing on charity work suggest that volunteering is also associated with increased life satisfaction and a slower decline in self-reported health (Van Willigen, 2000). Volunteering is also positively associated

with better cognitive health, physical functioning levels, well-being and longevity (Moen et al., 1992, Glass et al., 1999, Musick et al., 1999, Oman et al., 1999, Morrow-Howell et al., 2003, Lum and Lightfoot, 2005, Adam et al., 2007). Using SHARE and presenting merely Pearson correlations between volunteering and various measurements of health, Haski-Leventhal (2009) showed that respondents who volunteered at least monthly reported in most European countries significantly higher life satisfaction, lower rates of depression and were more optimistic about their chances to live longer. Similarly, Hank (2010) showed that the propensity to volunteer is significantly lower among SHARE respondents who reported less than good self-rated health or who presented symptoms of depression. Although volunteering seems to be associated with good health, the effect of the extent of the commitment, the number or the type of organisation older people volunteered for is unclear. Oman et al. (1999) reported that, among a community sample of 55+ older residents in California, volunteers engaged with more than two organisations had 63% lower mortality than non-volunteers over a 5-year period. Musick et al. (1999), using data from the Americans' Changing Lives (ACL) study, found a curvilinear relationship between volunteering and mortality, with older people who volunteered 40 annual hours having the greatest benefit from volunteering. Lum and Lightfoot (Lum and Lightfoot, 2005), using the American Asset and Health Dynamics Among the Oldest Old (AHEAD) Study found that having volunteered 100 annual hours significantly lowered the odds of dying. Similarly, whereas some researchers found that even a very small amount of volunteering was related to better health outcomes among older people, others found that volunteering more than 100 hours per year resulted in decreased positive self-reported health (Van Willigen, 2000, Morrow-Howell et al., 2003, Musick and Wilson, 2003). Using four waves of the USA Health and Retirement Study data collected from a sample of 7,830 individuals aged 55 to 66, Hao (2008) found that volunteers had a slower decline rate in psychological well-being in subsequent waves if they also were concurrently involved in paid work.

Numerous studies also suggest that social activities (and not necessarily only volunteering) are associated with better health. Educational, political and community-oriented activities were found to be positively associated with better perceived health

among 629 non-metropolitan older people (Young and Glasgow, 1998). Zunzunegui et al. (2004) studied 3018 people aged 65 and over living in two diverse French speaking Canadian community dwelling populations. In both settings, subjective health improved as the number of social activities increased, and community involvement was positively associated with good self-rated health. Glass et al (1999) examined associations between social, productive, and physical activity and 13 year survival (i.e. mortality from all causes during the follow-up) in a non-national representative sample of 2,761 older people aged over 65 from the City of New Haven (Connecticut, United States). Results concluded that all the activities were independently associated with survival: “more active elderly people were less likely to die than those who were less active”, even though “measures of activities convey more information about the number of activities in which people participate than information about the extent of that participation” (p. 480-1). Everard et al. (2000), examining a non-representative sample of 244 65+ members of an organisation for older adults in the USA, found that both social and high-demand leisure activities were cross-sectionally associated with higher functional physical health scores whereas low-demand leisure activities were associated with better mental health scores. Using cross-sectional data from SHARE, Sirven and Debrand (2008) showed that ‘social participation’ (defined as engagement in volunteering, political or religious organisations, training course and social club) contributes within most European countries to the increase in the average proportion of older people reporting at least good health. The relationship between social activities and health has also been investigated in longitudinal studies. Menec (2003) examined the longitudinal relationship between ‘everyday activities’ (ranging from sports to solitary hobbies) and a number of health indicators such as life satisfaction, mortality, physical and cognitive function. Using the Aging in Manitoba (AIM) study –a Canadian study from which interviews carried out in 1990 and 1996 were used – the author found that greater overall activity level was associated with better function and reduced mortality, with some differences. For instance, only sport was associated with greater life satisfaction whereas attending music/art/theatre was negatively related to functional health. Mendes de Leon et al. (2003) also investigated the relationship between participation in social and productive activities (ranging from gardening to day trips, from community work to

paid employment) and disability using nine waves of sequential data (1982 - 1991) from a sample of 2,812 older people (65 or older) in the New Haven, Connecticut, site of the Established Populations for Epidemiologic Studies of the Elderly. Strong and robust cross-sectional and longitudinal associations between social engagement and disability were found, although analyses “failed to provide evidence for a clear causal effect on rate of functional decline” (p 640).

People can remain active contributors to society and families even without being formally involved in any paid work or without committing themselves to any voluntary activities. There are other various ways older people can feel active, for instance being an active contributor towards family and friends. Qualitative studies suggest that good personal and social relationships represent one of the main factors affecting well-being and quality of life in older adults (Bowling, 2005, Askham et al., 2007). Social support and social networks are generally associated with better health outcomes, including higher level of satisfaction (Burholt et al., 2003), lower risk of mortality (Bowling and Grundy, 1998), lower functional decline (Uchino, 1996, Unger et al., 1999, Mendes de Leon et al., 2001) and better psychological health (Grundy and Sloggett, 2003). Litwin et al (Litwin and Shiovitz-Ezra, 2006), using data from a national sample of 1,334 Jewish-Israeli retirees, found that involvement in activities itself is significantly associated with well-being, though this association is stronger when the quality of social relationships is accounted for. Also Siegrist and Wahrendorf analysed the longitudinal relationship between quality of life among retired SHARE respondents and the reciprocity of efforts spent and rewards received in informal help: they found that those who appraised help as satisfactory and experienced reciprocity of exchange in this activity were more likely to have improved prospective quality of life (Siegrist and Wahrendorf, 2009a). Reciprocity of efforts and rewards or lack thereof may help to explain the links between social relationships and well-being of older people (Wenger, 1997, Jerrome and Wenger, 1999). Contacts with friends and relatives as well as membership in clubs or organisations are strongly and negatively associated with disability (Unger et al., 1999, Mendes de Leon et al., 2001). Unger and colleagues, for instance, using data from the longitudinal MacArthur Studies of Successful ageing (1189 men and women aged 70-79 classified as ‘high functioning’ were interviewed in

1988/9 with follow-up interviews scheduled between 1995 and 1997) found that those with a greater number of social relationships experienced reduced levels of functional decline.

Social participation and family relations, though, can also be negatively associated with good health. Kohli et al. (2009), using SHARE, analysed ‘informal social relationships’ of older European people, defined as any exchanges between family members – regardless of whether the respondents were the main providers or the recipients of help and care. They found that poor self-rated health was cross-sectionally positively correlated with informal relationships, “possibly reflecting health-related needs” (pg. 333). Hank (2010) also showed that SHARE respondents reporting depressive symptoms were more likely to be ‘carer’, possibly as a result of the stress of providing care (Sherwood et al., 2005). Receiving ‘too much’ help might indicate that older people might not be in a functional healthy position to reciprocate (Henretta et al., 2002, Albertini et al., 2007) whereas caring for grandchildren in skipped generation household, for instance, could potentially add a considerable demand on a grandparent’s life, being physically and emotionally challenging. Hughes et al. (Hughes et al., 2007), using a sample of 12,872 grandparents aged 50 to 80 from the Health and Retirement Study, found no evidence that caring for grandchildren had negative effects on grandparents’ health and health behaviour: health disadvantages arose mainly from their own prior characteristics, not as a consequence of providing care. However, caring for grandchildren in skipped-generation households worsened older people’s health, with grandmothers more likely to experience negative changes in depression and self-rated health. Similarly, Moen et al. (1992), using panel data from a sample of 313 women who were wives and mothers in 1956 and were interviewed both in 1956 and 1986, found a distinction between voluntary and obligatory roles: whereas participating in volunteer work and being a member of a club or organisation were positively related to health, paid work and caring for the infirm or aged kin were negatively associated with health (Moen et al., 1992).

To summarise, working appears generally protective of older people’s health, provided that work conditions are not degrading. Being out of paid work is generally associated with (but not necessarily the cause of) negative health. Evidence also suggests that

staying engaged in formal activities such as volunteering significantly benefits health and well-being of the older people as well as the organizations. Several publications document the significant positive associations between engagement and decreased mortality and depression, improved self-rated health, greater well-being and quality of life, and enhanced cognitive and functional abilities. These findings highlight the importance of activity in ageing well and also suggest that different types of activities may have different physical and psychological benefits.

It is worth mentioning, anyway, that both cross-sectional and longitudinal associations between 'engagement' and 'good health' might have been influenced by reverse causation. In fact, engagement may result from initial higher levels of health and maintain this advantage over time. Therefore, although it is plausible that being active sustains health and well-being, it is equally likely that better health provides an impetus for being more socially active in a wider variety of activities (Adelmann, 1994, Menec, 2003). As an illustrative example, if on one hand work affects the health status of older people, on the other health status can affect participation in the labour market determining the selection into and out of the workforce (Tsai et al., 2005, Barnay, 2006, Blanchet and Debrand, 2007, Alavinia and Burdorf, 2008, Hult et al., 2010). Subjects with poor health, in fact, are less likely to enter into the workplace and workers in poor health are more likely to drop out of work (healthy worker effect), biasing the higher health outcomes of workers when compared to people who no longer work. Thomas et al. (2005), for instance, analysed the impact of changes between employment and various forms of non-employment<sup>5</sup> on the psychological wellbeing of men and women aged 16–74, using the 1991 to 1998 rounds of the longitudinal British Household Panel Survey. The authors found that the prevalence of psychological distress was highest for groups not in employment; they also found that transitions from paid work into either unemployment or long term illness were associated with decreased mental health whereas transitions from non-employment into paid employment were associated with improved mental health. "This suggests that there may be health selection effects operating with healthy people being selected into employment" (Thomas et al., 2005)(pg 245). Ill people were less likely to start participating in work. This selection process for

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<sup>5</sup> Unemployed, retired, full time study, maternity leave, family care, and long term illness.

employment due to pre-existing health status is known as the ‘healthy worker’ effect, and is an instance of the broader phenomenon of reverse causality which can be found in numerous other fields (Östlin, 1989, Arrighi and Hertz-Picciotto, 1994, Siebert et al., 2001). For example researchers concerned with identifying possible benefits of volunteering have recognised that whether people choose to volunteer may be dependent on their health, making it difficult to determine the extent to which better health among volunteers compared with non-volunteers may be attributed to volunteering itself (Kent, 2011). Moreover, volunteers with high subjective well-being may gain more benefits from volunteering than other (Meier and Stutzer, 2004). Reverse causality is therefore a source of bias which makes it difficult to determine the true causal association in studies which assess the relationship of engagement in various activities with future health outcomes.

## **2.4 LIMITATIONS OF PREVIOUS STUDIES**

Previous studies generally support the idea that health is better among older people who are more active. Such an association has been found in both cross-sectional and longitudinal studies. Our review has shown that much of the research evidence on the issues of engagement and health is largely US-based and, in addition, there is relatively little comparative European work. Only recently, a number of studies have exploited the potentiality of the longitudinal Survey of Health, Ageing and Retirement in Europe (SHARE), a survey which makes comparison between European nationally representative samples possible. Most of both the US and SHARE studies, though, considered very few activities at the time and a considerable proportion focused merely on paid work, the transition into retirement, caring for a sick person and volunteering. This is clearly a legacy of past theories which were mainly concerned with the retiree's process of making post-retirement decisions in order to compensate for changes in roles and identity. Nowadays, though, studies have begun not only to account for people who are not in paid work (either unemployed, retired or homemakers) but also to account holistically for as many activities as possible. Some studies have just focused their attention on the involvement in charity work; others have concentrated upon the level of political and religious commitment only; a few have looked at specific activities such as



grandchild care. Older people, though, seem to be involved in an increasing number of simultaneous roles and activities and individuals appear to add family responsibilities to their portfolios of daily tasks without cutting back on paid work or other competing activities (Tomassini et al., 2004a, Glaser et al., 2005). People can take up a new activity in order to compensate for the loss of previous roles or give up activities due to time or physical constraints; people can also opt for multiple complementary activities performed in parallel (Van Willigen, 2000, Hank and Stuck, 2008, Kohli et al., 2009).

Moreover, the populations examined ranged from community-dwelling to residential living older adults; also specific groups of respondents either working in determined companies or having specific functional limitations were considered. Moreover, depending on the data available, each study used different methodologies as well as different definitions and measurements of both the activity and health of older people. Outcomes included –just citing some –functional health, physiological health, depression, mortality, self-rated health, psychological health, blood pressure, psychiatric morbidity, cardiovascular diseases, disability, well-being, physical health and mental health. As a consequence, the comparison of results at national levels in order to draw conclusions and explain differences or similarities between European countries is arduous: the availability of SHARE, a nationally representative study, is only recent.

Finally, both in cross-sectional and longitudinal studies reviewed, the problems of initial low-response and attrition were hardly ever mentioned, despite the fact that between 10% (Mendes de Leon et al., 2001, Mendes de Leon et al., 2003, Menec, 2003) and 30% (Unger et al., 1999, Siegrist and Wahrendorf, 2009a, Hank, 2010) of respondents were lost to follow-up. Sample attrition might bias longitudinal associations, yet this issue is generally ignored and analyses tend to be limited to complete record datasets.

## **2.5 THE CURRENT STUDY**

The current research project is distinct from the previous research in several key respects. This study analyses secondary data from two surveys, the English Longitudinal Study of Ageing (ELSA) and the Survey of Health, Ageing and Retirement in Europe (SHARE). Previous joint analyses of these sources have predominantly focussed on differences between countries in health (Avendano et al., 2009, Jürges, 2009, Jürges,

2010, Crimmins et al., 2011). Demographic, socio-economic and household characteristics as well as health-related variables are comparable among these two surveys. Although in theory the nature of these surveys allows for homogeneous and standardised definitions and measurements, given that very few studies have attempted to combine ELSA and SHARE, this research project will also highlight how comparable these two studies are when indicators of different forms of engagement are considered.

Additionally, this research study adopts a multifaceted inclusive approach to activities: the concept of 'active ageing' was operationalised holistically, including as many activities as possible, within the boundaries of available data. Most studies have considered few activities at a time and focused merely on paid work, caring for a sick person and volunteering, mostly because these activities were the only ones which had the highest prevalence at older ages (Wahrendorf et al., 2006, Siegrist and Wahrendorf, 2009a, Hank, 2011). In this project, restricting analyses to respondents aged 50-69, I will include all activities mentioned in the questionnaire, given that older people can be involved in a number of simultaneous activities. Moreover, there is no-evidence base to suggest that volunteering is a better predictor of health: the odds of reporting good health indicators are equally higher among respondents who, for instance, engage in political or religious organisations (Sirven and Debrand, 2008). Ignoring respondents who participate in activities other than just volunteering or caring would exclude potentially a considerable number of respondents; moreover, this would fail to embrace the WHO policy initiative which pushes towards a gradual broadening of 'activeness' to include any continuing participation in social, cultural, economic and civic affairs.

ELSA and SHARE are moreover ongoing panel surveys. The current study therefore allows for a longitudinal analysis of the association between engagement in a mixture of different activities and health among older people. This will enable us to control for previous levels of health, which partially addresses the concern that selection effects account for the observed relationships with engagement. The problem of missing data and attrition bias will also be attended to by using multiple imputations, as discussed in Chapter 9. Whereas the common practice is to restrict analyses and findings to "complete record" dataset, this research project will also propose multiple imputations as a possible remedy to address missing data.

Finally, in the belief that ageing and 'old age' have a dynamic, heterogeneous and shifting nature and are both social, cultural and economic constructs defined and shaped by social and environmental contexts (Victor, 2005, Phillipson and Baars, 2007), this study compares different countries. People age together with the rest of society: ageing people influence the wider community but their experiences are in turn shaped by social factors, culture and society. Socio-economic patterns, environmental contexts as well as factors such as age, gender and social class can influence later life and the resources that older people bring to later life with possible differences both within and between age-groups. Not necessarily all older people will be active in the same way, and the activities which keep people active may differ in different countries; similarly, the value attached to different activities could vary considerably between countries. Policies and norms could influence the wealth of knowledge, experience and energy older people might have to keep themselves active and to continue contributing to society. A comparative approach will also indirectly compare 'active ageing' policy effects, exploring what differences exist between countries in terms of 'activity levels' and its influence on older people's health.

Identifying the factors associated with engagement in different countries could help not only to determine whether and to what extent older people engage differently in different contexts but also to identify possible strategies or interventions to increase the level of participation of older people and contribute in the long-term to people's health. Investigating which activities older people prefer to engage as well as the ones which might contribute to improve or maintain a favourable health is of particular relevance to public policy, as activities could to some extent be influenced by policies.

### **2.5.1 AIM AND OBJECTIVES OF THE CURRENT STUDY**

In this study I analyse the association between a selected number of socio-economic, demographic, health, personal and household characteristics (drawn from previous research studies) and engagement. The combination and accumulation of, as well as possible conflicts between, different activities are also investigated. Moreover, making no prior assumptions about the benefit of each specific activity on health, their impact on older people's health is assessed longitudinally.

The overall aim of this research project is to assess whether activity has a positive impact on people's health. The WHO policy framework pushes boundaries towards a new balance between work, retirement and participation in a broader number of activities in which older people can contribute to maintain their health as they age. This research thesis, therefore, examines whether older people are indeed active contributors to their family, community and society, and whether there is a positive longitudinal relationship between engagement and better health. In particular, the level of 'activeness' and its longitudinal relationship with health are examined in different countries.

This project therefore aims to answer the following specific research questions:

1) Which characteristics are associated with engagement of older people?

This study investigates the baseline associations between socio-demographic and health characteristics of older people and engagement in various activities in order to gain insight into the characteristics which influence their level of engagement. Moreover, it investigates whether the level of engagement and the personal-level characteristics associated with it are common across different countries.

2) Do more 'active' people experience less health decline?

This study will analyse longitudinal associations between engagement at baseline and health at follow-up (controlling for baseline health). This analysis might help us determine whether the various forms of engagement play a similar role in different countries.

3) Does attrition bias longitudinal findings?

The extent to which longitudinal associations might be biased by sample attrition will be assessed by using multiple imputations and sensitivity analyses.

The following chapter introduces the rationale behind the choice of the four countries under study in this project. Even though European countries are facing similar demographic challenges, retirement and social policies continue to differ. These

different approaches might be embedded in the different European welfare state regimes.

### **3. WELFARE REGIMES AND THEIR INFLUENCE ON POLICIES IN FOUR EUROPEAN COUNTRIES**

This project focuses on four European countries: Denmark, France, Italy and the UK<sup>6</sup>. The choice of countries reflects the fact that, despite a general demographic convergence and although most European countries are facing similar challenges, these countries still continue to differ in a number of domains relevant to the topic of this thesis, including employment rates and retirement policies, fertility patterns (a determinant of population ageing) and patterns of household composition.

In this chapter, various approaches to distinguishing European countries and explaining persistent differences between them are briefly described, followed by a review of welfare regime classifications. Recent pension and retirement reforms in the four countries are then introduced, highlighting differences in the policies adopted which partly reflect principles and values of each distinct welfare regime. Denmark, France, Italy and the UK are purposively selected to reflect different welfare regimes, as the level of engagement of older people may indirectly relate to country-specific policies.

#### **3.1 THE 'HISTORICAL' APPROACH TO COUNTRY DIFFERENCES**

Numerous are the authors who have tried to explain differences between European countries and groups of countries. Espelt et al. (2008), for instance, classify countries in three political traditions (Social democracy, Christian democracy and Late Democracies) based on their political history (such as the political party in government), as politics relate to the extent to which welfare states expand, to class inequalities, and to the redistribution of the wealth. Giuliano (2007) stresses the importance of considering norms and values. In her work, she notes that differences in behaviours such as non-marital births, the relationship between marriage and fertility, co-residence and

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<sup>6</sup> Although in this chapter I will refer to the UK, data used in the following chapters only refers to England, where nearly 84% of the total UK population lives (Source: Office for National Statistics).

family composition, are related to value systems rather than to economic-related factors or the provision of services. Studying the behaviour of American European immigrants' children, Giuliano notes a "clear indication that culture matters" (pg. 7) since immigrant groups, despite being exposed to the same environment, tend to replicate the behaviour of their 'national' peers. Other authors have rooted differences in historical circumstances, such as migration flows, the timing of the transition processes of proletarianisation from agricultural to industrial economy or the different political participation of the civil society and composition of unions and workers (Andreotti et al., 2001). Reher (1998) believes that the European North-South gradient and distinction between areas "where traditionally the family group has had a priority over the individual, and others where the individual values have had priority over everything else" (p. 203) should be attributed to deep historical roots. Variations in the practice of using servants or day-labourers in agriculture, for instance, influenced the departure of young men from the parental house. The Reformation –with its emphasis on the individual and the value of work –enhanced women's position in society thanks to the parallel institutionalisation of marriage as a partnership contract, whereas in the traditional Catholic settings marriage remained male-authoritarian hierarchical. These are just few of the several interwoven factors which could help explain the importance of the role that 'the family' gained over centuries in Southern European countries (Reher, 1998). For instance, in Southern countries "much of the aid given to vulnerable members of society came from the family or from individual charity, while in northern societies this was largely accomplished through public and private institutions" (p. 216). Similarly, in Southern societies, family (and not the community) was the institution taking care of older people, either through means of co-residence, transfers of goods and services through family members or proximity of households. This intergenerational familial social obligation was necessary for the survival of the society itself and still nowadays, where family is strong, women in particular tend to add elder care and other family responsibilities to their daily tasks (Glaser et al., 2004). Legacies of stronger family ties (intergenerational exchange and support, multigenerational household composition and geographical proximity) continue to be more prevalent in southern than in north-western European countries (Tomassini et al., 2004a, Tomassini et al., 2004b).

### 3.2 ESPING-ANDERSEN'S THREE WORLDS OF WELFARE CAPITALISM

Despite the appeal of the historical approach, many recent comparisons of countries pivot on the 'welfare regime' typology developed by Esping-Andersen, who did not deny the importance and complexity of different actors, trends, forces and values in explaining the differences between countries but came up with a simpler way to classify welfare regime types. Despite continuous critiques, Esping-Andersen's formulation of ideal types is still a useful tool because of its power to describe and at the same time explain variations between countries. Esping-Andersen attempted to provide a theoretical framework able to make sense of empirical findings and differences, trying this way to combine the underlying dynamics of each regime with a successful empirical attempt to encompass them.

Esping-Andersen argues that welfare regimes are clustered around three diverse regime types (conservative, liberal and social-democratic), each organised according to different logics of organisation, stratification and social integration and each encompassing different historical and political forces and nation-buildings which are linked to particular social policy and political economic configurations (Esping-Andersen, 1990). He uses two criteria to define his typology: the degree of decommodification and the social stratification system. Decommodification is the possibility for citizens to "opt out of work when they themselves consider it necessary" (pg. 23): this indicates the degree to which individuals or families can maintain an acceptable standard of living independently of labour market participation. The stratification of the society is the manifestation of the capacity of the welfare state to redistribute wealth, reduce poverty among groups and provide resources for health, education and similar services which are decisive for individual mobility and for the employment structure (Esping-Andersen, 1990).

Observing social rights and welfare-state stratification in a number of OECD countries<sup>7</sup>, Esping-Andersen finds different arrangements between state, market and the family which can be clustered in 3 different regime types. There is a clear coincidence of high

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<sup>7</sup> Esping-Andersen considers, in his analyses, Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom and United States of America.



decommodification and strong universalism in the social-democratically influenced welfare states (such as the Scandinavian countries). The Social-democratic welfare regime promotes equality through the possibility for all citizens to enjoy the same rights, with high levels of universal social benefits. This ideal type also supports individual independence providing opportunities for individuals. In order to minimise dependence on the family, the State takes direct responsibilities for caring for children, older people and marginalised groups (Rostila (2007) refers to this as the socialisation of the costs of familyhood) in order to allow all individuals and women in particular to choose work rather than household duties (Esping-Andersen, 1990). This regime, in fact, tends to maximise the labour participation of all persons (through policies aimed to develop individual capabilities) because its attainment depends on it and a failure of this achievement would be considered a social risk for all. The conservative-corporatist welfare states –such as Germany, France and Belgium –are typified by a moderate level of decommodification and are shaped by both a catholic, etatist and corporatist legacy. Social rights are not universalistic; benefits are provided only to people with a previous status of worker (with a distinction between those who served the State and those who did not) and are based on previous earnings. De facto, this welfare regime perpetuates differences between recipients and preserves differentials since rights are attached to class and status. This ideal type is also characterised –due to the church legacy –by the preservation of the traditional family where its members are the main providers of services and the interference of the State is meagre and considered necessary (mainly through employment protection of the male breadwinner) only when the family’s capacity to service its members is exhausted. Finally, according to Esping-Andersen, there is also a clear correspondence between low decommodification and strong individualistic self-reliance in the liberal type of welfare regime. This is characterised by the primacy of the market and therefore policies tend to respond to possible market failure through encouraging it either passively (by guaranteeing only a minimum of benefits and by providing means-tested assistance with strict entitlement rules and modest universal transfers) or actively (by subsidising private forms of welfare system). In the Liberal Welfare states universal but low welfare benefits have never been intended to replace labour market income, and poverty is prevented by providing

incentives for and access to employment removing barriers to labour market participation. People under this regime are encouraged to look for jobs (or return to the labour market as soon as possible) and to apply for private protection and this leads to a division of the population with a minority of low-income people who depend on the state and the rest who can afford private social insurance plans.

### **3.3 CRITIQUES OF ESPING-ANDERSEN'S TYPOLOGY**

Esping-Andersen's typology has created much debate and led to three main criticisms, all strongly interconnected, relating to the number of clusters, the role of women and the methodology used to classify countries.

Among the critics, Esping-Andersen's typology has been strongly objected for not including a Mediterranean or Southern European welfare regime (Leibfried, 1993, Ferrera, 1996, Bonoli, 1997, Jensen, 2008) and for considering such countries as a subcategory or a variant of the continental one (Arts and Gelissen, 2002). Andreotti et al (2001), for instance, stated that "important differences make it necessary to distinguish continental European countries from Southern ones" (pg. 43). Trifiletti (1999) also argued that Southern welfare regimes lack resources to subsidise social policies because it is assumed that the family, and women specifically, have the crucial responsibility to prevent breakdown into a condition of need, being the main actors to whom care for the sick, disabled and unemployed is delegated. Moreno Mínguez (2005) insisted that Southern European countries persevere in supporting family strategies associated with the male breadwinner model. As a consequence, in Southern European countries the principal referent for social and employment policies remain the family rather than the individual. Various commentators (Trifiletti, 1999, Pierson, 2000, Danna, 2008) have also argued that in these countries resources are mobilised only when the risk of the individual is perceived as a risk which can damage the ability of the family to function as it usually does. This determines low female labour participation and the economic dependence of women on their husbands' income, as argued particularly by Saraceno (1994). This also reinforces gender inequality in the family. Given the limited institutional support to families and the lack of programmes supporting 'employment and family compatibility' (Moreno Mínguez, 2005), in the Southern welfare regime

women are expected to mainly work inside the family as carers who look after the other members of the family unit. In southern European welfare regime women emancipate *within* the family and not from it (Trifiletti, 1999, Andreotti et al., 2001).

Esping-Andersen's work has also been criticised for not including systematically a gender dimension in social policy and for ignoring the family's role, the provision of care as well as the contribution women have made in shaping the main contours of public policies (Pierson, 2000). Welfare regimes have an impact on issues such as female labour market participation, inequalities within households as well as the extent to which women can form an autonomous household without relying on the income of a male breadwinner (Jensen, 2008). It is not possible to divorce the study of unpaid work and caring regimes and the position of women in relation to paid work: women's labour force participation is largely influenced by the extent to which social welfare policies help both men and women to reconcile paid and unpaid work (Lewis, 1992). Women are more likely to work where social care responsibilities are transferred from the family to either the market or the state (Jensen, 2008). The provision of social care services is a necessary condition for defamilisation (defined as the degree to which adults can maintain a certain acceptable standard of living without relying on family relationships), constituting both the incentive and the opportunity for female decommodification. Whereas in Southern European welfare regimes the public social care sector has been contained, confining women to their institutionalised role of wives and mothers within their households (Danna, 2008), social-democratic countries have expanded social care services in order to provide women with a gateway to the labour market, considering them as workers who need protection as mothers and wives. Liberal welfare state regimes were somehow driven by the idea that social services could be accessed on the market if needed, keeping the provision of social services to a minimum and treating women mainly as workers (ignoring their family roles) (Trifiletti, 1999, Jensen, 2008). Nordic countries have the lowest gap between male and female economic activity participation and provide women with social services and benefits: Scandinavian countries have the highest maternity leave compensation rates and duration (Bambra, 2007a, Thévenon, 2011).

Finally, the methods used by Esping-Andersen, the variables included in the analyses and the resulting classification of the clusters (and country membership) have also been criticised by several authors who believe that different methods and different dimensions would lead to alternative clusters and a dissimilar classification of the nations under study (Arts and Gelissen, 2002, Powell and Barrientos, 2004). For instance, Hudson and Kühner's (2009) analysis, which also includes social investments, resulted in a much more complex classification of countries capturing in a richer picture the diversity and differences of welfare states in response to the modernising pressures of the knowledge economy. Adding, substituting or attaching more importance to certain indicators can yield different classifications. Only a few countries are more homogeneous across different policy areas and tend to emerge as standard examples of the same ideal type of regime (Arts and Gelissen, 2002, Bamba, 2007a). Most countries exhibit fluctuating regime type membership, depending on which factors and indicators are used in the regime construction and which policies are under examination. Arts and Gelissen (2002) and Bamba (2007b) list the ideal welfare state regime types: classifications range from British, Liberal or Anglo-Saxon to Conservative, Corporatist or Bismarckian; variables and dimensions also range from poverty rates to social expenditure and political tradition. Clearly, very few of the mainstream typologies (Esping-Andersen, 1990, Castles and Mitchell, 1993, Leibfried, 1993, Ferrera, 1996, Bonoli, 1997, Korpi and Palme, 1998) actually agree with one another over the exact classifications of all countries. Most of the recent studies conclude that, contrary to the ideal world of welfare states, the real world is likely to exhibit hybrid forms, and most countries present a system mix (rather than being one-dimensional pure cases). Similar circumstances and challenges faced by most countries –particularly in the European Union –have produced more hybrid mixed cases rather than prototypes of distinct regimes. Despite common trends, though, differences between countries continue to persist.

### **3.4 WELFARE REGIMES: STILL A VALUABLE INSTRUMENT TO EXPLAIN COUNTRY DIFFERENCES**

Despite criticisms and limitations, the welfare ideal typology is still a theoretical framework useful and much used to explain differences between countries ‘belonging’ to different regime types. It is undeniable that some of the major differences persisting between countries are associated with different welfare regimes types. Examples of differences attributable to different welfare regime types range from social trust to household characteristics. Variations in public social provision have big effects on issues such as income inequality, women’s labour participation or household formation and characteristics (Andreotti et al., 2001, Vasconcelos Ferreira and Figueiredo, 2005). Some argue that policies reconciling family and work (and therefore the degree of economic dependence of women upon their husbands) can influence family stability (Trifiletti, 1999, Danna, 2008); others believe that the target of benefits and social assistance (individuals versus households) can have an impact on co-residence and intergenerational family transfers (Albertini et al., 2007). Cohabitation is the Southern European way to combat poverty; similarly, intergenerational transfers of resources have been linked to the generosity of welfare regimes since it is believed that older people are more likely to give more where welfare regimes provide them with more social services and allocate them more economic resources (Künemund and Rein, 1999, Attias-Donfut et al., 2005, Albertini et al., 2007). Bohnke (2008) argued that differences in support among European countries could also be explained by welfare regimes and social benefits. Family solidarity was very strong particularly among Mediterranean countries. Where social benefits were at a low level and little help was provided by the State, there was also little confidence in the social security system and people tended to seek support and help mainly through family members rather than friends and workmates which were more important in Scandinavian countries. Rostila (2007), in his work, concluded that there was empirical evidence which supported the idea that the welfare state was associated with trust. Where social security levels were higher and income inequality was lower (‘socio-democratic’ countries), there was a higher social cohesion and trust among citizens. Also labour market employment levels and retirement attitudes can be systematically influenced by the welfare state, directly

through (un)employment and retirement policies or indirectly through social services available, for instance, to help women reconcile work and family and facilitate their access to work. Some argue that also volunteering and more generally civic participation should not be seen in isolation from the societal context, since they are highly dependent on a country's social policies (Salamon and Sokolowski, 2001, Erlinghagen and Hank, 2006). Where provision of services by the State is lower, voluntary activities might be more 'service' oriented to compensate for their lack, compared to social-democratic countries where, for instance, voluntary work is mostly performed in the cultural or recreational domain. To a certain extent, civic participation is not merely a personal choice (Salamon and Sokolowski, 2001) but also a response of individuals to specific conditions and incentives created by policies through direct and indirect intervention: engagement in non-productive activities tends to be higher where social expenditure is high and therefore where social policies create infrastructures and opportunities for people to be socially engaged (Pichler and Wallace, 2007, Hank, 2010).

#### **3.4.1 A SENSITIVE WAY TO MAKE USE OF A WELFARE REGIMES TYPOLOGY**

It appears evident that welfare states are active powerful mechanisms which influence societies on key issues such as social stratification, distribution of resources and household characteristics, working life or the evolution of employment. Regime types offer a fruitful simplified theoretical starting point for the sake of the argumentation when explaining empirical differences in trajectories among countries (Jæger, 2006).

It is also established that real welfare states are hardly ever pure types and that hybrid mixed cases are more common (Arts and Gelissen, 2002). Kasza (2002) explicitly refers to welfare regimes as an 'illusion'. The author argues that, particularly in Europe, most countries practise a disjoint set of welfare policies given the involvement of numerous actors, the historical and economic circumstances, the cumulative work of different governments, the influence of foreign models and the vastness of welfare fields ranging from income support for older people to housing and education. As a consequence, countries are not likely to exhibit the internal consistency, coherence and distinctive rationale necessary to reflect fixed principles and adhere to established values of a certain welfare regime.

Keeping in mind that single countries do not represent welfare regimes in their pure form, that evidence on the number of clusters and country membership is still inconclusive, and that –when comparing countries –differences between them (rather than welfare regimes) are being tested, there are still good reasons to continue to work on typologies, albeit with some caution. It is undeniable that differences between countries and their policies still exist. These differences are the product of complex historical cumulative interactions of interdependent multiple factors which still generate and perpetuate dissimilar dramatic outcomes for which it still makes sense to talk about regimes. In particular, this research study will consider four different welfare regimes, extending the initial Esping-Andersen’s typology to also include the Southern European regime. A four-country typology, in fact, seems to better capture the gender and family dimensions, providing a more useful way to analyse and understand differences between European countries.

This research project will analyse Italy, France, Denmark and the United Kingdom ‘representing’ the Southern, the Continental, the Social Democratic and the Liberal regime respectively. None of these countries perfectly represents a welfare regime, though their policies on pensions and (early) retirement reflect four different ‘regimes’. There are clear differences by welfare state regime in terms of how different early retirement policies were operationalised, particularly in terms of the generosity of benefits paid, the qualifying period and conditions.

Tables 3.1-3.6 present some general statistics and indicators on employment characteristics, social expenditure, social cohesion as well as household composition in the four countries under study. These indicators demonstrate that, despite similar European phenomena such as an increasing number of older people living alone or the general intention to increase female labour participation, differences still exist and somehow reflect the typology of welfare regimes they ‘belong’ to. These indicators also justify the use of four typologies instead of the original three proposed by Esping-Andersen: the inclusion of a Southern welfare regime typology, in fact, better accounts for the gender dimension.

In particular, Table 3.1 shows the percentage of men and women who are in paid work<sup>8</sup> by age-groups. The proportion of men working is very similar among 25-54 year old people; the younger (15-24) and older (55-64) age-groups though show country differences which are not unexpected: the employment structure, the individual mobility and the skills available to the labour market are highly influenced by the education system and in Italy and France the 'effective' average age for completion of tertiary education<sup>9</sup> is higher (Eurostat, 2009, Livi Bacci and De Santis, 2010). Similarly, the low participation rates among the older age groups are highly influenced by 'early retirement' policies: the late 1970s pension reforms in the 'Conservative' and the 'Southern' type regimes which discouraged active participation in the labour market among older people continue to have an effect on employment rates among people older than 55. Women's employment rates also reflect regime type differences: whereas Denmark (a social-democratic regime type country) seems to succeed in maintaining high employment among women and the gap between male and female participation is minimal, Italian women's labour participation is extremely low as expected in a 'male breadwinner' Southern tradition. In Italy, participation among women in their reproductive ages (25-49) is between 15% (compared to France and the UK) and 20% (compared to Denmark) lower. When the subgroup of mothers with at least one child aged less than 15 is considered, we observe that whereas in Italy only 50% are working, in Denmark more than two thirds are (see Table 3.2). Denmark is also the only country, out of the four under study, where the difference in participation between mothers of young children and other women of reproductive age is almost imperceptible. Finally, Table 3.3 shows the proportion of employed people who work part-time: in Denmark and France more than one quarter of women work part-time compared to less than 15% in Italy and more than 40% in the UK. Working women with family tasks are not numerous in Southern regimes because of the limited institutional network of support to families with children (Saraceno, 1994, Moreno Mínguez, 2005). In Socio-Democratic regimes women are treated as workers and are protected on the market if they are

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<sup>8</sup> Data refer to the employment rates as defined by the OECD, i.e. the proportion of the country's working-age population that is employed (or self-employed).

<sup>9</sup> Completion age depends on both the duration of studies, the year of entry into higher education as well as on year repetition or other interruption to schooling



mothers: the state aims to achieve real equality of opportunities, providing services –if and when needed –to sustain such equality. In Conservative and Liberal regimes, women are primarily treated as wives and mothers but are protected on the labour market: this protection, though, also creates some gender discrimination on the labour market, either because women get some social benefits just as ‘wives’ through their husbands (Conservative regimes) or because they tend to mainly work part-time to have enough time to compensate for the little protection they received from the state (Liberal State). Finally, Southern regimes tend to treat women as wives and do not protect them: as a consequence, fewer women work under male conditions and mainly full time and working mothers are given very few services such as child-care provision (Trifiletti, 1999, Thévenon, 2011).

**Table 3.1 Percentage of people in paid work, by age-group and sex – 2005**

	Denmark		France		Italy		UK	
	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>
<b>15-24</b>	63.9	60.5	32.5	25.9	29.9	20.8	60.4	56.7
<b>25-34</b>	86.3	77.3	86.3	72.0	80.1	58.2	87.9	72.5
<b>35-44</b>	90.2	82.8	89.2	74.9	91.2	61.3	88.9	75.0
<b>45-54</b>	88.2	81.5	87.3	75.1	88.1	53.5	86.3	76.7
<b>55-64</b>	65.6	53.5	41.6	36.0	42.7	20.8	65.7	48.1

This table shows the percentages of people who are employed by sex and age-groups in Italy, France, Denmark and the UK. Source: OECD Labour Force Statistics. Data accessed through the OECD website <http://stats.oecd.org> on 27/05/2011.

**Table 3.2 Percentage of women in paid work by country and specific groups – 2005**

	Denmark	France	Italy	UK
<b>Female (24-49) employment ratio</b>	79.4	74.6	61.1	75.2
<b>Maternal employment ratio (mothers with child[ren] under 15)</b>	76.5	64.9	50.0	61.4

This table shows the percentages of women in their reproductive ages (25-49) as well as the proportion of mothers (with at least one child under 15) who are employed in Italy, France, Denmark and the UK. Source: OECD Labour Force Statistics. Data accessed through the OECD website <http://stats.oecd.org> on 27/05/2011.

**Table 3.3 Percentage of workers working part-time, by country, sex and age-group – 2005**

	Denmark		France		Italy		UK	
	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>
<b>25-49</b>	6.4	25.4	3.9	29.2	3.6	18.3	4.2	41.1
<b>50-64</b>	7.3	29.6	5.8	31.2	3.8	18.4	11.3	48.1

This table contains part-time employment as a percentage of the total employment by sex and standardised age groups (25-49, 50-64) in Italy, France, Denmark and the UK. Part-time employment is based on a spontaneous response by the respondent. Source: Eurostat; Employment and unemployment (Labour Force Survey). Data accessed through the Eurostat website <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/> on 27/05/2011.

Table 3.4 shows the percentage of GDP spent on different cost components such as Unemployment, Old Age and Family. Whereas the proportion spent on Health is similar in all countries, other components differ quite substantially. For instance, Italy and the UK devote to unemployment protection half a point of their GDP, compared to 1.7 in France and almost 3% in Denmark (such expenditure is not a function of unemployment levels). Similarly, Italy, France and the UK spend less than 1% on programmes which aim to encourage labour market participation, compared to almost 2% in Denmark. Denmark, France and the UK also spend considerably more than Italy in Family related programmes, including family allowances and parental leaves.

**Table 3.4 Total Social Protection expenditures as % of GDP by country, 2005**

	Denmark	France	Italy	UK
<b>Old Age (including pensions)</b>	7.2	12.8	15.0	6.8
<b>Incapacity-Related programmes</b>	4.5	1.9	2.0	2.4
<b>Family</b>	3.6	3.0	1.3	3.0
<b>Housing</b>	0.7	0.8	0.0	1.4
<b>Unemployment</b>	2.8	1.7	0.4	0.5
<b>Active Labour market programmes</b>	1.7	0.8	0.5	0.5
<b>Other</b>	0.9	0.3	0.0	0.1
<b>Health</b>	7.8	5.8	6.8	7.0
<b>Total Voluntary Private Expenditures</b>	2.3	2.6	0.5	6.3

This table shows the total social-services expenditure by country. Expenditures include both cash benefits and benefits in kind; Programmes included range from pensions, family allowances, disability pension as well as parental leave. Both public and mandatory private expenditures are considered. Source: OECD Social Expenditure Dataset 2009 (ESDS International, University of Manchester) accessed through [https://www.esds.ac.uk/international/access/dataset\\_overview.asp#desc\\_OECDSED](https://www.esds.ac.uk/international/access/dataset_overview.asp#desc_OECDSED) on 24/05/2011

Table 3.5 shows the percentage of people who trust both other people and the institutions. In Denmark, both confidence in the institutions and trust in the others are much higher than the other countries under study: this has been linked to the much more ‘equal’ society that the socio-democratic regime countries pursue through high social security levels (Rostila, 2007).

**Table 3.5 Social Cohesion Indicators by country, 2010**

	<b>Denmark</b>	<b>France</b>	<b>Italy</b>	<b>UK</b>
<b>Perceived level of corruption</b>	15	54	76	48
<b>Confidence in institutions</b>	75	59	49	65
<b>Trust in others <sup>a</sup> (2008)</b>	89	56	missing	69

This table shows a selection of ‘Social Cohesion’ Indicators. Data are expressed on percentages agreeing on the various statements. a) Trust refers to 2008. Source: OECD Social Cohesion Indicators, 2010; data accessed through the OECD website on 24/05/2011 ([http://www.oecd.org/document/24/0,3343,en\\_2649\\_34637\\_2671576\\_1\\_1\\_1\\_1,00.html#data](http://www.oecd.org/document/24/0,3343,en_2649_34637_2671576_1_1_1_1,00.html#data)).

Table 3.6 presents the percentages of older people aged more than 65 who receive long term care in institutions and the percentage of men and women 65+ who live on their own. In Italy, very few older people live in institutions compared to the other 3 countries under study. Similarly, in France and particularly in Italy the family still takes care of older people through means of co-residence: less than 20% of older men and about 40% of older women live alone in these countries compared to more than 30% and 60% in Denmark and to a quarter and almost half women in the UK respectively.

**Table 3.6 Percentage of people older than 65 who receive long-term care in institutions and percentage of 65+ who live alone, by country and gender**

	<b>65+ who receive long-term care in institutions</b>	<b>Men 65+ who live alone</b>	<b>Women 65+ who live alone</b>
<b>Denmark</b>	4.8	30.5	60.6
<b>France</b>	6.7	18.0	40.6
<b>Italy</b>	2.4 <sup>a</sup>	13.6	36.9
<b>UK</b>	4.3 <sup>b</sup>	24.1	48.3

The first column of this table shows the Long-term Care Recipients in Institutions (other than Hospitals) as Percentage of Total Population, aged 65 and older, in 2008 [a) 2003; b) 2004]. Services received can be publicly or privately financed. Long-term care institutions refer to nursing and residential care facilities; Persons receiving long-term care in hospitals are excluded. Source: OECD Health Data, 2010 accessed through <http://www.ecosante.fr> on 24/05/2011. The second and third columns show respectively the proportion of older men and women aged more than 65 who live alone. Sources: statistics.gov.uk (UK, 2005); insee.fr (France, 1999); Rapporto Osserva Salute, Istat (Italy 2009); dst.dk (Denmark, 2005).

The following section presents a brief overview of trends in pensions, retirement policies and the more recent reforms in the four countries under study. The focus of the reforms will be up to the mid 2000 since data used in this study refer to this period of time; rather than going into the detailed technicalities of the various reforms, the general intents and trends are presented, highlighting the typical characteristics of the 4 welfare regimes.

## **3.5 PENSIONS AND RETIREMENT POLICIES**

### **3.5.1 DENMARK**

In Denmark, a basic public old-age pension is given to all citizens who are 65<sup>10</sup>. Such pension should secure an income by all citizens. In addition, workers also receive a supplementary earnings-based pension which depends on the individual contribution record. These occupation schemes are more flexible in terms of retirement decisions since employees can begin drawing the pension from the age of 60 with an adjustment (mainly a reduction) in entitlements (OECD, 2004a). In Denmark, workers depend less on the market since social security is universal and comprehensive. The cost of maintaining such a universalistic social system is met through tax revenue income and as a consequence, Danish pensions reforms in the last decades have focussed on containing costs through full employment (of both men and women) and prolonging working life (Aysan, 2009). The last major reforms, in fact, reformed the voluntary early retirement pensions and reduced the maximum number of years of unemployment benefits to four (1999); introduced stricter medical assessment criteria in order to be awarded a disability pension (2003); and introduced financial incentives for workers to continue working and to postpone access to their old-age pension (2004).

Denmark is tackling most of the routes and means used by workers to exit the labour market at younger ages than the official retirement age such as disability and unemployment benefits. In particular, drastic measurements have been passed to reform the voluntary early retirement pension (VERP). This was originally introduced in 1979 in order to offer fatigued older workers aged 60 and over a way to leave the labour

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<sup>10</sup> The normal pension age is currently 65 but will be increased gradually to age 67 in the period 2024-27. A full public old-age pension requires 40 years' residence. Shorter periods qualify for a pro-rata benefit.

market before they became entitled to the old-age pension (OECD, 2004a). Later reforms introduced the early retirement programme also for unemployed aged 50-59 (1992, 1994). De facto, in the early 1990s, the share of workers or unemployed aged 50-59 retiring through the VERP increased sharply to the extent that in 1996 the programme was terminated for unemployed, and in 1999 the entry age to access it was raised to 62 or later, provisions became less generous and the number of working years to qualify raised to 25 (from the previous 20) (OECD, 2004a).

In Denmark, reforms were mainly aimed at cost containment, met through high labour force participation and a rationalisation of the existing programmes. The reform agenda never questioned the active role that the state plays in managing social risks, compared to the market and the family. The pension regime in Denmark entails generous pension plans provided by the State and social security for its citizens as well as the emphasis on high labour force participation, both among men and women. This reflects the *Social-Democratic* welfare regime rationale which aims to provide both individual freedom (through high labour participation for both men and women) and to minimise the citizens' welfare dependence on the market (Powell and Barrientos, 2004, Aysan, 2009).

### **3.5.2 FRANCE**

The French pension system is very complex, mainly because more than 180 different schemes coexist, but also because the compulsory social security pension is paralleled with complementary schemes organised on a socio-professional basis with a large number of exemptions (particularly among civil servants) (Blanchet and Pelé, 1999). Different schemes exist for wage-earners in the public and private sectors, people in the professions, artisans, shopkeepers, farmers, and numerous special schemes exist for specific blue collar government workers (OECD, 2004b). In a simplistic way, the basic general regime offers the possibility of retirement between the age of 60 and 65; benefits are calculated on a contributory basis: the pension depends on the number of years of contribution and on the average wage of a certain number of years of the career.

Three major reforms introduced in 1983, 1993 and in 2003 make the French security system even more complicated. In 1983 the nominal age of retirement was reduced to 60 from 65 in order to replace the unemployment allowances given to people over 60 who

lost their jobs with a universal pension; moreover, social benefits were introduced for workers who lost their jobs at younger ages than the decreased normal retirement age, de facto introducing new forms of preretirement incentives. France opted for an early retirement strategy to handle the increasing unemployment problem rather than unemployment or disability benefits (OECD, 2004b). Since the mid-90s efforts have been made to restrict access to early retirement, and many provisions have been abolished or tightened up but with several exceptions. In 1993, as a response to a decreasing retirement age, the period required for gaining a full pension at 60 was lengthened from 37.5 to 40 contribution years; simultaneously, the basis for calculating the reference wage was increased lowering the pension for those who retire earlier and pensions were indexed to prices instead of wages (Blanchet and Pelé, 1999). The strengthening of the conditions to be fulfilled in order to take full retirement at 60, though, did not apply to workers who belonged to *special schemes*; it affected mainly the private sector and scheduled a progressive application of the reform (mainly applying to the younger cohorts of workers). Moreover, early retirement measures were kept for workers in strenuous conditions, people with bad health and those who had started working at very young ages. These exceptions were adopted “to protect the unions’ core clientele and avoid outright unions’ opposition” even though they introduced “a strong element of intergenerational inequality into the system” (Natali and Rhodes, 2004)(pg. 10).

In 2003, another pension reform was approved. The contribution period for the public sector was equalised to the one in the private sector (and the legal age of retirement was raised to 65 in both sectors), even though the maximum pension level obtainable remained at higher levels for workers in the public sector. Nonetheless, the minimum statutory ages for retirement remain low in the public sector and the special schemes: the entitlement age in certain categories of workers remain 50 or 55 even though this is “linked to a status rather than to any real arduousness of the job itself” (OECD, 2004b)(pg. 66).

The ‘*conservative tradition*’ in the French pension system history can be seen in the emphasis on the preservation of status differentials. Rights are by institution attached to class and status rather than citizenship. The pension benefits are differentiated by

occupational groups and strongly dependent on the recipient's occupation. This also implies that men, given their relatively longer unbroken careers compared to women, have higher employment opportunities and are entitled to more generous pensions (Aysan, 2009). Unlike in Southern countries, though, women are not discouraged from participating in the labour market and opportunities such as part-time jobs are offered to women to increase their labour participation.

### **3.5.3 ITALY**

The Italian system includes a number of means-tested measures in order to protect old people against poverty and to decrease inequalities as well as additional earnings-based pension which nowadays depend on the number of years a person has worked. The latter feature of the pension is the result of several reforms.

Social provision of pension in Italy is a patchwork of independent schemes, typically characterised by different benefit payouts and eligibility requirements which penalise particularly those who work in the private sector, making the system unfair and unbalanced (OECD, 2004c). In general, in a quite simplified way, until the 1990s, the pension replacement rate was based on the final year's earnings (equal on average to 80% of the last wage) and there was no contributory system. No actuarial penalties were present for those who retired early, and access to retirement was possible from the age of 50 and after only 15 years of work in the public sector. Such a system heavily distorted the choice of workers, resulting in early retirement and low employment rates (particularly among women).

In the early 1990s, the Italian authorities began to take action to prolong working lives in order to prevent a financial crisis of the pension system. Three major reforms were passed (1992; 1995 and 1997) with the goal to shift the pension system towards a contributory one. The 1992 reform started a process of realignment redesigning coherently the pension system and smoothing differences out (Brugiavini, 1999). It was decided that at least 35 years of contribution were necessary to access the pension, irrespective of the type of occupation and sector. Also, the age at which people could retire was increased (between 57 and 65) and the pension level attainable became highly correlated with the age of retirement. With the later reforms, previous differences

between civil servants and self-employed and between manual, agricultural and non-manual workers in the private and public sectors were gradually abolished.

The official increase in the minimum retirement age and the lower accumulation of rights, however, will not have a significant impact on retired workers until after 2030 (by 2020 more than 75% will still have their pensions calculated on the old rules defined on earnings rather than contributions) (OECD, 2004c). Such long implementation period avoided the risk of electoral opposition and social mobilisation. In the negotiation process for reforming the system, the unions obtained a transition period, favouring older cohorts of workers with continued access to early retirement (if certain joint requirements of age and years of contributions were met) at the expense of their future counterparts who hold the major burden of the reform. Intra-sectoral inequity, though, was reduced: public sector workers in Italy gradually lost their privileged position and most measures, contribution rules and entitlements apply nowadays to both public and private-sector workers (Natali and Rhodes, 2004). The various reforms, despite the long implementation period, represented a “breaking point after which the social security system could no longer be as generous as in the past” (Brugiavini, 1999)(pg. 40).

The dominance of schemes characterised by defined-contributions and differentiated by occupation somehow reflects the legacy of ‘*conservative-corporatist*’ welfare regimes, despite recent changes to defined-contribution schemes with fewer differences between private and public sectors. Italy still perseveres in maximising mainly the male labour force participation whereas the family (i.e. women) still play decisive roles in elderly and child care. The male breadwinner model and the traditional values of the family persist: the recent reforms have not yet undermined the traditional role of women, whose participation rate in the labour market remains comparably low even at younger ages (Aysan, 2009); the assumption that women should be looking after the family and their economic dependence on men due to low labour participation –typical of the *Southern regimes* –are still strong.



### 3.5.4 UK

The UK provides a flat-rate, virtually subsistence level pension to almost everyone (OECD, 2004d). A minimum pension is in fact offered according to the state pension age, regardless of the number of years of and level of contributions made (Blundell and Johnson, 1999). The UK population nearing state pension age can be split in two groups: those who only access state benefits, and those who also participate in an occupational private pension scheme<sup>11</sup>. Currently, 25% of the pensioners are in receipt of occupational and personal pensions (Department of Work and Pensions, 2010). Similar figures apply also to the workforce; particularly among the private sector workforce (self-employed included) the proportion of people who rely entirely on the basic state pension as an income when they retire peaks at almost 70% among lower/routine workers (Office for National Statistics, 2010). For these workers without any additional pension coverage, delaying retirement is not an attractive option since the replacement rate (compared to their average wages) is relatively higher. Moreover, despite efforts at reducing their generosity, unemployment and incapacity benefits and means-tested income supports<sup>12</sup> still provide an incentive to retire earlier and represent the main route of exit from the labour market before the age of state pension, particularly for low-income earners. Also occupational schemes might provide routes to retirement at ages younger than the state pension age: in fact, as soon as full occupation pensions become due, workers tend to retire since working longer would not increase their future already relatively generous pensions (Blundell and Johnson, 1999).

Reforms in 1997, 2002 and 2007 have mainly tried to tackle the official age of entitlement to a full public old-age pension and of access to private provision schemes in order to increase the age at which people decide to retire. For instance, under the Pensions Act 2007, a gradual increase in state pension age for men and women from 65 to 68 between 2024 and 2046 was approved. It was also decided that the earliest age at which individuals can access private pension schemes will rise to 55 (from the previous age 50). Reforms have also tried to change the structure and level of generosity of

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<sup>11</sup> Some people also have non-occupational private pensions.

<sup>12</sup> Pension credit, housing benefits and council tax benefits.

benefits so as to provide adequate pensions for lower-income earners without giving them stimulating their early retirement.

The pension regime and reforms, though, still reflect the liberal welfare regime principles: recent reforms continue to favour private pension plans and incentivise workers to opt for private schemes according to their needs and contributions (Blundell et al., 2006, Aysan, 2009) with government support through tax exemptions (Pension Policy Institute, 2004). Encouraging the market and its role, reforms also continue to perpetuate the dualism in the society and among workers, with the low-income workers and the poor, on the one hand, who have to rely on modest State provision, and, on the other hand, those who have access to occupational and private provisions.

### **3.6 CONCLUSIONS**

While the challenges that ageing countries share are very similar, the responses can vary. Different countries have adjusted to the new challenges in ways that correspond with past institutional arrangements and are associated with different philosophies underlying welfare regimes. At the European Employment Strategies summit of 1997 in Luxembourg, it was recognised that the sustainability of the welfare state hinged on the ability to maintain high employment because this equals decreasing social expenditures, decreased number of people at risk of poverty and social exclusion as well as more production and higher GDP. At the European summit of 2000 in Lisbon, the EU Council agreed on a more precise formulation of the targets with respect to labour participation. The Council adopted the goal of achieving an overall employment rate among the working-age population of at least 70 percent in each member state by 2010; the employment rate among women was targeted at 50 percent among people between the ages of 55 and 64 (de Beer, 2007). Despite a European overall process of convergence with equal guidelines and targets for all member states, countries responded to economic and social pressure adopting quite distinct strategies and active labour market policies, which still reflect (and at the same time reinforce) different typologies of welfare regimes (Powell and Barrientos, 2004, Vasconcelos Ferreira and Figueiredo, 2005, Bamba and Eikemo, 2009). For example, pension reforms have been influenced by paths that are differentiated across welfare regimes. In the UK, a 'liberal' state, the

market plays a role in the retirement and pensions system whereas the State remains a key determinant in Denmark, a 'Social-Democratic' country. In France and Italy, only recently have reforms tried to reduce the generosity of benefits and to reinforce the link between the level of benefits and the level of contributions (Reday-Mulvey, 2008). Moreover, Italy continues to reiterate a traditional role of the family and women.

Given these persistent differences in terms of provision of services, labour and in particular female participation, welfare regime typologies seem to be a useful way to understand possible different patterns of engagement between Denmark, France, Italy and the UK. This study, in fact, investigates the personal-level characteristics associated with various activities as well as the level of engagement across different countries: if country-specific differences were found, welfare regimes might provide a useful contextual framework to understand differences in the level of participation of older people in various activities such as paid work.

Denmark, France, Italy and the UK not only differ in employment rates and retirement policies; also their populations and their ageing processes present dissimilar patterns, despite a general demographic convergence, as the following Chapter Four highlights.

## **4. POPULATION AGEING IN EUROPE: AN OVERVIEW**

This chapter describes briefly some of the main demographic characteristics of the four countries under study. Although all these populations are ageing, the pace of growth of the share of older individuals and the pace of change differ between them. Also future projections of the proportion and characteristics of older people vary and these patterns pose challenges specific to each country. The following paragraphs –focusing in particular on Europe –will introduce the phenomenon of ageing, its causes and the concerns arising around ageing. More detailed information on recent life expectancy and fertility trends are then presented for the four countries under study; the current population and future projections are then described.

### **4.1 AGEING AS A GLOBAL PHENOMENON**

Over the past two centuries, a global transformation has occurred across most of the World: the population has been ageing, namely older individuals have become a proportionally larger share of the total population (UN, 2001). Such a phenomenon is due mainly to long term fertility declines with, more recently, increasing longevity leading to further population ageing (Livi Bacci, 1999). The rate of population aging may also be modulated by migration, although the role of international migration in changing age distributions of the host populations has been fairly modest (UN, 2000) and is less important than that of fertility and mortality (Lesthaeghe, 2000)<sup>13</sup>. While the ageing of the population is unique within every country, the global nature of ageing prefigures some common experiences among countries: “changes will impact all aspects of human life –from family composition, living arrangements and social support to

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<sup>13</sup> Past trends in migration seem likely to have had a more substantial effect on population totals as well as ethnic composition than variation in fertility or mortality. Their effect on age-structure, moreover, is modest (Coleman, 2003). Data on immigration, birthplace and proportion of births to immigrants are also difficult to retrieve, particularly for the pre-1990s period. For these reasons, this chapter will not consider in detail data on migration trends.

economic activity, employment rates and social security and to transfers between generations” (Peace et al., 2007)(pg. 2).

At the global level, in 1950 around 5% of the population was at least 65; by the year 2000, that proportion had increased to around 7% (with more than 28% of the world population aged 0-14). By the year 2050, more than 15% of people throughout the world are projected to be aged 65 or over (UN, 2001).

In Europe, according to the European Statistics Bureau (Eurostat, 2008), between 1960 and 2005 the percentage of children<sup>14</sup> (aged 0-14) dropped from 26.7% to 15.9% whereas older people (65+<sup>15</sup>) during the same period almost doubled their proportion rising from 8.8% to 15.9%. By 2050, the share of people aged 65 or more is projected to rise to almost 30% (Eurostat, 2008) and it is highly probable that by the same year those aged 80 and over will constitute at least one in ten of the European population (Grundy, 2010).

Europe is already facing major challenges in relation to the ageing population and, according to projections, will continue dealing with an ageing population, though to different extents in different countries, as will be illustrated below. For instance, whereas those aged 65+ account for about 20% of Italy’s population (in 2010) with figures projected to rise to 35% by 2050, Denmark is expected to have, by the same year, one of the lower representations of older people in Europe with fewer than 25% of Danish people aged more than 65 (Eurostat, 2008).

## **4.2 ‘CHALLENGES’ RELATED TO AN AGEING POPULATION**

Increased survival is a great achievement (WHO, 2001a, 2002) although population ageing is often portrayed negatively. The main concerns arising from population ageing<sup>16</sup> centre upon pension costs (and more generally income support costs), the likely

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<sup>14</sup> Data presented in the ‘Europe in figures – Eurostat yearbook 2008’ refer to the 27 Member States of the EU (EU-27). Time-series data refer to a sum or an average for all 27 countries as if all 27 Member States had been part of the EU in periods prior to the beginning of 2007 (i.e. when EU officially included 27 Member States).

<sup>15</sup> Throughout this chapter, the conventional age of 65 will be used to describe the older proportion of the population, despite numerous critiques (Egidi, 1988, Cagiano De Azevedo and Cassani, 2005).

<sup>16</sup> To reverse population ageing a rapid population growth would be necessary, which itself poses challenges (Livi Bacci, 1999).

end of the recent growth seen in labour force size, the availability of family support as well as health care costs. The general assumption is that the process of population ageing will challenge younger age groups to provide for a growing share of the old. For instance, it is believed that the ageing of population will increase pressure on public expenditures: fewer people in employment (i.e. a reduced tax-base) will have to finance with larger contributions of various forms (such as taxes and social security contributions) a rapidly growing number of people outside the labour market, with negative impacts on economic growth. Given that the extra burden of taxation is likely to fall on a shrinking labour force, current demographic changes also, it has been argued, may create intergenerational inequities and tensions between younger workers and older pensioners, particularly where participation rates of older workers in the labour market remain low (OECD, 2004a, c, Grundy, 2010).

Although recent studies suggest that population ageing has a limited marginal impact on health care costs (Richardson and Robertson, 1999, Zweifel et al., 1999, OECD, 2004d), it is believed that changes in patterns of family-related behaviours and in living arrangements might reduce the availability and supply of informal care, augmenting the demand for formal long-term professional care. It has been pointed out that the decreased average number of children per women, the increased participation of women in the labour market, increased divorce rates as well as the increased proportion of older people living alone (particularly among older women) might all contribute to a reduction of the availability of family support for older people in need of assistance (Bolin et al., 2008, Eurostat, 2008).

### **4.3 AGEING IN ITALY, FRANCE, DENMARK AND ENGLAND**

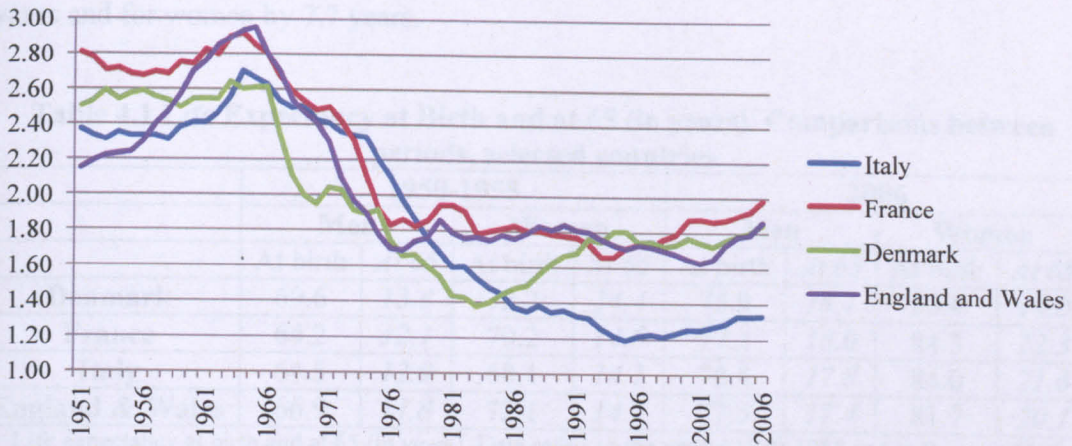
#### **4.3.1 DIFFERENCES WITHIN SIMILAR TRENDS**

The two major drivers of populations ageing are the shift from relatively high to low fertility rates and improvements in the overall level of mortality, particularly at older ages. The combination of these two driving factors determines the rate at which populations age.

The total fertility rate (TFR) is the average number of live children that a group of women would have if they experienced the age-specific fertility rates of a specific

calendar year throughout their childbearing lifespan. The TFR in Italy has fallen from almost 2.5 in 1970 (i.e. above the replacement rate of 2.1) to 1.24 in 2000 (Figure 4.1). Denmark experienced an accelerated decline in fertility from 1967, reaching the lowest level so far in 1983 (1.4 children per woman), after which fertility began to increase again peaking almost 1.8 children per women in 2006. France has had a slightly higher birth rate than the other countries under study: from the mid 1970s until the late 1990s, the French TFR fluctuated around 1.80, reaching its lowest point in 1993/4 (with a TFR equal to 1.66); since 2001, however, the French TFR has increased to almost 2 in 2006. As for the England and Wales, after an increase by more than 30% between the early 1950s and the mid 1960s, the total fertility rate fell from 2.9 to less than 1.7 in 1977. Between the last years of the 1970s and the late 2000s, the total fertility declined gradually to reach 1.63 in 2001, its lowest level, to then recover to almost 1.9 in 2006.

**Figure 4.1 Total Fertility Rates, 1950-2006 – selected countries**



Total Fertility Rates (. Data refers to the period 1950-2006. Sources: Birth statistics from Insee, Division des enquêtes et études démographiques ([www.insee.fr](http://www.insee.fr), France); Danmark Statistik Befolkning ([www.statbank.dk](http://www.statbank.dk), Denmark); Istat – Istituto nazionale di statistica ([www.istat.it](http://www.istat.it), Italy) and UK National Statistics ([www.statistics.gov.uk](http://www.statistics.gov.uk); England and Wales).

The second major explanation for population ageing is improvements in the overall level of mortality, often summarised using measures of life expectancies at specific ages (for example, birth and at 65) which give a rough idea of how many years an average individual at a certain age can expect to live after this age, if there are no changes<sup>17</sup> in future death rates. As Table 4.1 shows, Italy and France have among the highest male and female life expectancies at birth and at 65. In 2006, life expectancy at birth reached

<sup>17</sup> Life expectancy is in fact calculated on current mortality rates.



78.4 years for Italian men and 84.3 for French women, much higher than England and Denmark. The main differences among the four countries under study are observable when the gains in life expectancy (at birth and at 65) are compared. Whereas among Danish men life expectancy at birth has increased by around six years during the past five decades, in England and Wales men gained almost 11 years during the same period of time. In France and Italy, life expectancy for men increased by 13 and almost 14 years respectively. Gaps are even bigger if women are considered: in Italy, life expectancy at birth has increased by 16 years, almost double the gain in Denmark. Moreover, further life expectancy of men aged 65 ranges between 16 (among Danish men) and 18 (among French men) whereas among women this ranges between 19 in Denmark and 22 in France. Increases between the mid 1950s and 2006 are quite different among the different countries: whereas Danish men and women gained only 2.3 and 4.6 years respectively, in France male life expectancy at age 65 increased by 5.9 years and for women by 7.7 years.

**Table 4.1 Life Expectancy at Birth and at 65 (in years). Comparisons between periods, selected countries**

	1950-1955				2006			
	Men		Women		Men		Women	
	At birth	At 65	At birth	At 65	At birth	At 65	At birth	At 65
<b>Denmark</b>	69.6	13.8	72.2	14.4	75.9	16.1	80.4	19.0
<b>France</b>	64.2	12.1	70.2	14.6	77.2	18.0	84.3	22.3
<b>Italy</b>	64.5	12.9	68.1	14.1	78.4	17.8	84.0	21.6
<b>England &amp; Wales</b>	66.9	11.8	72.1	14.6	77.5	17.4	81.7	20.1

Life expectancy at birth and at 65 (in years). Data refers to the period 1950-1955 and to the year 2006. Sources: for the 1950-1955 period, data was accessed through the *Human Mortality Database* (University of California Berkeley (USA) and Max Planck Institute for Demographic Research (Germany)) available at [www.mortality.org](http://www.mortality.org). Data for 2006 was obtained via the national statistics bureaus, [www.statbank.dk](http://www.statbank.dk) (Denmark), [www.insee.fr](http://www.insee.fr) (France), [www.istat.it](http://www.istat.it) (Italy) and [www.statistics.gov.uk](http://www.statistics.gov.uk) (England and Wales).



### 4.3.2 CURRENT POPULATIONS

The increasing trends of longevity together with decreasing fertility rates have contributed to shaping the current age composition and will keep transforming it over the following decades. Italy, for instance, which experienced a substantial decrease of both mortality and fertility rates, has one of the oldest age-compositions among European countries: in 2006, only 14% of the population was younger than 15, whereas people older than 65 doubled compared to 1961 representing almost 20% of the total population in 2006 (Eurostat, 2008). The relatively similar TFR trends after the 1990s in France, Denmark and England and Wales are reflected in similar proportions of people aged 0-14 at around 18% in 2006. As regards the older share of the population, in France, Denmark and England and Wales, between 15% and 16% are aged over 65. In Denmark, though, because of the relatively smaller gains in longevity, the proportion of over 65 is slightly smaller than in France and the UK (see Table 4.3).

**Table 4.2 Population by broad age-groups (% distribution), 2006**

	0-14	15-24	25-49	50-64	65-79	80+
<b>Denmark</b>	18.7	11.2	35.1	19.9	11.1	4.1
<b>France</b>	18.6	12.9	34.4	17.9	11.6	4.6
<b>Italy</b>	14.1	10.3	37.5	18.3	14.6	5.1
<b>England and Wales</b>	17.6	13.4	35.0	17.9	11.5	4.6

Population by age group, 2006 [2007 for England and Wales]. Sources: Eurostat, 2008 (Italy; France; Denmark); Office for National Statistics, 2009 (England and Wales).

Focusing in particular on people aged 65 and more, Italy shows the higher percentages of older people. In 2006, almost one in ten Italian people are aged 75 and more compared to circa 7% in Denmark and England and Wales (see Table 4.4.).

**Table 4.3 Size and Age structure of the older population in selected countries, 2006**

Country	Population	Percentage (and Absolute Number) of the Entire Population aged		
		65+	75+	85+
<b>Denmark</b>	5,427,459	<b>15.16</b> (823,027)	<b>7.01</b> (380,633)	<b>1.90</b> (103,294)
<b>France</b>	61,166,822	<b>16.44</b> (10,058,762)	<b>8.24</b> (5,039,778)	<b>1.96</b> (1,201,927)
<b>Italy</b>	58,751,711	<b>19.73</b> (11,592,335)	<b>9.24</b> (5,431,005)	<b>2.11</b> (1,244,556)
<b>England &amp; Wales</b>	54,072,643	<b>16.07</b> (8,690,594)	<b>7.81</b> (4,221,687)	<b>2.17</b> (1,172,126)

The first column shows the total number of residents. The following columns show the percentages and absolute values of the fraction of the population aged over 65, 75 and 85 respectively. Data Sources: www.insee.fr (France), www.statbank.dk (Denmark); http://demo.istat.it (Italy) and www.statistics.gov.uk (England and Wales).

Considering also the sex distribution of the older people in the four different countries (see Table 4.4), data show that women are more numerous than men in all age groups. This reflects higher life expectancies for women (see Table 4.1). In all countries under study, between 56% and 59% of people older than 65 are women. Restricting the analysis to people older than 85, the disproportion between men and women is even higher with only about 30% of men. This deficit of men in the oldest cohorts is augmented to some extent by war-related mortality.

**Table 4.4 Age-Sex Distribution of the older population, 2006**

		65+ (%)	75+ (%)	85+ (%)
DK	Males	341,347 (43.2)	140,169 (38.1)	29,651 (29.6)
	Females	448,780 (56.8)	227,651 (61.9)	70,590 (70.4)
FR	Males	4,134,951 (41.1)	1,838,168 (36.5)	341,669 (28.4)
	Females	5,923,811 (58.9)	3,201,610 (63.5)	860,258 (71.6)
IT	Males	4,821,967 (41.6)	1,995,778 (36.7)	361,832 (29.1)
	Females	6,770,368 (58.4)	3,435,227 (63.3)	882,724 (70.9)
E&W	Males	3,775,548 (43.4)	1,648,718 (39.1)	366,159 (31.2)
	Females	4,915,046 (56.6)	2,572,969 (60.9)	805,567 (68.8)

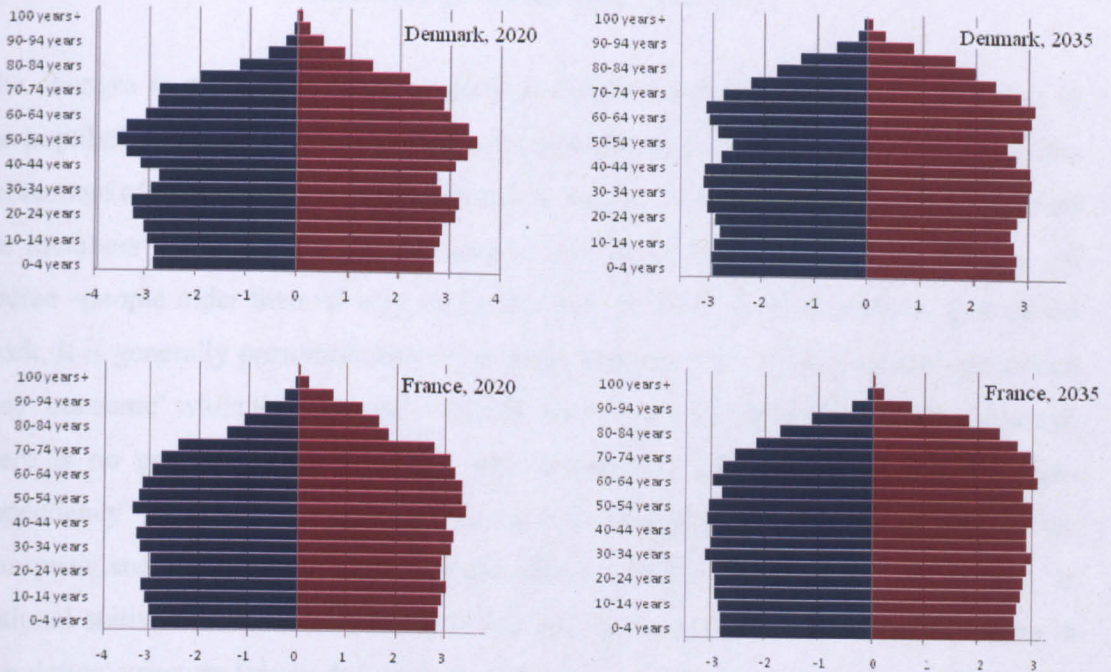
Age-Sex Distribution of people older than 65 in 2006. For each country, data show the percentage as well as absolute values of males and females in each age-group (+65; +75 and +85). Data Sources: www.insee.fr (France), www.statbank.dk (Denmark); <http://demo.istat.it> (Italy) and www.statistics.gov.uk (England and Wales).

### 4.3.3 FUTURE TRENDS

The trends in fertility and mortality discussed above affect not only the present but also the projected age distribution of populations. Figure 4.2 shows projections for the 2020 and the 2035 populations of the four countries under study. Because Italy's fertility rate is projected to remain well-below replacement level and the number of women of childbearing age has been decreasing, each birth cohort is projected to be smaller than the one above it in the population pyramid. By 2035, the base (ages 0-4) of the pyramid for Italy is projected to be not quite as wide as it for 2020, reflecting even fewer births in the later year. The 2020 pyramid has a bulge for those aged 45 to 55 years (who were born between 1965 and 1975) which reflects the rapid increase in fertility (the 'baby boom') that preceded the sharp decline of the TFR in 1973. Such a 'bulge' is projected

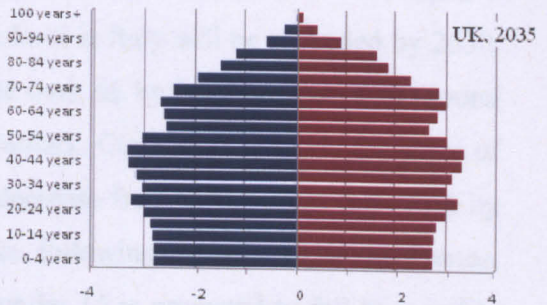
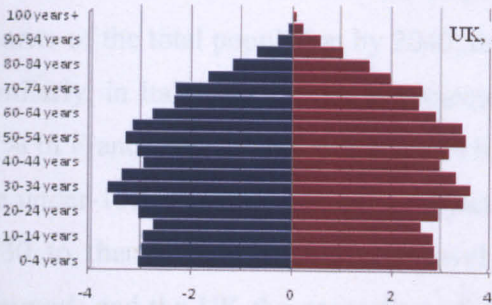
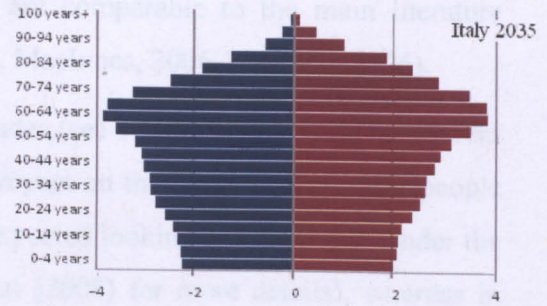
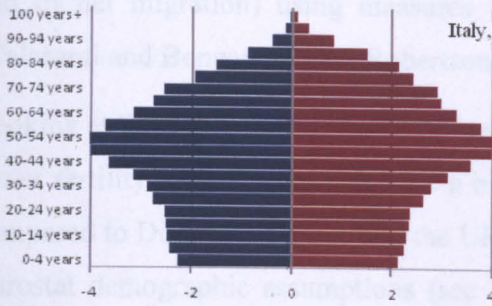
to move up in coming years inflating the proportion and the number of older people for a period. The pyramids for Denmark and the UK<sup>18</sup> are more jagged in shape: for instance, in 2020 there are two bulges in the Danish projection, one for those aged 20-29 (which reflects the pickup of the TFR in the early 1990s) and one for those aged 55 to 59 (reflecting the high fertility rates in the early 1960s before the rapid fall after 1966). Finally, France is projected to have a more rectangular-shaped age structure. In the coming decades, though, the relatively large cohorts of people born between the 1950s and mid-1960s (aged 55-70 in 2020) will continue to shift upward swelling the number of older people by 2035. At the same time, the base (ages 0-14) of the pyramid are projected to slightly narrow by 2035. In general, Italy is projected to be the only country to have a much smaller base compared to the other four under study: the proportion of women aged 0 to 4 years is projected to be as small as 2% of the total population by 2035, compared to 2.8 in Denmark and 2.7 in France and the UK.

**Figure 4.2 Projections of Age-Sex Pyramids in 2020 and 2035**



<sup>18</sup> In this case, data available for projections refer to the entity UK rather than to the sub-national population of England and Wales (E&W), preferred in all other tables and graphs.





Age-sex Pyramids projected at 2020 and 2035 for Denmark, Italy, France and the UK. Source: National Statistics Bureaux web-pages; projections are based on the “medium/central” assumptions. For details about hypotheses, refer to the websites [www.istat.it](http://www.istat.it) (Italy); [www.insee.fr](http://www.insee.fr) (France); [www.dst.dk](http://www.dst.dk) (Denmark) and [www.statistics.gov.uk](http://www.statistics.gov.uk) (UK).

The changes in population age composition shown above will affect the percentage of the population that is typically defined as of working age (i.e. aged 20-64) as well as the percentage of population that is of “dependent” age (0-19 and 65+)<sup>19</sup>. People aged 20-64 are members of the population who *can* contribute to the economy, even though –of course –people older than 65 may still work and not necessarily all people aged 20-64 work. It is generally presumed that, on average, people aged 15-64 ‘produce’ more than they ‘consume’ while the opposite is true for those who are younger and older. Although there is no general consensus about the ‘dependency’ concept and rates, the ‘age-dependency’ ratios are still very well known measurements used by the majority of the European and international organisations (such as OECD, Eurostat, UN as well as national statistics bureaux). The use of this indicator enables us to monitor changes in population structure (given that their evolution is a function of mortality, fertility rates

<sup>19</sup> People aged less than 20 and who are older than 65 are presumed to be too young or too old to support themselves through labour market activity and therefore need to be supported by others, typically the family or the state.

and of net migration) using measures which are comparable to the main literature (Calasanti and Bonanno, 1986, Robertson, 1997, MacInnes, 2006, Verdugo, 2006).

Looking at Eurostat projections for the next decades (see Tables 4.6 and 4.7), the current lower fertility rates in Italy will have a bigger impact on the proportion of older people compared to Denmark, France and the UK, as expected looking at Figure 4.2. Under the Eurostat demographic assumptions (see Eurostat (2008) for more details), whereas in France, Denmark and the UK the relative weight of the share over 65 will equal a quarter of the total population by 2040, this threshold in Italy will be exceeded by 2030. Similarly, in Italy one in three is projected to be over 65 by 2050 compared to around 27% in France and the UK and circa 24% in Denmark. Conversely, in Italy the share of the under-15s in the population is projected to decrease from 14% to less than 12% by 2030 to then remain at the same level for the following decades. Also in France, Denmark and the UK the proportion of people under 15 is projected to fall by roughly an absolute value of 3% reaching its lowest point in 2050 at about 16% in France and Denmark and about 15% in the UK.

**Table 4.5 Projection of the proportion of the population aged under 15 (%)**

	2005	2010	2020	2030	2040	2050
<b>Denmark</b>	18.8	18.0	16.0	16.3	16.5	15.7
<b>France</b>	18.5	18.2	17.2	16.3	16.0	15.8
<b>Italy</b>	14.2	14.0	12.9	11.6	11.4	11.2
<b>UK</b>	18.0	17.0	16.3	15.8	14.9	14.7

Source: Eurostat. Trend scenario, national level – base year 2004

**Table 4.6 Projection of the proportion of the population aged over 65 (%)**

	2005	2010	2020	2030	2040	2050
<b>Denmark</b>	15.0	16.3	20.0	22.6	24.7	24.1
<b>France</b>	16.5	16.8	20.7	24.2	26.8	27.3
<b>Italy</b>	19.5	20.5	23.3	27.5	33.1	35.3
<b>UK</b>	16.1	16.6	19.5	22.9	25.9	26.6

Source: Eurostat. Trend scenario, national level – base year 2004

Even though the projections are based on assumptions about the future which may not prove to be correct (particularly the ones about fertility levels), certain past trends and their consequences are less uncertain. For instance, past trends of family formation (such as number of average children and rates of marriage) determine the proportion of older women who are childless and the support they might get from their family. In fact,

whereas the TFR and the life expectancy indicators are synthetic ‘hypothetical’ summary measures which refer to what a group of people would experience if they were to experience the prevailing age-specific fertility and mortality rates of a specific calendar year throughout their lives, cohort measures such as the ‘completed TFR’ are actually based on the observed fertility of a real cohort of women born in a certain year who has completed childbearing and has been followed over the lifetime to count up the total number of children borne by those women.

Looking at tables 4.7 and 4.8 which show the completed TFR and the percentage of childless women by cohort respectively, we note that in both Italy and the UK the percentage of older women who are childless is currently decreasing and will do so until 2015, i.e. when those women born in 1950 and later reach the age of 65. In the coming quarter of century, by 2030, almost one in five women in both Italy and the UK will be childless. In France and Denmark, on the contrary, the proportion of childlessness among women born after 1945 has been more stable at around 10%, and therefore changes are not expected in the short and medium terms.

**Table 4.7 Completed Total Fertility Rate by birth cohorts, selected years**

	1930	1935	1940	1945	1950	1955	1960	1965
<b>Denmark</b>	2.38	2.36	2.24	2.06	1.90	1.84	1.90	1.89
<b>France</b>	2.63	2.57	2.41	2.22	2.11	2.13	2.11	2.02
<b>Italy</b>	2.28	2.28	2.14	2.07	1.89	1.80	1.66	1.49
<b>UK</b>	2.38	2.45	2.39	2.22	2.09	2.03	1.98	1.90

Source: Council of Europe (Comité européen sur la population du Conseil de l'Europe, 2005)

**Table 4.8 Percentage of women childless at age 45 by birth cohort, various countries**

	1930	1935	1940	1945	1950	1955	1960	1965
<b>Denmark</b>	n.a.	n.a.	n.a.	8.5	10.5	11.7	11.6	12.7
<b>France</b>	13.0	10.5	8.3	8.1	8.3	8.3	10.2	n.a.
<b>Italy</b>	13.5	12.5	12.0	9.8	11.3	12.7	15.3	21.2
<b>UK</b>	13.0	11.4	10.7	9.8	13.9	17.0	18.9	20.5

‘N.A.’ stands for ‘Not Available’. Data refers to women 45 years old. Source: OECD Family Database, accessed through [www.oecd.org](http://www.oecd.org) on 12/06/2011.

Similarly, the distribution of family sizes has changed with differences between countries. In France, the average number of children produced by women born between 1930 and 1965 declined constantly, even though women born in 1965 still had about two children each. In Denmark and Italy, despite a similar trend, women started having less than 2 children by 1950; this means that the proportion of women aged 65 having less than 2 children will start increasing by 2015<sup>20</sup>. Finally, the UK also experienced a decreasing family size, with women born in 1960 and onwards having less than two children each. In the UK, though, women born 1935 had very large families compared to the previous and subsequent cohorts: this means that proportion of women aged 65 with the higher number of children available peaked in 2000 whereas in the following years women are likely to have fewer and fewer children<sup>21</sup>.

#### **4.4 CONCLUSIONS**

Italy, France, Denmark and the UK have experienced different life-expectancy and fertility trends. For instance, France, Denmark and the UK –which were among the first countries to experience sustained below-replacement fertility in the late 1960s and early 1970s exhibit relatively high fertility in the early 2000s. Moreover, the Danish, French and British TFRs have fluctuated around levels of 1.8 in the 1990s, in sharp contrast to the pervasive TFR levels below 1.3 in Italy. Similarly, Italy and France have among the highest male and female life expectancies at birth and at 65 and, between War World II and the mid-2000s, have also experienced the highest gains in life expectancy (both at birth and at 65) compared to Denmark and the UK. The current populations of Italy, France, Denmark and the UK, as a consequence, appear to be quite dissimilar despite a general ageing phenomenon common to all four countries under study. Italy shows the higher percentage of people aged 65 and more. Also current projections suggest that both the proportion and the number of older people in Italy are increasing at a much higher rate compared to the other countries. In Italy one in three is projected to be over 65 by 2050 compared to around 27% in France and the UK and less than a quarter in Denmark. Similarly, the relative number of pensioners is expected to increase

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<sup>20</sup> This prediction does not account for the sex-specific mortality rates of the offspring, i.e. it does not refer to live children.

<sup>21</sup> This prediction does not account for the sex-specific mortality rates of the offspring., i.e. it does not refer to live children.

(Bongaarts, 2004), unless other substantial changes to the age of retirement will be introduced. Population ageing raises social and economic concerns, though governments are currently promoting 'active ageing' policies to achieve a much more positive vision of the ageing experience and tackle some of the issues associated with it. Before analysing whether a prolonged 'active' life may also create benefits for older people's health, chapter Five and Six introduce the datasets used: their rationale, instrument designs and implementations are described in the following Chapter whereas Chapter Six presents some descriptive statistics.



## **5. ELSA AND SHARE QUESTIONNAIRES: AN OVERVIEW**

This chapter introduces the two datasets that I used in this research project. First some brief rationale for the implementation of both the English and the European longitudinal surveys on ageing are highlighted. Information on methods and sample designs follows. The development and the content of the questionnaires are then presented. Baseline and longitudinal individual response rates (by age-groups and sex) are the described. Finally, the issue of weighting and some general critiques of the questionnaires are introduced.

### **5.1 SOME BACKGROUND RATIONALE**

The current phenomenon of the ageing of the population is unprecedented in Europe, as described in details in the chapter Four. The ways in which people live and experience their own old age, though, is by no means uniform: even within particular cohorts economic or gender differences may arise; moreover, expectations, policies around retirement and pension provision as well as self-perceptions of older people, their values and role in the society change over time highlighting both generational and time-period-specific effects.

Because of the above-mentioned reasons the need emerged to document the ageing process, its diversity and complexity and to investigate its implications both for individuals and the wider community and economy. It is precisely to understand the variability in the ageing phenomenon that longitudinal studies of ageing were initially established. Among the principal benefits, these studies could provide detailed pictures of the diversity of ageing trajectories, take account of changes over time and also provide some insight into directions of association. They could also present a more scientific basis for short- and long-term policies and interventions.

The English Longitudinal Study of Ageing (ELSA) was established in England with the support of various departments of the UK Government as well as the US National Institute on Aging (NIA). ELSA was shortly followed by the Study of Health and

Retirement in Europe (SHARE) in several European countries providing data to compare older people living under different arrangements of health and social services and economic policies both within Europe and with the US Health and Retirement Study (HRS) and to inform policy debate (Marmot et al., 2003b, Börsch-Supan et al., 2005, Taylor et al., 2007).

## **5.2 BRIEF HISTORY OF BOTH ELSA AND SHARE QUESTIONNAIRES**

ELSA was planned to be directly comparable to its US counterpart, the Health and Retirement Study (HRS). The initial questionnaire design meetings took place in late 2000 and involved a range of diverse experts from different fields, survey specialists, academics, advisory groups as well as collaborators from the HRS. In its initial stages, experts were asked to discuss and test specific modules or review elements of the survey: this formative stage of the development of the survey instruments was characterised by lively debates (Taylor et al., 2003). Two pilots were finally conducted in August and November 2001 in order to test the survey instruments and fieldwork approach. The final version of the ELSA questionnaire was then administered to the sample in 2002.

The history of SHARE is quite similar and this questionnaire also took its cue mainly from the US HRS (Börsch-Supan and Kemperman, 2005, Kapteyn, 2006). “A very early discussion about setting up a European HRS took place during an international conference on ageing in Amsterdam in the summer of 1997” (Kapteyn, 2006)(pg. 1) when it was agreed that an instrument which could ‘fill the gap’ and overcome the lack of knowledge on ageing and the interaction between socio-economic and health factors in the European countries was necessary.

Within 4 years, the feasibility of an international comparative European research project was explored: in 2000 a number of European researchers came together and discussed the possibility of launching a European variant of HRS and in 2002 the first grants were obtained primarily from the European Commission (with additional funding from the US National Institute on Ageing). Once the money was secured, the creation of the SHARE questionnaire was relatively short: a pre-test was ready to be submitted in all countries by June 2003 and just after a period of about one year the first wave of data

was collected in 2004. The prompt design of SHARE questionnaire is mainly due to the previous pioneering work conducted in both the US and the UK; in fact, the SHARE questionnaire is inspired by and modelled on both the ELSA and HRS.

Collaboration with HRS and ELSA was a major advantage: their researchers were actively involved as advisors in SHARE providing support as well as technical assistance. Moreover, such a close cooperation helped SHARE to build its questionnaire so as to maximize comparability of data and therefore extend comparisons from the Anglo-Saxon countries to continental Europe. Learning from a variety of European countries with striking differences in terms of culture, history or policies and “being able to anticipate what will happen in one country by looking at another country” was also an important task for SHARE (Börsch-Supan and Kemperman, 2005).

Both ELSA and SHARE have similar features: they both are *multidisciplinary longitudinal surveys*. SHARE and ELSA (as well as HRS) consider a number of diverse domains of an individual’s life. Income security, personal wealth, social networks and family as well as health are strongly linked with each other so a holistic approach –i.e. a multidisciplinary survey –was considered necessary. The time dimension was essential from the start of both surveys: observing individuals as they age over time and adapt to and are influenced by changes in family, health and wealth circumstances has the potential to provide insights into the ageing processes. Moreover, the time dimension is vital to investigate directions of associations and to better identify effects that public policies may have on the behaviour and well-being of citizens (Marmot et al., 2003a, Börsch-Supan et al., 2005). Both ELSA and SHARE follow and re-interview the same individuals every two years.

## **5.3 INSTRUMENT DESIGN AND IMPLEMENTATION**

### **5.3.1 ELSA**

The English Longitudinal Study of Ageing (ELSA) is a longitudinal survey of ageing and quality of life among people older than 50 living in private households in England. The design of the survey questionnaire began in 2001, when two pilots were tested. The initial draft questionnaire was tested in August 2001 in order to provide reasonable feedback about questions in each sub-model. Changes followed: in particular, the order

of the modules was revised and the need of the self-completion questionnaire (with additional questions on social participation and measures of well-being and quality of life) was established. The second version of the questionnaire incorporating the resulting amendments was again tested in November 2001 (Taylor et al., 2007). The first wave of ELSA interviews then took place between March 2002 and March 2003 and the project is still ongoing with interviews being repeated biennially.

The ELSA sample is representative of people born before the first of March 1952 (i.e. older than 50 at the time of the questionnaire) and *living in private households* in England at the baseline. The sample was drawn from households that had previously responded to the Health Survey for England (HSE) in 1998, 1999 and 2001 which altogether comprised a total of 23,132 responding households and 43,200 individuals. HSE samples were drawn in two stages: postcode sectors were initially selected from the Postcode Address File and stratified by health authority and proportion of households in non-manual socio-economic groups; secondly, from each postcode sector, addresses were systematically randomly selected. Full details about the HSE are available from the Technical Reports (Erens and Primatesta, 1999, Erens et al., 2001, Prior et al., 2003).

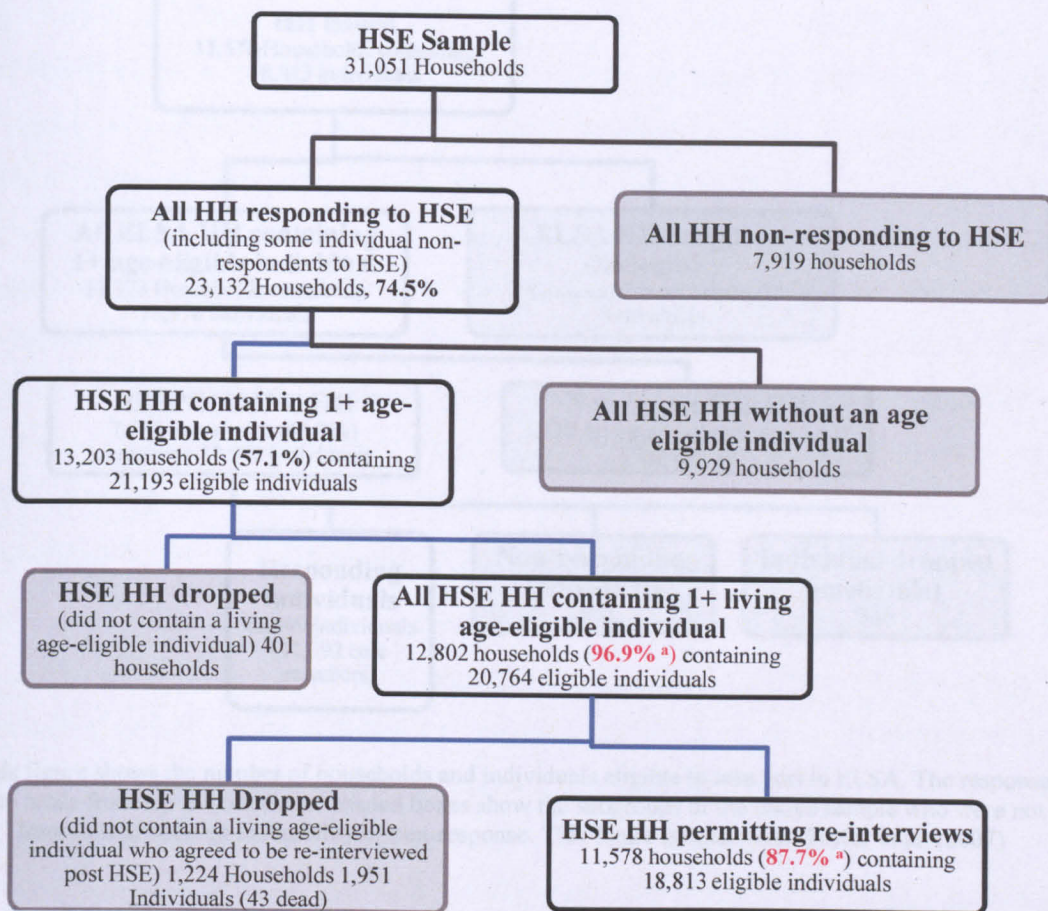
From the households identified in the HSE, 57% of them had at least one individual older than 50, i.e. 13,203 households (see Figure 5.1). Of these, 11,578 (i.e. 88%) agreed to be re-contacted and were therefore included in the final sample frame for ELSA<sup>22</sup>. Considering only the ELSA households issued (see Figure 5.2), contact with the eligible households was possible in 95% of cases<sup>23</sup>: only 73% of the households contacted agreed to be take part into the ELSA research project. A household response rate of 70% was therefore achieved among the ELSA households issued. Within the sampled

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<sup>22</sup> During the fieldwork, the actual number of potential eligible households became 11,373 containing 18,576 individuals: 296 households had become ineligible in the meantime (mainly because of the death of people or because they had moved into an institution or to another country) whereas 91 new households had formed (mainly due to divorce) (Taylor et al., 2007).

<sup>23</sup> The majority of the remaining 5% of the households not contacted had moved and could not be traced.

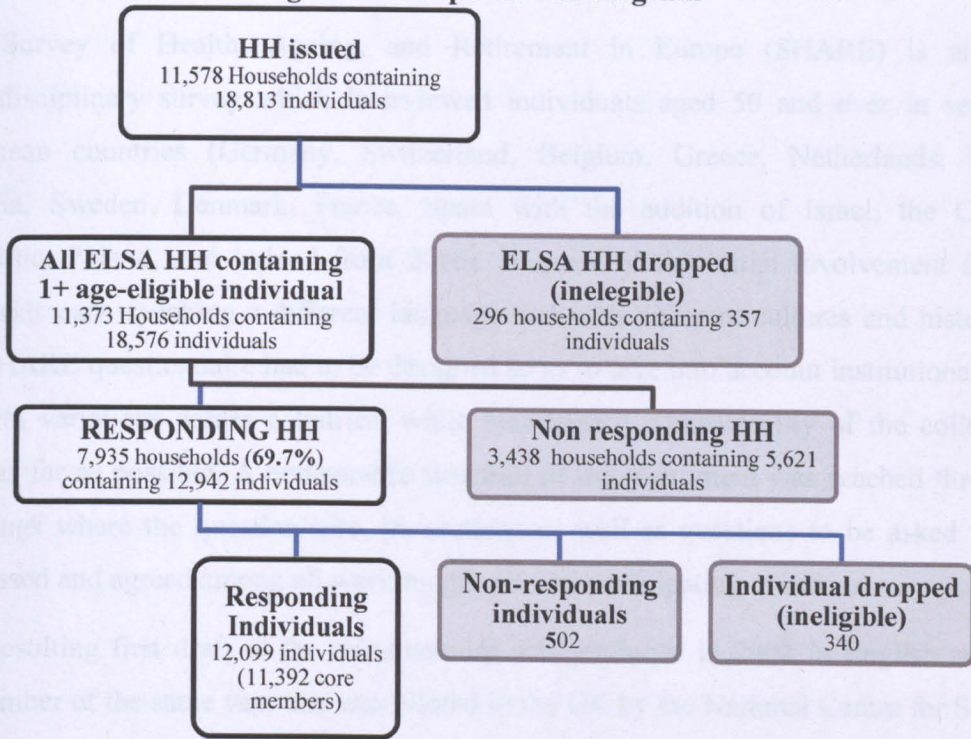
**Figure 5.1. ELSA sample frame definition tree**



Tree diagram summarising the process of the selection of the ELSA sample. The tree reads from the top to the bottom. The shaded areas of the tree diagram represent the number of household that were dropped. (Note: Households and individuals issued individuals do not necessarily correspond to the eligible ones). This figure is taken from Taylor et al. (2007). Note: a) This percentages are calculating considering the total households containing at least one eligible individual as the base, i.e. 13,203 households.



**Figure 5.2 Response tree diagram**



This figure shows the number of households and individuals eligible to take part in ELSA. The response tree reads from top to bottom and shaded boxes show the subgroups of the issued sample who were not interviewed because ineligibility or non-response. This figure is taken from Taylor et al. (2007)

households, 96% of individuals responded to the questionnaire. A final individual response rate of 67% was therefore achieved (Taylor et al., 2007). This equals a total of 12,099 interviews (11,391 with respondents aged 50 years and over; 577 with partners under 50 and 131 with “new partners”). Table 5.1 shows the distribution by age-groups and sex of the achieved sample in wave 1. The full details and explanations of the sampling frame and design and on response rates have been reported elsewhere (Marmot et al., 2003a).

**Table 5.1 Achieved sample by age and sex, ELSA (wave 1)**

Age at wave 1	Male	Female	Total
<50	105	472	577
50-64	2,762	3,210	5,971
65-74	1,485	1,709	3,195
75+	983	1,373	2,356
<b>Total</b>	<b>5,335</b>	<b>6,764</b>	<b>12,099</b>

Distribution by age and sex of the sample achieved in the first wave of ELSA; figures include the ‘core sample’ (i.e. all individuals older than 50) as well as ‘new’ and younger partners. Source: ELSA, 2002.

### **5.3.2 SHARE**

The Survey of Health, Ageing, and Retirement in Europe (SHARE) is also a multidisciplinary survey which interviewed individuals aged 50 and over in several European countries (Germany, Switzerland, Belgium, Greece, Netherlands, Italy, Austria, Sweden, Denmark, France, Spain with the addition of Israel, the Czech Republic, Poland, and Ireland from 2006). Because of the initial involvement of 11 countries each speaking a different language and with different cultures and histories, the SHARE questionnaire had to be designed so as to take into account institutional and cultural variations across countries, while maintaining comparability of the collected data as far as possible. A comparable structure of the instrument was reached through meetings where the questionnaire, its sections as well as questions to be asked were discussed and agreed among all working groups and participating countries.

The resulting first draft of the questionnaire was produced in 2002 in English and in September of the same year this was piloted in the UK by the National Centre for Social Research (NatCen). After a number of experiments and pilots, the questionnaire was thoroughly revised and then translated into the languages of the different countries with the help of the Language Management Unit (Harkness, 2005). Once the translation was found to be satisfactory, in June 2003 a final pilot took place in all SHARE countries using quota samples of about 75 people in each country. This led to the final instrument, after final adjustments and amendments. In particular, country-specific questions and specific answer categories were introduced when institutions were fundamentally different (health care, pension system, education just to cite some). The final version was fielded in the participating countries by local survey agencies between April and October 2004 (Borsch-Supan, 2005, Börsch-Supan and Kemperman, 2005, Harkness, 2005).

National survey agencies, selected within each country based on a tender, were responsible for the sampling and carried out the fieldwork following the protocol and the guidelines punctiliously defined centrally by the SHARE coordinating team (MEA of the Mannheim University) who also monitored the field work in parallel to the national survey agencies. Lack of a European agency meant that the sampling design

was conducted differently in each country. Depending on the availability of and accessibility to population registers as well as the possibility of cooperating with the national statistic bureaux, sampling designs used varied from simple random selection to rather complicated multi-stage designs (full details are given elsewhere (Klevmarken et al., 2005b)). In Denmark, a simple random design was used. In France and in Italy, multi-stage designs were adopted. Only 6 regions were drawn in the French sample; the degree of urbanisation would then determine strata from which primary sampling units were drawn. In Italy, 15 municipalities (strata) were randomly drawn without replacement; then, within each stratum, a number of electoral divisions (primary sampling units) were randomly selected.

About 18,000 households and 28,000 respondents were successfully interviewed (SHARE). The target population consisted of all individuals living in residential households<sup>24</sup> who were older than 49, who resided in the sampled address and who spoke the language of the national questionnaire. The SHARE team also interviewed spouses of household members who were older than 50, regardless of their age. The overall household response among SHARE countries participating in the 2004 survey was 61.6%<sup>25</sup>. Individual response rate (i.e. the proportion of eligible individuals within the eligible households interviewed that completed the questionnaire) was in 2004 on average equal to 85.3% (see Table 5.2 for details) with “only small differences in the patterns of survey participation by gender and age group” (De Luca and Peracchi, 2005b)(pg. 355).

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<sup>24</sup> Few exceptions apply: in Denmark, for instance, the target population included also individuals living in institutions for elderly people (but not those living in prisons or similar institutions for instance)

<sup>25</sup> <http://www.share-project.org/t3/share/index.php?id=97> - SHARE release 2.0.1. Last accessed on 11<sup>th</sup> of May 2010.



**Table 5.2 Distribution of Respondents by country, sex and age. Individual and household response rates (RR)**

Country	Total	M	W	50-64	65-74	75+	Individual RR* (%)	HH RR (%)
Austria	1,893	782	1,111	949	544	356	87.5	55.6
Belgium	3,827	1,739	2,088	1,991	986	672	90.6	39.2
Denmark	1,707	771	936	916	369	330	93.0	63.2
France	3,193	1,386	1,807	1,648	759	631	92.3	81.0
Germany	3,008	1,380	1,628	1,569	886	486	86.4	63.4
Greece	2,898	1,244	1,654	1,458	712	499	92.4	63.1
Italy	2,559	1,132	1,427	1,342	785	381	79.1	54.5
Netherlands	2,979	1,368	1,611	1,693	713	459	88.0	61.6
Spain	2,396	994	1,402	1,079	701	573	73.7	53.0
Sweden	3,053	1,414	1,639	1,589	816	592	84.4	46.9
Switzerland	1,004	462	542	505	251	204	86.9	38.8
<b>Total</b>	<b>28,517</b>	<b>12,672</b>	<b>15,845</b>	<b>16,155</b>	<b>8,212</b>	<b>5,530</b>	<b>85.3%</b>	<b>61.6%</b>

This table shows the sex and age distribution of respondents in SHARE countries; respondents younger than 50 are not shown. Also Individual and Household (HH) Participation Rates are given. Note: \* stands for "weighted average". Source: <http://www.share-project.org/> (last accessed on 14<sup>th</sup> of September 2009).

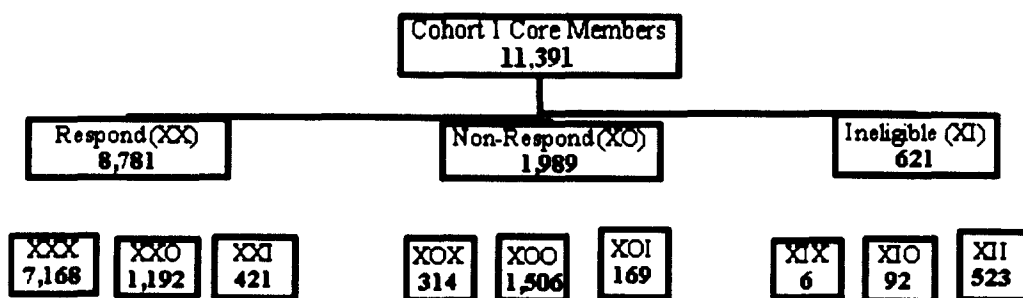
#### 5.4 LONGITUDINAL SURVEY PARTICIPATION FOR ELSA AND SHARE

Both ELSA and SHARE are longitudinal surveys: this means that the respondents in wave 1 (the baseline) were approached and interviewed again every two years. The ELSA wave 2 took place in 2004-05 and fieldwork for the third wave took place between May 2006 and August 2007. During the same period (2006/07), the SHARE research project collected the wave 2 data providing panel data from respondents who had been interviewed during the first wave. This longitudinal dimension is of crucial dimension when studying the ageing process as this enables to put a stress on evolutions and transitions over time (Barangé et al., 2008).

Either all wave 1 respondents or a restricted version of it (which excludes baseline respondents who became ineligible over time) can be considered as the base (i.e. the denominator) to measure longitudinal response rates. Among the criteria which render respondents ineligible, death, refusal to be re-contacted and moving out of the country are the most common ones. The ELSA team also labelled as ineligible baseline members who moved into an institution in wave 2 whereas they became eligible in wave 3.

Among ELSA Cohort 1 core members, 81% (i.e. 8,781 people) were successfully interviewed also at wave 2 and almost 70% (i.e. 7,168 people) were successfully interviewed also in wave 3. These figures apply if respondents who became ineligible by the time of each subsequent wave are excluded. If such a distinction is not applied, an overall 63% of the first wave respondents participated and completed the questionnaire also at waves 2 and 3 (see Figure 5.3 for more details on participation and eligibility at various waves). Full details on fieldwork response, contact, co-operation and response rates by the time of wave 3 are given elsewhere (Scholes et al., 2008a, Scholes et al., 2009).

**Figure 5.3 Responses across ELSA waves 1-3 (only Cohort 1 core members)**



This figure shows the actual figures of people who responded at different waves. Source: (Scholes et al., 2009). Notation: X denotes 'Respond' at a given wave, O 'Non-Respond' whereas I stands for 'Ineligible'.

Similarly, if we just consider the proportion of SHARE baseline respondents who were successfully re-contacted and interviewed two years after, an overall 65% completed the questionnaire carried out in 2006/2007 (with percentages ranging from almost 80% in Greece to slightly more than 50% in Germany. See Table 5.3 for full details).



**Table 5.3 Distribution of wave 1 SHARE respondents successfully re-interviewed at wave 2, by country**

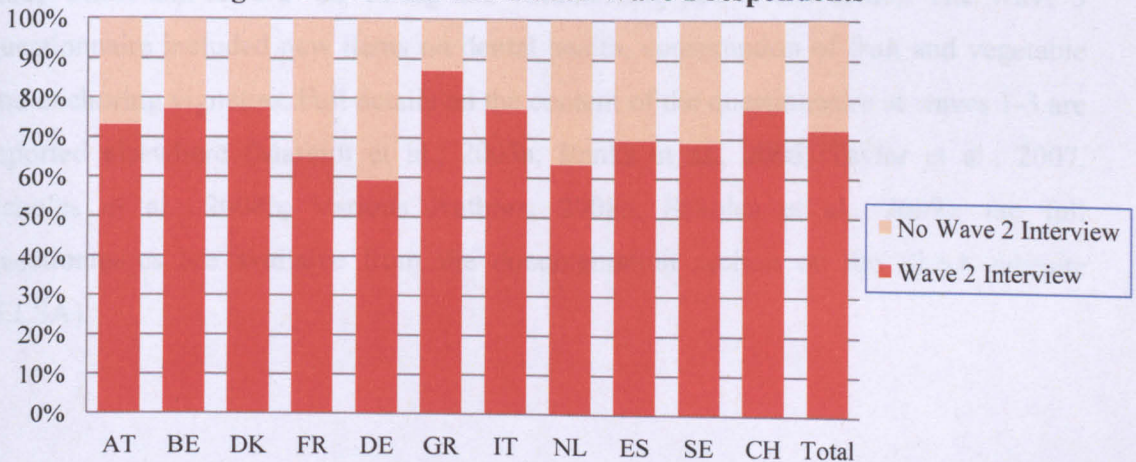
Country	Wave 1 (2004)	Wave 2 respondents	
		Effective #	Rate of retention (%)
Austria	1,893	1,238	65.4
Belgium	3,827	2,808	73.4
Denmark	1,707	1,249	73.2
France	3,193	1,998	62.6
Germany	3,008	1,544	51.3
Greece	2,898	2,280	78.7
Italy	2,559	1,766	69.0
Netherlands	2,979	1,777	59.7
Spain	2,396	1,375	57.4
Sweden	3,053	2,010	65.8
Switzerland	1,004	696	69.3
<b>Total</b>	<b>28,517</b>	<b>18,741</b>	<b>65.7</b>

This table presents the number of respondents in SHARE surveyed in 2004 and 2006 and the number (as well as the percentage) of those who were interviewed in both waves.

Source: <http://www.share-project.org/> (last accessed on 14<sup>th</sup> of September 2009).

Nonetheless, not including respondents who died (757 people, i.e. 2.7%), who moved out of their original country (480 people) or who explicitly asked not to be re-contacted at all are removed, the total longitudinal response rate increases to 72%, ranging from 87% in Greece to 59% in Germany, as shown in Figure 5.4 (Schröder, 2008).

**Figure 5.4 Attrition Rates for Wave 1 respondents**



These attrition rates for Wave 1 respondents are calculated once people who moved out of the countries, people who asked not to be further re-contacted and people who have died between the first and the second wave have been accounted for. Figure from Schröder (2008).

## **5.5 STRUCTURE AND CONTENT OF THE ELSA AND SHARE QUESTIONNAIRE**

SHARE and ELSA are 'sibling' studies: they both cover a number of similar issues including household composition, employment and pension details, the nature and timing of retirement and post retirement labour market activity; physical, cognitive, mental and psychological health measurements, health behaviours, social participation, social productivity and social support as well as information on housing, income, assets and expectations for the future.

### **5.5.1 ELSA QUESTIONNAIRE**

In its final form, the wave 1 survey comprised a personal face-to-face interview and a self-completion questionnaire. The ELSA questionnaire is composed of 13 modules each of which addresses a specific topic ranging from health-related to family characteristics. A brief description of the questions asked within each module is highlighted in the Table 5.5.

Wave 2 and 3 included some additions to the initial content. Firstly, Wave 2 included a nurse visit for the collection of biomedical and physical performance measures; secondly, an 'End of Life' interview was conducted with relatives of deceased respondents; thirdly, a number of new set on questions were added (on quality of health care, 'effort and reward' for caring and volunteering just to cite some). The Wave 3 questionnaire included new items on dental health, consumption of fruit and vegetable and anchoring vignettes. Full details on the content of the questionnaire at waves 1-3 are reported elsewhere (Marmot et al., 2003a, Banks et al., 2006, Taylor et al., 2007, Scholes et al., 2008b, Various Authors, 2008b, Scholes et al., 2009); the full questionnaires are available from the documentation section on the ELSA website (ELSA).

**Table 5.4 Overview of Content of ELSA Questionnaire (wave 1)**

<b>Module</b>	<b>Content</b>
<b>Introduction</b>	
<b>HD</b>	<b>Household Demographic:</b> basic demographics of everyone who lives in the household (sex, age and relationship to each other) including information on children living outside the household
<b>ID</b>	<b>Individual Demographics:</b> details about respondent's legal marital status, whether their parents were still alive or dead, number of living children and grandchildren, number of siblings and circumstances in childhood.
<b>HE</b>	<b>Health:</b> self-reported general health, long standing illnesses and disability; eyesight and hearing; specific diagnoses and symptoms; difficulty with a range of activities of daily living –(ADLs) and instrumental activities of daily living (IADL)
<b>SP</b>	<b>Social Participation:</b> extent to which respondent participates in certain types of social activity and whether they are limited or excluded from doing these activities.
<b>WP</b>	<b>Work and Pensions:</b> current work activities, current and previous pensions (with details on the amount received).
<b>IA</b>	<b>Income and Assets:</b> income of the respondents from a variety of sources (wages, state benefits, pensions) over the previous year. Amount of financial and non-financial assets held, any income from these assets, regular transfers from non-household members and one-off payments in the last year.
<b>HO</b>	<b>Housing:</b> current housing situation (including size and quality of the accommodation), housing-related expenses, ownership of durable goods and cars and expenditure on food. Owners and Mortgagers were also asked about the value of their property and questions were asked about housing costs including mortgages and rent.
<b>CF</b>	<b>Cognitive Function:</b> Respondent's cognitive function including memory, mental flexibility and basic numerical ability.
<b>EX</b>	<b>Expectations:</b> subjective expectations in a number of dimensions (ranging from feeling about the future to optimal planning horizons).
<b>PS</b>	<b>Psychosocial:</b> Respondent's view across a variety of dimensions.
<b>FQ</b>	<b>Final Questions and consents:</b> additional information on education and ethnic origin and permission to obtain further information from various administrative sources.
<b>MM</b>	<b>Measurement – Time Walked</b> (for all individuals aged 60 or over)
<b>SC</b>	<b>Self-Completion Questionnaire:</b> social participation, social network and social relationships of the respondent. This module also contains measures of well-being and quality of life.

ELSA Questionnaire: title of each module with a short description of the questions asked.

### **5.5.2 SHARE QUESTIONNAIRE**

The SHARE questionnaire has also got face-to-face, computer-aided personal interviews (CAPI) questionnaire. The main questionnaire is composed of 18 modules. A brief description of the questions asked within each module is highlighted in Table 5.6. Also a self-completion questionnaire with additional questions about issues like mental and physical health, quality of housing and social networks was given to the respondents at the end of the interview ('drop off' questionnaire as the completed questionnaire was meant to be returned via post). Extra samples ('vignettes sample' on six domains of general health) were taken in eight countries (Belgium, France, Germany, Greece, Italy, The Netherlands, Spain and Sweden) in order to collect a special self-completion questionnaire with anchoring vignette questions which are supposed to improve cross-national comparability (Kapteyn, 2006, Blanchet et al., 2007, Barangé et al., 2008).

For the second wave of the questionnaire, some adjustments to the survey instrument were made in order to account for changes between waves. In addition, an 'End of Life' interview was conducted for deceased respondents and two new modules were added (i.e. a test to measure the strength and endurance in legs and one to measure the lungs' capacity). Full details on the content and changes of the questionnaires at waves 1 and 2 are reported elsewhere (Börsch-Supan et al., 2005, Various Authors, 2008a). The generic and country-specific questionnaires for both waves are downloadable from the SHARE-website (SHARE).

**Table 5.5 Overview of Content of SHARE Questionnaire (wave 1)**

Module	Content
<b>Introduction</b>	
CV	<b>Cover-screen:</b> composition of the household; identification of respondents (individuals born in 1954 or before and their partners); identification of the respondent for the housing and finance-related questions.
<b>Core Questionnaire</b>	
DN	<b>Demographics:</b> demographic characteristics, level of education, parents, siblings, (ex) partners, offspring (if applicable).
PH	<b>Physical Health:</b> general health <sup>1</sup> , known diseases and treatments received, activity of daily living
BR	<b>Behavioural risk:</b> past and current consumption of tobacco and alcohol, physical exercise, sport practice
CF	<b>Cognitive Function:</b> Memory and literacy tests
MH	<b>Mental Health:</b> feeling of depression, appetite, irritability, existence of previous depression episodes
HC	<b>Health Care:</b> within the previous 12 months, visits with specialists and general practitioners, hospitalisation, stays in hospitals, home-care, money spent for personal health care
EP	<b>Employment and Pension:</b> current employment situation (characteristics, job satisfaction, income), last occupation for retired people, pension provision
GS	<b>Grip Strength:</b> 2 tests to assess the grip strength of each hand. Tests performed if this did not involve any risks for the respondent.
WS	<b>Walking speed (for people older than 75):</b> 2 timed tests assessing the length of time took by the respondent to cover 2.5 meters. Tests performed if this did not involve any risks for the respondent.
CH	<b>Children:</b> characteristics and family situation, frequency of contacts
SP	<b>Social Support:</b> during the previous 12 months, list of (non financial) help received from as well as given to family members, neighbours or friends; looking after grandchildren; frequency of help
FT	<b>Financial Transfers:</b> financial help given and received during the 12 months previous to the interview; inheritance and gifts.
HO	<b>Housing:</b> occupancy status (owned/rented flat), costs and purchasing methods, value of property, other real estates and their value, characteristics of the housing.
HH	<b>Household Income:</b> income from other members of the household not responding the questionnaire, additional income from other sources
CO	<b>Consumption:</b> expenditure on food, telephone and other goods and services.
AS	<b>Assets:</b> kinds of saving and investments and their value, debts.
AC	<b>Activities:</b> volunteering activities and satisfaction gained from these
EX	<b>Expectations:</b> subjective probability that certain event would happen in the future
IV	<b>Interviewer Observations:</b> information about the way the interview was conducted (filled in by the interviewer).
1. These questions are asked randomly either at the beginning or at the end of the module	

SHARE Questionnaire: title of each module with a short description of the questions asked.

## 5.6 WEIGHTING STRATEGIES

Sample cross-sectional and longitudinal weights<sup>26</sup> were attached to both the ELSA and SHARE datasets so as to adjust for potential bias in the respondent samples and therefore enhance confidence in the representativeness of the results. Both teams provided cross-sectional adjustments to match the respondents' age-by-sex distribution to the one from the Census<sup>27,28</sup> in order to account for initial non-response in wave 1 and for drop-outs in wave 2<sup>29</sup>. In addition, ELSA also used the information collected from the HSE interviews to correct for differences in characteristics found between respondents and non-respondents<sup>30</sup>. This calibration procedure (Deville and Särndal, 1992) assigns weights to sample respondents in order to match known population totals obtained from census data, even though the latter may not exactly cover the same target population (Klevmarcken et al., 2005a). In particular, all weights control for the size of the target population across gender and age groups with further country-specific adjustments such as by home ownership in France and geographical area in Italy and Denmark. Calibrated cross-sectional weights may help reduce the potential selectivity bias generated by this source of nonsampling error and therefore should allow less biased analyses of a particular wave. In the following chapters, distributions obtained with and without the use of cross-sectional weights will be compared to assess the effect of calibrated weights on specific key-variables such as education and labour force participation.

In addition to calibrated cross-sectional weights, SHARE and ELSA also provide weights for the longitudinal sample. The SHARE and ELSA teams have performed detailed analyses of a respondent's propensity to remain in the survey and constructed

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<sup>26</sup> Longitudinal weights are provided only for the subset of cases who have taken part in *all* waves whereas cross-sectional weights are defined for all cases belonging to the target population who responded in a particular wave

<sup>27</sup> ELSA also used the additional information collected from the HSE interviews to correct for differences in characteristics found between respondents and non-respondents.

<sup>28</sup> Non-institutionalised distribution for ELSA

<sup>29</sup> Cross-sectional weights were computed for SHARE countries whereas they were not for the English sample since ELSA did not include a refreshment sample for the second wave, i.e. a new sample drawn to compensate for the loss of observations due to sample attrition and to include new 50+ respondents. For ELSA, wave 2 weights supplied support both cross-sectional and longitudinal analysis

<sup>30</sup> The algorithm used to select Cohort 3 sample members was fallacious. The weighting adjustment made to address this shortfall is discussed elsewhere (Scholes et al., 2009).



weights accordingly in order to correct the data for the attrition as well as to adjust for initial non-response. These weights compensate for potential selectivity effects generated by sample attrition between the first and the second wave, i.e. for any differences in characteristics found between respondents and non-respondents. Therefore, such weights should reduce any bias arising from sample loss after wave 1 since they correct for non-response bias between waves 1 and 2, allowing more precise analyses of changes between waves. Longitudinal weights are based on a set of conditioning variables by using the additional information collected in the Wave 1 interview. Detailed descriptions of the weighting strategies and of the computation of calibrated cross-sectional and longitudinal weights adopted in the second wave of SHARE and ELSA are provided elsewhere (Little and Rubin, 2002, Marmot et al., 2003a, Börsch-Supan and Jürges, 2005, Taylor et al., 2007, De Luca and Rossetti, 2008, Scholes et al., 2008b, Various Authors, 2008a, Scholes et al., 2009).

## **5.7 STRENGTHS AND WEAKNESSES OF ELSA AND SHARE**

ELSA and SHARE are research driven and researcher managed; this means that questionnaires aim at addressing questions scientists are interested in (Kapteyn, 2006), gathering unique, comparable and innovative information on numerous ‘domains’ of life. Moreover, because of the involvement of the scientific community, both projects are flexible and can quickly and relatively easily incorporate new questions of interest for research. Furthermore, SHARE and ELSA have an open and eclectic research approach: there is no one leading research hypothesis and no particular paradigm. On the contrary, various disciplines are covered.

ELSA and SHARE also aim at providing comparable cross-national multidisciplinary data. Comparability of the topics covered is guaranteed by an assiduous collaboration between the two research groups; SHARE, moreover, provides cross-national truly comparable data since the same harmonised questionnaire was administered to each European participant at the same time.

The ELSA and SHARE questionnaires not only allow researchers to compare countries at a single point in time, but also use panel data which have normally “greater capacity for modelling the complexity of human behaviour than a single cross-section or time

series data” (Hsiao, 2006). Observations at different time points are ideal to capture the complexity and heterogeneity of the ageing phenomenon as well as to uncover dynamic relationships, contributing to the development of policy intervention and policy evaluations.

Despite their innovative force and potential, ELSA and SHARE in particular had to face numerous methodological problems and critiques. ELSA, for instance, has been criticised for using the HSE as a sampling frame. Among the numerous disadvantages that this frame carries, the potential loss of representativeness before the first ELSA interview is the most frequently mentioned (Taylor et al., 2007). Non-response at HSE, refusal to be re-contacted and attrition between HSE and ELSA could all potentially bias the responding sample<sup>31</sup>.

As regards SHARE, this has been criticised at various levels. Firstly, social protection, pension and retirement systems and many more domains are quite different from one country to the other. Despite the efforts made in the translation and adaptation of the questions from an English version (which is not the official language of any of the countries participating in the SHARE project) in order to allow for institutional differences, cross-cultural comparability of responses was not always addressed (Blanchet et al., 2007). “It is clear, for instance, that a term like ‘excellent health’ carries different meanings in different countries” (Kapteyn, 2006)(pg. 17). German people, for instance, would consider it as “an ironic exaggeration, in particular if used in the context of health” (Jürges, 2005). Similarly, it is known that the way a question is formulated can influence answers (Aureli Cutillo, 2002). Just to cite an example raised by Blanchet et al. (2007), in the module about social life there is a question asking whether the respondent has “gone to a sport, social or other kind of club”. This question was translated in different ways even within countries speaking the same language. For instance, in France people were asked about their participation to “à un club sportif, à une amicable ou à un autre type de club” whereas in Belgium and Switzerland the

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<sup>31</sup> Nonetheless, it was believed that “the advantages of sampling from the HSE outweigh any disadvantages”. In particular, “baseline data on respondents’ health (details of morbidity, lifestyle, diets and blood samples) had already been collected” before they even took part in ELSA (Taylor et al., 2007) (pg. 9). Moreover, almost all the people had already been interviewed once by the NatCen (National Centre for Social Research) making them easier to approach and more likely to take part in a new study.

translation stuck closer to the English version with “club sportif, social ou d’un autre type”. In Italy, the very same question was translated with “partecipazione alle attività di un circolo sportivo, ricreativo, sociale o culturale o altro tipo di associazione”. The word “club” is quite specific in the French and Italian languages and for instance it is not clear whether a French player of pétanque who meets their friends on a regular basis would consider this social activity as the one of a club. The French word ‘association’ (similar to the one used in the Italian version) could have provoked different answers (Blanchet et al., 2007).

Secondly, despite all the efforts to homogenise data and questions in the SHARE project, comparability of money-related questions still raises problems and concerns, especially because older people might have referred to their previous national currency rather than Euros<sup>32</sup>. Information about finances is also considered to be sensitive by many respondents. Data on consumption, earnings or money exchange are less precise and need more caution in use (Kalwij and van Soest, 2005, Blanchet et al., 2007, Christelis, 2008).

Finally, the sampling design strategies for SHARE have been criticised because each country used different designs depending on the availability of registers of households and individuals but also depending on the institution which was appointed to implement the study. Lack of access to national sampling frames could potentially yield less efficient estimates or increased systematic errors. In Greece, Switzerland and Austria, for example, the national statistics offices decided *not* to collaborate and therefore sampling units were drawn from telephone directories. Furthermore, probability sampling procedures used to draw national samples are not standardized across countries and, in some cases, even within the same country sampling designs differed between the first and second wave<sup>33</sup> (De Luca and Rossetti, 2008). Finally, “only exceptionally it became possible to identify people in institutions (homes for elderly) in the sampling frame” (Klevmarken et al., 2005b) and therefore for countries where the

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<sup>32</sup> Euro coins and banknotes entered circulation on 1 January 2002, i.e. only two years before the SHARE wave 1 interviews.

<sup>33</sup> In Belgium, the sampling design changed from three-stage sampling of telephone numbers in Wave 1 to two-stage sampling of households in Wave 2. In Denmark, the sampling design changed from simple random sampling of households in Wave 1 to simple random sampling of individuals in Wave 2.

population over 50 living in institutions was not included in the sampling frame, calibration against census population totals which do include those people is questionable and can potentially yield erroneous estimates of the variances (Klevmarcken et al., 2005b).

Bearing in mind the possible limitations and strengths of the datasets, the following Chapter introduces some initial descriptive statistics and address the issues of data quality and representativeness of ELSA and SHARE.

## **6. ELSA AND SHARE: DATA QUALITY AND SOME DESCRIPTIVE ANALYSES**

This chapter presents some descriptive statistics for a number of variables of interest for this research project, such as socio-demographic characteristics, work and retirement, socio-economic position, social activity and health, paying special attention to the issue of data quality and comparability. This chapter is structured in the following way: a brief description of issues such as initial response rate, non-response bias and data quality is introduced. Some descriptive analyses are then presented for Denmark, England, France and Italy. Where possible, the latter statistics will be compared with other sources (such as census data) as a way of assessing whether results from SHARE and ELSA are representative of the populations from which the samples are drawn. Throughout the Chapter, comparability of ELSA and SHARE variables are discussed.

### **6.1 INITIAL RESPONSE RATE, NONRESPONSE BIAS AND DATA QUALITY**

Initial non-response is a major concern in surveys: this, in fact, may be thought of as pre-study attrition (Sivo et al., 2006) and this could be even more selective than attrition at later waves (Pyy-Martikainen and Rendtel, 2008). Initial non-response raises two main problems: survey participants may systematically differ from those who refused to participate and, secondly, low initial response rate may result in an inadequate sample size, leading to inaccurate estimations and low power to detect precisely relationships (Baroudi and Orlikowski, 1989, Shadish et al., 2002, Sivo et al., 2006). Non-response bias can have significant detrimental effects on the precision of survey estimates as well as on their generalisability and representativeness if findings are drawn from a self-selected group of respondents whose characteristics differ consistently from the non-respondents (Pinsonneault and Kraemer, 1993). The bias of estimates might be increased also by item non-response if respondents who do not answer certain questions differ from those who answer them (de Leeuw et al., 2003, Pauwels and Svensson, 2008). Item non-response occurs when a respondent fails to provide useful answers to

particular items of the questionnaire, perhaps either because of the sensitivity of the question or because of its difficulty (Shoemaker et al., 2002).

Ideally surveys should pursue a close to 100% response rate and have no item non-response even though, in reality, surveys enjoying such a high response are few. Despite the fact that there is no reliable yardstick for determining what is an 'acceptable' response rate (Smith and Nutbeam, 1990), it is believed that a high response rate is an indicator of the quality of all survey estimates (Fogliani, 1999, Singleton and Straits, 2005) though even a 15% non-response might suggest that inferences should be interpreted cautiously (Sivo et al., 2006). Moreover, even when response rates are high, certain specific subgroups of the population could still deliberately decide not to take part in the study or not to answer certain questions (Jones and Lang, 1980, Groves, 2006). If those who respond to survey questionnaires differ in some systematic way from non-respondents, this will induce bias (Smith and Nutbeam, 1990, Kuskowska-Wolk et al., 1992, Bostrum et al., 1993, Hill et al., 1997). As a consequence, it is important to check the reliability of the data and assess whether nonresponse bias does occur or not, regardless of the initial response rate. Despite the fact that most surveys nowadays provide weights to account for bias and adjust for it, weighting techniques require the assumption that respondents and non-respondents –within a weighting class –share the same values on key variables. This is unknowable and untestable (Groves, 2006) and some adjustments may actually make matters worse (Brick et al., 2003, Little and Vartivarian, 2003).

Among the several techniques to check whether there is non-response bias, one of the most common is to compare the respondent-based estimates with those from other more comprehensive sources, such as census data (Groves and Couper, 1998, Pyy-Martikainen and Rendtel, 2008). Comparing the distribution of age, gender, education and other socio-demographic variables with those from other sources thought to be reliable will provide some indication of the extent of possible bias due to non-response in order to understand the potential impact of non-response on the ability of surveys to describe large populations without bias and within measurable levels of uncertainty (Smith and Nutbeam, 1990, Hill et al., 1997, Groves, 2006). Such comparisons are needed particularly for Italy and Denmark where household response rates were quite

low (54% and 65% respectively). The SHARE team claims that response rates compare fairly favourably to the ones of other European surveys (De Luca and Peracchi, 2005a). They also state that "comparisons with [...] European Union Labour Force Survey, the European Community Household Panel and the European Social Survey show that the SHARE data produces very similar distributions of key concepts such as employment, income, education and health" (Börsch-Supan and Jürges, 2005)(pg. 34). Nonetheless, when comparing the response rate and data of SHARE to the ones obtained in the other above-mentioned European surveys, we note that in some cases these studies have similarly low response rates (see Table 6.1). Consistency of data and response rate between equally low-response rate surveys is a practice that does not assure validity (Roth and BeVier, 1998) nor obviate the need for further comparisons with alternative sources.

Item non-response, on the other hand, was a minor issue for noneconomic variables (e.g. those referring to demographics, physical and mental health, employment variables, expectations or activities) both for SHARE (Kalwij and van Soest, 2005, Christelis, 2008) and ELSA datasets (Taylor et al., 2003, Cheshire et al., 2006).

**Table 6.1 Response Rate of SHARE and other European Surveys**

	Official Eurostat surveys			Scientific Surveys					Avg.
	SHARE 2004	ECHP 1994	LFS 1996	ESS 2002	ESS 2004	EVS 99-00	EES 1999	ISSP 2002	
Denmark	<b>63.2</b>	62.0	75.0	68.0	65.1	57.0	59.0	66.1	64.6
Germany	<b>63.4</b>	47.0	(a)	57.0	50.0	42.0	49.0	42.7	47.9
Italy	<b>54.5</b>	(a)	-	44.0	-	68.0	-	-	56.0
Netherlands	<b>61.6</b>	(a)	59.0	68.0	-	40.0	30.0	46.6	48.7
Spain	<b>53.0</b>	67.0	(a)	53.0	54.8	24.0	-	(a)	49.7
Sweden	<b>46.9</b>	-	(a)	69.0	65.8	41.0	31.0	57.2	52.8
Austria	<b>55.6</b>	-	-	-	62.4	77.0	49.0	63.9	63.1
France	<b>81.0</b>	79.0	(a)	-	-	42.0	44.0	20.3	46.3
Greece	<b>63.1</b>	(a)	-	80.0	78.8	82.0	28.0	-	67.2
Switzerland	<b>38.8</b>	-	-	34.0	46.9	-	-	32.8	37.9
<i>Weighted Average</i>	<b>61.6</b>	62.0	63.2	55.6	54.9	46.4	43.9	36.7	50.8

This table shows the household response rate of SHARE and other European Surveys.

Notes: (a) no pre-screening response rate reported, (-) country not in sample. ECHP: European Community Household Panel; EU-LSF: European Labour Force Survey; ESS: European Social Survey; EVS: European Values Study; EES: European Election Study; ISSP: International Social Survey Project.

Source: De Luca and Peracchi, (2005a, b).



## 6.2 DESCRIPTIVE STATISTICS AND ASSESSMENT OF DATA QUALITY

The following sections present some descriptive statistics for each country separately, including distributions of age, education, marital status, labour force participation and some health indicators. Some of these descriptive tables will also be compared with data obtained from national official sources to assess quality of data. Since the ELSA and SHARE teams provide sampling weights which adjust for nonresponse, these will be used when making inferences about the populations under study. This should give us an indication of how well this method of compensation meets the needs of this particular study. Also the sampling design (primary sampling units and strata) is taken into account in order to estimate correct point estimates for the population and their correct variances<sup>34</sup>.

## 6.3 SOCIO-DEMOGRAPHIC CHARACTERISTICS

### 6.3.1 AGE AND SEX COMPOSITION

In all countries considered, women outnumbered men in most age-groups and the age distribution of the female samples was older than that of the male samples reflecting the higher survival rates of women at older ages. Between 16% and 20% of both men and women were aged 50–59 but the proportion of women aged 80 and over was close to twice as high as that for men (see Table 6.2).

Table 6.3 shows the age-sex distributions obtained from census data or national population estimates (based on updated census results)<sup>35</sup> as well as both the unweighted and the weighted distributions for the SHARE and ELSA respondents, providing 95% confidence intervals for the survey estimates. For most countries, when the calibration weights provided by the SHARE and ELSA teams were *not* used, the age-sex

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<sup>34</sup> Strata with only one primary sampling unit pose problem for the estimation of the precision since there is no estimate of the variability between sampling units. In order to overcome this problem, the variability of the single unit is set equal to the overall mean variability. This conservative approach (that tends to give higher estimates of the variability) is believed preferable than overstating precision.

<sup>35</sup> Data refers to the 2001 census for England and to the updates of the 2000/1 census results for the SHARE countries. Age-sex distributions were obtained from the National Statistics Bureaux, i.e. Danmarks Statistik, DST, for Denmark ([www.dst.dk](http://www.dst.dk)), Istituto nazionale di statistica, ISTAT for Italy ([www.istat.it](http://www.istat.it)), Office for National Statistics, ONS, for England ([www.statistics.gov.uk](http://www.statistics.gov.uk)) and Institut national de la statistique et des études économiques, (INSEE), for France ([www.insee.fr](http://www.insee.fr)).



distributions did not match census data. There appeared to be a general underestimation of the youngest (50-54) and the oldest respondents (75+) and an over-representation of the in-between age-groups (55-74). In Italy, for instance, men and women aged 50-54 were heavily under-represented in the SHARE survey as were respondents aged more than 79. On the contrary, the 60-74 year old respondents tended to be over-represented when weights were not taken into account. Also among French and Danish women the un-weighted proportion of those aged 80+ was lower in the SHARE samples than in the census. Similar patterns were observable also among English respondents. When calibrations weights were taken into account, the age-sex distributions of the surveys' respondents matched census data quite reasonably with only a few exceptions. English men, Italian and French respondents aged 50-54, for instance, were still under-represented even in the weighted samples.

**Table 6.2 Distribution of Respondents by country, sex and age**

	Denmark		France		Italy		England	
	M % (N)	F % (N)	M % (N)	F % (N)	M % (N)	F % (N)	M % (N)	F % (N)
<b>50-59</b>	20.41 (317)	20.24 (328)	18.29 (575)	18.79 (617)	16.45 (356)	17.13 (474)	18.48 (1,916)	18.81 (2,250)
<b>60-69</b>	13.97 (228)	14.89 (229)	12.58 (374)	13.60 (432)	14.30 (421)	16.05 (525)	13.74 (1,611)	14.67 (1,787)
<b>70-79</b>	8.40 (147)	10.51 (188)	9.70 (299)	12.95 (389)	10.04 (278)	13.78 (274)	9.98 (1,174)	12.49 (1,391)
<b>80+</b>	3.93 (65)	7.66 (112)	4.55 (155)	9.54 (235)	4.03 (70)	8.23 (109)	4.20 (485)	7.63 (777)
<b>Total (N)</b>	<b>46.71 (757)</b>	<b>53.29 (857)</b>	<b>45.13 (1,363)</b>	<b>54.87 (1,673)</b>	<b>44.81 (1,125)</b>	<b>55.19 (1,382)</b>	<b>46.35 (5,186)</b>	<b>53.65 (6,205)</b>

Each column shows the percentage of male and female in each age group in each country.

Source: ELSA, 2002; SHARE, 2004. Weighted data.

**Table 6.3 Distribution of the ELSA and SHARE respondents by age group and sex (with and without weights); comparisons with the census data**

Age group	Male				Female		
	Census	ELSA		Census	ELSA		
		Weighted (95% CI)	Un-Weighted (95% CI)		Weighted (95% CI)	Un-Weighted (95% CI)	
<b>ENGLAND</b>	50-54	22.3	20.8 (19.6; 22.0)	17.6 (16.5; 18.6)	19.3	18.2 (17.1; 19.3)	18.4 (17.4; 19.3)
	55-59	18.4	19.1 (18.0; 20.2)	19.7 (18.6; 20.8)	15.9	16.8 (15.9; 17.7)	18.6 (17.7; 19.6)
	60-64	15.6	15.7 (14.7; 16.7)	15.5 (14.6; 16.5)	13.7	14.1 (13.2; 14.9)	14.0 (13.2; 14.9)
	65-69	13.8	14.0 (13.0; 14.9)	15.4 (14.4; 16.4)	12.6	13.3 (12.4; 14.1)	14.5 (13.6; 15.4)
	70-74	11.8	12.1 (11.2; 13.0)	13.0 (12.1; 13.9)	12.0	12.4 (11.6; 13.2)	12.7 (11.8; 13.5)
	75-79	9.1	9.4 (8.6; 10.2)	9.5 (8.7; 10.3)	10.8	10.9 (10.1; 11.7)	9.5 (8.7; 10.2)
	80+	9.0	8.9 (8.2; 9.7)	9.3 (8.5; 10.1)	15.7	14.3 (13.4; 15.3)	12.3 (11.5; 13.2)
		100	100	100	100	100	100
		<b>SHARE</b>				<b>SHARE</b>	
<b>DENMARK</b>	50-54	20.9	23.7 (20.4; 26.7)	22.3 (19.3; 25.3)	18.2	17.6 (14.9; 20.3)	17.7 (15.2; 20.3)
	55-59	22.8	20.0 (17.0; 23.0)	19.5 (16.7; 22.4)	19.8	20.4 (17.6; 23.2)	20.5 (17.8; 23.2)
	60-64	17.1	17.9 (15.0; 20.7)	18.0 (15.2; 20.7)	15.3	16.1 (13.5; 18.7)	15.7 (13.3; 18.2)
	65-69	13.0	12.0 (9.6; 14.4)	12.1 (9.8; 14.5)	12.4	11.8 (9.5; 14.1)	11.0 (8.9; 13.1)
	70-74	10.0	10.3 (8.1; 12.5)	11.2 (9.0; 13.5)	10.4	10.3 (8.3; 12.3)	11.3 (9.2; 13.4)
	75-79	7.9	7.7 (5.7; 9.6)	8.2 (6.2; 10.1)	9.3	9.4 (7.5; 11.3)	10.6 (8.5; 12.7)
	80+	8.4	8.4 (5.7; 9.6)	8.6 (6.6; 10.1)	14.6	14.4 (11.8; 16.7)	10.6 (8.5; 12.7)
		100	100	100	100	100	100
<b>FRANCE</b>	50-54	22.6	20.2 (18.0; 22.4)	21.3 (19.4; 23.3)	19.1	16.3 (14.7; 17.8)	17.5 (16.0; 19.0)
	55-59	19.7	20.3 (17.4; 23.5)	20.8 (17.6; 24.1)	16.6	18.0 (16.2; 19.7)	19.2 (17.4; 21.0)
	60-64	14.0	14.2 (12.4; 16.0)	14.2 (12.5; 15.8)	12.2	13.0 (11.5; 14.5)	13.7 (12.3; 15.1)
	65-69	13.2	13.7 (11.7; 15.6)	13.3 (11.7; 14.9)	12.5	11.7 (10.3; 13.2)	12.2 (10.8; 13.7)
	70-74	12.0	11.8 (10.0; 13.6)	12.2 (10.4; 14.0)	12.7	12.9 (11.0; 14.9)	12.9 (11.1; 14.6)
	75-79	9.3	9.7 (8.0; 11.4)	9.7 (8.2; 11.3)	11.3	10.6 (9.1; 12.1)	10.4 (9.0; 11.8)
	80+	9.3	10.1 (8.4; 11.8)	8.4 (7.0; 9.9)	15.7	17.3 (15.0; 19.7)	14.0 (12.4; 15.6)
		100	100	100	100	100	100
<b>ITALY</b>	50-54	19.1	15.4 (12.5; 18.2)	11.3 (9.4; 13.3)	16.7	13.3 (11.3; 15.3)	14.4 (12.6; 16.2)
	55-59	17.5	21.3 (18.4; 24.2)	20.3 (17.8; 22.7)	14.5	17.7 (15.6; 19.9)	19.9 (17.7; 22.1)
	60-64	17.0	16.5 (14.3; 18.8)	19.5 (17.1; 22.0)	15.4	15.5 (13.3; 17.7)	21.1 (18.9; 23.1)
	65-69	14.9	15.4 (13.1; 17.6)	17.9 (15.7; 20.0)	14.1	13.6 (11.9; 15.3)	16.9 (14.9; 18.9)
	70-74	12.8	15.0 (12.8; 17.2)	16.2 (14.1; 18.2)	13.4	14.6 (12.0; 17.2)	12.1 (11.0; 14.2)
	75-79	9.6	7.4 (5.8; 9.0)	8.5 (6.9; 10.1)	11.7	10.4 (8.7; 12.1)	7.7 (6.4; 8.9)
	80+	9.0	9.0 (7.0; 11.0)	6.2 (4.8; 7.6)	14.1	14.8 (11.8; 18.0)	7.8 (6.4; 9.4)
		100	100	100	100	100	100

This table compares the age-sex distribution between census (ONS for England) and ELSA and SHARE respondents respectively and its 95% confidence intervals obtained with weighted and unweighted data. Sources: ONS, 2001; ELSA, 2002; DST (Denmark), 2004; INSEE (France), 2004; ISTAT (Italy), 2004; SHARE 2004.

### 6.3.2 EDUCATION

When the level of education was considered, differences both between countries and within country (by age-groups) were quite striking as expected, reflecting few educational opportunities for older cohorts and for women. In general, men were more educated than women and the level of education decreased as age increased though differences in levels between countries were quite dramatic. Classifying older people into three categories of the ISCED-97<sup>36</sup> (low education: levels 0-2; medium education: 3; high education: levels 4-6), it was clear that both male and female younger respondents achieved higher educational levels than older ones. Differences by countries and gender were remarkable: almost 94% of Italian men older than 80 had low education versus 24% in Denmark. Almost 50% of Danish women aged 50-59 had high education compared to 23% in France and England and to 13% in Italy (see Table 6.4).

**Table 6.4 Level of Education (ISCED-97) by gender, age-group and country**

		50-59		60-69		70-79		80+		Total	
		%		M	F	M	F	M	F	Male	Female
DENMARK	Low	11.1	14.9	16.0	31.1	20.5	46.0	23.4	62.5	15.3 (119)	32.4 (288)
	Medium	53.5	35.0	48.6	43.3	46.0	32.9	44.0	27.3	49.9 (390)	35.8 (311)
	High	34.5	49.4	35.4	25.6	33.5	21.1	29.0	8.3	34.2 (240)	31.2 (254)
	Other*	0.8	0.7	-	-	-	-	3.5	0.2	0.6 (5)	0.5 (4)
	N	315	328	228	229	147	188	64	112	754	857
FRANCE	Low	31.6	40.2	50.2	55.5	64.0	77.1	64.9	85.7	47.2 (625)	60.5 (976)
	Medium	39.9	35.0	27.8	26.2	22.2	14.7	18.6	9.4	30.5 (414)	23.6 (405)
	High	27.6	23.5	20.4	17.6	13.1	7.3	14.8	5.3	21.1 (282)	15.1 (256)
	Other*	0.9	1.3	1.7	0.7	0.6	0.8	1.7	-	1.2 (15)	0.8 (14)
	N	561	611	366	424	294	385	115	231	1,336	1,651
ITALY	Low	59.8	66.2	73.0	75.8	81.8	86.3	93.3	94.2	71.9 (844)	78.2 (1,103)
	Medium	27.7	20.4	17.3	15.5	9.8	10.4	3.3	5.0	18.2 (189)	14.1 (184)
	High	11.7	13.4	9.7	8.2	8.4	2.4	3.4	0.8	9.6 (90)	7.3 (91)
	Other*	0.8	-	-	0.5	-	1.0	-	-	0.3 (2)	0.4 (3)
	N	356	473	421	525	278	274	70	109	1,125	1,381
ENGLAND	Low	29.5	35.6	47.7	49.7	60.3	63.3	68.4	73.0	45.0 (2,339)	51.2 (3,109)
	Medium	29.7	31.4	21.5	20.8	13.5	12.2	11.2	9.6	22.2 (1,144)	20.9 (1,360)
	High	35.8	22.4	26.2	17.5	19.5	11.7	13.5	8.4	27.4 (1,450)	16.6 (1,097)
	Other*	5.0	10.6	4.6	11.9	6.7	12.8	6.9	8.9	5.4 (280)	11.2 (712)
	N	1,945	2,325	1,612	1,789	1,174	1,390	482	774	5,213	6,278

The Level of Education classification follows the ISCED-97 standards (low education: levels 0-2; medium education: 3; high education: levels 4-6). Note: Other \* stands for "still in school", "other", "don't know", "refusal". Sources: SHARE, 2004; ELSA, 2002. Weighted data.

<sup>36</sup> International standard classification of education; full details available at [http://www.uis.unesco.org/TEMPLATE/pdf/isced/ISCED\\_A.pdf](http://www.uis.unesco.org/TEMPLATE/pdf/isced/ISCED_A.pdf)

However, as in the case of the age-sex distributions already discussed, there were differences between the distributions of educational attainment obtained from the SHARE and ELSA surveys and those provided by the relevant national censuses. Converting the highest degree obtained by each enumerated person into ISCED-97 codes following the official guidelines provided by UNESCO and OECD (1999), in most countries there was an under-representation of people with low education levels and an over-representation of middle and high levels. For instance, the proportion of Italian female SHARE respondents aged 55-69 who reported a high level of education was almost twice as high as that reported from the Census. Similarly, French men and women aged 50-64 with high education are over-represented in the SHARE sample (see Tables 6.A1-6A.4 in the appendix for full details).

### **6.3.3 MARITAL STATUS**

Between 70% (Denmark) and 76% (Italy) of men and between 54% (Denmark) and 58% (England) of women were married<sup>37</sup>. Whereas the proportion of men who were married started to decline only at ages above 80, the proportion of women who were married declined as age increased (reflecting earlier widowhood among women). For men, the age group including the highest proportion married was the 60-69 year-old age group in Italy, England and Denmark and the 70-79 one in France; for women, it was the 50-59 age-group in all countries. In England, Denmark and France around 10% of the sample were separated or divorced whereas less than 5% of the Italian SHARE respondents were divorced or separated. Finally, the proportion of widows was for all age groups and countries much higher than the proportion of widowers: for instance over a third of men aged 80 or over were widowed compared to more than two-thirds of 80+ women. In general, between 7% (France) and 9% (Italy, Denmark and England) of men and between 25% (England and Denmark) and 33% of women (Italy) were widowed: these gender-differences reflect higher female survival rates and the common pattern of age differences between spouses with women generally marrying men older than themselves (Table 6.5).

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<sup>37</sup> First and following marriages were merged together for the ELSA dataset.

SHARE and ELSA data on marital status compared reasonably well with census data, with a few exceptions particularly among respondents aged 80 and over. Among older respondents, single (never-married) and widowed people were over-represented among Italian men whereas French and English older single people (80+) tended to be under-represented; divorced and separated were inflated to the detriment of single people among Danish men (data not shown).

**Table 6.5 Distribution of legal marital status, by gender, age-group and country**

		50-59		60-69		70-79		80+		Total	
%		<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>Male</i>	<i>Female</i>
<b>DK</b>	<b>Single</b>	12.9	9.1	5.0	1.6	6.2	4.7	-	7.1	<b>8.2 (61)</b>	<b>5.8 (46)</b>
	<b>Married</b>	69.7	67.1	73.1	63.1	70.3	44.6	50.0	14.2	<b>69.3 (524)</b>	<b>54.0 (473)</b>
	<b>Divorced</b>	15.4	18.0	12.7	18.5	8.9	11.4	17.3	6.7	<b>13.6 (102)</b>	<b>15.2 (124)</b>
	<b>Widowed</b>	1.7	5.8	9.2	16.8	14.5	39.3	31.9	72.0	<b>8.8 (66)</b>	<b>25.0 (214)</b>
	<b>N</b>	<b>314</b>	<b>328</b>	<b>228</b>	<b>229</b>	<b>147</b>	<b>188</b>	<b>64</b>	<b>112</b>	<b>753</b>	<b>857</b>
<b>FR</b>	<b>Single</b>	6.9	7.7	5.8	6.5	6.8	5.5	4.3	7.5	<b>6.3 (85)</b>	<b>6.9 (117)</b>
	<b>Married</b>	78.8	69.5	77.5	63.3	81.0	48.4	62.5	20.9	<b>73.2 (1,038)</b>	<b>54.5 (924)</b>
	<b>Divorced</b>	11.8	14.7	13.9	11.2	3.6	6.3	4.3	5.2	<b>9.9 (130)</b>	<b>10.2 (174)</b>
	<b>Widowed</b>	2.4	8.1	2.6	19.0	8.5	39.8	28.9	66.4	<b>6.5 (82)</b>	<b>28.4 (434)</b>
	<b>N</b>	<b>561</b>	<b>610</b>	<b>365</b>	<b>424</b>	<b>294</b>	<b>384</b>	<b>115</b>	<b>231</b>	<b>1,335</b>	<b>1,649</b>
<b>IT</b>	<b>Single</b>	12.7	7.8	10.2	6.6	7.7	8.3	9.8	16.8	<b>10.5 (81)</b>	<b>8.9 (86)</b>
	<b>Married</b>	77.5	78.0	81.0	61.8	76.7	40.6	57.2	13.5	<b>76.6 (964)</b>	<b>54.3 (973)</b>
	<b>Divorced</b>	6.6	4.3	4.7	4.1	1.2	1.6	-	2.2	<b>4.2 (28)</b>	<b>3.3 (29)</b>
	<b>Widowed</b>	3.2	9.6	4.1	27.5	14.3	48.9	33.0	67.5	<b>8.7 (52)</b>	<b>33.3 (291)</b>
	<b>N</b>	<b>356</b>	<b>472</b>	<b>421</b>	<b>525</b>	<b>278</b>	<b>273</b>	<b>70</b>	<b>109</b>	<b>1,125</b>	<b>1,379</b>
<b>EN</b>	<b>Single</b>	8.4	4.6	7.5	3.6	4.3	5.4	2.0	7.5	<b>6.7 (324)</b>	<b>4.9 (306)</b>
	<b>Married</b>	76.1	73.6	78.2	68.0	75.5	48.0	57.8	18.3	<b>75.0 (3,916)</b>	<b>58.2 (3,654)</b>
	<b>Divorced</b>	13.3	16.9	9.0	12.4	5.5	6.0	2.0	2.5	<b>9.3 (463)</b>	<b>11.1 (732)</b>
	<b>Widowed</b>	2.1	4.9	5.3	15.9	14.7	40.6	38.2	71.7	<b>9.0 (482)</b>	<b>25.8 (1,512)</b>
	<b>N</b>	<b>1,915</b>	<b>2,250</b>	<b>1,611</b>	<b>1,786</b>	<b>1,174</b>	<b>1,391</b>	<b>485</b>	<b>777</b>	<b>5,185</b>	<b>6,204</b>

Each column shows the percentage of single, married, divorced and widowed respondents by age-group and age. 'Single' stands for 'never married'; 'Married' includes remarried and people cohabiting with a partner. 'Divorced' includes also 'Separated'. Sources: SHARE, 2004; ELSA, 2002; Weighted data.

### 6.3.4 HOUSEHOLD COMPOSITION AND OTHER CHARACTERISTICS

Information on household composition was collected separately from legal marital status in SHARE and ELSA, determining who people lived with regardless of their marital status. Table 6.6 shows that the majority of both men and women lived with their 'spouse/partner only' in all countries except Italy, where more than 40% of both men and women lived 'in other arrangements'<sup>38</sup>. The proportion of people who lived alone ranged between 15% (France) and 23% (Denmark) for men and between 27% (Italy) and 40% (Denmark) for women. The figures showed age and gender differences. The proportion of people who lived on their own increased with age. For example, in France while 11% of men and 16% of women aged 50–59 reported living alone, these proportions for people aged 80 or over were 32% and 66% respectively. Conversely, the proportion of people who lived 'in other arrangements' decreased with age.

**Table 6.6 Distribution of living arrangements, by age, sex and country**

		50-59		60-69		70-79		80+		Total	
%		<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>Male</i>	<i>Female</i>
<b>DK</b>	<b>Alone</b>	17.6	24.3	20.7	32.5	27.1	53.5	46.6	79.8	22.7 (169)	40.3 (335)
	<b>Partner</b>	51.6	56.7	73.7	64.0	68.8	45.2	53.4	16.3	61.4 (476)	50.7 (446)
	<b>Other</b>	30.8	19.0	5.6	3.5	4.1	1.3	-	3.9	15.9 (112)	9.00 (76)
	<b>N</b>	<b>317</b>	<b>328</b>	<b>228</b>	<b>229</b>	<b>147</b>	<b>188</b>	<b>65</b>	<b>112</b>	<b>757</b>	<b>857</b>
<b>FR</b>	<b>Alone</b>	11.0	16.4	15.7	26.8	14.5	42.3	32.2	65.9	15.2 (201)	33.7 (536)
	<b>Partner</b>	40.9	41.0	62.1	57.4	75.6	46.6	63.5	22.2	56.5 (768)	43.1 (734)
	<b>Other</b>	48.1	42.6	22.2	15.8	9.9	11.1	4.3	11.9	28.3 (394)	23.2 (403)
	<b>N</b>	<b>575</b>	<b>610</b>	<b>374</b>	<b>424</b>	<b>299</b>	<b>384</b>	<b>115</b>	<b>231</b>	<b>1,363</b>	<b>1,649</b>
<b>IT</b>	<b>Alone</b>	13.0	9.9	13.8	20.8	19.4	41.9	35.4	55.0	16.7 (92)	27.8 (210)
	<b>Partner</b>	18.1	27.1	43.5	40.2	57.4	34.7	49.1	12.2	37.8 (481)	30.6 (525)
	<b>Other</b>	68.9	63.0	42.7	39.0	23.2	23.4	15.5	32.8	45.5 (552)	41.6 (647)
	<b>N</b>	<b>356</b>	<b>474</b>	<b>421</b>	<b>525</b>	<b>278</b>	<b>274</b>	<b>70</b>	<b>109</b>	<b>1,125</b>	<b>1,382</b>
<b>EN</b>	<b>Alone</b>	13.2	13.2	16.1	23.2	20.4	43.7	39.7	69.3	18.0 (937)	31.1 (1,913)
	<b>Partner</b>	41.1	46.7	63.2	61.1	69.2	44.6	52.0	16.5	54.7 (2,943)	45.8 (2,917)
	<b>Other</b>	45.6	40.1	20.6	15.7	10.4	11.7	8.3	14.2	27.3 (1,306)	23.1 (1,375)
	<b>N</b>	<b>1,916</b>	<b>2,250</b>	<b>1,611</b>	<b>1,787</b>	<b>1,174</b>	<b>1,391</b>	<b>485</b>	<b>777</b>	<b>5,186</b>	<b>6,205</b>

'Partner' includes respondents who live only with their partner or spouse. 'Other' includes all other arrangements such as couples or single adults living with their children and/or parents and/or other relatives and/or other not-related people. Sources: SHARE, 2004; ELSA, 2002. Weighted Data.

<sup>38</sup> The wording 'other arrangements' include couples or single adults living with their children and/or parents, couples or single adults living with other relatives as well as couples and adults living with other not-related people.

ELSA and SHARE respondents were also asked about the number of living children<sup>39</sup> and parents and whether they lived in or outside the household “since this has important implications for social relationships and social support” (Marmot et al., 2003a)(pg. 25). Differences between countries, sex and age-groups were quite striking: whereas in Denmark only 8% of women and 14% of men lived with at least one child, in Italy the percentages were 38 and 41 respectively (see Table 6.7). The results also showed a clear age pattern: younger respondents were more likely to be living with some of their children. For example, in France 45% of men and 41% of women aged 50–59 lived with at least one child on the household; the proportions for men and women aged 80 or over who lived with at least one child were respectively 3% and 10%.

**Table 6.7 Distribution of respondents living with at least one child in the same household (%), by age group, gender and country**

		Age	50-59	60-69	70-79	80+	Total
			% (N)	% (N)	% (N)	% (N)	% (N)
DK	Men		28.6 (88)	4.9 (10)	3.6 (4)	-	14.6 (102)
	Women		17.8 (56)	3.1 (7)	1.3 (3)	3.9 (5)	8.4 (71)
FR	Men		44.9 (259)	20.5 (76)	7.3 (22)	2.6 (3)	25.7 (360)
	Women		40.8 (259)	14.2 (60)	8.2 (33)	10.3 (24)	21.2 (376)
IT	Men		62.4 (232)	39.0 (182)	21.4 (67)	11.4 (10)	41.2 (491)
	Women		59.8 (296)	35.4 (184)	19.8 (59)	27.9 (40)	38.0 (579)
EN	Men		41.5 (760)	16.9 (236)	8.3 (98)	6.9 (32)	23.9 (1,150)
	Women		36.2 (771)	11.1 (195)	9.6 (125)	11.5 (84)	19.6 (1,175)

Each line shows the percentage of men or women who live with their children in each age-group. Sources: SHARE, 2004; ELSA, 2002. Weighted Data

<sup>39</sup> Information on whether children were natural, stepchildren, adopted or fostered was also collected; both SHARE and ELSA did not collect the full fertility history of women but only the number of children alive at the time of the survey was asked to both men and women. Full details on children’s characteristics can be found elsewhere (Marmot et al., 2003a, Börsch-Supan and Jürges, 2005).

## **6.4 EMPLOYMENT AND SOCIO-ECONOMIC POSITION**

The SHARE and ELSA questionnaires asked respondents a number of questions about their current employment situation. Workers were also asked questions on job characteristics and pensioners were asked questions about their last occupation before retirement.

### **6.4.1 EMPLOYMENT STATUS**

ELSA and SHARE respondents were initially asked to describe their current employment situation; a set of joint crosscheck questions were then asked to those who described themselves as not-employed to assess whether they did any paid activities in the month prior to the interview. In particular, the SHARE questionnaire asked respondents to self-assess their current job situation, describing it from six mutually exclusive answers: 'retired', 'employed or self-employed (including working for family business)', 'unemployed', 'permanently sick or disabled', 'homemaker' or 'other'. ELSA posed a similar question even though the categories 'employed' and 'self-employed' were separated and instead of 'homemaker' the wording 'looking after home or family' was used. In this project, SHARE and ELSA respondents were labelled as 'workers' if they had self-described their current situation as employed or self-employed *and* they were not temporarily away from any work, including seasonal work. In theory, respondents who did some paid work during the four weeks prior to the interview (even for just a few hours) could also be considered as workers (regardless of their economic description). Although differences between these two measurements were almost imperceptible, the first definition was considered in the following analyses as this accounts for people who describe themselves as workers and actually work on a regular basis. As for retired people, the definition of retirement was left to the respondents: this means that this category might include people who have withdrawn from the labour market permanently as well as those who are in receipt of a pension even if they never were in employment.

In all four countries considered 'retired' people represented the largest group: between 48% (Denmark) and 67% (Italy) of male respondents were 'retired' whereas for females percentages ranged between 45% (Italy) and 56% (Denmark). The second most frequent



category was 'employed or self-employed' with the exception of Italian older women who assessed themselves as homemakers in 39% of cases (see Table 6.8). Whereas 20% of French older women and almost 17% of English female respondents called themselves 'homemakers', less than 3% of Danish women did so. Conversely, 33% of Danish women were workers compared to less than 15% of Italian women. As for men, 28% of Italian older men described themselves as employed compared to 32% in France, 39% in England and 43% in Denmark. Unemployment was higher among men and figures were higher in Denmark than in the other countries reflecting the fact that in Denmark people remain part of the labour force until older ages than in other countries and so are more likely to describe themselves as unemployed than as retired. Finally, whereas in Italy around 1% of respondents called themselves 'permanently sick or disabled' in England figures were above 6% (see Table 6.8).

**Table 6.8 Distribution of self-reported current economic status, by sex and country**

	Denmark		France		Italy		England	
	M	F	M	F	M	F	M	F
<b>Retired</b>	48.5	56.0	60.2	50.8	67.7	45.7	49.5	48.5
<b>(Self) Employed</b>	43.3	33.3	31.9	23.9	27.9	13.1	39.0	27.0
<b>Unemployed</b>	5.6	3.9	3.9	2.9	3.0	1.1	2.0	0.4
<b>Sick/Disabled</b>	2.2	3.9	3.2	1.9	1.3	0.8	7.2	6.1
<b>Homemaker</b>	0.1	3.0	0.6	20.0	0.1	39.2	1.1	16.9
<b>Other*</b>	0.2	-	0.2	0.5	-	0.1	1.3	1.1
<b>N Observations</b>	751	856	1,313	1,626	1,118	1,377	5,186	6,205
<b>Missing</b>	6	1	50	47	7	5	-	-

Notes: \*includes also 'refusal' and 'don't know' and 'Semi-retired' in the ELSA survey; moreover, the wording "homemaker" includes people who described their situation as "looking after home or family" in ELSA. Source: SHARE, 2004; ELSA 2002; weighted data

Since most of the people did not work after the age of 70 (see Figure 6.1, where the categories 'Unemployed', 'Permanently sick or disabled', 'Homemaker' have been grouped together), some more detailed descriptions are presented for respondents aged 50-69. As expected from welfare regime descriptions and differences in pension ages highlighted in chapter 3, findings reflected expected differences in labour participation rates between countries and between men and women both between and within countries. Italian and French people exited the labour force at earlier ages than in Denmark and England even if the relationship between age and proportion of workers

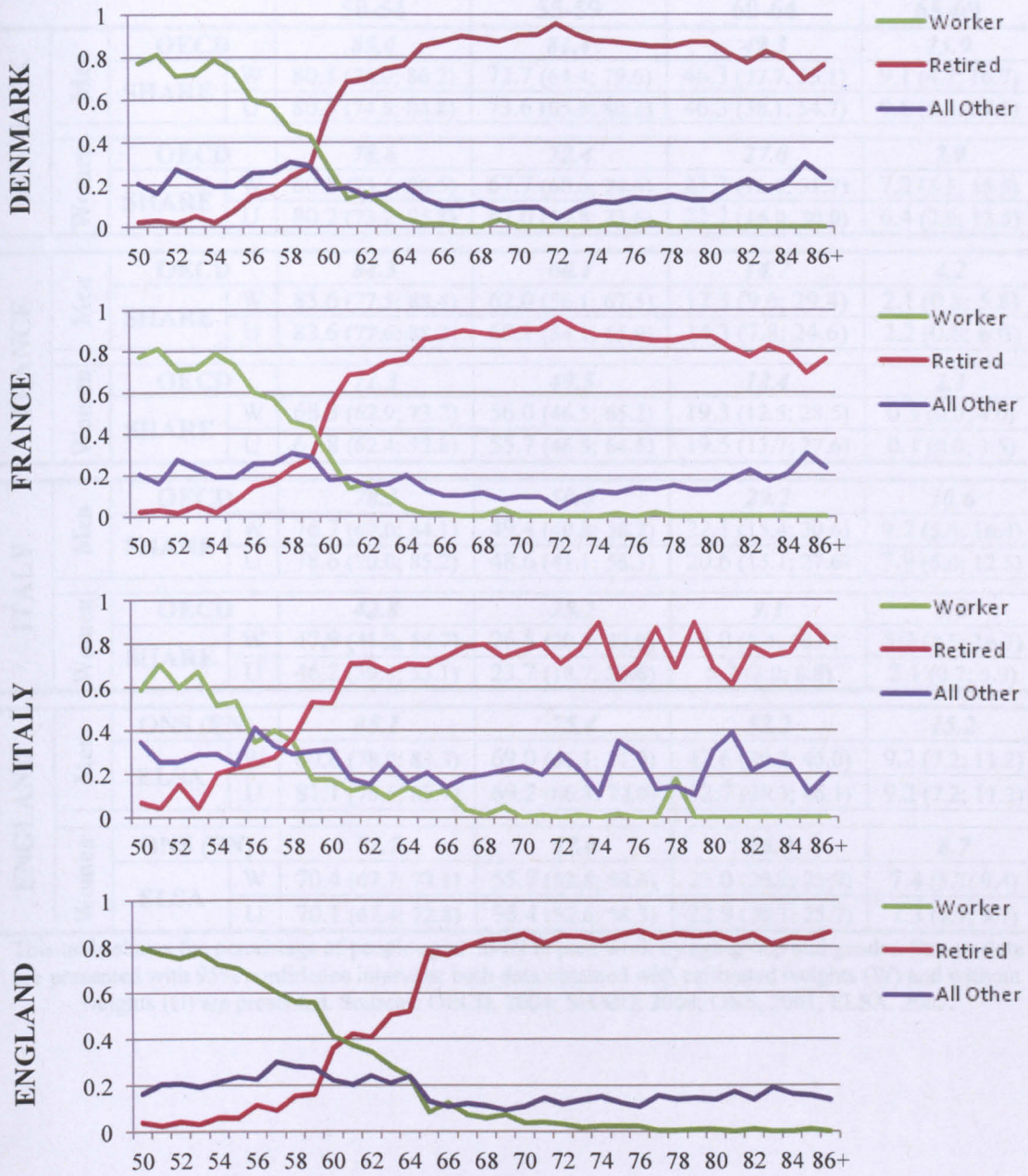
did not seem to be linear. Around the age of 60 there was a considerable drop of the proportion of workers which became less than 10% after the age of 65 in all countries.

Comparing the SHARE and ELSA proportions of respondents aged 50-69 in paid work with the OECD<sup>40</sup> figures, we note that in most cases the sampled data fitted reasonably well with a few exceptions. For instance, French female workers aged 60-64 were over-represented whereas 55-59 Danish male workers were under-estimated in SHARE. When calibrated weights were not used, Danish men aged 50-59 who were in paid work were also underestimated and so were Italian men aged 60-64. As regards the working status among English ELSA respondents, regardless of the use of calibrated weights or not, there seemed to be an under-representation of the proportion of men in paid work (in all age-groups) and of women aged 60-64 (see Table 6.9).

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<sup>40</sup> OECD does not provide data for England only; for the latter, proportions of people in paid work were obtained through the ONS website.

**Figure 6.1 Self-Reported Economic Activity by age and country**



These figures graphically represent the proportion of the self-reported economic activity grouped into three categories (employed; retired; all others including homemakers, sick and unemployed people) among Danish, French, Italian and English respondents at each age point. Sources: SHARE, 2004; ELSA, 2002. Weighted data.

**Table 6.9 Percentages of the SHARE and ELSA respondents 'in paid work', by gender and age (<70). Comparisons with OECD statistics**

				50-54	55-59	60-64	65-69
<b>DENMARK</b>	<b>Men</b>	<b>OECD</b>		<b>85.0</b>	<b>81.4</b>	<b>49.3</b>	<b>13.9</b>
		<b>SHARE</b>	W	80.8 (74.0; 86.2)	72.7 (64.4; 79.6)	46.3 (37.7; 55.1)	9.1 (4.7; 16.7)
			U	80.5 (74.8; 84.8)	73.6 (65.8; 80.2)	46.3 (38.1; 54.7)	9.8 (5.2; 17.8)
	<b>Women</b>	<b>OECD</b>		<b>78.6</b>	<b>72.4</b>	<b>27.0</b>	<b>7.9</b>
		<b>SHARE</b>	W	80.8 (73.5; 86.5)	67.7 (60.0; 74.4)	23.3 (16.6; 31.7)	7.2 (3.5; 15.5)
			U	80.2 (73.2; 85.8)	67.0 (59.8; 73.6)	22.2 (16.0; 30.0)	6.4 (2.9; 13.5)
<b>FRANCE</b>	<b>Men</b>	<b>OECD</b>		<b>84.3</b>	<b>60.1</b>	<b>14.7</b>	<b>4.2</b>
		<b>SHARE</b>	W	83.6 (77.5; 88.4)	62.0 (56.1; 67.5)	17.3 (9.6; 29.4)	2.1 (0.8; 5.8)
			U	83.6 (77.6; 88.2)	60.1 (54.1; 65.9)	14.3 (7.8; 24.6)	2.2 (0.8; 6.0)
	<b>Women</b>	<b>OECD</b>		<b>71.3</b>	<b>49.5</b>	<b>12.4</b>	<b>2.1</b>
		<b>SHARE</b>	W	68.3 (62.9; 73.2)	56.0 (46.5; 65.2)	19.3 (12.5; 28.5)	0.5 (0.0; 4.0)
			U	67.8 (62.4; 72.8)	55.7 (46.5; 64.5)	19.5 (13.7; 27.6)	0.1 (0.0; 3.5)
<b>ITALY</b>	<b>Men</b>	<b>OECD</b>		<b>78.3</b>	<b>50.0</b>	<b>29.2</b>	<b>10.6</b>
		<b>SHARE</b>	W	76.7 (67.0; 84.1)	49.4 (40.8; 58.2)	22.1 (15.4; 30.6)	9.7 (5.6; 16.4)
			U	78.6 (70.0; 85.2)	48.6 (41.1; 56.3)	20.6 (15.1; 27.6)	7.9 (5.0; 12.5)
	<b>Women</b>	<b>OECD</b>		<b>42.8</b>	<b>25.2</b>	<b>9.1</b>	<b>3.0</b>
		<b>SHARE</b>	W	47.9 (41.2; 54.7)	26.5 (20.9; 33.0)	6.0 (3.4; 10.6)	5.3 (1.5; 16.7)
			U	46.2 (39.5; 53.1)	23.7 (18.7; 29.6)	5.2 (3.0; 8.8)	2.1 (0.7; 5.9)
<b>ENGLAND</b>	<b>Men</b>	<b>ONS (EN)</b>		<b>85.1</b>	<b>75.4</b>	<b>52.2</b>	<b>15.2</b>
		<b>ELSA</b>	W	80.8 (78.0; 83.3)	69.0 (66.1; 71.9)	42.6 (39.2; 46.0)	9.2 (7.2; 11.2)
			U	81.1 (78.6; 83.7)	69.2 (66.3; 72.0)	42.7 (39.3; 46.1)	9.2 (7.2; 11.2)
	<b>Women</b>	<b>ONS (EN)</b>		<b>71.7</b>	<b>57.6</b>	<b>26.0</b>	<b>8.7</b>
		<b>ELSA</b>	W	70.4 (67.7; 73.1)	55.7 (52.8; 58.6)	23.0 (20.2; 25.9)	7.4 (5.7; 9.4)
			U	70.1 (67.4; 72.8)	55.4 (52.6; 58.3)	22.9 (20.1; 25.7)	7.3 (5.7; 9.1)

This table shows the percentage of people aged 50-69 in paid work by age-group and gender. Survey data are presented with 95% confidence intervals; both data obtained with calibrated weights (W) and without weights (U) are presented. Sources: OECD, 2004; SHARE 2004; ONS, 2001, ELSA, 2002.

#### 6.4.2 HOUSEHOLD INCOME AND WEALTH

ELSA and SHARE respondents were asked detailed questions on their finances and wealth (pension, income, transfers and financial and non-financial assets). Those who refused or did not give exact answers were asked whether their circumstances were higher or lower than suggested monetary amounts (Taylor et al., 2007)<sup>41</sup>. Even though this method significantly reduced the number of observations for which no information is collected, when all the components of wealth and income of the households were considered together, the proportion of respondents with at least one missing value was very high (almost 60% among SHARE countries). Just as an example, more than 12% of pension amounts were missing. Moreover, whereas ELSA wealth and income variables were asked at the 'benefit unit' level, SHARE measures were asked at the 'couple' level but referred to the household as unit of observation. Given that in SHARE a household may consist of more than one "couple", it is not always possible to distinguish to which member of the household the income and wealth measures refer. Comparisons are further complicated by the fact that the total household income is calculated differently: ELSA, for instance, excluded housing and council tax benefits and SHARE considered income before tax. Finally, in wave 1, SHARE respondents of Euro countries were allowed to choose whether to report financial amounts in Euros or in their local pre-Euro currencies.

As an indicator of wealth, house ownership was therefore considered. People were asked in both questionnaires whether they owned the house where they lived (mortgage-free or not) or whether they paid a monthly rent or mortgage. Table 6.10 shows the percentage of older people by sex and age-group who owned a mortgage-free house or live rent-free (i.e. the proportion of people who did not have to pay monthly a mortgage or a rent). Whereas 80% of the Italian sample owned a mortgage/rent-free house, only one quarter of the Danish older people did. In particular, whereas more than 70% of Italian men aged 50-59 did not pay any monthly mortgage or rent, only 56% of the French

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<sup>41</sup> For example, if a respondent did not know how much the last payment they received from a particular pension was, then they would have been asked an unfolding bracket question such as "Was it less than £600, more than £600, or what?" If the respondent said they received "less than £600", then they could have been asked "Was it less than £300, more than £300, or what?"

counterpart was in the same position compared to 33% of English men and 14% of Danish men aged 50-59.

**Table 6.10 Percentage of mortgage-free house ownership, by age and sex and country**

	Age								Total (N)	
	50-59		60-69		70-79		80+		Male	Female
	M	F	M	F	M	F	M	F		
<b>Denmark</b>	13.9	16.7	30.7	34.2	35.76	33.6	36.9	31.9	<b>24.8</b> (187)	<b>27.1</b> (222)
<b>N</b>	314	324	227	225	145	185	64	107	750	841
<b>France</b>	55.9	58.7	68.2	72.5	83.14	79.5	79.3	68.8	<b>67.5</b> (898)	<b>68.7</b> (1,112)
<b>N</b>	566	606	363	417	293	380	115	225	1,337	1,628
<b>Italy</b>	70.9	74.3	81.1	82.3	85.02	83.0	96.1	85.4	<b>79.6</b> (924)	<b>80.4</b> (1,130)
<b>N</b>	351	468	416	516	276	274	70	106	1,113	1,364
<b>England</b>	33.1	40.1	63.5	69.5	73.45	67.0	68.2	59.9	<b>54.0</b> (2,876)	<b>57.3</b> (3,564)
<b>N</b>	1,908	2,234	1,604	1,779	1,170	1,387	484	773	5,166	6,173

This table shows the percentage of people who live in a mortgage and rent-free flat/house, by age and sex in Denmark, France, Italy and England. Source: ELSA, 2002; SHARE, 2004. Weighted data.

## 6.5 HEALTH STATUS AND ITS MEASUREMENT

Physical and mental health as well as physical and cognitive functioning were key areas of focus for this research study since they could influence and be influenced by people's employment patterns, their socio-economic position and the levels at which in particular older people participated in society. ELSA and SHARE collected measurements of different facets of health, reflecting the complexity of this concept which goes beyond the mere 'absence of disease' (Saylor, 2004, Blanchet et al., 2007, Kirsten et al., 2009) and is defined by the WHO (2006) as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

In its operationalisation, health status usually draws on three distinct main models: a medical model which envisages health in relationship with certain physical or psychological standards; a functional model which defines health as the capability of performing daily activities in the social environment and a subjective model which

gleans the health status of individuals from their personal perception. SHARE and ELSA adopted a similar strategy in collecting health information: in both questionnaires questions on physical pain and self-reported diagnosed chronic conditions, on self-reported functional health (problems with activities of daily limits or disabilities), on subjective health, mental health as well as cognitive functioning and health-related behaviours were included.

These measurements are mainly self-assessed and present some limitations. For instance, it is well known that the way people evaluate their medical status and include it in the perception of their health differs depending on the country-specific socio-economic position of the respondent (Etilé and Milcent, 2006, Bago d'Uva et al., 2008, Jürges et al., 2008, Dowd and Zajacova, 2010). Difference in self-rated health (SRH) between countries and subgroups of the population do not necessarily correspond to differences in 'true' health. SRH might also be sensitive to cultural environment as well as to different health expectations (Sherwood et al., 2005, Haski-Leventhal, 2009). As Sen (2002) stated quite clearly in an obviously extreme case, "a person brought up in a community with a great many diseases and few medical facilities may be inclined to take certain symptoms as 'normal' when they are preventable" (pg 860) and this could potentially bias the perception people have of their own health status. Similarly, differing expectations for health could potentially also lead to differences in response category cut points. For example, a 90 year old man who struggles to climb the stairs might characterise himself as having "mild difficulties" in moving around, but a 40 year old man with the same mobility might describe himself as having "moderate to high difficulties". Clearly, different response category cut-points about mobility and functional limitations could also lead to potentially incomparable answers (Salomon et al., 2004). Furthermore, when chronic conditions are considered, this thesis examines co-morbidity without distinguishing between various possible combinations of chronic diseases (such as cardiovascular diseases, chronic conditions or visual impairments). Moreover, respondents might report chronic diseases differently, depending on their level of education and memory. In addition, self-reported morbidity might not be an accurate measure of the prevalence of chronic conditions at the population level because only respondents who have a 'diagnosed' condition would report it and because of recall

bias (Heliövaara et al., 1993). Finally, depression symptoms scales ask for symptoms experienced in various temporal frames (the week or the month prior to the interview, and ‘recently’): although diagnosed depression is a chronic disease, it is likely that respondents who experienced symptoms “some of the time” would answer “yes”, overstating the prevalence of the items and therefore the prevalence of “respondents at risk” of depression.

Keeping in mind the above-mentioned limitations, the following subsections present a selection of health-related outcomes and only consider the variables which are present in both questionnaires and are fully comparable.

### **6.5.1 SELF-RATED HEALTH (SRH)**

Each respondent was asked to self-assess their health status with a generic question (Would you say your health is ... ). SHARE respondents were asked to evaluate their health using two different scales: the ‘Rand’ scale includes ‘excellent’, ‘very good’, ‘good’, ‘fair’ and ‘poor’ whereas the ‘Europ’ formulation comprises ‘very good’, ‘good’, ‘fair’, ‘bad’ and ‘very bad’.

In both studies, respondents were randomly allocated to two subgroups; this allocation determined the order of and the scale used for the self-assessed general health question, i.e. whether they had to answer with the ‘Rand’ or ‘Europ’ scale before or after a detailed series of questions about their physical health. Both the position as well as of the formulation used to self-assess general health are important factors which can influence response, as discussed by several authors (Jürges, 2005, Bago d’Uva et al., 2008, Bowling and Windsor, 2008, Jürges, 2008, Jürges et al., 2008). Despite that, since in the second and following waves, SHARE and ELSA research teams decided to drop the ‘Europ’ scale, data on the ‘Rand’ self-classification of health only is presented. Moreover, all the ‘Rand’ answers were grouped together regardless of where they were placed in the questionnaire<sup>42</sup>.

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<sup>42</sup> Because of the random allocation procedure, there is no reason to believe that people who answered the self-assessment health question at the end of the questionnaire systematically differ by socio-economic or demographic characteristics to the ones who answer it at the beginning of the health module. Similarly, it is assumed that any effect of the position of the question on the answer will be similar among men and women in all countries under study.



Men in all countries reported better health than women. Similarly, an age gradient was clear: older people were more likely to report poor health than people in the younger age groups; for example, among French respondents 14% of men and 12% of women aged 50-59 rated their health as excellent compared with 1% and 4% respectively of those aged over 80. Conversely, only 6% of Italian women and men in the youngest age group (50-59) reported poor health whereas among 80+ this percentage increased to 19% among men and 23% among women. As regards countries, whereas more than 20% of Danish men reported their health as excellent, only 13% did so in England and 8% in France and Italy; similarly, 19% of Danish women said they had excellent health compared with 13% in England, 7% in France and only 5% in Italy (see Table 6.11). Such differences in health suggest that health status varies across welfare state regimes, with people in Scandinavian countries having better general health than Southern welfare regimes, as several other papers have shown (Bambra, 2006, Eikemo et al., 2008). These disparities in self-perceived health between countries were thought to reflect broader differences in their welfare state regimes and the implementation of policies aimed at reducing social inequalities (Navarro et al., 2006, Chung and Muntaner, 2007, Espelt et al., 2008). Suggested explanations for the better performance of the Scandinavian welfare state regimes were numerous. It was believed that health was enhanced where the welfare provision was more generous and income redistribution was higher, providing better protection against the health effects of a low socio-economic position and reducing the welfare burden on families and women in particular (Torsheim et al., 2006, Bambra, 2007a). The implementation, over a sustained period of time, of a variety of policies (such as universal access to generous welfare services and high levels of employment amongst both men and women) might also have resulted in narrower income inequalities and higher levels of de-commodification, both of which are associated with better population health (Bambra, 2006, Navarro et al., 2006, Chung and Muntaner, 2007). These differences in reporting health might also depend on cultural differences that a term like 'excellent health' carries in different countries (Jürges, 2005, Kapteyn, 2006).

Distributions of self-rated health were compared with other sources in France, Italy and England. Whereas in France and Italy surveys on health were conducted by their

National Statistics Bureaux, in England the 2001 Census asked directly whether over the previous 12 months the person's health had on the whole been 'good', 'fairly good' or 'not good'. In France, the 2007 INSEE survey "Vie quotidienne et Santé" investigated, among other measures, self-perceived health. The health survey had almost 238,000 respondents representative of the whole country and reached a response rate of more than 80%<sup>43</sup>, representing a similar reliable source for data quality. In Italy, the 2005 ISTAT "Condizione di salute e ricorso ai servizi sanitari"<sup>44</sup> survey sampled 60,000 household and had a response rate of about 84%<sup>45</sup>.

**Table 6.11 Distribution of Self-Reported Health, by sex, age-group and country**

		50-59		60-69		70-79		80+		Total	
%		<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>Male</i>	<i>Female</i>
<b>DENMARK</b>	<b>Excellent</b>	23.7	26.9	25.0	18.9	10.5	12.6	14.0	3.9	<b>20.9 (158)</b>	<b>18.5 (159)</b>
	<b>V. Good</b>	29.2	32.2	30.5	32.2	31.8	30.0	10.9	19.6	<b>28.6 (213)</b>	<b>29.9 (255)</b>
	<b>Good</b>	27.0	23.1	21.6	23.1	32.0	25.9	21.5	34.4	<b>25.8 (197)</b>	<b>25.3 (211)</b>
	<b>Fair</b>	14.2	11.3	16.8	19.3	19.7	28.0	45.6	35.2	<b>18.5 (140)</b>	<b>20.2 (179)</b>
	<b>Poor</b>	5.6	6.6	6.0	6.4	6.0	3.5	8.0	6.8	<b>6.0 (45)</b>	<b>6.0 (53)</b>
	<b>N</b>	<b>314</b>	<b>328</b>	<b>228</b>	<b>229</b>	<b>147</b>	<b>188</b>	<b>64</b>	<b>112</b>	<b>753</b>	<b>857</b>
<b>FRANCE</b>	<b>Excellent</b>	13.6	11.6	7.7	6.5	3.1	2.7	0.9	3.6	<b>8.5 (116)</b>	<b>6.8 (115)</b>
	<b>V. Good</b>	22.3	20.3	15.6	14.9	7.9	8.7	7.0	6.1	<b>15.7 (205)</b>	<b>13.8 (233)</b>
	<b>Good</b>	44.0	45.9	45.9	46.8	42.7	43.5	32.5	34.2	<b>43.1 (571)</b>	<b>43.6 (726)</b>
	<b>Fair</b>	14.9	18.1	22.2	26.0	30.3	33.8	35.0	36.1	<b>22.4 (291)</b>	<b>26.9 (435)</b>
	<b>Poor</b>	4.9	3.9	8.4	5.8	16.0	11.3	24.6	20.0	<b>10.3(136)</b>	<b>8.9 (133)</b>
	<b>N</b>	<b>554</b>	<b>607</b>	<b>361</b>	<b>423</b>	<b>291</b>	<b>382</b>	<b>113</b>	<b>230</b>	<b>1,319</b>	<b>1,642</b>
<b>ITALY</b>	<b>Excellent</b>	12.8	8.1	7.8	7.1	7.5	0.9	4.0	-	<b>8.4 (93)</b>	<b>4.8 (65)</b>
	<b>V. Good</b>	18.4	15.5	15.6	11.7	13.4	6.0	6.9	3.9	<b>15.3 (165)</b>	<b>10.3 (159)</b>
	<b>Good</b>	49.7	44.5	40.1	40.4	34.5	32.5	33.0	23.0	<b>41.7 (470)</b>	<b>37.1 (529)</b>
	<b>Fair</b>	13.1	25.9	29.9	33.4	35.6	41.7	36.7	50.3	<b>25.7 (296)</b>	<b>35.7 (467)</b>
	<b>Poor</b>	6.1	6.1	6.4	7.4	12.8	18.9	19.4	22.8	<b>8.9 (95)</b>	<b>12.1 (159)</b>
	<b>N</b>	<b>353</b>	<b>473</b>	<b>418</b>	<b>524</b>	<b>278</b>	<b>273</b>	<b>70</b>	<b>109</b>	<b>1,119</b>	<b>1,379</b>
<b>ENGLAND</b>	<b>Excellent</b>	16.4	16.2	14.2	13.9	9.1	8.2	6.0	9.2	<b>13.2 (657)</b>	<b>12.7 (768)</b>
	<b>V. Good</b>	32.2	31.2	28.4	30.3	27.8	25.7	24.3	22.9	<b>29.4 (1,486)</b>	<b>28.7 (1,753)</b>
	<b>Good</b>	30.9	31.0	28.4	33.1	31.3	33.2	30.3	31.2	<b>30.2 (1,543)</b>	<b>32.2 (1,965)</b>
	<b>Fair</b>	13.7	15.6	21.1	17.0	22.1	23.9	27.0	27.0	<b>18.9 (986)</b>	<b>19.5 (1,201)</b>
	<b>Poor</b>	6.8	5.5	7.9	5.7	9.8	9.0	12.4	9.8	<b>8.3 (430)</b>	<b>6.9 (427)</b>
	<b>N</b>	<b>1,892</b>	<b>2,235</b>	<b>1,585</b>	<b>1,768</b>	<b>1,155</b>	<b>1,374</b>	<b>470</b>	<b>737</b>	<b>5,102</b>	<b>6,114</b>

Each column shows the percentages of men or women in each particular age-group who reported their health as excellent, very good, good, fair or poor. Sources: SHARE, 2004; ELSA, 2002. Weighted data.

<sup>43</sup> [www.insee.fr/fr/publications-et-services/docs\\_doc\\_travail/Docf1001.pdf](http://www.insee.fr/fr/publications-et-services/docs_doc_travail/Docf1001.pdf)

<sup>44</sup> Health data can be consulted and downloaded at [www.istat.it/sanita/sociosan/](http://www.istat.it/sanita/sociosan/). More details about the survey can be found on [http://www.istat.it/dati/dataset/20080131\\_00/notametodologica.pdf](http://www.istat.it/dati/dataset/20080131_00/notametodologica.pdf)

<sup>45</sup> [www.agenas.it/agenas\\_pdf/Supplementi\\_Monitor/indagine\\_ISTAT\\_multiscopo/Quaderno\\_Monitor\\_ISTAT.pdf](http://www.agenas.it/agenas_pdf/Supplementi_Monitor/indagine_ISTAT_multiscopo/Quaderno_Monitor_ISTAT.pdf)

Bearing in mind that data were not fully comparable (the English census and the Italian survey used different response scales<sup>46</sup>), some health-effect bias was present. In fact, for instance, whereas the proportion of English people reporting good health in the census data halved as age-group increased, the decline was not as sheer among ELSA respondents. Similarly, even if data from the France and Italy were also affected by potential non-response bias having been collected in surveys, both INSEE and ISTAT surveys sampled a considerable amount of households and respondents rendering these reliable sources. Compared to these surveys, French SHARE respondents tended to report similar self-perceived health with a few exceptions among respondents older than 74. Among Italian SHARE respondents, on the contrary, the proportion of people reporting 'good health' was higher at older ages compared to the ISTAT survey data (see Table 6A.5 for details).

### 6.5.2 CHRONIC DISEASES

SHARE and ELSA also asked participants whether they were diagnosed by a practitioner to have chronic illnesses/conditions<sup>47</sup>. Table 6.12 shows the age-sex distribution of the total reported number of chronic illnesses derived summing all reported chronic illnesses (this indicator ranged from 'no reported conditions' to 'multiple chronic illnesses'). Treating these conditions as a continuous variable is advantageous because –despite the fact that each specific morbidity may have a specific and unique effect –persons with multiple conditions tend to have more rapid declines in health status and well-being and to be more likely to have greater decrements in functioning (Stewart et al., 1989, Fried et al., 1999, Wolff et al., 2002).

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<sup>46</sup> Whereas SHARE questionnaire classifies health as "Molto buona; Buona; Discreta, Cattiva or Molto cattiva", ISTAT survey uses the following categories "Molto bene, Bene, Discretamente, Male e Molto male". Similarly, the English census health classifications are 'good', 'fairly good' or 'not good' whereas in ELSA the scale comprises 'very good', 'good', 'fair', 'bad' or 'very bad'.

<sup>47</sup> The conditions mentioned are 'heart attack or other heart problems', 'stroke or cerebral vascular disease', 'diabetes', 'chronic lung disease', 'asthma', 'arthritis or rheumatism', 'osteoporosis', 'cancer or malignant tumor', 'stomach, duodenal, or peptic ulcer', 'Parkinson's disease', 'cataract', 'hip or femoral fracture' or 'high blood cholesterol'. In ELSA, the conditions 'stomach or duodenal ulcer, peptic ulcer' and high blood cholesterol' are not present.

Men (with a few exceptions) had 'no chronic conditions' more often than women, regardless of their age. Also, the percentage of people who were told by a doctor that they had chronic illnesses as well as the number of declared illnesses increased with age: for example, just around 45% of Italian male respondents and 42% of Italian women aged between 50 and 59 said that they had no chronic illnesses compared with 23% of men and 12% of women aged 80 or over. Similarly, whereas only around 3% of Danish respondents aged 50-59 declared more than 4 chronic illnesses, 16% of men and 21% of women aged 80 or more had more than 4 chronic illnesses. Differences between countries were mainly noticeable at older ages: 22% of Italian and English men aged 80+ declared no chronic illnesses compared to 17% among Danish men and 11% among French men; similarly, only 12% of English women aged 80+ declared more than 4 chronic illnesses compared with 18% of French and 21% of Danish and Italian women in the same age-group. For the younger age-groups (50-69) the age-sex distributions of the number of chronic condition were very similar in all four countries under study (see Table 6.12 for full details).

**Table 6.12 Percentage distribution of number of chronic illnesses, by sex age-group and country**

	#	50-59		60-69		70-79		80+		Total	
		<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>Male</i>	<i>Female</i>
<b>DENMARK</b>	<b>0</b>	53.0	42.2	33.8	28.5	18.7	19.1	17.4	11.8	<b>38.1 (286)</b>	<b>29.4 (255)</b>
	<b>1</b>	24.3	33.8	30.6	31.7	35.2	30.9	34.5	19.1	<b>29.0 (228)</b>	<b>30.5 (259)</b>
	<b>2</b>	14.3	15.1	17.0	20.9	14.9	19.9	19.3	30.2	<b>15.7 (116)</b>	<b>19.9 (172)</b>
	<b>3</b>	5.2	6.1	13.5	10.3	17.9	18.1	12.5	17.6	<b>10.5 (75)</b>	<b>11.3 (97)</b>
	<b>4+</b>	3.1	2.8	5.1	8.7	13.3	12.0	16.4	21.3	<b>6.7 (52)</b>	<b>8.9 (75)</b>
	<b>N</b>	<b>317</b>	<b>328</b>	<b>228</b>	<b>230</b>	<b>147</b>	<b>188</b>	<b>65</b>	<b>112</b>	<b>757</b>	<b>858</b>
<b>FRANCE</b>	<b>0</b>	48.8	42.1	31.0	25.9	19.8	16.3	11.4	15.7	<b>33.9 (468)</b>	<b>27.4 (470)</b>
	<b>1</b>	31.9	35.3	32.4	33.9	30.9	26.1	31.2	27.3	<b>31.8 (434)</b>	<b>31.4 (535)</b>
	<b>2</b>	12.9	14.4	21.1	22.9	24.3	27.2	21.9	22.0	<b>18.5 (256)</b>	<b>20.8 (346)</b>
	<b>3</b>	2.8	4.7	11.7	9.7	14.7	17.2	22.5	16.8	<b>9.8 (127)</b>	<b>11.0 (184)</b>
	<b>4+</b>	3.6	3.5	3.8	7.6	10.3	13.2	13.0	18.2	<b>6.0 (83)</b>	<b>9.4 (149)</b>
	<b>N</b>	<b>579</b>	<b>628</b>	<b>374</b>	<b>432</b>	<b>300</b>	<b>389</b>	<b>115</b>	<b>235</b>	<b>1,368</b>	<b>1,684</b>
<b>ITALY</b>	<b>0</b>	45.0	42.2	28.8	23.9	21.1	15.5	22.7	11.9	<b>32.5 (368)</b>	<b>25.7 (367)</b>
	<b>1</b>	35.1	28.0	33.9	34.2	28.2	24.4	34.2	25.4	<b>33.1 (365)</b>	<b>28.5 (399)</b>
	<b>2</b>	13.3	17.4	21.4	17.8	23.6	22.4	16.1	21.7	<b>18.4 (208)</b>	<b>19.4 (278)</b>
	<b>3</b>	4.9	7.8	7.7	13.6	14.38	14.6	19.3	19.2	<b>9.2 (106)</b>	<b>12.9 (161)</b>
	<b>4+</b>	1.7	4.6	8.2	10.5	12.9	23.1	7.8	21.7	<b>6.8 (74)</b>	<b>13.5 (177)</b>
	<b>N</b>	<b>357</b>	<b>474</b>	<b>421</b>	<b>525</b>	<b>278</b>	<b>274</b>	<b>70</b>	<b>109</b>	<b>1,126</b>	<b>1,382</b>
<b>ENGLAND</b>	<b>0</b>	41.9	39.4	31.3	25.6	24.6	18.6	21.5	17.4	<b>32.3 (1,253)</b>	<b>26.5 (1,271)</b>
	<b>1</b>	32.4	32.3	32.0	31.6	29.6	26.1	33.7	29.8	<b>31.7 (1,260)</b>	<b>30.2 (1,465)</b>
	<b>2</b>	14.9	17.7	19.5	23.0	24.2	26.5	23.3	25.9	<b>19.5 (782)</b>	<b>22.8 (1,108)</b>
	<b>3</b>	7.7	7.8	10.2	13.2	13.0	17.6	14.1	15.3	<b>10.4 (410)</b>	<b>13.1 (626)</b>
	<b>4+</b>	3.2	2.8	7.0	6.6	8.6	11.1	7.4	11.6	<b>6.1 (245)</b>	<b>7.4 (360)</b>
	<b>N</b>	<b>1,198</b>	<b>1,339</b>	<b>1,326</b>	<b>1,548</b>	<b>997</b>	<b>1,191</b>	<b>429</b>	<b>692</b>	<b>3,950</b>	<b>4,830</b>

This table shows the percentage of people reporting a specific number of chronic conditions by age-group and gender in Denmark, France, Italy and England. Sources: SHARE, 2004; ELSA, 2002. Weighted data.

### 6.5.3 PHYSICAL FUNCTIONING

Physical functioning is the ability of a person to perform normal activities of daily living without restrictions (WHO, 1980, Verbrugge and Jette, 1994, WHO, 2001b). In both SHARE and ELSA, questions about physical functioning were divided in three main domains: activities of daily living (ADLs); instrumental activities of daily living (IADLs); mobility and both upper and lower limb function. SHARE (except Denmark) and ELSA excluded respondents who received long-term care in institutions who are the most disabled: this exclusion is most relevant for France and England where the proportions of people older than 65 (women in particular) living in institutions are higher (see Chapter 3).

#### MOBILITY AND ARM FUNCTIONING

SHARE and ELSA asked whether, because of a health problem, respondents had any difficulties expected to last more than three months doing a number of activities used as measures of mobility (or lower-limb function) (MacInnes, 2006) and physical (upper-limb) functioning (Verdugo, 2006), here reported jointly (Calasanti and Bonanno, 1986).

The activities considered included 'walking 100 metres', 'sitting for about two hours', 'getting up from a chair after sitting for long periods', 'climbing several flights of stairs without resting', 'climbing one flight of stairs without resting', 'stooping, kneeling, or crouching', 'reaching or extending your arms above shoulder level', 'pulling or pushing large objects like a living room chair', 'lifting or carrying weights over 5 kilos<sup>48</sup> like a heavy bag of groceries' and 'picking up a small coin<sup>49</sup> from a table'.

Comparatively high rates of difficulty were reported by both sexes with 'climbing several flights of stairs' (English men up to 29%, Italian and English women up to 40%), 'stooping, kneeling or crouching' (men up to 31% in England, women up to 40% in England and Italy), 'lifting or carrying heavy weights' and 'getting up from a chair after sitting for long periods' (men up to 19% in Denmark, women up to 29% in England) (Table 6.A6).

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<sup>48</sup> 10 pounds in the ELSA questionnaire.

<sup>49</sup> 5p coin in the ELSA questionnaire.

In all countries, women always reported more difficulty with mobility and arm functioning than men at all ages. For instance, whereas 66% of all Danish men reported no mobility difficulty, less than half of the female sample reported no difficulty. The prevalence of reported difficulty with mobility and arm function increased with age: 64% of English respondents aged 50–59 reported no difficulty compared with 19% of those aged 80 and over. As for countries, French and Danish respondents aged 50-69 tended to report no limitations more often than the English and Italian ones. For older age-groups (70+), Danish SHARE participants tended to report no limitations more often than French, Italian and English respondents. For the latter countries, no clear pattern emerged from the data (see Table 6.13).

**Table 6.13 Difficulty with mobility and upper-limb functions, by age-group, sex and country (%)**

	%	50-59		60-69		70-79		80+		Total	
		<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>Male</i>	<i>Female</i>
<b>DENMARK</b>	<b>0</b>	76.2	64.5	67.5	52.3	52.0	39.3	36.8	19.5	<b>65.9</b> (503)	<b>49.7</b> (429)
	<b>1</b>	13.8	11.5	16.1	14.7	16.7	17.8	9.9	13.5	<b>14.7</b> (106)	<b>13.9</b> (122)
	<b>2</b>	2.8	6.5	5.9	12.4	15.0	14.6	15.5	17.9	<b>7.0</b> (54)	<b>11.3</b> (96)
	<b>3</b>	2.3	5.0	5.8	6.8	5.9	10.2	14.2	8.2	<b>5.0</b> (38)	<b>7.0</b> (59)
	<b>4+</b>	4.9	12.5	4.8	13.8	10.4	18.2	23.6	41.0	<b>7.4</b> (55)	<b>18.1</b> (151)
	<b>N</b>	<b>316</b>	<b>328</b>	<b>228</b>	<b>229</b>	<b>147</b>	<b>188</b>	<b>65</b>	<b>112</b>	<b>756</b>	<b>857</b>
<b>FRANCE</b>	<b>0</b>	78.9	61.0	64.7	48.5	45.8	26.7	29.7	16.4	<b>62.9</b> (864)	<b>42.0</b> (724)
	<b>1</b>	8.6	17.0	16.2	21.8	15.5	17.4	16.6	11.7	<b>13.0</b> (177)	<b>17.4</b> (293)
	<b>2</b>	5.9	7.7	7.7	10.1	12.1	16.5	13.9	11.8	<b>8.5</b> (116)	<b>11.1</b> (182)
	<b>3</b>	2.1	4.3	4.5	7.3	5.7	13.2	8.9	12.3	<b>4.2</b> (56)	<b>8.5</b> (140)
	<b>4+</b>	4.6	10.0	6.9	12.3	20.9	26.2	30.9	47.8	<b>11.4</b> (149)	<b>31.0</b> (331)
	<b>N</b>	<b>575</b>	<b>614</b>	<b>373</b>	<b>432</b>	<b>299</b>	<b>389</b>	<b>115</b>	<b>235</b>	<b>1,362</b>	<b>1,670</b>
<b>ITALY</b>	<b>0</b>	71.1	55.6	59.6	46.7	39.0	29.1	29.6	13.0	<b>56.5</b> (644)	<b>40.0</b> (575)
	<b>1</b>	15.5	15.0	16.8	14.9	22.6	11.2	13.2	10.9	<b>17.3</b> (193)	<b>13.4</b> (193)
	<b>2</b>	6.1	10.6	8.8	13.1	14.9	10.1	12.7	10.8	<b>9.6</b> (106)	<b>11.2</b> (158)
	<b>3</b>	2.7	8.5	7.0	7.7	6.2	11.1	11.5	8.2	<b>5.6</b> (65)	<b>8.9</b> (128)
	<b>4+</b>	4.7	10.4	7.8	17.7	27.3	38.5	33.0	57.0	<b>11.0</b> (117)	<b>26.5</b> (328)
	<b>N</b>	<b>356</b>	<b>474</b>	<b>421</b>	<b>525</b>	<b>278</b>	<b>274</b>	<b>70</b>	<b>109</b>	<b>1,125</b>	<b>1,382</b>
<b>ENGLAND</b>	<b>0</b>	63.9	50.3	51.4	39.9	39.6	25.0	25.9	18.9	<b>51.6</b> (2,618)	<b>37.1</b> (2,296)
	<b>1</b>	15.5	16.9	16.1	17.8	20.0	15.5	18.0	10.4	<b>16.8</b> (883)	<b>15.9</b> (999)
	<b>2</b>	5.1	10.9	7.9	11.6	10.3	11.5	10.1	10.1	<b>7.5</b> (402)	<b>11.1</b> (704)
	<b>3</b>	4.0	6.0	6.0	7.5	8.3	12.4	9.4	13.8	<b>6.0</b> (321)	<b>9.0</b> (552)
	<b>4+</b>	11.5	15.9	18.6	23.2	21.8	35.6	36.6	46.8	<b>18.1</b> (958)	<b>26.9</b> (1,644)
	<b>N</b>	<b>1,915</b>	<b>2,247</b>	<b>1,608</b>	<b>1,780</b>	<b>1,174</b>	<b>1,391</b>	<b>485</b>	<b>777</b>	<b>5,182</b>	<b>6,195</b>

This table shows the percentages of older people in Denmark, France, Italy and England reporting various number of difficulty with mobility items by age and sex. Sources: SHARE, 2004; ELSA, 2004. Weighted data.

### ACTIVITIES OF DAILY LIVING (ADLs)

To assess Activities of Daily Living (ADLs), respondents of both ELSA and SHARE surveys were shown a card from which they had to select the activities they had any difficulty with for at least three months because of a physical, mental, emotional or memory problem. The activities considered for the ADLs were the following: 'dressing, including putting on shoes and socks', 'walking across a room', 'bathing or showering', 'eating, such as cutting up your food', 'getting in or out of bed', 'using the toilet, including getting up or down'.

Particularly high rates of difficulty were reported in all countries and both among men and women for dressing (up to 10% for French men and Italian women) and bathing (6% and 10% among Italian men and women respectively) (see Table 6.A7).

The prevalence of reported difficulty with ADLs increased with age and similar patterns were observed in all countries: 95% of Italian male respondents aged 50–59 reported no difficulty compared with 66% of those aged 80 and over. As regards sex, there were in general very little differences between the sexes for reported difficulty with ADLs although –in general –disability was slightly higher in men up to age 69 in England and Italy and up to age 79 in France and Denmark, and in women over the age of 70 (England and Italy) and 80 (France and Denmark). The higher prevalence of ADL limitations among women at older ages is consistent with several other studies (Robertson, 1997, Lesthaeghe, 2000, UN, 2000).



**Table 6.14 Difficulty with Activities of daily living (ADLs) by sex, age-group and country (%)**

	%	50-59		60-69		70-79		80+		Total	
		<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>Male</i>	<i>Female</i>
<b>DENMARK</b>	<b>0</b>	93.8	94.6	90.9	91.1	89.9	90.6	68.5	67.5	<b>90.1 (683)</b>	<b>89.0 (764)</b>
	<b>1</b>	3.9	2.9	6.1	7.1	6.5	5.4	14.7	15.3	<b>5.9 (44)</b>	<b>6.3 (53)</b>
	<b>2</b>	1.8	1.3	1.9	0.7	-	1.3	7.3	7.3	<b>2.0 (14)</b>	<b>2.0 (17)</b>
	<b>3+</b>	0.3	1.2	1.1	1.1	3.6	2.7	9.5	9.9	<b>2.0 (15)</b>	<b>2.7 (23)</b>
	<b>N</b>	<b>316</b>	<b>328</b>	<b>228</b>	<b>229</b>	<b>147</b>	<b>188</b>	<b>65</b>	<b>112</b>	<b>756</b>	<b>857</b>
<b>FRANCE</b>	<b>0</b>	93.4	94.9	91.8	93.9	82.9	86.6	65.0	62.0	<b>87.6 (1,196)</b>	<b>87.6 (1,480)</b>
	<b>1</b>	4.5	3.6	5.2	4.3	10.7	8.6	12.0	15.6	<b>6.9 (95)</b>	<b>6.8 (109)</b>
	<b>2</b>	1.4	1.4	2.5	1.3	4.1	2.7	13.9	10.6	<b>3.6 (47)</b>	<b>3.0 (43)</b>
	<b>3+</b>	0.7	0.1	0.5	0.5	2.3	2.1	9.1	11.8	<b>1.9 (23)</b>	<b>2.6 (38)</b>
	<b>N</b>	<b>575</b>	<b>614</b>	<b>372</b>	<b>432</b>	<b>299</b>	<b>389</b>	<b>115</b>	<b>235</b>	<b>1,361</b>	<b>1,670</b>
<b>ITALY</b>	<b>0</b>	94.7	95.7	92.7	93.2	86.7	82.7	65.5	60.0	<b>90.0 (1,026)</b>	<b>86.2 (1,218)</b>
	<b>1</b>	3.2	3.0	4.1	3.6	6.6	6.8	17.6	15.0	<b>5.5 (50)</b>	<b>6.0 (70)</b>
	<b>2</b>	0.4	0.6	0.8	1.3	3.6	4.1	8.3	8.1	<b>1.7 (19)</b>	<b>2.9 (34)</b>
	<b>3+</b>	1.7	0.7	2.4	1.9	3.1	6.4	8.6	16.9	<b>2.8 (30)</b>	<b>4.9 (60)</b>
	<b>N</b>	<b>356</b>	<b>474</b>	<b>421</b>	<b>525</b>	<b>278</b>	<b>274</b>	<b>70</b>	<b>109</b>	<b>1,125</b>	<b>1,382</b>
<b>ENGLAND</b>	<b>0</b>	87.1	88.0	81.7	82.3	75.1	72.6	63.2	58.4	<b>80.8 (4,156)</b>	<b>78.6 (4,890)</b>
	<b>1</b>	6.4	5.2	8.9	9.4	14.6	13.2	15.9	20.2	<b>9.8 (525)</b>	<b>10.4 (630)</b>
	<b>2</b>	2.5	3.3	3.9	3.8	4.3	6.8	10.4	11.0	<b>4.0 (212)</b>	<b>5.4 (335)</b>
	<b>3+</b>	4.0	3.5	5.5	4.5	6.0	7.4	10.5	10.4	<b>5.4 (161)</b>	<b>5.6 (340)</b>
	<b>N</b>	<b>1,915</b>	<b>2,247</b>	<b>1,608</b>	<b>1,780</b>	<b>1,174</b>	<b>1,391</b>	<b>485</b>	<b>777</b>	<b>5,182</b>	<b>6,195</b>

This table shows the percentage of older people in Denmark, France, Italy and England reporting various number of difficulties with activities of daily living (ADLs) by age-group and sex. Sources: SHARE, 2004; ELSA, 2002. Weighted data.

### **INSTRUMENTAL ACTIVITIES OF DAILY LIVING (IADLS)**

To assess Instrumental Activities of Daily Living (ADLs), respondents of both ELSA and SHARE surveys were asked to select the activities they had any difficulty with for at least three months because of a physical, mental, emotional or memory problem. The activities considered for the IADLs were the following: 'using a map to figure out how to get around in a strange place', 'preparing a hot meal', 'shopping for groceries', 'making telephone calls', 'taking medications', 'doing work around the house or garden', 'managing money, such as paying bills and keeping track of expenses'.

Comparatively high rates of difficulty were reported for 'doing work around the house and garden', 'shopping for groceries' as well as 'using a map'; percentages reporting these difficulties were almost double among women compared to men (see Table 6.A8).

The prevalence of reported difficulty with IADLs increased with age, with less than 6% of male respondents aged 50–59 reporting difficulty compared with around 40% in Italy and France and almost 50% in Denmark of those aged 80 and over (see Table 6.15). In particular, there was a massive increase in the percentage of people reporting at least one difficulty with IADLs in the age-group 80+. Women always reported more difficulties with IADLs than men, regardless of their age and the country. Looking at country differences, whereas SHARE respondents had similar patterns and similar percentages of respondents reporting no difficulties, ELSA respondents tended to report at least one difficulty with IADL activities more often, particularly at younger ages.

The distributions of people who reported limitations with ADLs and IADLs for the French and Italian SHARE respondents was compared to the one obtained in the INSEE and ISTAT health surveys conducted in 2007 and 2005 respectively. Although the latter surveys asked slightly different questions<sup>50</sup>, given the number of respondents, these health surveys give a good indication of the prevalence of reported limitations. Table 6.16 shows the proportion of French people who reported having at least one IADL or ADL: The INSEE and SHARE distributions compared fairly well particularly for people aged more than 70; the younger SHARE respondents (aged 50–69), on the contrary, reported fewer health limitations in daily activities compared to the INSEE respondents. Table 6.17 shows the proportion of Italian people who reported having at least one *serious* ADL limitation. In both surveys it appeared that women reported more ADL limitations than men and the proportions increased as age increased. Whereas SHARE proportions were roughly three times higher than the ISTAT ones for people aged under 75, such ratio decreased for older respondents: this might suggest that older SHARE respondents were slightly healthier, though it could also imply that limitations were mainly serious as age increases. The two distributions were therefore hard to compare.

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<sup>50</sup> SHARE daily living activities are “1. Dressing, including putting on shoes and socks; 2. Walking across a room; 3. Bathing or showering; 4. Eating, such as cutting up your food; 5. Getting in or out of bed; 6. Using the toilet, including getting up or down”. ISTAT questionnaire lists, on the contrary, the following ones: “1. Dressing and undressing; 2. Getting up and down on a chair; 3. Bathing or showering; 4. Eating, such as cutting up your food; 5. Getting in or out of bed; 6. Washing hand and face”. ISTAT only reports the proportion of people who had ‘*serious*’ difficulties.

**Table 6.15 Distribution of number of difficulties with Instrumental Activities of daily living (IADL), by sex and age-group –Denmark**

	%	50-59		60-69		70-79		80+		Total	
		M	F	M	F	M	F	M	F	Male	Female
<b>DENMARK</b>	0	94.8	86.3	92.8	84.0	81.7	73.6	51.6	50.5	88.2 (664)	78.1 (670)
	1	3.1	9.0	3.9	10.7	8.3	11.9	28.2	13.3	6.4 (49)	10.6 (90)
	2	1.1	2.7	1.4	2.5	4.0	8.1	2.6	12.5	1.8 (15)	5.1 (44)
	3+	1.0	2.0	1.9	2.8	6.0	6.4	17.6	23.7	3.6 (28)	6.2 (53)
	N	316	328	228	229	147	188	65	112	756	857
<b>FRANCE</b>	0	95.0	92.0	93.1	89.1	77.9	74.6	61.4	43.8	87.4 (1,197)	78.7 (1,343)
	1	3.1	5.0	4.1	7.4	9.7	16.4	7.8	17.2	5.3 (73)	10.4 (165)
	2	0.7	1.3	1.0	1.6	4.5	5.2	6.9	10.3	2.2 (30)	3.8 (60)
	3+	1.2	1.7	1.8	2.0	7.9	3.9	23.8	28.7	5.1 (61)	7.1 (102)
	N	575	614	372	432	299	389	115	235	1,361	1,670
<b>ITALY</b>	0	96.9	92.5	92.3	88.3	89.1	74.38	61.8	43.9	90.5 (1,022)	79.4 (1,134)
	1	1.0	4.4	3.5	7.9	4.6	9.46	16.6	12.1	4.0 (48)	7.8 (110)
	2	0.6	1.4	1.9	1.9	1.5	5.88	3.9	13.2	1.5 (16)	4.4 (51)
	3+	0.9	1.7	2.3	1.9	4.8	10.28	17.7	30.8	4.0 (39)	8.4 (87)
	N	356	474	421	525	278	274	70	109	1,125	1,382
<b>ENGLAND</b>	0	88.3	84.0	83.8	81.3	80.6	70.7	59.7	50.0	82.7 (4,266)	75.3 (4,689)
	1	5.8	9.0	7.6	9.8	11.3	14.6	17.6	18.2	8.6 (454)	11.9 (736)
	2	2.9	3.8	4.8	4.8	3.7	8.1	11.7	12.6	4.5 (239)	6.3 (391)
	3+	3.0	3.2	4.0	4.1	4.4	6.6	11.0	19.2	4.2 (223)	6.5 (379)
	N	1,915	2,247	1,608	1,780	1,174	1,391	485	777	5,182	6,195

This table shows the percentage of older people in Denmark, France, Italy and England reporting various number of difficulty with instrumental activities of daily living (IADL) by age and sex. Sources: SHARE, 2004; ELSA, 2004. Weighted data.

**Table 6.16 Percentage distribution of INSEE and SHARE respondents who reported at least either one ADL or IADL limitation by age-group and sex**

	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
INSEE	12.7	15.6	15.7	20.2	27.5	35.5	48.8	70.1
SHARE	10.5	8.7	11.8	12.8	25.3	34.8	46.9	69.6

This table compares the age distribution of INSEE 'Survey of Health' and SHARE respondents who reported at least either one ADL or one IADL limitation. Sources: INSEE, 2007; SHARE 2004.

**Table 6.17 Percentage distribution of ISTAT and SHARE respondents who reported at least one Activity of Daily Living (ADL) limitation, by age-group and sex**

	45-54*		55-64		65-69		70-74		75-79		80+	
	M	W	M	W	M	W	M	W	M	W	M	W
ISTAT	0.5	0.6	1.0	1.3	2.7	3.1	4.7	5.6	8.4	12.1	25.3	36.8
SHARE	5.5	3.4	5.2	5.4	7.6	9.4	12.7	17.3	14.4	17.6	32.8	43.8

This table compares the age-sex distribution of people who reported at least one ADL between ISTAT 'Survey of Health' and SHARE respondents. Sources: ISTAT, 2005; SHARE 2004.

#### 6.5.4 MENTAL HEALTH

In addition to physical health and physical functioning, the SHARE and ELSA questionnaires also included a module focusing on mental health. The two research projects, though, used two different instruments to measure symptomatic mental illness. ELSA included an abbreviated eight-item version of the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977) whereas SHARE used the EURO-D<sup>51</sup> 12 item scale that was developed and validated by the EURODEP Concerted Action Programme (Prince et al., 1999). Both asked respondents whether they had experienced any depressive symptoms, such as restless sleep, being unhappy and so on in the week (ELSA) or month (SHARE) prior to interview. Those who reported four or more symptoms on both the CES-D and EURO-D scales were classified as being 'depressed': "those scoring above this level would be likely to be diagnosed as suffering from a depressive disorder for which therapeutic intervention would be indicated" (Steffick, 2000, Dewey and Prince, 2005).

There were clear sex differences in the rates of people who reported suffering from depression on the CES-D and the EURO-D scale. At all ages, women were more likely than men to be suffering from depressive symptoms: 14% of men reported three or more symptoms compared with 22% of women in Denmark; 20% of English men were classified as depressed against 28% of women; around one quarter of French and Italian men were depressed compared to more than 41% of French and Italian women. As regards the relationship between age and depression, patterns were not always clear. In general, rates of depression were stable in the 50-59 and 60-69 age-groups and then increased in older ages for both sexes. 63% of Italian women aged 80+ were depressed compared with 39% aged 50-59; in Denmark, though, there was an initial drop and rates got higher only in the 80+ group: for instance, 24% of Danish women aged 50-59 were depressed compared to 16% among the 60-69 aged ones and 18% among the women aged 70-79 (see Table 6.18).

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<sup>51</sup> CES-D is in theory also asked in SHARE in a separate drop-off questionnaire. Unfortunately, though, the general drop-off response rate is round two third, which means that almost one older person out of three interviewed did not return by mail the additional questionnaire given to them.

**Table 6.18 Percentage of respondents reporting three or more depressive symptoms, by gender, age-group and country**

Age	50-59		60-69		70-79		80+		Total (N)	
	M	F	M	F	M	F	M	F	Male	Female
<b>DK</b>	15.6	23.8	11.5	16.0	12.9	18.0	21.4	35.5	<b>14.3 (98)</b>	<b>22.1 (185)</b>
<b>N</b>	309	322	227	229	143	184	59	109	738	844
<b>FR</b>	20.5	41.2	23.4	40.2	25.4	39.7	39.2	44.7	<b>24.2 (303)</b>	<b>41.2 (640)</b>
<b>N</b>	523	584	347	408	274	362	104	207	1,248	1,561
<b>IT</b>	21.7	38.7	21.8	37.2	28.1	47.1	47.4	62.9	<b>25.5 (271)</b>	<b>44.0 (569)</b>
<b>N</b>	353	472	416	518	277	268	68	108	1,114	1,366
<b>EN</b>	18.8	25.1	19.4	23.7	19.1	31.5	25.0	34.0	<b>19.6 (1,012)</b>	<b>27.5 (1,712)</b>
<b>N</b>	1,912	2,244	1,599	1,774	1,164	1,386	477	771	5,152	6,175

This table shows the percentages of people who reported three or more symptoms on the depression scale, by age and gender. Whereas data for England is based on the 8-point depression scale CES-D, data for SHARE countries is based on the 12-item EURO-D measurement. Source: ELSA, 2002; SHARE, 2004

Finally, both ELSA and SHARE measured 'Quality of life' using the CASP-19 (Hyde et al., 2003, Wiggins et al., 2004) and the shorter version CASP-12 questionnaire (von Dem Knesebeck et al., 2007) respectively. Both contained questions on four sub-domains of quality of life, i.e. control, autonomy, self-realisation and pleasure. In SHARE, though, these questions were included in the drop-off questionnaire and because of the low response rates (only 54% of the SHARE respondents completed the drop-off questionnaire) and potential selection bias, quality of life was not considered here.

## 6.6 FORMAL, INFORMAL AND FAMILY INVOLVEMENT

The growing interest in the way older people engage outside paid work and contribute to the community and society at large was reflected in both ELSA and SHARE projects which included several questions about activities and social participation.

Unfortunately, though, harmonisation between the ELSA and SHARE questions on formal and informal activities as well as family-related involvement was difficult. Most of the questions addressed to respondents were not the same and when they were either temporal references or the response scales were different. Just to mention some examples, whereas SHARE referred to 'care for a sick or disabled adult', ELSA mentioned 'care for someone'. Moreover, with regards to care and help, whereas SHARE considered both help given and received in and outside the household (personal care, practical household help and help with paperwork), ELSA concentrated only on help received.

Similarly, when inquiring about the frequency of the engagement, whereas SHARE referred to the previous *4 weeks* and used 3 categories of involvement ('almost daily', 'almost every week' or 'less often'), ELSA considered the *year* and therefore answers ranged from 'twice a month or more' to 'less than once a year'. Finally, although the activity domains and categories were similar (training courses, religious and political organisations, volunteering and so on), whereas SHARE investigated actual engagement ELSA explored membership with the consequent impossibility of comparison between questionnaires. Both questions, moreover, were not exempt from criticism: although membership is highly correlated with activity, the former measure might lead to an overestimation of actual engagement; on the other hand, since involvement could be performed on a rather irregular basis, SHARE figures –referring only to the previous month- could underestimate the prevalence of engagement in various activities. Furthermore, SHARE asked whether people had looked after their grandchildren without the presence of their parents whereas this activity was not explicitly mentioned in ELSA. Finally, whereas ELSA explored other social/leisure activities such as 'reading a daily newspaper', 'going to the cinema' or 'going on a trip', such information was not collected in SHARE. As a final remark, activities such as getting together with

friends or just visiting family members to have a chat were not included in either the SHARE or ELSA questionnaires.

For the above mentioned reasons, descriptive statistics about activities other than work are presented separately for the two questionnaires. In this descriptive section all available variables are included, although a more limited range were selected for inclusion in the multivariate analysis presented in Chapter Seven.

### 6.6.1 ACTIVITIES IN SHARE

SHARE respondents were asked whether or not they were involved during the *last month* in the following activities: voluntary or charity work, care for a sick or disabled adult, help to friends and neighbours, attendance at an educational or training course, attendance at a sport, social or other kind of club, participation in a religious or political organisation. For each activity people were engaged with, participants were asked the frequency of the engagement and whether they always received adequate appreciation from others<sup>52</sup>. Nothing was asked about what kind of sport or the organization people had taken part into, the type of activity done or the kind of charity work. Moreover, it is well known that the concept of volunteering, for instance, has different culture-specific definitions and nuances which may have lead to different reporting of participation rates (Anheier and Salamon, 1999, Wilson, 2000, Kendall, 2009); similarly, certain categories such as 'social or sport club' carry different meanings in different countries (Blanchet et al., 2007), as discussed in Chapter Five.

Questions about help and care followed. First, respondents were asked whether in the previous 12 months any family member from outside the household, any friend or neighbour had given them any kind of help (personal care, practical household help or help with paperwork). Then respondents were asked whether in same timeframe (i.e. in the previous year) they had personally given any kind of help to a family member from *outside* the household, a friend or neighbour. For up to three people, respondents were also asked the frequency with which they received or gave 'help altogether'<sup>53</sup> (on a 4-

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<sup>52</sup> For the activities, the responses are 'yes' or 'no' whereas the response options about the appreciation statement are 'Strongly agree', 'Agree', 'Disagree' and 'Strongly disagree'.

<sup>53</sup> It is therefore not possible to distinguish between 'personal care', 'practical household help' and 'help with paperwork'.

point scale –‘Almost daily’, ‘Almost every week’, ‘Almost every month’ or ‘Less often’). Similar questions were then asked about receiving and giving help to members *in* the household: SHARE participants were asked whether there was someone living in this household whom they had helped regularly or from whom they had received help regularly (i.e. daily or almost daily for at least 3 months) with personal care only (i.e. washing, getting out of bed, or dressing). Finally, respondents who had at least one grandchild were asked whether during the last twelve months, they had looked after their grandchild(ren) without the presence of their parents and –if they did- with what frequency of grandchild care (ranging from ‘almost daily’ to ‘less often’ than monthly).

Although SHARE provided information on the frequency of commitment for specific activities, because of the different temporal frames (previous month and previous year), Tables 6.19-21 show only the percentages of people who indicated the listed activities<sup>54</sup>. The proportions of older people who had committed to various activities varied by age, sex and activity. In general, people’s commitment decreased with age. For instance, 21% of Danish men and 17% of Danish women aged 50-59 volunteered compared with 7% of those aged 80+. For specific activities, a gender difference was detectable: the percentage of women looking after grandchildren or giving help (to members either inside or outside the household) was higher than men in all countries and regardless of the age-group considered. Finally, whereas the percentage of people who took part into a religious or political organisation was similar in all countries and for both sexes (with figures ranging between 3% and 6%), differences were observed for attendance at training and educational courses: around 10% of the Danish men attended a course against 1% of French and Italian male respondents. Similarly, 31% of Danish women had gone to a sport, social or other club compared with 18% of French and 4% of Italian women. In general, Danish respondents did more activities than their French and Italian counterparts, regardless of their age and sex with a few exceptions: a higher proportion of French and Italian respondents gave help to household members.

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<sup>54</sup> No distinctions were made between the kind of help or care given or received; similarly, the frequency of engagement was not considered in these summary tables.



**Table 6.19 Involvement in other activities, by age-group and sex –Denmark**

	Activities	Age				Total (N)	Eligible Total N
		50-59	60-69	70-79	80+		
<b>Men</b>	Voluntary or charity work	21.2	18.4	18.7	6.6	18.7 (140)	746
	Care for a sick or disabled adult	6.1	4.3	3.0	7.1	5.1 (38)	746
	Help to family/friends/neighbours	42.5	38.8	19.6	11.4	34.7 (261)	746
	Attended training course	16.8	7.0	1.4	1.3	9.8 (69)	746
	Gone to a sport/social/other club	30.6	32.1	30.2	24.5	30.5 (231)	746
	Taken part in a religious org.on	2.8	3.6	5.6	9.2	4.1 (31)	746
	Taken part in a political org.on	6.3	7.6	9.8	-	6.8 (49)	746
	Received help from outside HH*+	27.3	26.2	26.9	26.0	26.8 (144)	552
	Given help to outside the HHold members*	60.1	47.7	43.6	17.8	49.9 (371)	749
	Received personal help from inside the household* ^ ✓	6.6	4.7	10.9	14.4	7.8 (12)	174
	Given help to inside the HHold members* @	3.5	2.9	5.2	2.6	3.6(19)	581
	Looked after grandchild(ren) * ●	63.0	67.3	36.5	8.0	51.8 (237)	461
<b>TOTAL</b>	<b>312</b>	<b>228</b>	<b>145</b>	<b>64</b>			
<b>Women</b>	Voluntary or charity work	16.6	18.7	19.9	7.4	16.5 (144)	848
	Care for a sick or disabled adult	8.2	6.1	3.0	2.9	5.9 (47)	848
	Help to family/friends/neighbours	47.4	27.6	19.6	5.5	30.5 (266)	848
	Attended training course	20.8	4.7	8.2	0.8	11.0 (87)	848
	Gone to a sport/social/other club	32.0	36.5	31.4	18.9	31.3 (271)	848
	Taken part in a religious org.on	5.0	4.2	8.4	5.8	5.6 (50)	848
	Taken part in a political org.on	5.1	1.5	4.0	0.8	3.3 (28)	848
	Received help from outside HH*+	35.5	29.2	39.1	52.1	37.7 (233)	615
	Given help to outside the HHold members*	59.3	46.6	34.1	10.5	43.9 (378)	853
	Received personal help from inside the household* ^ ✓	10.4	2.3	1.7	21.4	7.0 (18)	210
	Given help to inside the HHold members* @	3.0	4.5	3.1	22.8	4.5 (25)	523
	Looked after grandchild(ren) * ●	79.8	81.4	33.3	2.5	58.1 (354)	604
<b>TOTAL</b>	<b>328</b>	<b>228</b>	<b>186</b>	<b>111</b>			

This table shows the percentage of Danish older people who did the listed activities by age-group and gender. Each cell then indicates the percentage of either men or women in a specific age-group who did a specific activity. Notes: \* indicates an activity done in the last twelve months; + this question is only asked to the family respondent and not to all eligible household members; ^ indicates an activity asked only to participants living in a household with more than 1 person; ✓ indicates that the question was only asked to people living with someone and who reported no difficulty with mobility; ● indicates that the question was only asked to respondents who had at least one living grandchild. Source: SHARE, 2004; Bases vary; the age-group totals shown are for all SHARE sample members for the highest row total.

**Table 6.20 Involvement in other activities, by age-group and sex –France**

		Age						
	Activities	50-59	60-69	70-79	80+	Total (N)	Eligible Total N	
Men	Voluntary or charity work	16.7	25.3	10.9	9.4	17.1 (220)	1,273	
	Care for a sick or disabled adult	5.0	4.9	5.1	1.8	4.7 (59)	1,273	
	Help to family/friends/neighbours	31.9	27.9	18.7	10.4	25.8 (341)	1,273	
	Attended training course	5.4	4.7	1.0	-	0.4 (50)	1,273	
	Gone to a sport/social/other club	16.6	24.0	22.3	10.5	19.3 (240)	1,273	
	Taken part in a religious org.on	3.8	6.0	5.2	10.4	5.4 (66)	1,273	
	Taken part in a political org.on	8.1	4.2	2.5	-	5.0 (63)	1,273	
	Received help from outside HH*+	7.2	10.8	15.1	38.1	13.3 (123)	941	
	Given help to outside the HHold members*	34.1	31.1	21.3	7.9	27.8 (373)	1,306	
	Received personal help from inside the household* ^ ✓	10.9	10.3	16.4	23.6	14.5 (55)	405	
	Given help to inside the HHold members* @	3.4	5.5	6.4	6.6	4.9 (55)	1,107	
	Looked after grandchild(ren) * ●	54.2	60.5	40.1	16.8	47.3 (359)	751	
	<i>TOTAL</i>		549	356	289	112		
	Women	Voluntary or charity work	12.3	16.0	11.6	6.7	12.2 (198)	1,595
Care for a sick or disabled adult		8.7	9.0	8.1	4.4	7.9 (128)	1,595	
Help to family/friends/neighbours		31.6	30.2	19.3	6.6	24.1 (409)	1,595	
Attended training course		9.0	2.4	1.6	0.9	4.2 (72)	1,595	
Gone to a sport/social/other club		16.8	18.0	19.7	17.0	17.9 (279)	1,595	
Taken part in a religious org.on		4.1	5.9	6.6	6.2	5.5 (87)	1,595	
Taken part in a political org.on		4.2	1.9	0.5	-	2.2 (35)	1,595	
Received help from outside HH*+		13.6	15.1	28.7	60.2	27.5 (293)	1,111	
Given help to outside the HHold members*		38.2	33.6	22.2	9.5	28.4 (477)	1,621	
Received personal help from inside the household* ^ ✓		3.5	5.8	12.5	35.1	10.7 (59)	589	
Given help to inside the HHold members* @		4.7	6.1	11.9	14.3	7.4 (81)	1,097	
Looked after grandchild(ren) * ●		73.0	69.6	36.3	8.4	49.8 (546)	1,046	
<i>TOTAL</i>			602	420	376	223		

This table shows the percentage of French older people who did the listed activities by age-group and gender. Each cell then indicates the percentage of either men or women in a specific age-group who did a specific activity. Notes: \* indicates an activity done in the last twelve months; + this question is only asked to the family respondent and not to all eligible household members; ^ indicates an activity asked only to participants living in a household with more than 1 person; ✓ indicates that the question was only asked to people living with someone and who reported no difficulty with mobility; ● indicates that the question was only asked to respondents who had at least one living grandchild. Source: SHARE, 2004; Bases vary; the age-group totals shown are for all SHARE sample members for the highest row total.

**Table 6.21 Involvement in other activities, by age-group and sex –Italy**

		Age					
	Activities	50-59	60-69	70-79	80+	Total (N)	Eligible Total N
Men	Voluntary or charity work	7.2	9.4	6.2	2.5	7.3 (79)	1,113
	Care for a sick or disabled adult	2.6	2.5	-	1.0	1.8 (24)	1,113
	Help to family/friends/neighbours	14.4	11.6	4.6	5.3	10.5 (114)	1,113
	Attended training course	0.9	0.4	0.3	-	0.5 (7)	1,113
	Gone to a sport/social/other club	7.8	12.5	6.5	2.4	8.5 (94)	1,113
	Taken part in a religious org.on	4.3	3.9	1.5	1.4	3.4 (35)	1,113
	Taken part in a political org.on	4.2	2.3	2.8	-	2.9 (33)	1,113
	Received help from outside HH**	16.3	12.9	8.4	40.0	15.7 (100)	775
	Given help to outside the HHold members*	30.5	23.1	12.6	14.7	22.7 (238)	1,115
	Received personal help from inside the household* ^ ✓	13.9	5.7	12.4	31.5	12.9 (52)	432
	Given help to inside the HHold members* @	6.5	6.7	6.9	9.8	6.9 (76)	1,024
	Looked after grandchild(ren) * ●	30.0	43.6	32.58	14.73	33.0 (190)	558
	<i>TOTAL</i>		351	417	278	69	
Women	Voluntary or charity work	7.8	9.8	4.4	0.7	6.5 (89)	1,372
	Care for a sick or disabled adult	7.4	2.7	2.1	-	3.6 (54)	1,372
	Help to family/friends/neighbours	21.8	15.9	9.2	1.5	14.0 (208)	1,372
	Attended training course	3.3	0.9	0.6	-	1.5 (19)	1,372
	Gone to a sport/social/other club	6.2	4.8	2.9	-	4.1 (50)	1,372
	Taken part in a religious org.on	7.0	6.7	7.8	0.6	6.2 (88)	1,372
	Taken part in a political org.on	3.6	0.7	0.6	1.2	1.6 (18)	1,372
	Received help from outside HH**	13.5	14.9	25.9	41.5	22.1 (181)	1,037
	Given help to outside the HHold members*	34.3	27.3	17.1	3.5	23.4 (344)	1,375
	Received personal help from inside the household* ^ ✓	7.7	7.9	19.0	44.4	15.8 (93)	665
	Given help to inside the HHold members* @	9.0	8.3	10.6	17.6	9.9 (125)	1,167
	Looked after grandchild(ren) * ●	58.3	61.8	33.4	6.9	41.9 (372)	801
	<i>TOTAL</i>		473	520	273	109	

This table shows the percentage of Italian older people who did the listed activities by age-group and gender. Each cell then indicates the percentage of either men or women in a specific age-group who did a specific activity. Notes: \* indicates an activity done in the last twelve months; + this question is only asked to the family respondent and not to all eligible household members; ^ indicates an activity asked only to participants living in a household with more than 1 person; ✓ indicates that the question was only asked to people living with someone and who reported no difficulty with mobility; ● indicates that the question was only asked to respondents who had at least one living grandchild. Source: SHARE, 2004; Bases vary; the age-group totals shown are for all SHARE sample members for the highest row total.

### 6.6.2 ACTIVITIES IN ELSA

In the 'Work and Pension' module, respondents were initially asked whether in the month prior to the interview they did voluntary work, cared for anyone<sup>55</sup> and attended a formal educational or training course. In the self-completion section of the interview, respondents were asked whether they were members of any of the following organisations: political party, trade union or environmental groups; tenants' groups or residents' groups; neighbourhood watch; religious groups; charitable associations; education, art or music groups or evening classes; social club; sports clubs, gym or exercise classes; or any other. In the same section, they were asked whether they were involved in social and civic activities<sup>56</sup>.

Overall, women younger than 80 were more likely than men to report volunteering, caring for a disabled person, looking after someone and attending training courses. The younger the age, the bigger was the difference between men and women: for instance, 26% of English women aged 50-59 looked after someone compared with 15% of men; among 70-79 year old people, 17% looked after someone against 16% of men. The proportion of older people who were members of an organisation varied by age, sex and type of organisation. For membership of a church or religious organisations, for instance, there was an increasing trend by age for both sexes. See Table 6.22 for full details.

Participation in cultural activities declined dramatically as age increased. For instance, whereas 42% of men and 45% of women aged 50-59 went to the cinema more than once in a year, among those aged 80+ percentages went down to 7% and 10% respectively. Clear declines in participation were observable also for having hobbies, taking holidays and outings. An increase in participation was, on the contrary, evident when rates of people who voted and read a daily newspaper were considered (see Table 6.A9).

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<sup>55</sup> Respondents were asked whether they have looked after anyone in the *week prior to the interview*, including partners or other people in your household; if so, respondents were then asked the relationship to the recipient of care as well as the number of hours of commitment.

<sup>56</sup> Respondents were asked whether they voted in the last general election, read a daily newspaper, had a hobby, had been on a holiday in the UK in the last 12 months, had been on a holiday abroad in the last 12 months, had been on a day trip in the last 12 months, used email or the Internet, and had a mobile phone. Finally, ELSA respondents were asked how often –if at all - they went to the cinema, ate outside the house, went to a museum or art gallery and went to the theatre or opera. For each activity, respondents said whether they went more than twice a month, once or twice a month, a couple of times a year, once a year, less than once a year, or never.

**Table 6.22 Activities and Organisational memberships, by age-group and sex – England**

		Age					
	Activities	50-59	60-69	70-79	80+	Total (N)	Eligible Total N
<b>Men</b>	Voluntary or charity work+	8.6	11.4	12.7	6.9	10.1 (543)	5,186
	Care for sick/disabled adult+	8.8	7.3	7.2	4.7	7.6 (396)	5,186
	Attended training course+	7.5	3.6	1.9	1.0	4.6 (238)	5,186
	Look after anyone (past week)	15.0	16.3	15.6	12.8	15.2 (778)	5,104
	Member of political party*	23.5	16.3	14.0	15.9	18.8 (830)	4,530
	Member of tenants group*	14.7	20.2	22.6	19.7	18.4 (852)	4,530
	Member of religious group*	11.5	16.2	21.5	22.8	15.9 (735)	4,530
	Member of charitable ass.on*	15.3	15.6	15.8	14.0	15.4 (706)	4,530
	Member of educational classes*	9.1	10.7	9.5	4.4	9.3 (435)	4,530
	Member of social club*	22.2	26.3	26.0	23.1	24.3 (1,111)	4,530
	Member of sport club*	22.3	18.5	14.3	9.2	18.5 (833)	4,530
	Member of other clubs*	29.1	26.7	24.1	21.4	26.7 (1,226)	4,530
		<b>TOTAL</b>	1,916	1,611	1,174	485	
<b>Women</b>	Voluntary or charity work+	11.0	16.6	13.0	5.8	12.3 (794)	6,205
	Care for sick/ disabled adult+	14.6	12.5	7.8	3.0	10.8 (682)	6,205
	Attended training course+	11.4	4.7	2.0	0.8	5.9 (385)	6,205
	Look after anyone (past week)	26.3	25.9	16.6	8.5	21.4 (1,325)	6,118
	Member of political party*	15.2	8.8	9.5	9.1	11.4 (613)	5,340
	Member of tenants group*	15.6	20.8	19.4	16.8	18.1 (985)	5,340
	Member of religious group*	17.7	27.2	29.9	35.9	25.3 (1,334)	5,340
	Member of charitable ass.on*	19.4	20.9	17.9	19.0	19.5 (1,055)	5,340
	Member of educational classes*	17.3	18.7	13.8	8.5	15.9 (882)	5,340
	Member of social club*	15.2	20.1	19.5	22.4	18.4 (977)	5,340
	Member of sport club*	24.6	22.4	12.2	5.3	18.9 (1,030)	5,340
	Member of other clubs*	19.8	22.4	19.7	17.6	20.3 (1,109)	5,340
		<b>TOTAL</b>	2,250	1,787	1,391	777	

This table shows the percentage of English older people who did the listed activities by age-group and gender. Each cell then indicates the percentage of either men or women in a specific age-group who did a specific activity. Notes: Memberships (\*) have no temporal references; + indicates activities in the prior month whereas 'look after someone' refers to the week before. Source: ELSA, 2002.

## 6.7 CONCLUSION

Findings showed expected variations by age and sex in most of the variables considered. For instance, in all countries, men reported better health and were less likely to report at least three depressive symptoms than women. Similarly, the proportion of older people living alone was higher among women, particularly in older age groups. Moreover, the proportion of respondents reporting functional limitations and at least two chronic diseases increased with age in all subpopulations under study. Findings also pointed to large differences between countries, particularly when variables such as education, paid work and self-rated health were considered. Just as a few examples, Danish respondents –both men and women –had higher levels of education compared to French, Italian and English respondents. Italian and French people exited the labour force at earlier ages than in Denmark and England; also, the proportion of Italian women in paid work was much smaller than that of female respondents in the other countries. Similarly, the proportion of Danish men and women who reported their health as excellent was respectively three and four times higher than in France and Italy.

Initial low response rates have had some negative effect on the representativeness of the datasets; using calibration weights provided by the ELSA and SHARE teams partly compensates for nonresponse bias. Both surveys were no exception to the common pattern of non-response: younger respondents (particularly men and people in paid work) were under-represented. The few health-related indicators considered also suggested that people ‘in good health’ may have been over-represented. Data was not fully representative of the countries and therefore the generalization of the findings might not hold had the non-respondents also been included in the sample. Moreover, given that this research study investigates the relationships between health and engagement, non-response bias is a potential limitation of this study to be considered throughout the analysis and the interpretations of the findings. Additionally, France, Italy and England included only respondents in private households. Given that the proportions of people resident in communal establishments such as residential and nursing homes are higher in England and France than Italy, this might bias statistics particularly among older women. However, this source of bias is likely only to be

important in the oldest age-groups (80+) as proportions in younger age groups in institutions are very low (Coleman, 2003).

It is also important to bear in mind that whereas for most health-related, socio-economic and demographic variables the two questionnaires are fully comparable, when analysing activities and participation, unfortunately, ELSA and SHARE asked the very same set of questions only about paid work. Participation in other activities was, on the other hand, not fully comparable and therefore, given the different questions and timeframes they refer to, some practical compromises were necessary when setting the stage for the analyses as described in the following chapter.

## **7. HOUSEHOLD AND PERSONAL CHARACTERISTICS OF OLDER PEOPLE WHO ENGAGE IN WORK, FORMAL, INFORMAL AND FAMILY ACTIVITIES**

This chapter aims to explore the personal and household characteristics which are associated with engagement of older people in each of the four different countries under study – Denmark, France, Italy and England – in each of the three main activities considered (specifically work, formal activities, informal and family-related activities). Cross-sectional analyses are presented separately for each activity and country. Finally, only people aged 50-69 with full records are considered in the following analyses because participation rates are particularly low among people older than 70, especially when paid work is considered (see 6.2.1 and 6.5 for more details on participation rates).

### **7.1 ACTIVITIES AND THEIR DETERMINANTS**

Given that the holistic definition of ‘active ageing’ includes continuing participation in a number of different domains (Hutchison et al., 2006) which go beyond ‘employment and participation in economically productive activities’ to also incorporate ‘community participation’ and other meaningful activities common among older people which contribute to their personal well-being and quality of life, 3 major areas of involvement were considered: *labour market participation*, *participation in formal activities* and *participation in informal and family-related activities*.

Many factors can contribute to the decision to engage in the various forms of activities, including personal health situation, family responsibilities, the interaction of choices within couples, the satisfaction gained from such engagement or working conditions as well as the availability of social security and early retirement pathways (Gollac and Volkoff, 2000, Debrand and Lengagne, 2007, Künemund and Kolland, 2007), as described in the following sections.



### **7.1.1 LABOUR MARKET PARTICIPATION**

Participation in the labour market may depend on a number of different household and personal factors including respondents' health characteristics. Household and family factors are relevant as family responsibilities (such as having parents, partners or other kin members in need of assistance) could lead people to reduce paid work, especially where family-oriented norms and traditions are strong and social services are lacking or are limited. Participation in the workforce, then, could also be affected by the extent to which older people have to supply informal care to their elderly parent(s), particularly among women (Dentinger and Clarkberg, 2002a, Pavalko and Henderson, 2006, Bolin et al., 2008). Moreover, married couples may decide on retirement/work decisions based on each other's health (Gotlibovski and Weiss, 2008) and work status (Coile, 2004). For instance, Gotlibovski and Weiss (2008) found that when facing health problems, the members of the couple tend to react in different ways: "the husband reacts to his wife's illness by raising his work and the wife reacts to her husband's sickness by reducing her work" (pg. 81). Similarly, kin obligations to other family members, such as children living at home, may be associated with parents' labour participation (Cohen and Bianchi, 1999, Szinovacz et al., 2001, Raymo and Sweeney, 2006a, b), although with differences across countries (Manacorda and Moretti, 2006, Becker et al., 2010).

Personal socio-demographic and economic characteristics are also hypothesised to be associated with working status. For example, age affects pension eligibility. Similarly, education has an impact on age of entry to the labour market and type of job and is therefore expected to be associated with working status; people with higher education are more likely to have better quality jobs and are therefore more likely to remain engaged in paid work longer (Gollac and Volkoff, 2000, Blanchet and Debrand, 2007, Debrand and Lengagne, 2007, Siegrist et al., 2007). In the cohorts under study, education level itself was influenced by gender which in turn may have had an impact on work status because of the identification of women as the main family caretakers (and men as bread-winners) (Szinovacz et al., 2001, Dentinger and Clarkberg, 2002b).

Finally, health characteristics may be associated with participation in the labour market (Barnay and Debrand, 2006, Siegrist et al., 2007): for instance, people who are

depressed might be more likely to be out of work; similarly, people who experience difficulties in every-day activities or mobility are hypothesised to be less likely to be formally employed, both because these characteristics make it harder to find and retain employment and possibly because unemployment may contribute to depression or other forms of ill health (Bartley, 1994, Gallo et al., 2000, Thomas et al., 2005, Alavinia and Burdorf, 2008).

### **7.1.2 FORMAL, INFORMAL AND FAMILY PARTICIPATION**

A number of authors stressed the importance of societal context, governmental policies as well as values and expectations (Mendes de Leon et al., 2001, Salamon and Sokolowski, 2001, Erlinghagen and Hank, 2006, Hank, 2010, Hank and Erlinghagen, 2010) in shaping both informal and formal participation. It is believed that older people's level of commitment depends on the societal values people attach to such experiences and the personal benefits they gain from it (Van Willigen, 2000). Informal and formal activities are culture specific (Zunzunegui et al., 2004) but also vary within country by socio-economic position, gender and physical functioning (Unger et al., 1999, Grundy and Holt, 2001, Grundy and Sloggett, 2003). In particular, household characteristics are expected to be associated with both informal and family activities: it is believed that older people living with other family members, having at least one child still living in the household as well as having living parents (particularly if in bad health) are more likely to end up helping or caring for other kin members in and outside the household. Similarly, the area of residence of respondents could impact on their participation. For example, living in rural areas or small settlements may be associated with greater informal participation but fewer opportunities for engagement in formal activities (Smith, 1994). Also demographic characteristics such as age and sex might be associated with formal, informal and family participation. It is hypothesised that the gender of older people (and the responsibilities and obligations attached to it) could influence informal participation over the formal one, especially in those countries where care is considered a family obligation and responsibility (Herzog and Morgan, 1992, Dentinger and Clarkberg, 2002b, Raymo and Sweeney, 2006a, Burr et al., 2007, Kohli et al., 2009). Finally, health conditions such as depression and functional limitation

could be associated with lower levels of participation in the above mentioned activities (Hao, 2008).

### **7.1.3 ACCUMULATION OR COMPETITION BETWEEN PARTICIPATION IN FORMAL OR INFORMAL ACTIVITIES AND EMPLOYMENT STATUS**

It is hypothesised that people less involved in formal employment may be more active in other spheres of participation since they have more time to dedicate to them. However, it could also be argued that family and informal involvement might compete with more formal participation: retired people (who have therefore been formally involved in the society at some point in their life) might for example be more likely to engage in formal activities rather than informal or family ones whereas those who never formally engaged might be more likely to engage in informal and family-related activities (Hank and Stuck, 2008, Kohli et al., 2009). Older people who retire can take up a new activity in order to compensate for the loss of previous active roles or give up activities due to time or physical constraints. Family responsibilities may constrain women's involvement in nonfamily roles such as paid or charity work, though some studies suggested that particularly women appear to add family responsibilities without cutting back on work (Tomassini et al., 2004b, Glaser et al., 2005). Older people can in fact opt for multiple complementary activities performed in parallel (Van Willigen, 2000, Hank and Stuck, 2008).

## **7.2 METHODS**

### **7.2.1 SAMPLE**

Results in this chapter are based on cross sectional analyses of data from the 2004 Survey of Health, Ageing, and Retirement in Europe (SHARE) for Denmark, France and Italy and from the 2002 baseline wave of the English Longitudinal Study of Ageing (ELSA) for England. Analyses were restricted to respondents aged 50-69 who had complete cases, with no missing values in any of the variables considered in the multivariate analyses. Differences in the number of observations considered, where observable, were due to item non-response.

## 7.2.2 MEASURES

### OUTCOME MEASUREMENTS AND DESCRIPTIVE TABULATIONS

*Work* – people were classified as workers if they described their current situation as “Employed or self-employed (including working for family business)” and if they were not “temporarily away from any work, including seasonal work”, as it was thought most appropriate to include only those with a current commitment to labour market activity.

*Formal social involvement* – This was conceptualised and defined to include non-kin social activities linked to some kind of formalised association or group and formally organised, performed within an established structure with a regular and routine schedule. Formal social involvement thus included organised voluntary work; attendance at training courses, and participation in political organisations, religious organisations or sport, social or other kind of clubs. Although most studies tend to focus on volunteering, it was decided to be as inclusive and holistic as possible and therefore to consider a wider range of the activities which older can theoretically enjoy. Grouping such a variety of different activities together was possible since no underlying model or ‘hierarchy of activities’ is explicit and no a priori assumptions were made about the correlation between activities: It was therefore assumed that all activities have the same weight and importance. In SHARE countries, the formal social involvement variable is coded 1 if the respondent reported active participation in at least one of the above-mentioned activities almost *every week or more often* during the month prior to the interview<sup>57</sup>. For ELSA respondents, only those who volunteered or attended a training course in the month prior to the interview are coded as 1<sup>58</sup>. In this case, the frequency of

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<sup>57</sup> SHARE questionnaire specifically asks respondents “Have you done any of these activities in the last month? 1. Done voluntary or charity work; 4. Attended an educational or training course; 5. Gone to a sport, social or other kind of club; 6. Taken part in a religious organization (church, synagogue, mosque etc.); 7. Taken part in a political or community-related organization”. For each of the activities, in case of an affirmative answer, the respondents are then asked “How often in the last four weeks did/have you /Do voluntary or charity work/ Attended an educational or training course/ Go to a sport, social or other kind of club/ Taken part in a religious organization (church, synagogue, mosque etc.)/ Taken part in a political or community-related organization? 1. Almost daily; 2. Almost every week; 3. Less often.

<sup>58</sup> ELSA respondents are asked in the Work and Pensions Module “Did you do any of these activities during the last month, that is since [date a month ago]? 3. Voluntary work; 6. Attended a formal educational or training course”.

engagement was not considered<sup>59</sup> because the corresponding questions did not consider any specific temporal frame; it was also decided to not define as 'active' people who were just members of charitable, religious or social organisations because no information was available on frequency of participation in activities and membership alone does not necessarily indicate active participation. Since among the major scope of this research project is the assessment of whether more engaged people have better health to start with and whether they experience lower health declines over time, it seems reasonable to only consider people who are actively involved on a regular basis. Active engagement is meant as both an opportunity as well as a commitment which demands time and energy and helps people structure their day (Deeming, 2009).

*Informal and family-related participation* – this indicator represents engagement in activities which involve family members and are done in a more casual and less structured way. In SHARE, these activities include providing care for sick or disabled adults, help to family, friends or neighbours and others from outside the household; help to other household members, and looking after grandchildren without the presence of their parents. The informal and family-related participation indicator is coded 1 if the SHARE respondent reported that they did at least one of the above-listed activities almost every week or more often<sup>60</sup>. Introducing the *at least weekly* frequency allows comparisons with formal social activities, otherwise problematic since most of the

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59 In ELSA questionnaire, respondents are asked "how often –if at all- do you do any voluntary work?" but there is no specific reference to any temporal frame: declaring to volunteer more than twice per month does not necessarily entail that the specific month prior to the interview the respondent volunteered that often.

60 To construct the indicator of informal and family engagement, a series of questions are considered. In particular, the following are taken into account: "Have you done any of these activities in the last month? 2. Cared for a sick or disabled adult; 3. Provided help to family, friends or neighbors". If so, was it "1. Almost daily; 2. Almost every week or 3. Less often". In the Social participation module, respondents are also asked "In the last twelve months, have you personally given any kind of help (i.e. personal care, practical household help, help with paperwork) to a family member from outside the household, a friend or neighbour?" and in case of an affirmative answer they are then asked "In the last twelve months, how often altogether have you given such help? Was it... 1. Almost daily 2. Almost every week 3. Almost every month 4. Less often". SHARE questionnaire also specifically asks "During the last twelve months, have you regularly or occasionally looked after [your grandchild/your grandchildren] without the presence of the parents?" If so, "On average, how often did you look after the child(ren) of [child name] in the last twelve months? Was it 1. Almost daily; 2. Almost every week; 3. Almost every month; 4. Less often. Finally, respondents are asked: "Is there someone living in this household whom you have helped regularly (i.e. daily or almost daily) during the last twelve months with personal care, such as washing, getting out of bed, or dressing?"

family-related activities refer to the year preceding the interview (rather than the month). For ELSA respondents, it was decided to only include those who reported that they cared for someone sick or disabled in the last month and those who cared for anyone in the past week, despite the discrepancy in time frame<sup>61</sup>.

### **Descriptive tabulations: Paid Work**

Bearing in mind the different definitions of formal and informal indicators, Tables 7.1-7.3 show the percentage of people who were actively involved in the above-described activities by age and sex. Table 7.1 shows the percentage of people who describe themselves as workers and shows large variations by country, gender and age group. Half of the female Danish sample were working compared with only 21% of Italian women. Similarly, almost 60% of the Danish men work compared to 54% of English men, 47% of French men and 40% of Italian male respondents. Differences between countries for both men and women are even more striking as age increases: whereas more than 80% of French, English and Danish men aged 50-54 work, less than 10% of French men aged 60-69 work compared to more than 31% of Danish male respondents and more than a quarter of English men (see Table 7.1 for more details). Differences between countries are evident among women also at younger ages: two third of Danish women aged 55-59 work compared to 56% in England and France and one quarter of the Italian female population.

### **Formal Activities**

Table 7.2 shows the percentage of people who were involved in formal activities. Differences between countries are noticeable (for instance, in all age groups Danish respondents consistently had participation rates between two and three times higher than those of the Italians). Differences by age were minor, although rates are slightly higher in the older age groups among SHARE respondents. In all countries considered, there was also little variation in formal participation by gender, though English women seem to report higher rates of formal involvement compared to men in all age groups. These

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<sup>61</sup> ELSA family and informal engagement was assessed considering the following questions: "Did you do any of these activities during the last month? 4 Cared for a sick or disabled adult"; and "Did you look after (i.e. actively provided care for) anyone in the past week (including your partner or other people in your household)?"

differences between European countries confirm that civic participation is highly dependent on country-specific societal context, the available opportunities as well as values and expectations of what is socially appropriate (Salamon and Sokolowski, 2001, Erlinghagen and Hank, 2006).

#### **Informal and Family-related activities**

Table 7.3 shows the percentage of people who were involved in informal and family-related activities by age group, gender and country. In all countries, women tend to be more involved than men in informal and family-related activities in all age-groups considered, though the gap between genders is not similar in all countries: for instance, in Italy only 29% of men were involved in family and informal activities compared with more than 47% of women whereas in Denmark 37% of men and 44% of women are informally engaged. The pattern of involvement by age varies by gender; whereas among men this seems to be u-shaped, with a decrease of informal involvement in the 55-59 age-group, among women the trend seems more linear and stable.

#### **Accumulation of activities**

Table 7.4 shows the distribution of the respondents engaged in all the possible combinations of activities by gender and country. Interestingly, in all countries under study between 17% (Denmark) and 35% (Italy) of the respondents were not engaged in any of the above-mentioned activities; such category represents the highest proportion of respondents among Italian respondents, French and English women. On the opposite extreme, only between 7% (Denmark) and 2% (Italy and England) of the samples reported to be engaged simultaneously in paid work, formal and informal activities. Excluding the two extreme cases, the majority of the samples were engaged mainly with paid work only, with smaller proportions of respondents who combined work with any other activities. At the same time, the percentages of people engaged only in either formal or informal activities were generally higher than the proportion of respondents who combined either of them with work. For instance, 19% of the French women were engaged only in informal activities whereas 13% were engaged in both work and informal activities. A few exceptions to these trends were observed: among Danish respondents, the percentages of workers who also participated in either formal or

informal activities were higher than those only formally or informally engaged. Moreover, among French and Italian women, almost 20% and 33% of respondents were engaged only in informal activities, category which represented the second highest after 'no engagement'.

**Table 7.1 Percentage of people aged 50-69 in paid work, by age-group, sex and country**

	50-54		55-59		60-69		Total (N)	
	M	F	M	F	M	F	Male	Female
<b>Denmark</b>	80.8	80.8	72.6	67.6	31.3	16.5	<b>58.4 (314)</b>	<b>49.5 (276)</b>
<i>N</i>	169	152	144	176	228	229	541	557
<b>France</b>	83.6	68.3	62.0	56.0	9.7	10.4	<b>46.8 (425)</b>	<b>40.2 (415)</b>
<i>N</i>	274	289	276	314	360	421	910	1,024
<b>Italy</b>	76.6	47.9	49.4	26.5	16.0	5.7	<b>39.9 (270)</b>	<b>21.2 (177)</b>
<i>N</i>	126	199	226	274	419	522	771	995
<b>England</b>	80.7	70.4	69.0	55.7	26.8	15.4	<b>54.5 (1,847)</b>	<b>42.4 (1,667)</b>
<i>N</i>	896	1,085	1,020	1,165	1,611	1,786	3,527	4,036

Sources: Denmark, France and Italy data obtained from SHARE; English data obtained from ELSA. Data refer to 2004 and 2002 respectively. Own calculations

**Table 7.2 Percentage of people aged 50-69 involved in formal activities, by age-group, sex and country**

	50-54		55-59		60-69		Total (N)	
	M	F	M	F	M	F	Male	Female
<b>Denmark</b>	36.4	34.2	34.8	35.7	39.0	41.1	<b>37.1 (200)</b>	<b>37.6 (207)</b>
<i>N</i>	167	151	143	175	228	228	538	554
<b>France</b>	23.8	22.5	26.8	25.5	34.9	24.0	<b>29.3 (251)</b>	<b>24.1 (243)</b>
<i>N</i>	267	283	268	308	349	416	884	1,007
<b>Italy</b>	12.5	13.8	8.00	14.1	15.9	14.1	<b>12.5 (100)</b>	<b>14.0 (124)</b>
<i>N</i>	125	199	226	273	417	521	768	993
<b>England</b>	15.3	18.5	13.2	19.8	14.2	18.9	<b>14.1 (503)</b>	<b>19.1 (786)</b>
<i>N</i>	896	1,085	1,020	1,165	1,611	1,786	3,527	4,036

Source: Denmark, France and Italy data obtained from SHARE; English data obtained from ELSA. Data refer to 2004 and 2002 respectively. Own calculations



**Table 7.3 Percentage of people aged 50-69 involved in informal and family-related activities, by age-group, sex and country**

	50-54		55-59		60-69		Total (N)	
	M	F	M	F	M	F	Male	Female
<b>Denmark</b>	39.6	43.1	32.1	41.3	37.6	45.1	<b>36.8 (200)</b>	<b>43.4 (241)</b>
<i>N</i>	167	152	144	176	228	228	539	556
<b>France</b>	36.0	37.1	27.8	50.5	35.1	46.9	<b>33.1(302)</b>	<b>45.3 (460)</b>
<i>N</i>	270	284	269	310	351	417	890	1,011
<b>Italy</b>	29.1	40.9	22.3	50.7	33.3	47.8	<b>28.9 (236)</b>	<b>47.1 (483)</b>
<i>N</i>	125	199	225	273	417	520	767	992
<b>England</b>	17.8	28.4	16.3	31.0	17.7	28.3	<b>17.3 (613)</b>	<b>29.1 (1,160)</b>
<i>N</i>	896	1,085	1,020	1,165	1,611	1,786	3,527	4,036

Source: Denmark, France and Italy data obtained from SHARE; English data obtained from ELSA. Data refer to 2004 and 2002 respectively. Own calculations

**Table 7.4 Percentage distribution of the engagement in the combination of the three forms of activities, by gender and country**

	Denmark		France		Italy		England	
	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>
No Activities	16.9	17.7	24.7	25.7	37.2	35.1	32.4	32.9
Only paid work	23.6	20.7	25.8	18.0	26.0	11.4	39.2	25.4
Paid Work & Formal Engagement	13.9	9.4	6.9	4.9	3.1	1.6	5.4	5.5
Paid Work & Informal Engagement	14.4	12.4	9.2	12.9	9.2	6.4	6.3	8.0
Only Formal Engagement	8.8	8.8	9.4	6.1	4.7	4.8	5.6	7.5
Only Informal Engagement	8.0	11.6	11.1	19.3	14.9	33.0	7.8	14.3
Formal & Informal Engagement	7.9	12.4	8.0	8.6	3.2	5.8	1.9	4.0
Paid Work & Formal & Informal	6.5	7.0	4.9	4.5	1.7	1.9	1.4	2.4

Source: Denmark, France and Italy data obtained from SHARE; English data obtained from ELSA. Data refer to 2004 and 2002 respectively. Own calculations

The differences apparent in these tables were investigated further using multivariate logistic regressions in which associations between the outcome measures and a range of socio-demographic and health indicators were analysed.

### CO-VARIATES

*Demographic characteristics.* — Age was grouped into either three (50-54; 55-59; 60-69) or four (50-54; 55-59; 60-64; 65-69) categories depending on the activity considered. In order to facilitate comparisons between countries and subpopulations it was decided not to further split the 60-69 age-group when labour market participation was considered: in this case, in fact, the proportion of people working after 60 is small

in some subpopulations and almost equal to zero after the age of 65. Although retirement policies determine official pension ages (see Chapter 3), 60 is the median effective age at which older European male and female workers withdraw from the labour force (Romans, 2007). As regards education, qualifications were re-coded to three categories representing low, mid and high education using the ISCED classification (UNESCO - UIS, 2006). The presence of children in the household was dichotomised (y/n) as 1 if at least one child or child-in-law (regardless of their age) still lived in the household and 0 otherwise. Marital status was dichotomised into living with a spouse/partner or not. In the analysis of participation in informal and family-related activities, other variables were derived indicating whether the respondent lived alone, whether their parents were still alive, whether if alive they were in good health or not. Additionally, a categorical variable indicating the health status of co-residents aged over 50 was constructed distinguishing those who lived with other older members who rated their health as good or better and those who rated it as less than good<sup>62</sup>. Finally, the area of residence was dichotomised into 'urban' and 'rural'<sup>63</sup> on the basis of respondents' reports.

*Economic Characteristics.* — A dummy variable indicating 'mortgage free house ownership' was included as it was hypothesised that people who have to pay monthly a rent or a mortgage might be more likely to work. It was decided not to use equivalised income available to the household since between 77% and 88% of the household income originates from pension and work earnings, both highly correlated with employment status. Also, in order to study the interaction between the various forms of engagement, a series of dummy variables indicating whether the respondent was actively involved in

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<sup>62</sup> This variable includes the following categories: 'the respondent lives with another 50+ adult or a younger partner whose health was self-assessed as more than good', 'the respondent lives with another 50+ adult or a younger partner who self-assessed their health as less than good', 'the respondent lives alone', 'the respondent is the only 50+ adult in the household', and 'the respondent lives with a younger partner or other 50+ people who refused to answer the questionnaire and for whom there is therefore no information on their self-rated health status'. This categorisation of the respondents was necessary to account for all the possible combinations of household composition and also to account for the possibility of the household members to not take part into the study.

<sup>63</sup> SHARE respondents are asked to describe the area they live in out of five possible options: 1. A big city; 2. The suburbs or outskirts of a big city; 3. A large town; 4. A small town or 5. A rural area or village. Large town, small town and village were all grouped together under 'rural area' for the scope of this analysis.

paid work, formal engagement or informal participation were included. People who were not in paid work were also further split into two groups: those who had retired within two years prior to the interview and those who had not worked for more than two years in order to assess whether people's attitude towards formal and informal or family engagement changed in proximity to retirement. Finally, since it was believed that respondents living together might coordinate their work decision, the working status of the other members of the household was considered<sup>64</sup>.

*Health Characteristics* — The engagement of older people may also be associated with health. Only a selection of the numerous variables available (fully described in Chapter 6.4) was considered in this analyses. In particular, we took into account a summary variable representing the total reported number of chronic illnesses (dichotomised to 'less than 2' against '2 or more' chronic diseases); a dummy variable indicating whether the respondent self-reported at least one functional limitation (NAGI, ADL or IADL); a dummy variable indicating whether the respondents self-reported their general health as at least good and finally an indicator of depressive symptoms (constructed considering symptoms on the EURO-D or on the CES-D depression scale).

### 7.2.3 STATISTICAL MODELLING

Logistic regressions for each activity were estimated for men and women separately in each country. Models were fitted also for SHARE countries altogether (with country dummy variables). The models presented in this chapter include a selection of the hypothesised explanatory variables based on a number of criteria such as the parsimony of the model, the comparability between the female and male subpopulations in the same country and between countries as well as the sampling adequacy and the multicollinearity of the independent variables, i.e. whether independent variables might

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<sup>64</sup> This variable includes the following categories: 'the respondent lives with at least another 50+ adult or a younger partner who is currently not working', 'the respondent lives with another 50+ adult or a younger partner who is currently working', 'the respondent lives alone', 'the respondent is the only 50+ adult in the household', and 'the respondent lives with a younger partner or other 50+ people who refused to answer the questionnaire and for whom there is therefore no information on their self-assessed economic position'. This categorisation of the respondents was necessary to account for all the possible combinations of household composition and also to account for the possibility of the household members to not take part into the study.

contain redundant (not significant) information if they were considered altogether in the model (Agresti, 2002).

Multicollinearity between the explanatory variables was investigated with logistic regressions with variables considered in blocks (i.e. socio-demographic, the economic and the health-related variables): it was assessed whether deleting one or more of the redundant predictors would reduce standard errors of the other estimated effects.

Also other criteria were adopted to decide which variables would be kept in the model. Firstly, variables with too few observations in subcategories which could not be combined were not considered in order to avoid reporting implausibly large odds ratios and standard errors (Pedhazur, 1997, Greenland et al., 2000, Agresti, 2002)<sup>65</sup>. Secondly, it was decided to select those variables which were comparable between subgroups of the various countries. Thirdly, the criterion of readability of the model was adopted: “the selection process becomes harder as the number of explanatory variables increases, because of the rapid increase in possible effects and interactions. There are two competing goals: The model should be complex enough to fit the data well. On the other hand, it should be simple to interpret, smoothing rather than over-fitting the data” (Agresti, 2002)(pg. 211).

Finally, it was decided to restrict the analyses only to those respondents with no missing information, i.e. to those with data on all variables in the model. Between 3% (Denmark and Italy) and 10% (France) of respondents were dropped.

All analyses were performed using Stata, version 11 (Stata Corp, 2009).

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<sup>65</sup> No formal rules exist to decide which variables not to include: some guidelines suggests that at least between 10 and 30 outcomes of each type should occur for every predictor (Peduzzi et al., 1996, Hosmer and Lemeshow, 2000) so as to also guarantee a sufficient number of independent variables to be included in the model (Agresti, 2002).

The main final models considered were as follows:

- For participation in **paid work**, the main model (see Table 7.5) considered as explanatory variables age, education, personal ill-health indicators, wealth assessed through mortgage-free house and marital status. Also other variables such as the working status or health characteristics of the other household members or the presence of at least one child in the household were explored in separate models.
- For participation in **formal activities**, the main model (see Table 7.11) accounted for explanatory variables such as age, education, personal health-characteristics, the area of residence as well as marital status. Similarly, whether the respondent lived alone or not was investigated in a different model. Furthermore, in order to assess whether –controlling for socio-economic and demographic characteristics –formal engagement was associated with participation in paid work and informal and family-related activities an additional model was fitted (see Table 7.12).
- For participation in **informal and family-related activities**, among the explanatory variables considered in the main model (see Table 7.14), age, education, personal health-characteristics, having grandchildren and having parents still alive were included. Other household characteristics (health of the other members living in the household, whether the respondent lived alone and marital status) were also explored. Finally, dichotomous variables indicating the respondents' participation in paid work and formal activities were added to the analysis to assess 'competition' between activities (see Table 7.17).

## **7.3 RESULTS**

### **7.3.1 LOGISTIC REGRESSION: ANALYSIS OF PROPORTIONS IN PAID WORK**

Table 7.5 summarises the results from the fully adjusted logistic regression models of being in paid work in each of the four countries separately for both men and women. In all populations considered, age was associated with the probability of being a worker, though this linear negative relationship was not significant among Danish men: being

55-59 was not significantly associated with reduced odds of being in paid work among this subpopulation. In all countries, those with the highest level of education were more likely than those with the lowest level of education to be in paid work. Differences between those with mid and low levels of education were only significant among Italian respondents and English women. Individual self-assessed bad health was negatively associated with the probability of working although with differences between subgroups: Danish and French women had significantly lower odds of being a worker if they reported at least one functional limitation and reported depressive symptoms, whereas among Italian women reporting at least 2 chronic diseases was the only factor negatively and significantly associated with lower odds of working. Men were less likely to be in paid work if they had some kind of limitation, with the exception of Italian male respondents. Italian men's health characteristics were never significantly associated with the probability of being in paid work: although the direction of the association was negative, those with 'ill-health' did not differ much compared to respondents in 'good health'. On the contrary, among English respondents, all three health indicators (depressive symptoms, chronic diseases and functional limitations) were significantly and negatively associated with the probability of being in paid work. Living in a mortgage or rent free house was negatively associated with being in paid work in all countries except among Danish women. Finally, findings suggested that the marital status of the respondent was differentially associated with the probability of being in paid work: English and Danish men who were married or lived with a partner were significantly more likely to be in paid work whereas the relationship was negative among Italian and English women. These findings may reflect different family values and gender role-division and in particular withdrawal of women from the labour market in response to family needs and presence of children (Thompson and Walker, 1989, Szinovacz et al., 2001).

In order to examine whether and how household characteristics may be associated with the participation of the respondents in the labour market, it was decided to explore in separate models whether variables accounting for the characteristics (health or work status) of the other household members or the presence of at least one child in the household would be associated with the odds of being in paid work. Although fully

adjusted logistic regression models of being in paid work were fitted for each of the above-mentioned variables separately, comments and tables refer only the results for the specific variables. The associations found between being in paid work and the other explanatory variables (i.e. age, education, personal ill-health indicators and wealth assessed through mortgage-free house) remained in fact similar in terms of significance and direction.

Table 7.6 considers the presence of at least one child in the household: this variable appears to be an important factor associated with older people's engagement in paid work. Statistically significant differential associations were found: in Denmark and England there was a positive association with work both among men and women whereas in France and Italy the direction of association was negative among women (significantly in Italy). Also the health of other members of the household was explored to assess whether having other kin members in potential need of assistance could be associated with a reduction of paid work. The direction of associations between the self-rated health of the other members living in the household and the odds of being in paid work suggested that respondents who lived with another members who rated their health as more than good were more likely to be in paid work than those who lived with members who self-assessed their health as fair or poor. This association, though, was only significant among English male respondents (data not shown).

Also the working status of the other older members living in the household was explored<sup>66</sup>. Table 7.7 shows that respondents who lived with another adult in paid work were significantly positively associated with the odds of being in paid work in all countries (except among Italian women), lending support to the idea that older people might tend to coordinate their retirement decisions which are, to a certain extent, a household rather than a personal decision (Smith and Moen, 1998, Henkens, 1999, Coile, 2004, Gotlibovski and Weiss, 2008). Findings also suggested that people who either lived alone or who were the only 'adults' in the households had higher odds of being in paid work compared to those respondents who lived with others not in paid work.

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<sup>66</sup> See Table 7.A1 in the Appendix for the distribution of the economic status of the members in the household.

**Table 7.5 Participation in Paid Work –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions with legal marital status, by country and sex**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age 50-54</b>								
<b>Age: 55-59</b>	0.71 (0.39-1.29)	0.55 ** (0.31-0.97)	0.27 *** (0.15-0.47)	0.61 ** (0.41-0.91)	0.33 *** (0.18-0.61)	0.45 *** (0.28-0.70)	0.61 *** (0.48-0.76)	0.59 *** (0.48-0.71)
<b>Age: 60-69</b>	0.11 *** (0.06-0.18)	0.04 *** (0.02-0.08)	0.02 *** (0.01-0.04)	0.06 *** (0.04-0.08)	0.06 *** (0.03-0.12)	0.06 *** (0.03-0.12)	0.11 *** (0.09-0.13)	0.10 *** (0.08-0.12)
<b>Education: LOW</b>								
<b>Education: MIDDLE</b>	1.80 (0.96-3.37)	1.42 (0.74-2.73)	1.36 (0.82-2.22)	1.34 (0.95-1.89)	2.08 *** (1.31-3.29)	4.22 *** (2.72-6.53)	1.16 (0.94-1.43)	1.57 *** (1.29-1.90)
<b>Education: HIGH</b>	2.07 ** (1.04-4.16)	3.97*** (2.04-7.75)	3.43 *** (1.89-6.24)	3.04 *** (2.08-4.45)	6.93 *** (4.12-11.6)	12.1 *** (4.89-29.9)	1.30 ** (1.06-1.59)	1.71 *** (1.39-2.10)
<b>&lt;2 Chronic diseases</b>								
<b>2+ Chronic diseases</b>	0.69 (0.43-1.13)	0.68 (0.40-1.15)	0.79 (0.48-1.31)	0.85 (0.57-1.26)	0.72 (0.43-1.22)	0.48 ** (0.23-1.00)	0.47 *** (0.39-0.58)	0.55 *** (0.45-0.66)
<b>No Limitations</b>								
<b>1+ NAGI, IADL or ADL Limitation</b>	0.31 *** (0.19-0.52)	0.33 *** (0.19-0.57)	0.59 ** (0.39-0.91)	0.71 ** (0.51-0.98)	0.71 (0.45-1.22)	0.85 (0.50-1.43)	0.50 *** (0.42-0.60)	0.59 *** (0.50-0.70)
<b>&lt;3 Depressive Symptoms</b>								
<b>3+ Depressive Symptoms</b>	0.65 (0.34-1.26)	0.47 ** (0.24-0.88)	0.64 (0.36-1.12)	0.67 ** (0.49-0.92)	0.65 (0.38-1.09)	1.01 (0.60-1.70)	0.43 *** (0.34-0.54)	0.58 *** (0.47-0.71)
<b>Not Married</b>								
<b>Married</b>	2.73 *** (1.64-4.53)	1.17 (0.71-1.91)	0.79 (0.48-1.31)	0.77 (0.56-1.08)	1.01 (0.48-2.08)	0.59 ** (0.37-0.95)	1.58 *** (1.28-1.96)	0.80 *** (0.67-0.95)
<b>Paying Rent or Mortgage</b>								
<b>Monthly Rent/ Mortgage free</b>	0.50 ** (0.28-0.89)	1.07 (0.58-1.94)	0.86 (0.60-1.22)	0.65 ** (0.44-0.94)	0.66 (0.39-1.08)	0.54 ** (0.31-0.92)	0.52 *** (0.44-0.63)	0.61 *** (0.51-0.72)
<b>Observations (N)</b>	<b>532</b>	<b>542</b>	<b>854</b>	<b>971</b>	<b>762</b>	<b>977</b>	<b>3,338</b>	<b>3,556</b>

Source: SHARE, 2004; ELSA, 2002; weighted data – own calculations. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.



**Table 7.6 Participation in Paid Work –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions, by country and sex. Selected results obtained when presence of at least one child in the household was considered**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
No children in Household								
At least 1 child lives in the Household	2.32 ** (1.18-4.56)	1.17 (0.52-2.52)	2.26 *** (1.42-3.62)	0.81 (0.57-1.12)	1.22 (0.69-2.18)	0.60 *** (0.41-0.89)	1.62 *** (1.33-1.97)	1.25 ** (1.03-1.52)
<b>Number of Observations</b>	<b>532</b>	<b>542</b>	<b>854</b>	<b>971</b>	<b>762</b>	<b>978</b>	<b>3,339</b>	<b>3,556</b>

Source: SHARE, 2004; ELSA, 2002; weighted data – own calculations. Among the other covariates, this specification included age, education, personal ill-health indicators and wealth assessed through mortgage-free house. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.

**Table 7.7 Participation in Paid Work –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions, by country and sex. Selected results obtained when employment status of the other household members was considered**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
Other member(s) in Household NOT in paid work								
Other member(s) in Household in paid work	3.91 *** (2.29-6.68)	1.95 ** (1.01-3.76)	2.25 *** (1.32-3.89)	2.36 *** (1.45-3.84)	2.59 *** (1.39-4.84)	1.55 (0.80-3.04)	4.03 *** (3.30-4.92)	2.87 *** (2.32-3.54)
Living alone	0.57 (0.29-1.12)	1.09 (0.57-2.09)	1.58 (0.77-3.25)	1.64 *** (1.13-2.38)	1.58 (0.54-4.62)	3.49 *** (1.54-7.93)	1.06 (0.81-1.38)	1.57 *** (1.24-1.97)
Only 50+ Member in the Household	3.44 (0.66-17.8)	1.23 (0.40-3.78)	0.98 (0.49-1.95)	1.66 (0.96-2.87)	2.74 *** (1.53-4.58)	1.12 (0.62-2.03)	2.29 *** (1.30-4.04)	2.88 *** (2.07-4.00)
Living with other members who refused to answer	1.93 (0.82-4.52)	1.42 (0.48-4.31)	0.89 (0.40-1.97)	1.68 (0.60-4.71)	2.09 (0.95-4.58)	1.28 (0.60-2.73)	2.21 *** (1.36-3.60)	2.14 *** (1.49-3.08)
<b>Number of Observations</b>	<b>532</b>	<b>541</b>	<b>836</b>	<b>945</b>	<b>761</b>	<b>977</b>	<b>3,338</b>	<b>3,556</b>

Source: SHARE, 2004; ELSA, 2002; weighted data – own calculations. Among the other covariates, this specification included age, education, personal ill-health indicators and wealth assessed through mortgage-free house. The employment status of the other members in the household included the following categories: ‘the respondent lives with other members currently not in paid work’, ‘the respondent lives with at least another member currently in paid work’, ‘the respondent lived alone’, ‘the respondent is the only adult in the household’, and ‘the respondent lived with other members who refused to answer the questionnaire and for whom there is therefore no information on their self-assessed economic position’. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.

Table 7.9 summarises results from the fully adjusted logistic regression models of being in paid work when the SHARE countries are considered all together. The probability of being a worker significantly decreased with age. Ill-health was also associated with decreased odds of being in paid work: women declaring more than 2 chronic diseases and men having at least one functional limitation and having depressive symptoms were associated with decreased odds of being in paid work. Being married was significantly negatively associated with the odds of being in paid work only among women. It was also found (data not shown) that both among men and women living with at least one other adult in paid work were significantly more likely to be in paid work compared to respondents who lived with other members not in paid work. Results also confirmed a statistically significant –though differential –association between paid work and the presence of at least one child living in the household: men were associated with higher odds of being in paid work whereas women with lower odds.

When countries were considered altogether, however, the interaction between country and education was included in order to account for the different distributions of education (see Table 6.5) and of paid work by education (see Table 7.8) in the three countries under study. If an interaction term was not included, we would end up assuming that high education was more beneficial in Italy merely because 70% of Italian men with higher education were in paid work against 63% in Denmark and France, even though the proportion of Italian male respondents with high education was less than 10% compared to more than 30% in Denmark. Without an interaction term, the multivariate model (see Table 9) would suggest, for instance, that Danish and Italian older men had similar probabilities to be in paid work, despite the much higher percentage of male workers in Denmark (58%) compared to Italy (40%).

**Table 7.8 Respondents (%) in paid work by education, gender and country**

Education	Italy		France		Denmark		TOTAL SHARE	
	M	F	M	F	M	F	Male	Female
<b>LOW</b>	29.7 (142/535)	11.3 (76/750)	33.8 (119/353)	29.7 (146/479)	42.0 (31/71)	24.8 (32/126)	31.3 (292/959)	18.1 (254/1,355)
<b>MIDDLE</b>	54.8 (81/165)	38.1 (56/161)	49.7 (163/324)	43.2 (140/323)	59.4 (170/290)	41.5 (91/220)	52.5 (414/779)	41.2 (287/704)
<b>HIGH</b>	70.3 (46/70)	57.5 (45/84)	63.0 (138/223)	58.2 (124/213)	62.9 (111/177)	71.5 (153/209)	65.2 (295/470)	59.4 (322/506)

Each cell represents the percentage of respondents (in brackets the actual number) with a specific education level who were in paid work. Source: SHARE, 2004; weighted data.

**Table 7.9 Participation in Paid Work – Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions with and without education and considering the interaction term between education and country –all SHARE countries considered all together by sex**

	Model (without education)		Model (with education)		Model (with interaction)	
	Male	Female	Male	Female	Male	Female
<b>Age: 50 -54</b>						
<b>Age: 55-59</b>	0.34 *** (0.23-0.49)	0.57 *** (0.43-0.75)	0.33 *** (0.22-0.48)	0.57 *** (0.43-0.75)	0.33 *** (0.22-0.48)	0.57 *** (0.43-0.76)
<b>Age: 60-69</b>	0.05 *** (0.04-0.08)	0.07 *** (0.04-0.10)	0.05 *** (0.03-0.08)	0.07 *** (0.04-0.10)	0.05 *** (0.03-0.08)	0.07 *** (0.05-0.10)
<b>Paying Rent/Mortgage</b>						
<b>Rent/Mortgage free</b>	0.72 ** (0.53-0.96)	0.68 *** (0.53-0.88)	0.72 ** (0.54-0.97)	0.62 *** (0.46-0.82)	0.73 ** (0.55-0.98)	0.63 *** (0.47-0.84)
<b>No Limitations</b>						
<b>1+ Limitation (NAGI, IADL, ADL)</b>	0.60 ** (0.43-0.84)	0.75 ** (0.56-0.99)	0.67 ** (0.48-0.92)	0.77 (0.58-1.02)	0.66 ** (0.48-0.91)	0.76 (0.57-1.01)
<b>&lt;2 Chronic diseases</b>						
<b>2+ Chronic diseases</b>	0.77 (0.57-1.06)	0.58 ** (0.38-0.88)	0.75 (0.54-1.03)	0.65 ** (0.44-0.96)	0.74 (0.53-1.02)	0.67 (0.45-1.00)
<b>&lt;3 Depr. symptoms</b>						
<b>3+ Depressive symptoms</b>	0.66 ** (0.47-0.93)	0.75 ** (0.56-0.99)	0.69 ** (0.49-0.97)	0.79 (0.58-1.07)	0.66 ** (0.48-0.91)	0.79 (0.59-1.07)
<b>Not Married</b>						
<b>Married</b>	0.95 (0.62-1.46)	0.69 ** (0.52-0.90)	0.98 (0.65-1.49)	0.71 ** (0.54-0.93)	0.96 (0.63-1.47)	0.74 ** (0.56-0.92)
<b>Education: LOW</b>						
<b>Education: MIDDLE</b>			1.77 *** (1.27-2.48)	2.21 *** (1.65-2.97)	1.95 *** (1.20-3.17)	4.23 *** (2.75-6.51)
<b>Education: HIGH</b>			4.63 *** (3.12-6.87)	5.23 *** (3.35-8.17)	7.41 *** (4.13-13.3)	11.3 *** (4.63-27.6)
<b>Italy</b>						
<b>France</b>	0.96 (0.65-1.41)	2.37 *** (1.66-3.37)	0.71 (0.49-1.03)	1.88 *** (1.35-2.63)	0.90 (0.54-1.50)	3.54 *** (2.33-5.39)
<b>Denmark</b>	1.61 (0.99-2.62)	2.98 *** (2.05-4.33)	0.99 (0.62-1.57)	1.70 *** (1.14-2.53)	1.13 (0.53-2.44)	2.78 *** (1.43-5.43)
<b>France * Middle Ed</b>					0.73 (0.38-1.41)	0.29 *** (0.17-0.52)
<b>France * High Ed</b>					0.46 ** (0.22-0.97)	0.24 *** (0.08-0.64)
<b>Denmark * Middle Ed</b>					1.13 (0.48-2.62)	0.37 ** (0.17-0.81)
<b>Denmark * High Ed</b>					0.38 (0.14-1.01)	0.40 (0.13-1.27)
<b>Observations</b>	<b>2,140</b>	<b>2,473</b>	<b>2,129</b>	<b>2,463</b>	<b>2,129</b>	<b>2,463</b>

Source: SHARE, 2004; weighted data – own calculations. Fully adjusted logistic results for participation in paid work for SHARE countries considered altogether, accounting for country dummy variables. Three different sub-models are considered: the first ignores education, the second includes it and the third considers the interaction between education and country. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.

**Table 7.10 Result Summary in terms of odds ratios of being in paid work considering the interaction terms between country and level of education, by gender - SHARE respondents**

	Male			Female		
	Italy	France	Denmark	Italy	France	Denmark
<b>Education: LOW</b>	1.00	0.90 (0.54-1.50)	1.13 (0.53-2.44)	1.00	3.54 *** (2.33-5.39)	2.78 *** (1.43-5.43)
<b>Education: MIDDLE</b>	1.95 *** (1.20-3.17)	1.49 (0.80-2.06)	2.49 *** (1.44-4.31)	4.23 *** (2.75-6.51)	4.47 *** (2.94-6.77)	4.36 *** (2.70-7.01)
<b>Education: HIGH</b>	7.41 *** (4.13-13.3)	3.10 *** (1.86-5.19)	3.23 *** (1.67-6.24)	11.3 *** (4.63-27.6)	9.45 *** (5.95-15.0)	12.7 *** (7.64-21.3)

Source: SHARE, 2004; weighted data. Own Calculations. Each cell represents the odds for men or women of being in paid work by country and education level obtained considering the linear combination of Education, country and their interaction term form Table 9. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively

### 7.3.2 LOGISTIC REGRESSIONS FOR FORMAL ACTIVITIES

Table 7.11 shows the results of the regression models for the participation in formal activities fitted in each of the SHARE and ELSA subpopulations<sup>67</sup>. Age is generally not significantly associated with formal engagement, even though age-groups 60-64 and 65-69 were positively and significantly associated with participation in formal activities among specific subpopulations such as Danish, French and English women and French and Italian men. Higher education was significantly associated with higher odds of formal engagement in all subpopulations, except Danish and Italian men. In particular, Italian men with middle education had higher odds of being formally engaged than those with high education (although this may reflect the small proportions in the latter group) whereas neither categories were associated with formal engagement among Danish male respondents. The role of ill-health in older people's engagement in formal activities was unclear. Among Danish respondents, none of the variables suggesting bad health were significantly associated with formal involvement. Conversely, in the other subpopulations a statistically significant –though differential –association was found: less than very good health (in England and among French men) and reporting depressive symptoms (among French men and Italian respondents) were paralleled with a lower propensity to report formal engagement, while reporting more than 2 chronic diseases

<sup>67</sup> Note that although the outcome variable definition differs for the two datasets in the description of the logistic results I will generically and indistinctively refer to 'formal participation'.

was positively associated with formal engagement among English women. Finally, the legal marital status did not seem to be associated with the odds of being engaged in formal activities; only Italian women who were married had significantly lower odds of being formally engaged. Opposite results were found when, instead of marital status, the variable indicating whether the respondent lived alone or not was considered: only Italian respondents living alone had significantly higher odds of being engaged in formal activities compared to those living alone whereas no associations were found in the other populations.

In a separate model, it was also investigated whether 'bigger' areas would present more opportunities for people to engage in formal activities. Bearing in mind that people living in different countries may have in mind a different definition of 'big town' or 'rural area' based on the relative population necessary to make a community "urban" (Hartshorn, 1992), only Italian women and Danish men who lived in a big city had higher odds of being formally engaged compared to those who reported living in a small town or rural area whereas the direction and strength of the association was unclear in the other subpopulations (data not shown).

Analyses shown on Table 7.12 also included among the covariates engagement in the other two forms of engagement, i.e. paid work and participation in informal or family-related activities. When these two factors were included in the analysis, age was no longer associated with the odds of formal engagement and the pattern of association was no longer linear. The other factors on the contrary confirmed similar patterns and directions of association. When considering people's engagement in the other forms of activity, a substitutive association between formal engagement and paid work was suggested in all countries except Italy and among French men: individuals who were in paid work were significantly less likely to engage in formal activities; in Italy and among French men the direction of the association was also negative although not significant. The association between formal and informal/family engagement was positive in all countries (but not significantly among Italian respondents and Danish men), backing the hypothesis of a cumulating commitment. It is worth noting that out of all the subpopulations under study, Italy was the only country where the substitutive

association between formal engagement and paid work as well as the cumulative association between formal and informal participation was not significant.

In a separate model, it was tested whether not being in paid work for less than two years before the survey was associated with formal engagement (see Table 7.A2 in appendix). Findings showed that respondents who had 'recently retired' had lower odds of being formally engaged similarly to those who were in paid work (significantly among French women and English men) with the exception of Italian women who had higher odds of being involved in formal activities compared to respondents who had not been in paid work at all or for more than two years. Cross-sectional analyses failed to endorse the general idea that people who retire are more likely to get involved in formal activities due to their free time available and also in order to (over)-compensate for lack of work and replace the benefits previously derived from paid work (Fischer et al., 1991, Wilson, 2000). Retirement does not necessarily draw people into formal involvement (Herzog et al., 1989, Caro and Bass, 1997), this may increase only among those who already were formally engaged (Mutchler et al., 2003).

Education, ill-health and employment status seemed to be the major determinants of older people's commitment in formal participation even though there was no clear common pattern and differences between subpopulations were quite striking and difficult to interpret: commitment to formal activities among Danish men seemed to be associated mainly with employment status for instance. Other factors not considered in this analysis such as societal context, culture, values and expectations must be playing a more important role in shaping older people's level of formal commitment (Salamon and Sokolowski, 2001, Hank and Stuck, 2008, Hank, 2010, Hank and Erlinghagen, 2010), given the different levels of commitment in the four countries under study.

**Table 7.11 Participation in Formal Activities –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions, by country and sex**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age 50-54</b>								
	0.98 (0.59-1.62)	1.07 (0.66-1.76)	1.15 (0.80-1.67)	1.15 (0.79-1.69)	0.78 (0.33-1.85)	1.05 (0.65-1.68)	0.88 (0.67-1.15)	1.20 (0.95-1.52)
<b>Age: 55-59</b>								
	1.16 (0.68-1.94)	1.34 (0.79-2.28)	1.46 (0.89-2.37)	1.54** (1.02-2.31)	2.23** (0.98-5.10)	1.16 (0.66-2.04)	1.07 (0.80-1.43)	1.26* (0.97-1.62)
<b>Age 60-64</b>								
	1.30 (0.74-2.32)	1.99** (1.10-3.58)	2.32*** (1.37-3.91)	0.92 (0.60-1.39)	1.82 (0.85-3.89)	0.68 (0.39-1.16)	1.28* (0.96-1.73)	1.39** (1.08-1.81)
<b>Education: LOW</b>								
	0.93 (0.52-1.86)	1.48 (0.89-2.46)	1.08 (0.74-1.59)	2.01*** (1.45-2.78)	2.67*** (1.47-4.84)	2.53*** (1.45-4.42)	2.38*** (1.77-3.19)	3.64*** (2.88-4.60)
<b>Education: MIDDLE</b>								
	1.49 (0.80-2.80)	2.36*** (1.37-4.05)	2.08*** (1.46-2.97)	3.28*** (2.14-5.04)	1.29 (0.51-3.27)	3.04*** (1.77-5.20)	3.84*** (2.92-5.06)	7.52*** (5.95-9.50)
<b>&lt;2 Chronic Diseases</b>								
	0.87 (0.54-1.37)	0.97 (0.62-1.52)	1.45* (0.95-2.21)	1.07 (0.69-1.65)	0.82 (0.45-1.47)	1.11 (0.56-2.19)	1.16 (0.90-1.50)	1.29** (1.05-1.59)
<b>2+ Chronic diseases</b>								
	0.67 (0.38-1.16)	0.96 (0.63-1.48)	1.17 (0.80-1.71)	1.18 (0.89-1.56)	1.44 (0.79-2.62)	1.50 (0.81-2.78)	1.02 (0.80-1.28)	1.02 (0.84-1.24)
<b>No Functional lim.s</b>								
	0.90 (0.48-1.69)	0.75 (0.45-1.26)	0.65** (0.42-1.00)	0.85 (0.61-1.19)	0.45** (0.21-0.96)	0.61* (0.34-1.08)	0.95 (0.70-1.29)	0.89 (0.71-1.12)
<b>&lt;3 Depressive sympt.s</b>								
	0.64 (0.35-1.14)	1.06 (0.60-1.86)	0.45*** (0.26-0.77)	0.76 (0.47-1.24)	0.51 (0.23-1.15)	0.88 (0.52-1.51)	0.65*** (0.47-0.89)	0.64*** (0.48-0.84)
<b>Self-rated Health &lt; Good</b>								
	1.47 (0.95-2.25)	1.06 (0.71-1.58)	1.10 (0.77-1.58)	1.12 (0.83-1.51)	0.68 (0.33-1.40)	0.49*** (0.31-0.77)	1.21 (0.93-1.59)	1.11 (0.91-1.35)
<b>Not Married</b>								
	532	548	852	981	763	987	3,308	3,547

Source: SHARE, 2004; ELSA, 2002; weighted data – own calculations. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.

**Table 7.12 Participation in Formal Activities—Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions with the 'living alone' indicator and dummy indicators of engagement in the other two forms of activity, by country and sex**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
Age 50-54								
Age: 55-59	0.99 (0.59-1.67)	1.01 (0.60-1.68)	1.11 (0.77-1.61)	1.01 (0.68-1.49)	0.85 (0.33-2.19)	0.92 (0.57-1.51)	0.84 (0.64-1.11)	1.15 (0.91-1.45)
Age: 60-64	1.03 (0.59-1.75)	0.91 (0.51-1.63)	1.16 (0.69-1.94)	1.18 (0.83-1.69)	2.17 (0.80-5.89)	0.93 (0.51-1.72)	0.92 (0.68-1.24)	1.09 (0.83-1.43)
Age 65-69	0.99 (0.52-1.90)	1.21 (0.61-2.37)	1.81 ** (1.02-3.21)	0.64 (0.41-1.01)	1.73 (0.68-4.36)	0.61 (0.34-1.08)	0.98 (0.70-1.36)	1.14 (0.86-1.54)
Education: LOW								
Education: MIDDLE	0.97 (0.53-1.77)	1.45 (0.87-2.40)	1.04 (0.68-1.57)	2.03 *** (1.47-2.79)	2.65 *** (1.48-4.74)	2.65 *** (1.48-4.77)	2.40 *** (1.78-3.22)	3.69 *** (2.91-4.67)
Education: HIGH	1.63 (0.85-3.12)	2.65 *** (1.53-4.60)	2.12 *** (1.43-3.14)	3.57 *** (2.34-5.44)	1.24 (0.47-3.25)	3.28 *** (1.89-5.72)	3.88 *** (2.93-5.13)	7.77 *** (6.14-9.85)
<2 Chronic Diseases								
2+ Chronic diseases	0.89 (0.56-1.44)	0.93 (0.58-1.46)	1.45 * (0.96-2.19)	1.04 (0.68-1.61)	0.78 (0.43-1.42)	1.07 (0.54-2.09)	1.14 (0.88-1.47)	1.28 ** (1.04-1.57)
No Limitation								
1+ Limitation (NAGI, IADL, ADL)	0.63 (0.36-1.09)	0.90 (0.58-1.40)	1.12 (0.76-1.64)	1.16 (0.88-1.54)	1.37 (0.75-2.48)	1.44 (0.79-2.62)	0.97 (0.76-1.23)	1.01 (0.83-1.22)
<3 Dep. Symptoms								
3+ Depressive symptoms	0.88 (0.46-1.67)	0.70 (0.42-1.16)	0.63 ** (0.40-0.98)	0.83 (0.58-1.19)	0.42 ** (0.19-0.93)	0.61 * (0.34-1.08)	0.91 (0.67-1.24)	0.85 (0.67-1.07)
SRH ≥ Good								
Self-rated Health < Good	0.58 (0.31-1.07)	0.91 (0.51-1.62)	0.44 *** (0.26-0.73)	0.73 (0.45-1.17)	0.48 (0.20-1.15)	0.86 (0.51-1.46)	0.60 *** (0.43-0.84)	0.61 *** (0.46-0.80)
Not Living Alone								
Living Alone	0.63 (0.37-1.08)	1.03 (0.67-1.58)	1.23 (0.77-1.96)	1.11 (0.79-1.57)	3.00 *** (1.37-6.61)	2.05 ** (1.02-4.12)	0.77 (0.56-1.07)	1.03 (0.81-1.28)
Not in paid work								
In paid work	0.62 ** (0.38-1.01)	0.47 *** (0.28-0.77)	0.72 (0.47-1.10)	0.66 ** (0.44-0.98)	0.86 (0.42-1.76)	0.69 (0.40-1.20)	0.65 *** (0.51-0.84)	0.74 *** (0.60-0.92)
No Informal Eng. nt								
Engaged in Fam&Inf Activities	1.15 (0.78-1.70)	1.64 *** (1.12-2.39)	1.67 *** (1.25-2.23)	1.71 *** (1.31-2.24)	1.65 (0.96-2.85)	1.47 (0.91-2.36)	1.46 *** (1.14-1.87)	1.37 *** (1.14-1.67)
N Observations	532	548	851	981	763	988	3,309	3,547

Source: SHARE, 2004; ELSA, 2002; weighted data – own calculations. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively



A 'country' factor was also confirmed when all SHARE countries were analysed together and a dummy country indicator was included in the analyses (see Table 7.13). Multivariate analyses reflected differences between the SHARE countries: both Danish and French older men and women were found to exhibit significantly higher probabilities to be engaged in informal activities compared to Italian respondents, even after controlling for socio-demographic, economic and health characteristics. Findings also suggested a case for a divide between paid work and the other forms of activities: whereas the association between formal and informal engagement was positive, the association between formal involvement and paid work was negative. Respondents who were engaged in formal activities were also associated with engagement in informal and family-related activities whereas those in paid work were more likely to have lower odds of participating in formal activities.

### **7.3.3 LOGISTIC REGRESSIONS FOR BEING INVOLVED IN INFORMAL AND FAMILY ACTIVITIES**

Table 7.14 shows the results of the logistic regression model for the participation in informal and family activities in both SHARE countries and England<sup>68</sup>. Age was not significantly associated with informal engagement; the only exception were French respondents aged 55-59 who were significantly less likely to be engaged in family and informal activities compared to those aged 50-54. Similarly, no significant association was found between education and informal engagement. As for health characteristics, ill-health indicators are generally not significantly associated with informal and family engagement, with a few exceptions: Danish women who declared at least 2 chronic diseases, English women who had depressive symptoms and English men who declared at least one IADL, ADL or NAGI limitation were significantly positively correlated with informal engagement. The existence of kin members – almost a prerequisite for informal and family engagement – was the most important factor associated with informal commitment in almost all countries. In particular, having at least one parent alive (regardless of their health status) and/or at least one grandchild increased the odds

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<sup>68</sup> Although the outcome variable definition differs for the two datasets, in the following description of the logistic regression results I will generically and indistinctively refer to 'informal participation'.

**Table 7.13 Participation in Formal Activities –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions when all SHARE countries are grouped altogether, by sex and various model specifications**

	M	F	M	F	M	F
<b>Age: 55-59 <sup>a</sup></b>	0.94 (0.66–1.34)	1.09 (0.84–1.43)	0.95 (0.66–1.35)	1.11 (0.85–1.45)	0.92 (0.64–1.34)	0.99 (0.75–1.30)
<b>Age: 60-64 <sup>a</sup></b>	1.65 ** (1.12–2.44)	1.37 ** (1.02–1.82)	1.67 ** (1.12–2.48)	1.39 ** (1.04–1.85)	1.43 (0.90–2.28)	1.09 (0.81–1.47)
<b>Age 65-69 <sup>a</sup></b>	1.91 ** (1.30–2.80)	0.90 (0.67–1.21)	1.93 *** (1.31–2.84)	0.92 ** (0.68–1.24)	1.60 ** (1.01–2.53)	0.71 ** (0.51–0.97)
<b>Education: MIDDLE <sup>b</sup></b>	1.51 ** (1.06–2.15)	2.17 *** (1.63–2.89)	1.52 ** (1.06–2.17)	2.19 *** (1.65–2.93)	1.49 ** (1.03–2.16)	2.25 *** (1.69–3.00)
<b>Education: HIGH <sup>b</sup></b>	2.02 *** (1.45–2.81)	3.16 *** (2.31–4.31)	2.03 *** (1.45–2.83)	3.21 *** (2.35–4.38)	2.07 *** (1.46–2.93)	3.57 *** (2.61–4.86)
<b>1+ Limitation <sup>c</sup> (NAGI, IADL, ADL)</b>	1.20 (0.87–1.64)	1.28 (0.97–1.69)	1.20 (0.88–1.65)	1.27 (0.96–1.69)	1.14 (0.83–1.57)	1.24 (0.95–1.64)
<b>2+ Chronic <sup>d</sup> diseases</b>	1.10 (0.81–1.48)	1.06 (0.74–1.53)	1.10 (0.81–1.49)	1.07 (0.75–1.53)	1.09 (0.80–1.48)	1.02 (0.72–1.46)
<b>Depressed <sup>e</sup></b>	0.57 *** (0.40–0.81)	0.74 (0.55–1.00)	0.58 *** (0.41–0.83)	0.74 (0.55–1.00)	0.56 *** (0.39–0.81)	0.74 ** (0.55–1.00)
<b>SRH &lt; Good <sup>f</sup></b>	0.48 *** (0.32–0.75)	0.81 (0.57–1.15)	0.49 *** (0.32–0.75)	0.82 (0.57–1.16)	0.48 *** (0.31–0.75)	0.79 (0.56–1.12)
<b>Living Alone</b>	1.49 (0.98–2.28)	1.32 (0.93–1.86)			1.59 ** (1.02–2.51)	1.37 (0.97–1.94)
<b>Married</b>			0.96 (0.68–1.36)	0.80 (0.61–1.05)		
<b>In paid work</b>					0.78 (0.54–1.14)	0.67 *** (0.49–0.90)
<b>Informally Engaged</b>					1.59 *** (1.23–2.04)	1.58 *** (1.23–2.02)
<b>France <sup>g</sup></b>	2.62 *** (1.93–3.62)	1.56 *** (1.18–2.07)	2.64 *** (1.92–3.62)	1.57 *** (1.19–2.08)	2.62 *** (1.90–3.60)	1.63 *** (1.23–2.16)
<b>Denmark <sup>g</sup></b>	3.06 *** (2.12–4.45)	2.17 *** (1.55–3.04)	3.10 *** (2.14–4.52)	2.21 *** (1.59–3.09)	3.06 *** (2.08–4.50)	2.33 *** (1.66–3.29)
<b>Observations</b>	<b>2,147</b>	<b>2,517</b>	<b>2,146</b>	<b>2,517</b>	<b>2,147</b>	<b>2,516</b>

Source: SHARE, 2004; weighted data – own calculations. This table shows the fully adjusted logistic results for participation in informal activity only for SHARE countries when the latter are considered altogether and country dummy variables are taken into account. Analyses are repeated for various model specifications. Reference categories: a) Age 50-54; b) Education: LOW c) No NAGI, IADL or ADL limitations d) < 2 Chronic diseases, e) Less than 3 depressive symptoms, f) Self-Rated Health ≥ good g) Italy. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.

of being committed to informal and family activities. Also respondents who are married are associated with increased odds of being informally engaged. Married people tend to have larger networks which increases their chances of getting in touch with other family members or friends who need care or help (De Koker, 2009). Among Italian men, French men and English respondents having a parent alive, having grandchildren and being married are all simultaneously positively and significantly associated with family and informal engagement.

Other characteristics of the household were also investigated to assess whether, for instance, the presence of a member in the household who self-rated their health as less than good would increase the odds of being informally engaged. Table 15 shows that respondents who lived with other members who self-rated their health as better than good had lower odds to be involved in informal activities compared to those who lived with members with poor or bad self-rated health; this association was statistically significant among French women and English respondents. Table 16 focuses specifically on the association between informal engagement and household composition, regardless of the relationship of the other members living in the household or their health status: findings show that respondents who lived alone were generally less likely to be engaged in informal activities than those who live with other members (significantly among Danish and French men as well as English respondents).

Table 7.17 shows results obtained when engagement in paid work and formal engagement were included among the covariates. It was found that people who were in paid work had lower odds of being engaged in informal and family activities compared to those not in paid work, though this negative association was statistically significant only among English people. On the other hand, respondents formally engaged were significantly positively associated with informal engagement in all countries except among Italian women and Danish men, suggesting a complementarity of these two activities.

Table 7.18 shows the results for the logistic regression model for the participation in informal and family activities when SHARE countries are considered all together. Most of the above-discussed results were confirmed: presence of kin in or outside the

household was positively associated with higher odds of engagement in informal activities. Considering the inter-relationship between the various forms of engagement, formal engagement and paid work were differentially associated with informal engagement, though the negative association with paid work was not statistically significant among SHARE male respondents (as also observed for formal engagement – see Table 7.13). Finally, being Danish or French was not significantly associated with informal and family engagement. The slighter higher level of informal engagement in Denmark and France (37% and 33% respectively) compared to Italian men (29%) and a reverse mirrored picture for women (i.e. higher participation in Italy compared to France and Denmark) is reflected in the direction of the odds. Nonetheless, once health, age, education and the presence of a kin network were controlled for, there were no statistically significant differences between countries.

**Table 7.14 Participation in Informal and Family-related Activities –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions, by country and sex**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age: 55-59 <sup>a</sup></b>	0.82 (0.48-1.40)	0.78 (0.46-1.31)	0.64 ** (0.44-0.94)	1.67 *** (1.21-2.31)	0.66 (0.36-1.22)	1.25 (0.86-1.82)	0.84 (0.65-1.09)	1.11 (0.90-1.37)
<b>Age: 60-64 <sup>a</sup></b>	1.29 (0.72-2.30)	1.12 (0.62-2.02)	0.89 (0.56-1.41)	1.36 (0.87-2.13)	1.18 (0.68-2.06)	1.26 (0.78-2.01)	0.86 (0.64-1.15)	1.05 (0.82-1.34)
<b>Age 65-69 <sup>a</sup></b>	1.36 (0.70-2.64)	1.12 (0.58-2.18)	1.04 (0.69-1.56)	1.43 (0.91-2.24)	1.18 (0.64-2.17)	0.72 (0.44-1.18)	0.94 (0.68-1.28)	1.03 (0.79-1.34)
<b>Education: MIDDLE <sup>b</sup></b>	0.83 (0.47-1.47)	1.56 (0.96-2.52)	1.38 (0.95-1.99)	1.08 (0.80-1.44)	1.68 ** (1.03-2.76)	1.05 (0.62-1.79)	0.93 (0.73-1.19)	1.11 (0.93-1.34)
<b>Education: HIGH <sup>b</sup></b>	1.00 (0.54-1.84)	1.82 ** (1.08-3.04)	1.43 * (0.98-2.09)	0.83 (0.58-1.20)	1.77 (0.75-4.18)	0.93 (0.46-1.85)	1.05 (0.83-1.33)	0.97 (0.79-1.20)
<b>2+ Chronic Diseases</b>	0.67 (0.42-1.07)	1.64 ** (1.07-2.51)	1.16 (0.79-1.70)	1.10 (0.76-1.59)	1.02 (0.69-1.51)	1.20 (0.80-1.79)	1.06 (0.83-1.34)	0.96 (0.79-1.14)
<b>1+ Limitation (NAGL, IADL, ADL)</b>	1.62 (0.94-2.77)	1.01 (0.65-1.56)	1.19 (0.80-1.78)	1.14 (0.86-1.49)	1.53 (0.89-2.63)	1.37 (0.95-1.96)	1.39 *** (1.12-1.73)	0.92 (0.77-1.09)
<b>3+ Depressive Symptoms</b>	0.59 (0.30-1.16)	1.21 (0.75-1.96)	1.01 (0.72-1.39)	0.94 (0.74-1.20)	1.26 (0.73-2.17)	0.99 (0.70-1.39)	1.16 (0.89-1.52)	1.41 *** (1.17-1.70)
<b>Self-rated Health &lt; Good <sup>c</sup></b>	0.84 (0.47-1.50)	0.89 (0.52-1.53)	0.87 (0.60-1.28)	0.78 (0.57-1.07)	0.68 (0.38-1.20)	0.76 (0.50-1.14)	0.83 (0.63-1.08)	0.87 (0.70-1.09)
<b>No natural parents alive <sup>d</sup></b>								
<b>At least 1 parent in &lt; good health <sup>d</sup></b>	1.85 ** (1.12-3.03)	1.51 (0.95-2.42)	1.74 *** (1.21-2.51)	1.38 ** (1.00-1.91)	2.11 *** (1.27-3.49)	1.42 (0.95-2.13)	1.51 *** (1.22-1.88)	1.97 *** (1.66-2.35)
<b>Parent(s) in ≥ good health <sup>d</sup></b>	2.37 *** (1.34-4.18)	1.90 ** (1.06-3.40)	1.50 * (0.95-2.35)	1.74 *** (1.20-2.52)	1.74 (0.89-3.39)	1.64 ** (0.98-2.71)		
<b>No Grandchildren</b>								
<b>At least 1 grandchild</b>	0.99 (0.63-1.55)	2.02 *** (1.26-3.23)	1.97 *** (1.48-2.62)	1.78 *** (1.37-2.32)	2.77 *** (1.76-4.35)	2.84 *** (1.85-4.35)	1.61 *** (1.30-1.99)	1.78 *** (1.49-2.13)
<b>Married</b>	0.99 (0.64-1.52)	1.05 (0.70-1.55)	1.99 *** (1.32-3.01)	1.04 (0.80-1.36)	2.74 *** (1.45-5.20)	1.42 (0.95-2.13)	1.44 *** (1.11-1.87)	1.24 *** (1.04-1.48)
<b>Number of Observations</b>	<b>514</b>	<b>541</b>	<b>826</b>	<b>950</b>	<b>734</b>	<b>954</b>	<b>3,197</b>	<b>3,414</b>

Source: SHARE, 2004; ELISA, 2002; weighted data – own calculations. Reference categories: a) Age 50-54; b) Education: LOW; c) Self-Rated Health ≥ good a) for ELISA, the categories used refer to 'parents dead' vs 'at least one parent alive'. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.

**Table 7.15 Participation in Informal and Family-related Activities –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions, by country and sex. Selected results obtained when SRH of the other household members was considered**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
Other member(s) in Household with SRH < Good	0.94 (0.51-1.74)	0.66 (0.37-1.16)	0.97 (0.71-1.59)	0.63 ** (0.40-0.97)	0.66 (0.38-1.16)	0.82 (0.56-1.21)	0.38 *** (0.30-0.48)	0.37 *** (0.30-0.46)
Other member(s) in Household with SRH ≥ Good	1.14 (0.57-2.30)	0.74 (0.40-1.38)	0.46 *** (0.25-0.84)	0.77 (0.52-1.14)	0.27 *** (0.11-0.70)	0.64 (0.32-1.27)	0.20 *** (0.14-0.30)	0.28 *** (0.22-0.36)
Living alone	1.02 (0.31-3.34)	0.60 (0.20-1.75)	0.65 (0.31-1.35)	0.83 (0.49-1.41)	0.51 ** (0.11-0.97)	0.79 (0.32-1.27)	0.49 ** (0.27-0.90)	0.51 *** (0.37-0.71)
Only 50+ Member in the Household	0.94 (0.40-2.20)	1.13 (0.49-2.63)	1.67 (0.63-4.44)	0.94 (0.51-1.71)	0.81 (0.42-1.58)	1.00 (0.55-1.83)	0.22 *** (0.11-0.43)	0.40 *** (0.28-0.57)
Number of Observations	514	540	811	929	733	953	3,166	3,352

Source: SHARE, 2004; ELSA, 2002; weighted data – own calculations. Among the other covariates, this specification included age, education and personal ill-health indicators. SRH status of the other household members included the following categories: ‘the respondent lived with at least another adults whose health was self-assessed as less than good’, ‘the respondent lived with other members with SRH equal or better than good’, ‘the respondent lived alone’, ‘the respondent is the only adult in the household’, and ‘the respondent lived with other older members who refused to answer the questionnaire and for whom there is therefore no information on their self-rated health status’.

\*\* , \*\*\*: significant at the 0.05 and 0.01 levels, respectively.

**Table 7.16 Participation in Informal and Family-related Activities –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions, by country and sex. Selected results obtained when the variable indicating whether the respondent lived alone was considered**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
Living with others	0.39 ** (0.18-0.84)	0.74 (0.38-1.41)	0.44 *** (0.27-0.71)	0.97 (0.70-1.44)	1.19 (0.74-1.93)	0.99 (0.66-1.51)	0.42 *** (0.30-0.59)	0.54 *** (0.43-0.66)
Living Alone	0.39 ** (0.18-0.84)	0.74 (0.38-1.41)	0.44 *** (0.27-0.71)	0.97 (0.70-1.44)	1.19 (0.74-1.93)	0.99 (0.66-1.51)	0.42 *** (0.30-0.59)	0.54 *** (0.43-0.66)
Number of Observations	514	540	811	929	733	953	3,166	3,352

Source: SHARE, 2004; ELSA, 2002; weighted data – own calculations. Among the other covariates, this specification included age, education and personal ill-health indicators. \*\* , \*\*\*: significant at the 0.05 and 0.01 levels, respectively

**Table 7.17 Participation in Informal and Family-related Activities –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions with the inclusion of dummy indicators of engagement in the other two forms of activity, by country and sex**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age: 55-59<sup>a</sup></b>	0.79 (0.47-1.35)	0.75 (0.44-1.27)	0.57 *** (0.40-0.83)	1.62 *** (1.17-2.25)	0.64 (0.35-1.18)	1.21 (0.84-1.73)	0.79 (0.60-1.03)	1.06 (0.85-1.31)
<b>Age: 60-64<sup>a</sup></b>	1.25 (0.69-2.27)	0.85 (0.45-1.64)	0.68 (0.41-1.12)	1.22 (0.74-2.01)	1.13 (0.65-1.99)	1.11 (0.66-1.87)	0.70 ** (0.52-0.95)	0.86 (0.67-1.12)
<b>Age 65-69<sup>a</sup></b>	1.27 (0.62-2.62)	0.76 (0.36-1.61)	0.72 (0.40-1.29)	1.31 (0.80-2.14)	1.13 (0.59-2.17)	0.64 (0.39-1.05)	0.64 ** (0.45-0.92)	0.82 (0.62-1.09)
<b>Education: MIDDLE<sup>b</sup></b>	0.86 (0.48-1.52)	1.51 (0.93-2.46)	1.38 ** (0.95-2.00)	1.02 (0.75-1.38)	1.59 (0.94-2.69)	1.07 (0.60-1.92)	0.88 (0.68-1.13)	1.08 (0.89-1.30)
<b>Education: HIGH<sup>b</sup></b>	1.00 (0.55-1.85)	1.79 ** (1.05-3.05)	1.38 ** (0.93-2.03)	0.74 (0.50-1.08)	1.76 (0.67-4.61)	1.03 (0.56-1.91)	0.96 (0.76-1.23)	0.90 (0.72-1.13)
<b>2+ Chronic Diseases</b>	0.68 (0.43-1.07)	1.67 ** (1.09-2.57)	1.09 (0.75-1.58)	1.08 (0.75-1.55)	1.04 (0.69-1.55)	1.16 (0.79-1.69)	1.01 (0.79-1.29)	0.91 (0.76-1.10)
<b>1+ Limitation (NAGI, IADL, ADL)</b>	1.63 (0.94-2.81)	0.97 (0.61-1.52)	1.18 (0.80-1.75)	1.12 (0.85-1.47)	1.49 (0.86-2.56)	1.37 (0.96-1.95)	1.34 *** (1.07-1.67)	0.89 (0.75-1.06)
<b>3+ Depressive Symptoms</b>	0.58 (0.30-1.15)	1.23 (0.75-1.99)	1.05 (0.75-1.46)	0.96 (0.74-1.23)	1.32 (0.74-2.35)	1.02 (0.72-1.45)	1.15 (0.87-1.51)	1.43 *** (1.18-1.72)
<b>Self-rated Health &lt; Good<sup>c</sup></b>	0.83 (0.46-1.50)	0.78 (0.44-1.36)	0.86 (0.59-1.26)	0.77 (0.56-1.08)	0.72 (0.41-1.28)	0.73 (0.48-1.11)	0.74 ** (0.56-0.99)	0.83 (0.66-1.04)
<b>1+ natural parent alive</b>	1.98 ** (1.23-3.38)	1.86 ** (1.03-2.78)	1.56 *** (1.09-2.35)	1.58 *** (1.13-2.14)	2.09 ** (1.03-3.52)	1.39 ** (1.04-2.37)	1.60 *** (1.28-1.99)	2.03 *** (1.70-2.42)
<b>1+ grandchild</b>	0.99 (0.63-1.55)	1.95 *** (1.21-3.15)	1.96 *** (1.47-2.62)	1.77 *** (1.37-2.29)	2.82 *** (1.79-4.45)	2.97 *** (1.93-4.60)	1.59 *** (1.28-1.98)	1.79 *** (1.49-2.14)
<b>Married</b>	1.05 (0.67-1.87)	1.03 (0.66-1.53)	1.97 *** (1.29-2.98)	1.03 (0.77-1.40)	2.62 *** (1.54-5.01)	1.42 (0.92-2.11)	1.41 *** (1.07-1.84)	1.21 *** (1.03-1.46)
<b>In paid work</b>	0.94 (0.57-1.56)	0.60 (0.36-1.02)	0.66 (0.43-1.03)	0.86 (0.63-1.18)	0.97 (0.66-1.41)	0.69 (0.43-1.11)	0.54 *** (0.42-0.70)	0.60 *** (0.49-0.72)
<b>Engaged in Formal Activities<sup>d</sup></b>	1.16 (0.77-1.73)	1.59 ** (1.09-2.33)	1.73 *** (1.29-2.33)	1.74 *** (1.32-2.30)	1.82 ** (1.00-3.33)	1.42 (0.86-2.38)	1.54 *** (1.19-2.00)	1.42 *** (1.16-1.74)
<b>N Observations</b>	<b>514</b>	<b>540</b>	<b>824</b>	<b>949</b>	<b>734</b>	<b>955</b>	<b>3,198</b>	<b>3,414</b>

Source: SHARE, 2004; ELISA, 2002; weighted data – own calculations. Reference categories: a) Age 50-54; b) Education: LOW; c) Self-Rated Health  $\geq$  good; d) Note that the definition of Engagement in family and informal activities differs for SHARE and ELISA datasets. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.

**Table 7.18 Participation in Informal and Family-related Activities –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted logistic Regressions when all SHARE countries are grouped altogether, by sex and considering various model specifications**

	With 'living alone'		With marital status		Marital + activities	
	Male	Female	Male	Female	Male	Female
<b>Age: 55-59<sup>a</sup></b>	0.62 *** (0.47–0.89)	1.42 *** (1.12–1.79)	0.65 *** (0.47–0.90)	1.40 *** (1.11–1.76)	0.62 *** (0.45–0.85)	1.36 *** (1.08–1.70)
<b>Age: 60-64<sup>a</sup></b>	1.06 (0.76–1.47)	1.31 (0.97–1.76)	1.03 (0.74–1.43)	1.28 (0.95–1.74)	0.93 (0.66–1.29)	1.14 (0.81–1.60)
<b>Age 65-69<sup>a</sup></b>	1.13 (0.79–1.63)	0.99 (0.71–1.39)	1.10 (0.77–1.58)	0.98 (0.71–1.36)	0.96 (0.63–1.45)	0.87 (0.63–1.23)
<b>Education: MIDDLE<sup>b</sup></b>	1.44 ** (1.04–1.98)	1.05 (0.81–1.37)	1.45 ** (1.05–2.00)	1.05 (0.81–1.36)	1.42 ** (1.02–1.98)	1.04 (0.78–1.35)
<b>Education: HIGH<sup>b</sup></b>	1.54 ** (1.01–2.34)	0.91 (0.66–1.26)	1.54 ** (1.03–2.31)	0.91 (0.65–1.26)	1.51 (0.97–2.32)	0.89 (0.65–1.21)
<b>1+ Limitation</b>	1.37 (0.98–1.91)	1.25 ** (1.01–1.54)	1.36 (0.98–1.89)	1.24 ** (1.01–1.54)	1.34 (0.96–1.87)	1.22 (0.99–1.51)
<b>2+ Chronic Diseases</b>	1.03 (0.79–1.34)	1.17 (0.91–1.50)	1.03 (0.79–1.35)	1.17 (0.91–1.51)	1.01 (0.77–1.31)	1.16 (0.90–1.47)
<b>3+ Depressive Symptoms</b>	1.10 (0.80–1.51)	0.97 (0.79–1.19)	1.10 (0.80–1.51)	0.97 (0.80–1.19)	1.14 (0.82–1.58)	0.99 (0.81–1.21)
<b>SRH &lt; Good<sup>c</sup></b>	0.77 (0.56–1.06)	0.77 ** (0.61–0.98)	0.78 (0.56–1.07)	0.78 ** (0.61–0.99)	0.80 (0.58–1.10)	0.76 ** (0.58–0.97)
<b>Living Alone</b>	0.38 *** (0.25–0.57)	0.79 (0.57–1.10)				
<b>Married</b>			2.16 *** (1.52–3.04)	1.22 (0.98–1.51)	2.12 *** (1.50–3.01)	1.14 (0.94–1.45)
<b>1+ parent with SRH &lt; good<sup>d</sup></b>			1.88 *** (1.41–2.52)	1.36 *** (1.08–1.72)	1.89 *** (1.40–2.54)	1.40 *** (1.12–1.76)
<b>Parent with SRH ≥ good<sup>d</sup></b>			1.64 ** (1.13–2.39)	1.67 *** (1.27–2.21)	1.66 ** (1.12–2.45)	1.71 *** (1.29–2.26)
<b>1+ grandchild</b>			2.21 *** (1.72–2.84)	2.25 *** (1.74–2.92)	2.25 *** (1.74–2.90)	2.28 *** (1.75–2.96)
<b>In Paid work</b>					0.84 (0.65–1.07)	0.75 ** (0.58–0.97)
<b>Formally Engaged</b>					1.69 *** (1.30–2.21)	1.58 *** (1.21–2.05)
<b>France<sup>e</sup></b>	1.04 (0.76–1.43)	0.86 (0.67–1.09)	1.05 (0.76–1.45)	0.85 (0.67–1.08)	0.95 (0.69–1.31)	0.86 (0.67–1.09)
<b>Denmark<sup>e</sup></b>	1.09 (0.74–1.61)	0.77 (0.57–1.04)	1.11 (0.76–1.64)	0.76 (0.56–1.02)	0.99 (0.67–1.46)	0.74 (0.53–1.04)
<b>N Observations</b>	<b>2,074</b>	<b>2,446</b>	<b>2,074</b>	<b>2,445</b>	<b>2,072</b>	<b>2,444</b>

Source: SHARE, 2004; weighted data – own calculations. This table shows the fully adjusted logistic results for participation in informal activity only for SHARE countries when the latter are considered altogether and country dummy variables are taken into account. Analyses are repeated for each of the various model specifications.

Reference categories: a) Age 50-54; b) Education: LOW; c) SRH = good, very good, excellent; d) No natural parents alive; e) Italy. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.



## 7.4 CONCLUSIONS

This chapter examined the baseline associations between socio-demographic and health characteristics of older people and engagement in paid work, formal and informal activities in Denmark, France, Italy and England in order to assess whether the characteristics associated with engagement were common across different countries.

It is clear that older people aged 50-69 contribute significantly to the well-being of other individuals as well as to the larger society. Using data from SHARE and ELSA, overall almost 40% of respondents aged 50-69 were in paid work, one quarter were engaged in formal activities, and one third provided regular help and care for family members, friends and neighbours. Nonetheless, almost one quarter of respondents in SHARE and one third in ELSA were not engaged in any of the above-mentioned activities.

As regards the *personal-level characteristics* associated with engagement in the three activities, some common patterns were found across different countries. Among the factors associated with the three forms of engagement, the age of the respondents was, in both SHARE and ELSA countries, consistently and significantly correlated only with paid work whereas there was no significant association between age and formal and informal engagement. Higher education was generally positively associated with both paid work and commitment in formal activities, confirming that the level of education is the most consistent predictor of civic participation (Wilson, 2000, van Ingen and Dekker, 2010).

The association between health and older people's engagement was less clear. Ill-health indicators were significantly negatively associated with work in all countries except among Italian men. The association with the other two forms of activities were weaker and differential depending on the country and the gender. Some of the positive associations between ill-health and engagement may be explained by the fact that activities such as providing help and caring for sick people could be potentially risk factors for health; it could also be possible, though, that people who were formally and informally engaged were those not in paid work for health-related reasons. Clearly, given the cross-sectional nature of these findings, it is not possible to determine whether

poor health was the cause or the consequence of being engaged in certain activities. Both mechanisms are equally plausible. Just as an example, being in paid work may have a favourable and positive impact on people's health but at the same time it might be less likely for ill people to start participating in work (Thomas et al., 2005).

Older people's *level of engagement* in paid work, formal, informal and family activities differed in each of the countries considered<sup>69</sup>, suggesting the importance of other country-specific factors in determining older people's level of engagement. Generally speaking higher proportions of 'active' older people were found in Denmark whereas Italy was characterized by lower rates of engagement. The proportion of Danish SHARE female respondents in paid work was more than double the Italian proportion; similarly, almost 60% of the Danish men were in paid work compared to 40% of the Italian male respondents. Danish respondents consistently also had participation rates in informal activities between two and three times higher than those of the Italians. Moreover, whereas in France, Italy and England the proportion of respondents who were engaged only in formal or informal activities was higher than that of respondents who combined either of these activities with work, in Denmark almost a quarter of respondents aged 50-69 combined work with at least one of the formal or informal activities.

Independent of the general level of participation in a country, we also found evidence for a complementary relationship between the formal and informal activities and therefore a possible accumulation of these two forms of engagement at the individual-level. While, in our sample, paid work was negatively associated with the probability to engage in formal and informal activities, a strong positive correlation was found between active involvement in informal domain and the propensity to be engaged also in formal activities. Among the mechanisms proposed to explain these relationships, it is likely that older people engaged with informal and family-related activities might be more likely to get involved with larger social networks, including charitable, political or religious organizations, which may provide opportunities for engaging in formal activities. These findings confirm similar results reported in a number of studies (Burr et al., 2005, Choi et al., 2007, Hank and Stuck, 2008). Paid work, on the other hand, did

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<sup>69</sup> After controlling for socio-economic, demographic and health-related variables, differences between countries remained only when paid work and formal engagement were considered

not seem to compete with family and informal commitment (with the exception of ELSA respondents<sup>70</sup>). One possible interpretation is that, because of normative obligation or expectation, older people are available to give support to their family and friends regardless of their employment status (Caro et al., 2005).

Differences in the level of engagement suggest a connection between patterns of activity and policies such as –for paid work –the statutory retirement age, part-time work opportunities, the social security benefits and the pension wealth (Pichler and Wallace, 2007, Hank and Stuck, 2008, Börsch-Supan et al., 2009). Similarly, the level of participation in formal activities seemed to be country-specific, suggesting that differences in the level of formal commitment may be mainly explained by the interaction between welfare regimes and the societal context, norms and values as proposed in several studies (Salamon and Sokolowski, 2001, Smith and Shen, 2002, Erlinghagen and Hank, 2006, Pichler and Wallace, 2007, Hank and Stuck, 2008, Hank, 2010, Hank and Erlinghagen, 2010). Conversely, family-related and informal participation was in all countries mainly associated with the presence of kin network and, once controlling for that, differences between countries become almost undetectable.

Longitudinal analyses may provide a better insight on the mutual relationship between participation in the various activities and health and whether maintaining an active engaged life can be beneficial for their health.

Chapter 9 investigates the longitudinal association between engagement at baseline and health at follow-up, trying to understand whether the various forms of activity contribute equally to health and its lower decline over time. Before introducing these longitudinal analyses, however, a few considerations about attritions are introduced in Chapter 8. This deals with attrition and introduces a model to better describe the characteristics of people who were not successfully interviewed at the second wave of the study.

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<sup>70</sup> The measure of outcome for ELSA respondents, however, is different and includes fewer activities.

## **8. ATTRITION IN ELSA AND SHARE: WHO IS MISSING AT WAVE 2**

The main focus of this chapter is on attrition, i.e. respondents who dropped out of the survey between waves. After an initial introduction about missing data, some analyses on the occurrence of missing data are shown, focusing in particular on those factors hypothesised to be correlated with the outcomes of the study. Cross-tabulations (and relative chi-squared tests) comparing the groups of subjects with and without missing data at the second wave are presented (i.e. data collected at the first wave will be used to understand the nature of subsequent non-response). The influence of a selection of predictor variables on the occurrence of missing data at subsequent waves is also presented by means of a simple logistic regression analysis. In the latter case, the focus will not only merely be the significance of the variables but also the direction of the association with missingness since both are important issues in determining whether or not the pattern of missing data is informative. The latter suggests that the pattern of missing data is not ignorable and has to be acknowledged when the influence of activity on health is analysed.

### **8.1 ATTRITION IN LONGITUDINAL STUDY. AN INTRODUCTION**

#### **8.1.1 POTENTIAL REASONS**

Sample attrition is a type of missingness which occurs when a responding unit in one wave of the panel drops out in a subsequent wave. This is almost an unavoidable problem (Ruspini, 2004, Twisk, 2007) which is often considered one of the most serious disadvantages of panel data (Fitzgerald et al., 1998, Trivellato, 1999) because of decreased precision of the estimates as the sample size decreases too and, most importantly, because non-response may not be random. As a result the sample may cease to be representative and estimates of the outcomes of interest may be biased (Uhrig, 2008).

Although preventive measures are adopted in order to minimise drop-outs, attrition might happen because of the *survey design* (such as the length of the interview, the topic of the survey, incentives and follow-up procedures), *individual and household characteristics* (such as gender, employment status, health as well as household location) and the *interaction between the interviewer and the respondents* (Lepkowski and Couper, 2002, Lynn et al., 2005, Nicoletti and Peracchi, 2005). For instance, Schröder (2008) showed how the interview length was associated (with mixed country-specific findings) with survey participation in SHARE Wave 2. In the Michigan Panel Study on Income Dynamics attrition was concentrated among lower socio-economic status respondents whereas marriage and living in an urban area were protective factors (Fitzgerald et al., 1998). Zamarro et al. (2008) found that people in poor health and with poor cognitive abilities were more likely to drop out. Several studies have shown that the interviewer characteristics as well as how they got along with the respondents were also important factors in determining people's attrition level (Groves and Couper, 1998, Schröder, 2008, Uhrig, 2008).

### **8.1.2 MISSINGNESS MECHANISMS**

In the statistical literature, it is considered useful to distinguish the missing data mechanism (i.e. the relationship between missingness and the values of the variables) because most statistical methods depend on such mechanisms (Little and Rubin, 2002). Data are said to be missing completely at random (MCAR) if missingness does not depend on the (unobserved and observed) values of the data. Data are said to be missing at random (MAR) if missingness depends only on the observed data (or in other words, given the observed values, the missing data are random). Finally, if missingness depends on information that has not been recorded and this information also predicts the missing values, then the missing data mechanism is said to be not missing at random (NMAR). Although the distinction between MAR and NMAR is quite important since this affects methods, analyses and results, the observed data in a given dataset cannot be used to distinguish between MAR and NMAR mechanisms without additional untestable assumptions given that the missing data mechanism is in most

situations unknown because of the unavailability of the missing data (Kenward and Carpenter, 2007).

## **8.2 ATTRITION IN ELSA AND SHARE**

Despite the impossibility of testing the missing mechanisms, it is nevertheless important to investigate whether missing data depend on earlier observations, i.e. to determine whether certain predictor variables (mainly the demographic and health status of the respondents) were related to the occurrence of missing data (Twisk, 2007). If not formally, at least these analyses of the attrition in each of the countries separately will inform us on whether the pattern of missing data was ignorable or informative and on whether attrition differed in different countries.

Because of the longitudinal nature of the study and the potential self-selectiveness of the sample, it is important to have an idea of the potential limitation of the findings. Attrition characteristics among both ELSA and SHARE respondents should help us determine whether and how the factors of interest are related to the occurrence of missing data. In particular, given that health and activity participation are mutually causally correlated, the longitudinal effect of each on the other might be overstated should characteristics of drop-outs not be accounted for. For instance, in fact, if unhealthier and less engaged people are more likely to have dropped out of the study, the longitudinal as well as cross-sectional wave-2 association between activity and health could be exaggerated.

## **8.3 ATTRITION RATES IN ELSA AND SHARE**

The attrition rate was based on respondents with a completed interview in 2004-2005 (SHARE) and in 2002 (ELSA). Around a third of French and 30% of the Italian samples dropped-out of the survey between the first and the second wave, regardless of their gender. In contrast, 23% of Danish and less than 20% of English older people dropped out of the survey in the second wave (see Table 8.1). Interestingly, France experienced more attrition than the other countries under study; this could partly reflect the initially higher response rate achieved by SHARE in this country.

**Table 8.1 Attrition Rates for Wave 1 Respondents by country**

	<b>Denmark</b>	<b>France</b>	<b>Italy</b>	<b>England</b>
	<b>% (N)</b>	<b>% (N)</b>	<b>% (N)</b>	<b>% (N)</b>
<b>Participated in wave 2</b>	75.5 (832)	64.4 (1,286)	70.3 (1,249)	80.0 (6,049)
<b>Drop out (excluding dead)</b>	23.0 (254)	34.5 (690)	28.7 (509)	19.0 (1,436)
<b>Dead between waves</b>	1.5 (16)	1.1 (22)	1.0 (18)	1.0 (79)
<b>Total</b>	100 (1,102)	100 (1,998)	100 (1,776)	100 (7,564)

This table shows the percentages (and number) of respondents from each country who did not take part in the second wave of SHARE and ELSA in 2006 and 2004 respectively. Source: SHARE 2006, ELSA 2004; unweighted data.

Given the very few number of people who died between the first and second wave, deaths were excluded in the analyses: not only they were not counted as attritions but also they were not considered as a specific category (Rendtel, 2002).

## **8.4 DETERMINANTS OF ATTRITION**

### **8.4.1 RESPONDENT CHARACTERISTICS AND DIFFERENTIAL NON-RESPONSE IN WAVE 2; BIVARIATE ANALYSES**

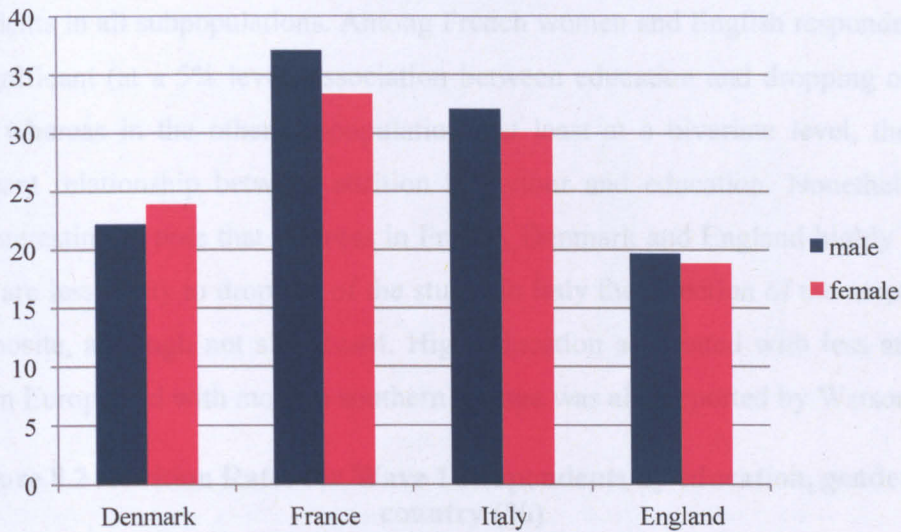
Almost all the personal and household characteristics could potentially be considered among the factors associated with dropping out of the study. In this section, only a few important ones such as gender, age, employment status and participation in other activities, health status and type of house were considered. These variables are among the ones of interest in this study and it is therefore important to determine whether and how they are related to the occurrence of missing data.

Men were more likely to drop out of the study than women in all countries except Denmark, even though this relationship was significant<sup>71</sup> only in France (see Figure 8.1). This confirmed findings from previous studies where men dropped out more frequently than women (Lepkowski and Couper, 2002, Behr et al., 2005, Hawkes and Plewis, 2006), even though the effect of gender usually disappears when other factors are controlled for (Watson, 2003).

<sup>71</sup> Bivariate associations were assessed with  $\chi^2$  tests.



**Figure 8.1 Attrition Rates for Wave 1 Respondents (%), by gender and country**



Source: SHARE 2006/4, ELSA 2004/2; weighted data.

Table 8.2 shows attrition rates by gender and **age-group** at baseline. The attrition rates did not seem to follow any particular trends except among Danish and English men where a reverse U-shaped pattern was detectable, with the highest attrition among those aged 55-59. The latter were also the only two subpopulations where the association between attrition rates and age-group was significant.

**Table 8.2 Attrition Rates for Wave 1 respondents by age-group, country and gender**

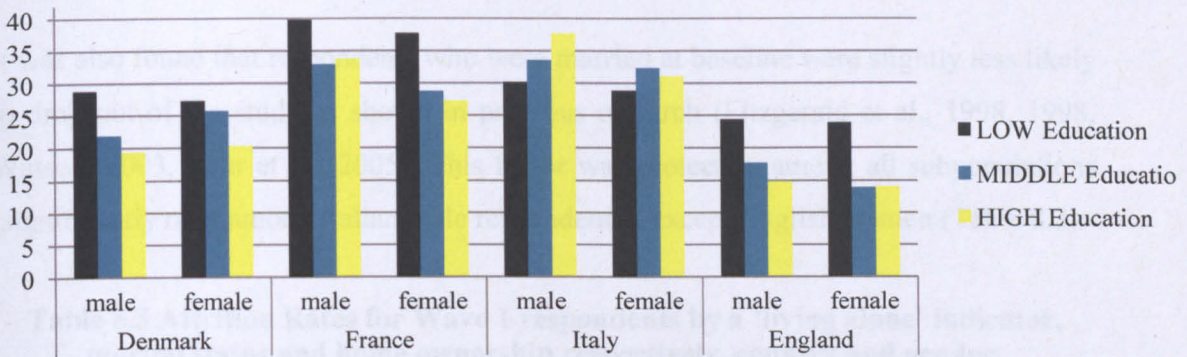
	Denmark		France		Italy		England	
	M **	F	M	F	M	F	M**	F
<b>50-54</b>	24.4 (41/168)	25.3 (38/151)	40.5 (116/287)	36.3 (110/294)	28.7 (35/127)	30.9 (60/199)	17.0 (154/893)	19.1 (208/1,082)
<b>55-59</b>	28.1 (43/147)	26.9 (44/171)	34.3 (97/278)	35.8 (112/322)	38.1 (81/226)	24.3 (65/275)	21.4 (213/1,006)	19.6 (222/1,153)
<b>60-64</b>	19.6 (28/134)	17.4 (25/135)	39.1 (73/188)	32.1 (73/227)	28.9 (59/217)	33.7 (88/290)	21.1 (171/801)	16.8 (143/872)
<b>65-69</b>	11.4 (10/88)	25.8 (25/92)	34.0 (56/175)	27.0 (53/205)	30.6 (53/193)	33.0 (68/231)	19.9 (153/783)	19.6 (172/894)
<b>Total</b>	22.2 (122/537)	23.9 (132/549)	37.1 (342/928)	33.4 (348/1,048)	32.1 (228/763)	30.1 (281/995)	19.7 (691/3,483)	18.8 (745/4,001)

This table shows the percentages and absolute number of respondents who were interviewed at wave 1 but not at wave 2 stratified by gender, country and age-group at the point of the first wave interview. Sources: SHARE 2006/4, ELSA 2004/2; weighted data. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively



Figure 8.2 shows the relationship between attrition and **educational level** of the respondents in all subpopulations. Among French women and English respondents there is a significant (at a 5% level) association between education and dropping out of the survey whereas in the other subpopulations, at least at a bivariate level, there is no significant relationship between attrition behaviour and education. Nonetheless, it is quite interesting to note that whereas in France, Denmark and England highly educated people are less likely to drop out of the study, in Italy the direction of the association is the opposite, although not significant. High education associated with less attrition in northern Europe and with more in southern Europe was also reported by Watson (2003).

**Figure 8.2 Attrition Rates for Wave 1 Respondents by education, gender and country (%)**

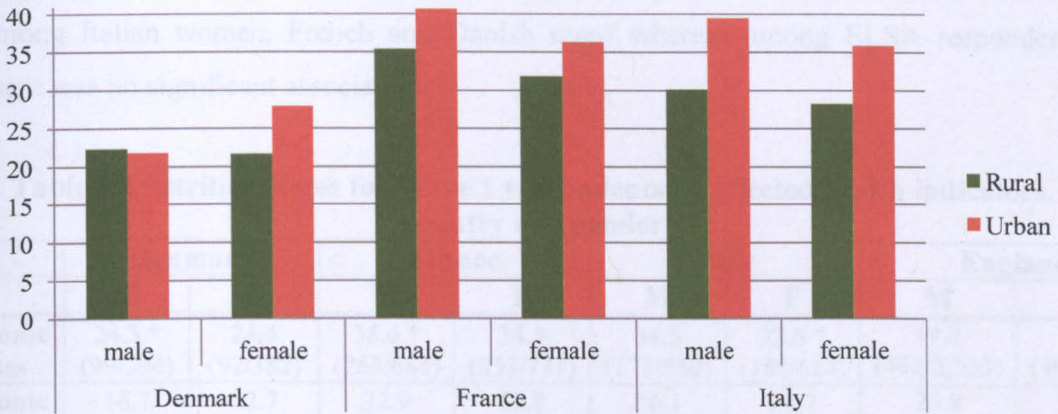


Source: SHARE 2006/4, ELSA 2004/2; weighted data.

Figure 8.3 shows the relationship between attrition and whether living in either a urban or a rural area. Zabel (1998), analysing attrition behaviour in two longitudinal surveys (the Panel Study of Income Dynamics and the Survey of Income and Program Participation) reported higher attrition among urban dwellers. However, in SHARE there was no significant urban/rural difference in attrition (but rates of attrition are generally higher among urban dwellers).



**Figure 8.3 Attrition Rates for Wave 1 Respondents by area of residence, gender and country**



This figure shows the percentages of respondents who were not interviewed at wave 2 stratified by area of residence (rural or urban), gender and country at the baseline. Source: SHARE 2006/4; weighted data.

It was also found that respondents who were married at baseline were slightly less likely to drop out of the study as shown in previous research (Fitzgerald et al., 1998, 1998, Watson, 2003, Behr et al., 2005). This factor was protective among all subpopulations (significantly only among Italian male respondents), except English women (Table 8.3).

**Table 8.3 Attrition Rates for Wave 1 respondents by a ‘living alone’ indicator, marital status and home ownership respectively, country and gender.**

	Denmark		France		Italy		England	
	M	F	M	F	M	F	M	F
<b>Not Married</b>	25.7 (42/153)	24.0 (43/181)	40.5 (75/191)	32.8 (110/345)	45.2 *** (45/101)	33.0 (58/195)	19.8 (151/757)	16.8 ** (196/1,204)
<b>Married</b>	20.4 (78/381)	23.4 (89/368)	34.8 (249/714)	32.3 (225/688)	28.8 (183/662)	28.7 (222/798)	19.6 (540/2,725)	19.6 (549/2,797)

This table shows the percentages and absolute number of respondents who were interviewed at wave 1 but not at wave 2 tabulated by gender, country and whether the respondent was married at the point of the first wave interview. Sources: SHARE 2006/4, ELSA 2004/2; weighted data. \*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively

Table 8.4 shows the association between attrition and health. Findings were mixed for French and Danish men. Among the other subpopulations, patterns were opposite: respondents with at least one function limitation, depressive symptoms, and who rated their health as poor or fair were less likely to be interviewed in the second wave among Danish women and English men whereas they were more likely to participate in wave 2 among Italians and French female respondents.

Similarly, SHARE respondents who reported having two or more chronic diseases at baseline were more likely to participate in the second wave of the survey (significantly among Italian women, French and Danish men) whereas among ELSA respondents there was no significant association.

**Table 8.4 Attrition Rates for Wave 1 respondents by selected health indicators, country and gender**

	Denmark		France		Italy		England	
	M	F	M	F	M	F	M	F
<b>&lt;2 Chronic diseases</b>	24.3 * (99/394)	24.4 (92/382)	38.6 * (263/684)	34.5 (253/731)	34.5 (173/550)	32.6 * (188/614)	19.3 (492/2,533)	18.4 (495/2,729)
<b>2+ Chronic diseases</b>	16.7 (23/143)	22.7 (40/167)	32.9 (79/244)	30.8 (95/317)	26.1 (55/213)	25.7 (93/381)	20.8 (199/950)	19.8 (250/1,272)
<b>No Limitations</b>	21.0 (84/394)	21.5 (67/313)	36.0 (240/671)	37.6 *** (213/570)	37.0 *** (165/497)	34.5 ** (146/469)	18.8 (372/1,968)	18.8 (327/1,751)
<b>1+ Limitation</b>	25.3 (38/143)	27.1 (65/236)	39.8 (102/257)	28.3 (135/478)	23.1 (63/266)	25.8 (135/526)	20.9 (319/1,515)	18.8 (418/2,250)
<b>Not Depressed</b>	22.2 (105/465)	22.8 (100/433)	34.9 (230/666)	33.9 (196/591)	32.5 (179/599)	32.2 * (182/613)	19.1 * (547/2,839)	18.4 (550/3,015)
<b>Depressed</b>	16.1 (11/64)	27.6 (30/111)	35.8 (66/184)	28.6 (116/400)	27.6 (43/156)	25.0 (92/373)	22.1 (144/644)	20.1 (195/986)
<b>(SRH) =&gt; Good</b>	20.6 (91/427)	22.8 (98/433)	33.5 ** (228/682)	31.1 * (235/760)	32.9 (164/553)	31.7 (184/617)	18.3 *** (479/2,606)	17.4 *** (534/3,094)
<b>SRH = fair/poor</b>	27.3 (29/107)	28.1 (34/116)	43.3 (90/212)	37.0 (98/269)	27.2 (58/146)	26.3 (95/376)	22.8 (189/829)	22.7 (195/877)

Percentages and absolute number of respondents who were interviewed at wave 1 but not at wave 2 tabulated by gender, country and selected health characteristics (chronic diseases, functional limitation, depression and self-rated health) at the point of the first wave interview. Source: SHARE 2006/4, ELSA 2004/2; weighted data. \*, \*\*, \*\*\*: significant at the 0.10, 0.05 and 0.01 levels, respectively.

Finally, when considering the relationship between the employment status at baseline and attrition we found few statistically significant differences between those who were in paid work and those who were not. Even though other studies suggested that people in paid work were more likely to drop out (Watson, 2003, Behr et al., 2005), this association was significant only among French men. In England and among Danish women, on the contrary, the direction of the association is opposite (though not significant) (see Table 8.5 for full details).

ELSA and SHARE respondents (except Italian women) who were engaged in formal activities at baseline were more likely to be interviewed at the second wave and this association was significant among Danish and Italian men as well as French women and

the English subpopulations. This confirms the hypothesis that people engaged in community affairs also tend to have higher civic mindedness and are therefore more willing to keep participating in surveys (Groves et al., 2000, Lepkowski and Couper, 2002, Uhrig, 2008).

Similarly, people who were actively involved in informal and family-related activities at time 1 seemed to have lower attrition rates than those who were not engaged in such activities in almost all subpopulations (except Danish and English women), although this difference was significant only among French women, Danish men and ELSA participants.

**Table 8.5 Attrition Rates for Wave 1 respondents by 'participation' in the three forms of activities, country and gender**

	Denmark		France		Italy		England	
	M	F	M	F	M	F	M	F
<b>No Paid Work</b>	22.0 (51/220)	22.2 (65/275)	32.1 ** (147/469)	31.6 (192/609)	29.7 (136/490)	29.1 (223/814)	21.0 (341/1,641)	19.6 (450/2,342)
<b>In Paid Work</b>	21.5 (68/313)	25.6 (67/274)	39.0 (165/420)	33.7 (137/414)	33.9 (86/267)	31.7 (51/177)	18.7 (350/1,842)	17.7 (295/1,659)
<b>No Formal</b>	25.0 ** (84/332)	24.6 (85/341)	36.1 (223/616)	34.2 *** (260/763)	32.6 ** (202/655)	28.9 (240/865)	20.9 *** (628/2,984)	20.1 *** (640/3,218)
<b>Formal Acts</b>	15.3 (32/198)	21.8 (44/205)	33.3 (79/247)	25.5 (60/243)	21.8 (18/100)	32.6 (35/124)	12.7 (63/499)	13.6 (105/783)
<b>No Fam Inf Acts</b>	23.8 * (85/337)	22.9 (69/310)	36.4 (205/571)	35.5 *** (194/552)	32.3 (156/521)	31.0 (153/509)	20.2 (586/2,876)	18.1 * (509/2,851)
<b>Family/ Inf Acts</b>	17.4 (32/194)	24.9 (62/238)	33.3 (100/298)	28.5 (130/459)	28.6 (64/234)	27.7 (122/480)	17.3 (105/607)	20.6 (236/1,150)

This table shows the percentages and absolute number of respondents who were interviewed at wave 1 but not at wave 2 tabulated by gender, country and participation in the three activities under study (work, formal, informal and family-related) at the point of the first wave interview. Sources: SHARE 2006/4, ELSA 2004/2; weighted data. \*, \*\*, \*\*\*: significant at the 0.10, 0.05 and 0.01 levels, respectively

#### **8.4.2 RESPONDENT CHARACTERISTICS AND DIFFERENTIAL NON-RESPONSE IN WAVE 2; MULTIVARIATE MODEL OF RESPONSE TO MAIN INTERVIEW**

Table 8.6 shows participation in the second wave of the SHARE and ELSA survey modelled on a full range of information collected at baseline, including not only personal demographic and health characteristics but also the three variables indicating whether the respondent was actively engaged at baseline in the three forms of activities under study (i.e. work, formal participation, informal and family-related activities).

Age did not seem to be significantly associated with the likelihood of participating in the second wave. Among Danish men and French women, people aged 65-69 at baseline were more likely to stay in the study compared to the younger counterparts whereas in the other subpopulations a drop in the odds of participation was detectable as age increased (though such associations were not significant). Responders in wave 2 were more likely than non-responders to be highly educated in all countries (and significantly among English respondents, Danish and French women) except Italy.

As regards the health characteristics, fully adjusted logistic results confirmed most of the bivariate associations. Having reported at least 2 chronic diseases at baseline increased the odds of participation in all subpopulations (except English women), although significantly only among Danish men. Similarly, the direction of the association between 'depression' and participation in the second wave of the survey seemed to suggest that respondents who were depressed at baseline were less likely to drop out. As regards SRH, in most subpopulations those who rated their health as less than good were less likely to participate in the second wave (statistically significant among French and English respondents). Having at least one IADL, ADL or NAGI limitation was differentially associated with the participation in the second wave: French women and Italian men with baseline functional limitations were significantly more likely to be interviewed at follow-up whereas the opposite association held among French men.

Living in a big city was positively associated with the likelihood of dropping out in all SHARE countries, significantly among Danish women and French men. 'Living alone' was associated with participation in the second wave in a differential way depending on

the country. Among Danish and English women, living alone at baseline was positively and significantly associated with participation in the second wave whereas among Italian respondents living alone were significantly more likely to drop out. No association was detectable in the other subgroups.

Finally, when engagement in the three forms of activities was considered, findings showed that paid work at baseline was significantly associated with attrition only among French men. In the other subpopulations, the direction of the association between paid work and attrition was positive among Italian respondents and Danish women whereas it was negative among Danish men, French women and ELSA respondents. People who were actively involved in formal activities at the time of the first interview were significantly more likely to participate also in the second, significantly among French women and Danish, English and Italian men. No association between formal engagement and attrition was present among Danish female and French male respondents. Being involved in informal and family-related activities at baseline also increased the odds of participating in the second wave interview in most subpopulations except Danish and English women.

**Table 8.6 Participation in wave 2 of the survey –Odds Ratios and 95% Confidence Intervals obtained from fully adjusted Logistic Regressions analysis including ‘living alone’ indicator and ‘engagement’ at baseline, by country and sex,**

	DENMARK		FRANCE		ITALY		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age: 55-59 *</b>	0.89 (0.50-1.60)	0.80 (0.46-1.41)	1.24 (0.84-1.84)	1.08 (0.70-1.64)	0.54 ** (0.29-1.00)	1.32 (0.79-2.19)	0.80 * (0.62-1.03)	0.91 (0.72-1.16)
<b>Age: 60-64 *</b>	1.50 (0.78-2.87)	1.21 (0.62-2.37)	1.01 (0.64-1.61)	1.33 (0.90-1.97)	0.69 (0.38-1.26)	0.84 (0.44-1.59)	0.79 * (0.59-1.04)	1.11 (0.84-1.48)
<b>Age: 65-69 *</b>	3.25 ** (1.25-8.44)	0.59 (0.27-1.30)	1.07 (0.46-2.48)	2.16 *** (1.34-3.48)	0.57 (0.28-1.17)	0.92 (0.52-1.61)	0.88 (0.64-1.22)	0.92 (0.68-1.24)
<b>Education: MIDDLE <sup>b</sup></b>	1.72 (0.91-3.26)	1.17 (0.67-2.03)	1.30 (0.91-1.86)	1.53 *** (1.16-2.02)	0.82 (0.50-1.35)	0.99 (0.61-1.61)	1.36 *** (1.08-1.70)	1.85 *** (1.48-2.32)
<b>Education: HIGH <sup>b</sup></b>	1.71 (0.83-3.51)	1.98 ** (1.05-3.73)	1.19 (0.82-1.72)	1.72 *** (1.20-2.45)	0.82 (0.37-1.78)	1.17 (0.58-2.40)	1.62 *** (1.29-2.04)	1.72 *** (1.34-2.19)
<b>2+ Chronic diseases</b>	2.17 ** (1.17-4.03)	1.46 (0.84-2.54)	1.26 (0.86-1.83)	1.05 (0.76-1.46)	1.46 (1.81-2.67)	1.12 (0.78-1.60)	1.09 (0.87-1.36)	0.95 (0.77-1.16)
<b>1+ Limitation (NAGI, IADL, ADL)</b>	0.64 (0.34-1.21)	0.74 (0.44-1.26)	0.78 * (0.58-1.06)	1.50 *** (1.11-2.03)	1.97 *** (1.21-3.21)	1.28 (0.87-1.89)	0.95 (0.77-1.16)	1.04 (0.86-1.27)
<b>Depressed</b>	2.39 ** (1.11-5.13)	0.75 (0.43-1.31)	1.23 (0.86-1.74)	1.42 * (0.94-2.13)	1.18 (0.75-1.87)	1.24 (0.83-1.84)	0.96 (0.75-1.23)	1.07 (0.85-1.33)
<b>Self-rated Health &lt; Good <sup>c</sup></b>	0.71 (0.36-1.39)	0.84 (0.44-1.59)	0.57 *** (0.38-0.85)	0.62 *** (0.45-0.86)	0.93 (0.56-1.54)	1.04 (0.70-1.55)	0.93 (0.73-1.18)	0.82 (0.65-1.04)
<b>Living Alone</b>	1.10 (0.59-2.05)	1.67 * (0.98-2.85)	1.05 (0.50-2.21)	1.00 (0.70-1.42)	0.40 *** (0.22-0.73)	0.64 * (0.38-1.07)	1.06 (0.82-1.38)	1.42 *** (1.12-1.82)
<b>Living in big city <sup>d</sup></b>	0.99 (0.59-1.66)	0.60 ** (0.38-0.96)	0.78 * (0.60-1.01)	0.81 (0.51-1.27)	0.69 (0.39-1.21)	0.76 (0.41-1.39)		
<b>Working</b>	1.45 (0.82-2.55)	0.64 (0.36-1.13)	0.64 ** (0.43-0.95)	1.16 (0.85-1.59)	0.93 (0.58-1.51)	0.86 (0.55-1.34)	1.10 (0.87-1.38)	1.04 (0.83-1.28)
<b>Engaged in Formal Activities <sup>e</sup></b>	1.76 ** (1.07-2.89)	1.00 (0.63-1.59)	1.00 (0.68-1.49)	1.44 ** (1.06-1.97)	2.00 ** (1.11-3.59)	0.94 (0.60-1.47)	1.56 *** (1.15-2.11)	1.17 (0.92-1.51)
<b>Engaged in Family &amp; Informal Activities <sup>e</sup></b>	1.65 ** (1.00-2.74)	0.87 (0.55-1.35)	1.16 (0.88-1.54)	1.29 ** (1.01-1.65)	1.04 (0.66-1.63)	1.10 (0.82-1.48)	1.18 (0.92-1.51)	0.83 ** (0.68-1.00)
<b>Observations (N)</b>	<b>524</b>	<b>534</b>	<b>825</b>	<b>969</b>	<b>747</b>	<b>973</b>	<b>3,258</b>	<b>3,501</b>

Source: SHARE, 2004; ELSA, 2002; weighted data – own calculations. Reference categories: a) Age 50-54; b) Education: LOW; c) Self-Rated

Health = good, very good, excellent d) Living in rural area, small town or big town e) Note that the definition of Engagement in family and informal activities differs for SHARE and ELSA datasets. \*\*, \*\*\*, \*\*\*: significant at the 0.05 and 0.01 levels, respectively.

## **8.5 CONCLUSIONS**

Both bivariate and multivariate logistic regression analyses indicated that the pattern of attrition was not completely at random, although demographic, activity and health characteristics associated with attrition differed across countries and gender. Keeping in mind that the self-selection process varied in each subpopulation, in general highly educated respondents were more likely to stay in the study as were respondents engaged in formal and informal activities. Workers and respondents who rated their health as poor or fair were on the contrary more likely to drop out of the study. In summary, analyses suggested a differential non-response between waves 1 and 2.

When drawing conclusions on the mutual interplay between health and engagement as people age, caution is therefore warranted. The selectivity effect of the sample might over or underestimate certain findings: when commenting on results and discussing them, the self-selectivity of the sample should not be ignored. Attrition may weaken or jeopardize the generalisability of the findings and confound some of the reported associations. The following Chapter presents some longitudinal analyses in order to better understand whether engagement is beneficial for older people's health and also explores multiple imputations techniques to account for attrition in the surveys.



## **9. LONGITUDINAL ASSOCIATION BETWEEN BASELINE ENGAGEMENT, AND SELF-PERCEIVED HEALTH AND DEPRESSION AT FOLLOW-UP**

Previous analyses (chapter 7) reported associations between the participation of older people in paid work, formal and informal activities and various socio-economic, demographic and health-related factors. These associations only considered one point in time.

The analyses to follow investigate longitudinal associations between the three forms of engagement at baseline and self-rated health (SRH) and depressive symptoms (depression) of respondents two years later. Using the first two waves of both ELSA and SHARE, I will investigate whether engagement in paid work, formal and informal activities are associated with health after two years (controlling for baseline measures of health) and whether such associations differ between countries and by gender.

Additionally, the association between changes or continuity over time in engagement level and health outcomes will be investigated. This might provide some insight into the mutual relationship between health indicators and different forms of engagement, even though causality between level of participation over time and health two years later cannot be demonstrated. Given the contemporaneous nature of these measurements, participants' health could experience a lower decline because they started a new activity but it is also plausible to assume that older people whose health perception improved decide to start engaging in a new activity.

The following sections will present the longitudinal outcome measurements. Also some descriptive longitudinal tables will be introduced to show changes over time in both health and in different dimensions of engagement. Results obtained from multivariate logistic and ordinal regressions, will be then presented separately for men and women.

Finally, multiple imputations will be explored in order to account for attrition in the surveys.

## **9.1 HEALTH AND ITS DETERMINANTS**

Two health measurements were considered as outcomes of the longitudinal analyses: self-rated health and depressive symptomatology<sup>72</sup>.

### **9.1.1 SELF-RATED HEALTH**

**Self-rated health (SRH)** is a single-item measure in which individuals are asked to rate their health on a 5-point ordinal scale (excellent, very good, good, fair, or poor). Such an apparently simple question has the potential to portray the complex concept of ‘ageing well’ without merely relying on chronic conditions or functional limitations (Strawbridge and Wallhagen, 1999, Strawbridge et al., 2002). The SRH is a validated global measure of general health: even when physical health conditions are controlled for, SRH predicts outcomes such as quality of life, health care utilization and mortality (Kaplan and Camacho, 1983, Connelly et al., 1989, Wolinsky and Johnson, 1992, McCallum et al., 1994, Idler and Benyamini, 1997, Maier and Smith, 1999).

Longitudinal studies which have explored trajectories of changes in perceived health over time showed that multiple patterns of changes in subjective health exist, including substantial improvement as well as decline (Kim et al., 1997, Han, 2002). Previous studies suggest that physical and mental health conditions (Goldstein et al., 1984, Rodin and McAvay, 1992, Han, 2002, Choi, 2003, Jang et al., 2009), and health-related behaviours (Guthrie et al., 1997, Leinonen et al., 2001, Wilson et al., 2007) are strongly associated with changes in self-rated health, even though persons with equivalent levels of physical conditions do not necessarily rate their perceived health equally (Kahana et al., 1995, Jang et al., 2009). Similarly, socio-demographic and economic characteristics such as age and education are known influential mediating factors in a change in self-reported health (Choi, 2003, Buckley et al., 2004).

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<sup>72</sup> Longitudinal analyses were restricted to depression and SRH only because very few changes occurred between baseline and follow-up with regards to chronic diseases and functional limitations.

### **9.1.2 DEPRESSION**

The WHO's World Health Report (WHO, 2001c) estimated that by 2020 **depression** is expected to be the second highest ranking cause of disease in the developed world. Depression, even after adjusting for socio-demographic characteristics, is associated with increased coronary artery diseases and cardiovascular death and with worsened quality of life (Angermeyer et al., 2002, Black et al., 2003, Rumsfeld et al., 2005, Rapp et al., 2008, Nabi et al., 2010, Celano and Huffman, 2011), even though some researchers suggest that such associations are no longer significant after controlling for chronic health conditions (Everson-Rose et al., 2004, St John and Montgomery, 2009).

Factors including loneliness, stressful life events, disruptions in family functioning, poor nutrition, low socioeconomic status and adverse health behaviours (such as alcohol use disorders) are strongly correlated with depression (Averina et al., 2005, Rosenquist et al., 2011), even though such associations do not necessarily indicate the direction of any causal relationship.

## **9.2 METHODS**

### **9.2.1 SAMPLE**

Results in this chapter are based on longitudinal analyses of data from the first and second wave of the SHARE and ELSA surveys. Initial longitudinal analyses were undertaken on records with complete data on the variables included in the analyses and were restricted to respondents aged 50-69 at wave 1 who were successfully re-interviewed at wave 2, with participation rates ranging from 80% (England) to 64% (France).

### **9.2.2 MEASURES**

#### **Outcome Measurements**

This study investigates whether engagement in paid work, formal and informal activities at baseline is associated with SRH and depression at follow-up (controlling for baseline values) and with changes in status over a 48-month period.

When self-rated health at follow-up is considered, there are various ways to assess whether there has been a change in the perception of health. The SHARE questionnaire

asks respondents whether they think that, compared to the previous wave, their health is better, about the same or worse. Most respondents answered that their health was about the same as in the previous wave, with women declaring a worsening of health more frequently than men in all countries. Very few people, on the contrary, declared that their health was better (see Table 9.A.1 in appendix). Such a question, though, is not present in the ELSA questionnaire. Moreover, for the SHARE respondents there is no association between the self-assessed change of health (SRHC) and the direct comparison of SRH scores at the two time points (data not shown). The absence of relationship between these two measurements of change in health might be due to different criteria used in the assessment. People adapt to changes in their health and therefore might assess their health as better or the same despite, for instance, increasing functional health limitations or diseases. SRHC, on the contrary, is assessed based on intra-individual comparison: less positive scores indicate that respondents are realistic about health changes over time (Leinonen et al., 2001).

Considering actual changes in the SRH from baseline to follow-up (calculated by subtracting SRH at baseline from SRH at follow-up) would capture the range of possible changes and their magnitude, with positive scores indicating worsening of perceived health, negative indicating improvement in health and zero implying no change. Unfortunately, this approach creates (particularly for high and small values) several cells which are extremely small or empty when cross-tabulated with predictors. Such a situation creates difficulties in fitting the models (Scott Long, 1997, Agresti, 2002). Similarly, although some authors would consider this outcome variable as continuous (Jang et al., 2009), it is not recommended to use such approach as the outcome is truly multinomial and ordered. Switching to a linear regression would make the model theoretically incorrect.

Table 9.1 considers improvement/decline in health between the two surveys as an increase or a decrease of *one point or more* on the five point scale (Excellent, very good, good, fair, poor). Changes in health depend on the starting point in most countries: those who rated their health as very good at time 1 tend to declare a worsened health at time 2 particularly among French and Italian respondents, whereas the majority of Danish and English participants reported the same health. As health decreases, the proportion of

people reporting either the same health as before or an improvement increases. Considering point changes, though, has the disadvantage of categorising into the same group people who dropped their assessment by any point (with decline in health referring to both the decrease from 'excellent' to 'very good' as well as from 'excellent' to 'poor'). This fails to capture the magnitude of change and suffers from 'floor and ceiling effects' which render the detection of changes at follow-up assessment more difficult for those who assessed their health as 'excellent' or 'poor' at baseline (Uttl, 2005, Wang et al., 2009).

In this study, the variables capturing changes over time were constructed as 4 ordinal category indicators. Changes in SRH were categorised as follows: 'improvement' if respondents whose SRH at baseline was equal to poor/fair at follow-up was greater than or equal to good; 'decline' for those with initial good or better health who rated their health as poor/fair at follow-up; two no-change groups denoting respectively those whose SRH was "greater or equal to good" at both time points and those whose SRH was "less than good" at both time points (i.e. their SRH changed from poor to fair or vice-versa or stayed equal to fair or poor)<sup>73</sup>. Such an outcome has the advantage of containing information on the relative rank order of changes in health. Of course, this scale is not exempt from criticism. In particular, this indicator assumes that certain changes (such as from poor to fair or vice versa) should be considered as negligible (mirroring the general dichotomisation between those in more than good and those in less than good health). Moreover, because of this distinction, the four categories of such indicator do not necessarily reflect same-distance changes: both a respondent who self-assessed their health as 'excellent' at baseline and as 'poor' at follow-up and a respondent who answered 'good' and 'fair' respectively would be equally considered as having worsened health. Despite the fact that this indicator does not reflect interval changes, this variable still captures an ordinal scale of possible changes in health which are ordered in line with no ambiguities and are meaningful for comparison. Moreover, this approach partly avoids the ceiling and flooring effects since, for instance, a change from 'excellent' to 'very good' health would not be defined as a decrease in health.

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<sup>73</sup> This indicator was coded with increasing numbers from 'decline' to 'improvement'. This means that in ordinal regressions, positive log-odds represent a change for the better, whereas negative values represent a deterioration of respondents' SRH.

**Table 9.1 Percentage distribution of respondents by self reported health at baseline and change in self reported health at follow-up, by sex and country**

Wave 1		Wave 2															
		Denmark				France				Italy				England			
		Worse	Same	Better	N	Worse	Same	Better	N	Worse	Same	Better	N	Worse	Same	Better	N
<b>MEN</b>		47.7 (51)	52.3 (55)	--	106	56.1 (41)	43.9 (32)	--	73	68.6 (41)	31.4 (17)	--	58	53.3 (225)	46.7 (196)	--	421
Very Good		37.9 (50)	45.5 (58)	16.6 (22)	130	54.5 (62)	25.7 (31)	19.8 (20)	113	66.7 (59)	25.0 (26)	8.3 (8)	93	36.4 (310)	46.6 (403)	17.0 (146)	859
Good		26.4 (27)	37.6 (38)	36.0 (36)	101	20.8 (55)	61.5 (172)	17.7 (46)	273	18.7 (50)	61.5 (143)	19.8 (45)	238	22.3 (182)	47.5 (402)	30.3 (254)	838
Fair		14.5 (9)	49.9 (30)	35.6 (21)	60	10.7 (10)	52.4 (48)	36.9 (34)	92	17.8 (20)	49.1 (55)	33.1 (39)	114	15.2 (70)	48.2 (226)	36.7 (171)	467
Poor		--	71.9 (13)	28.1 (5)	18	--	36.5 (13)	63.5 (22)	35	--	45.3 (17)	54.7 (15)	32	--	56.6 (96)	43.4 (72)	168
<b>WOMEN</b>		52.0 (53)	48.0 (49)	--	102	71.4 (50)	28.6 (21)	--	71	70.9 (31)	29.1 (13)	--	44	53.4 (262)	46.6 (239)	--	501
Very Good		38.8 (54)	43.9 (61)	17.3 (24)	139	54.4 (65)	39.2 (49)	6.4 (8)	122	59.6 (61)	30.5 (32)	9.9 (9)	102	36.7 (370)	47.7 (478)	15.6 (160)	1,008
Good		19.2 (18)	41.4 (39)	39.4 (37)	94	22.2 (76)	65.2 (215)	12.7 (42)	333	23.2 (89)	50.8 (215)	17.0 (50)	287	20.5 (213)	47.1 (498)	32.4 (330)	1,041
Fair		7.2 (4)	61.8 (34)	31.0 (17)	55	14.1 (20)	61.1 (88)	24.8 (36)	144	14.6 (38)	62.0 (130)	23.4 (57)	225	15.0 (74)	49.2 (251)	35.8 (189)	514
Poor		--	44.5 (12)	55.5 (15)	27	--	38.3 (11)	61.7 (18)	29	--	30.1 (18)	69.9 (38)	56	--	46.3 (75)	53.7 (88)	163

Sources: SHARE 2004/06 and ELISA 2002/04. Weighted data; own calculations.

Table 9.2 shows the distribution of changes in SRH. Most people self-assessed their health in the same category as in the baseline in most countries, although between 6% and 9% of respondents improved the assessment of their health over the years whereas between 10% and 16% of those successfully interviewed at the second wave reported a decline in health. These trends are in line with other studies which show that, on average, health deteriorates slowly over time and improvements in health are possible in some people (Kim et al., 1997, Han, 2002, Sacker et al., 2011). This table also confirms the initial cross-sectional differences in health between countries: partly given their higher baseline levels of SRH, Danish and English respondents tend to have also better SRH over time, with almost 70% of respondents assessing their health as at least good in both waves. Within-country gender differences in the distribution of health changes are tiny in England and Denmark. Differences between male and female Italian participants are, on the contrary, striking: 59% of men reported good health in both waves compared to less than 45% among women.

**Table 9.2 Distribution of changes in SRH between wave 1 and 2, by sex & country**

	Denmark		France		Italy		England	
	Male	Female	Male	Female	Male	Female	Male	Female
	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)
<b>Better</b>	7.0 (29)	5.8 (24)	7.2 (42)	5.9 (41)	7.5 (40)	8.9 (64)	7.2 (195)	6.3 (209)
<b>Still &gt;= good</b>	70.6 (293)	68.5 (286)	66.9 (392)	62.0 (434)	58.9 (315)	44.7 (319)	67.0 (1,861)	69.3 (2,242)
<b>Still &lt;= good</b>	12.8 (53)	14.9 (62)	14.5 (85)	18.9 (132)	19.8 (106)	30.4 (217)	16.3 (440)	14.5 (468)
<b>Worse</b>	9.6 (40)	10.8 (45)	11.5 (67)	13.3 (93)	13.8 (74)	16.0 (114)	9.5 (257)	9.6 (308)
<b>Tot (N)</b>	415	417	586	700	535	714	2,753	3,227

Sources: SHARE 2004/06 and ELSA 2002/04. Weighted data

Similarly, for depression 4 categories were considered (with categories equal to ‘no longer depressed’, ‘not depressed at either wave’, ‘became depressed’; ‘depressed at both times’)<sup>74</sup>. Differences in changes of depression status between gender and countries were striking (see Table 9.3). Whereas among men, roughly 10% of those who were not

<sup>74</sup> Also in this case, the variable was coded so that negative log-odds ratios in the ordinal regressions mean that the respondents has decreased the level of their mental health and has become depressed, whereas positive log odd ratios imply a positive change, i.e. the respondent no longer depressed.

depressed at baseline declared depressive symptoms at the second interview, among women the percentages were higher particularly in France and Italy (20% and 25% respectively). Between 50% and 65% of women continued to declare depression symptoms after two years whereas among men percentages ranged between 31% (Denmark) and 50% (Italy and England).

**Table 9.3 Percentage distribution of changes in 'depression' between wave 1 and 2, by sex and country**

		Denmark			France			Italy			England		
		Not Depressed	Depressed	N	Not Depressed	Depressed	N	Not Depressed	Depressed	N	Not Depressed	Depressed	N
Wave 1	Wave 2												
	MEN	Not Depressed	89.3 (318)	10.7 (38)	356	91.3 (382)	8.7 (37)	419	88.9 (366)	11.1 (51)	417	89.4 (2,057)	10.4 (235)
Depressed		68.7 (36)	31.3 (16)	52	63.5 (71)	36.5 (43)	114	46.4 (50)	53.6 (61)	111	48.2 (246)	51.8 (254)	500
WOMEN	Not Depressed	87.9 (290)	12.1 (40)	330	78.8 (307)	21.2 (82)	389	74.2 (314)	25.8 (114)	428	85.5 (2,107)	14.5 (358)	2,465
	Depressed	51.3 (41)	48.7 (39)	80	34.4 (94)	65.7 (179)	279	39.2 (110)	60.8 (171)	281	46.5 (371)	53.5 (420)	791

Sources: SHARE 2004/06 and ELSA 2002/04. Weighted data

### Co-variates

Socio-demographic and economic characteristics are factors which might be associated with changes in both self-reported health and depression. Among the variables included in the multivariate analyses, time-fixed variables were age, whether the respondent lived in a rent/mortgage free home, education and whether the respondent lived alone, all measured at baseline. It was decided not to consider changes in household composition because the number of people who got divorced or became widowed over the two-year time was very small (less than 1.5% in all countries either got divorced or lost their spouses; similarly less than 2% on average were living alone at follow-up compared to wave 1). Similarly, the only health-related variable included in the analyses was the one accounting for any limitations (IADLs, ADLs or NAGI) at time 1 to avoid the potential risk of over-fitting the model. Besides, controlling for changes in limitation over time



could cause over-adjustment bias (Schisterman et al., 2009), since it is unclear how changes in health status and changes in activity level mutually affect each other. Changes in limitations might be on the causal pathway between exposure (engagement level over time) and the outcome variables and as a consequence the effect of the exposure on the outcome could be estimated with bias.

Among the explanatory variables, the main interest of this study focused on the association between engagement at baseline (paid work, participation in formal activities, participation in formal and family-related activities) and health and changes in health at follow-up after two years. For each activity, a new variable capturing changes in level of participation was created: those who were active at baseline but no longer at wave 2 were assumed to have given up the respective activity whereas people who were inactive at time 1 and then active at time 2 were assumed to have started an activity.

Tables 9.4–9.6 show some descriptive statistics about changes in level of participation in the various activities over time. Between 20% and 30% of both male and female respondents who were in **paid work** at baseline were no longer working at the time of the second interview (see Table 9.4). The proportions were slightly higher in Italy compared to the other three countries, particularly among women. The transition from no work into work was rare in most countries: Danish men were the only exceptions with more than 10% of non-workers in 2004 working in 2006 (though that only means 17 people switching category). For this reason, it was decided to just consider three categories to capture changes in paid work: ‘out of paid work at both waves’, ‘out of paid work for less than 2 years’ and ‘in paid work at time 2’ (regardless of status at time 1).

**Table 9.4 Percentage distribution of changes in 'paid work status' between wave 1 and 2, by sex and country**

		Denmark			France			Italy			England		
		Not in Paid Work	In paid work	N	Not in Paid Work	In paid work	N	Not in Paid Work	In paid work	N	Not in Paid Work	In paid work	N
MEN	Wave 2												
	Wave 1												
	Not in Paid work	88.9 (152)	11.1 (17)	169	97.0 (312)	3.0 (10)	322	95.2 (343)	4.8 (11)	354	92.9 (1,123)	7.1 (87)	1,300
	In Paid work	24.1 (63)	75.9 (182)	245	26.4 (61)	73.6 (194)	255	29.8 (60)	70.2 (121)	181	17.3 (270)	82.7 (1,222)	1,492
WOMEN	Not in Paid work	95.7 (201)	4.3 (9)	210	96.5 (403)	3.5 (14)	417	98.0 (581)	2.0 (10)	591	93.9 (1,794)	6.1 (108)	1,892
	In Paid work	22.2 (46)	77.8 (161)	207	21.2 (61)	78.8 (215)	276	32.8 (40)	67.2 (83)	123	23.5 (328)	76.5 (1,036)	1,364

Sources: SHARE 2004/06 and ELSA 2002/04. Weighted data

In all four countries under study, continuity in **formal engagement** was noticeable, particularly among SHARE respondents. This may be because the measure of engagement I used in the SHARE analyses was based on weekly participation whereas the ELSA measure refers to monthly participation. In France and Italy, more than 60% of both men and women who engaged in formal activities at baseline were still engaged after two years. Proportions of people continuing engagement in formal activities were slightly higher among Danish respondents (70% and 77% among men and women respectively) whereas figures were slightly lower among English respondents (though the ELSA indicator considered fewer activities than the SHARE one and limited the frequency of engagement to the month prior the interview). Between 10% (among Italian and English respondents) and more than 30% (in Denmark) of those who were not formally engaged at baseline became 'active' participants by the time of the second questionnaire (see Table 9.5 for more details). Changes in participation in formal activities were not significantly associated with changes in work status ( $p$  value = 0.44): the proportion of women who started to be formally engaged by time 2 was slightly higher among those who no longer were in paid work compared to those who stayed in the same work category across waves, though not significantly (results not shown).

**Table 9.5 Percentage distribution of changes in ‘formal engagement’ between wave 1 and 2, by sex and country, by sex and country**

		Denmark			France			Italy			England		
		NO Formal	Formal engagement	N	NO Formal	Formal engagement	N	NO Formal	Formal engagement	N	NO Formal	Formal engagement	N
MEN	Wave 2												
	Wave 1												
MEN	No Formal	70.8 (171)	29.2 (72)	243	85.9 (321)	14.1 (55)	376	90.6 (403)	9.4 (46)	449	88.8 (2,086)	11.2 (270)	2,356
	Formal	29.4 (47)	70.6 (115)	162	37.0 (64)	63.0 (102)	166	37.4 (34)	62.6 (48)	82	50.6 (213)	49.4 (223)	436
WOMEN	No Formal	61.0 (152)	39.0 (97)	249	81.7 (400)	18.3 (92)	492	89.3 (559)	10.7 (65)	624	87.1 (2,236)	12.9 (342)	2,578
	Formal	22.4 (36)	77.6 (125)	161	39.8 (71)	60.2 (107)	178	35.9 (32)	64.1 (57)	89	43.8 (291)	56.2 (387)	678

Sources: SHARE 2004/06 and ELSA 2002/04. Weighted data

As regards **informal and family-related participation**, continuity in engagement was generally higher among women. Among SHARE male respondents, only half of the sample continued engagement whereas women’s continuity peaked at 75% among Italian respondents. In all SHARE countries, both among men and women, a quarter of people who were not engaged at all with these activities at baseline became ‘active’ at time 2. As for ELSA respondents, only a third of male respondents and about 40% of women remained engaged in informal and family-related activities: such a different pattern might be due to the fact that the indicator used to account for informal activities was slightly different compared to the one used among SHARE respondents: there was no account of frequency of commitment, and activities such as ‘looking after grandchildren’ were not asked about in the ELSA questionnaire.

**Table 9.6 Distribution of changes in ‘informal and family-related engagement’ between wave 1 and 2, by sex and country, by sex and country**

		Denmark			France			Italy			England		
		Not informal engaged	Informally engaged	N	Not informal engaged	Informally engaged	N	Not informal engaged	Informally engaged	N	Not informal engaged	Informally engaged	N
MEN	Wave 2												
	Wave 1												
MEN	No Informal	73.9 (184)	26.1 (65)	249	76.5 (265)	23.5 (83)	348	75.7 (270)	24.2 (93)	363	93.8 (2,143)	6.2 (147)	2,290
	Informal	49.5 (80)	50.5 (81)	161	45.8 (91)	54.2 (105)	196	44.9 (71)	55.1 (98)	169	68.8 (345)	31.2 (157)	502
WOMEN	No Informal	68.0 (162)	32.0 (76)	238	73.3 (258)	26.7 (93)	351	70.7 (248)	29.3 (107)	355	86.2 (2,020)	13.8 (322)	2,342
	Informal	38.5 (67)	61.5 (107)	174	36.6 (120)	63.4 (205)	325	25.2 (88)	75.8 (270)	358	59.4 (543)	40.6 (371)	914

Sources: SHARE 2004/06 and ELSA 2002/04. Weighted data

### 9.2.3 STATISTICAL MODELLING

For each of the four outcomes, either binary logistic regression or ordinal multinomial logistic regression methods were used. The former was used when the response variable was dichotomous (as in the case of depression at follow up controlling for baseline) whereas the latter for outcome variables presented in ordered categories (such as SRH at follow-up or health changes over time). In both cases, the influence (i.e. the probabilistic relationship) of the various explanatory factors on the outcome was examined. Both models are widely used in epidemiological studies which present the response variable in the form of categories, either dichotomous or ordinal (Anderson and Philips, 1981, Ananth and Kleinbaum, 1997).

As regards the independent variables, baseline socio-economic and demographic characteristics of the respondents were considered for each outcome variable. Additionally, functional limitations at baseline were included. In this study, the factors of major interest were the participation of older people in the various forms of engagement at baseline; nonetheless, changes in engagement levels over time were also considered.

The above-mentioned analyses were initially restricted to participants with complete data on the variables examined. Given that “complete record” analyses could be both biased and inefficient, multiple imputations were proposed as a remedy to deal with missing data (Klebanoff and Cole, 2008). In particular, multiple imputations (MI) were explored under the Missing At Random (MAR) assumption (i.e. missingness depends on variables fully observed in the data set) (Little and Rubin, 2002). In this study, though, there may be reason to believe that missingness was related to the missing data themselves. Some sensitivity analyses to the MAR hypothesis were therefore performed.

### **9.2.3.1 A BRIEF OVERVIEW OF MULTIPLE IMPUTATION**

The general idea of MI is to create a collection of datasets (usually between 5 and 20) where missing values in the original data are replaced by randomly imputed ones. The imputations are carried out so that the overall joint distribution of all variables involved is maintained. Multiple sets are created, instead of just one, in order to reproduce the variability in the original –but missing –data. Each dataset is then analysed as if there were no missing values, with the results summarised into a single summary set of findings, with standard errors that incorporate the variability in results between the imputed data sets. This method has the advantage of being robust to violations of non-normality of the variables used in the analysis (Roth, 1994, Little and Rubin, 2002, Wayman, 2003).

The initial step of MI is the definition of an imputation model. This must include all variables that are thought to influence the missing mechanism plus all variables to be considered in the analyses. Among the various methods for multiple imputation, this research study used chained equations (MICE), which use a series of conditional distributions rather than a joint distribution to impute missing data (Royston, 2005). The idea of such an algorithm is to impute, in each chained equation cycle, each missing value in each variable on the basis of a predictive distribution derived from a regression on all other variables in the imputation model. With each iteration the simulations are updated for a certain number of ‘cycles’ until the imputed values converge and a final imputed dataset is created. A number of authors suggest that such a method works well

in epidemiological settings (van Buuren, 2007, Lee and Carlin, 2010). Moreover, its availability in Stata renders it computationally simple to implement.

In this research study, the two main variables imputed were SRH and depression at follow-up. In particular, the imputation models used in this section included all variables found to be related to the probability of missing data on the outcomes of interest. For each of the outcome variables, a separate imputation model was used. Also, the imputation was carried out separately by country and gender, given that the analyses were carried out separately for men and women in each country. Among the variables included for each of the imputations models, I considered the following baseline variables: age-group (as a categorical variable), ADL and IADL limitations, SRH, depression, chronic disease, marital status, whether the respondent lived alone or not, engagement in formal and informal activities, employment status and whether the respondent lived in a rent or mortgage-free house. Given the large amount of missing data, the chained equation process was continued for 20 cycles and 200 imputed datasets were created in order to reduce the impact of the random sampling in multiple imputation procedures. The distributions of observed and imputed data were compared; no implausible differences were found. The results of analyses on each individual data set were combined using Rubin's rules (Little and Rubin, 2002). All analyses were performed using Stata, version 11 (Stata Corp, 2009).

#### **9.2.3.2 SENSITIVITY ANALYSES**

The above-described method assumed that loss of cases over time (incomplete data) was missing at random. This means that, controlling for baseline fully-observed characteristics, the observed distribution of depression and SRH at follow-up were treated as reference distributions which could be used to impute all the missing values due to attrition. Potentially, though, the rate of depression and less than good SRH among subjects who were lost to follow-up may be different from the rates of respondents at follow-up. Missingness of those subjects who dropped out of the study might depend on the unobserved SRH and depression status themselves; i.e. people who dropped out are potentially missing not at random (MNAR). In such instances, it was decided to carry out some sensitivity analyses so that the posterior distribution of the

rate of depression and less than good SRH for drop-outs was artificially increased as compared with the reference distributions. Pattern mixture models (Daniels M. J. and Hogan, 2008) were used to assess whether and how much various plausible ‘arbitrary’ assumptions about the missing data mechanism affect the results. Such an approach is quite simple but flexible and easy to interpret

In this research study, given that no prior information was available, it was decided to test the robustness of the results by doing successive analyses assuming that among drop-outs the proportion of depressed and people who self-rated their health as poor or fair was increased by 20% and 33%. This way, even controlling for baseline characteristics, those who were lost to follow-up had lower SRH and were more depressed than respondents.

### **9.3 RESULTS FROM THE MULTIVARIATE ANALYSES FOR THE “COMPLETE RECORD”**

#### **9.3.1 SELF-RATED HEALTH AT FOLLOW UP CONTROLLING FOR BASELINE SELF-RATED HEALTH**

Table 9.7 shows the results from an ordinal logistic regression model which investigates how SRH at follow-up was associated with baseline engagement controlling for SRH at baseline. Age (treated as a continuous variable) was not associated with SRH at follow-up: the only exceptions were Italian men and French women. In the latter cases, there was a differential association significant at a 10% level: for a one unit increase in age, the log odds of reporting a lower level of SRH were expected to decrease among French women and to increase among Italian male respondents, given all of the other variables in the model are held constant. Such a differential association might be influenced by characteristics of respondents who dropped out of the study: for instance, attrition is significantly higher among younger female French respondents (see chapter 8).

When socio-economic characteristics and household composition were considered, the direction of association between baseline level of education and SRH at follow-up suggested that respondents were less likely to report bad health the higher their level of education: only among Italian female and French male respondents was this association

not significant. Living in a rent/mortgage free home, a proxy of socio-economic status, did not have any significant effect on health reported at follow-up among SHARE respondents whereas for ELSA respondents living in rent/mortgage-free home significantly reduced the odds of reporting lower levels of SRH. Finally, living alone at baseline was not significantly associated with SRH at follow-up except among Italian and English women. Among the latter subpopulations, the association was differential: women living alone at baseline were more likely to report a lower level of SRH in Italy compared to a higher level in England. Such a differential association, though, could be partly attributable to the different attrition patterns in these two subpopulations: English women who lived alone were significantly more likely to participate in the second wave of the survey whereas Italian women living alone were significantly more likely to drop out (see chapter 8).

Focusing on SRH and functional limitations at baseline, the lower SRH was at baseline, the higher the increase in the odds of reporting low SRH at follow-up. This applied to all subpopulations. Similarly, for respondents who reported some kind of functional limitation at baseline, an increase in the log-odds of being in a lower level of SRH at time 2 was observed, when all of the other variables in the model are held constant. The latter applies to all countries with the exception of Italian and French men where the direction of the association is similar but not significant.

Finally, when the three indicators of engagement in paid work, formal and informal or family-related activities were considered, patterns arising in most subpopulations were unclear. People who were in paid work at baseline had significantly higher odds of reporting higher levels of SRH at time 2 in most countries, except among Italian and female Danish respondents for whom the association was not significant. Both formal and informal/family-related engagements at baseline were not significantly associated with SRH at follow-up.

Table 9.8 highlights the associations<sup>75</sup> between SRH at follow-up and changes in level of commitment in the various forms of activities; the other socio-economic and

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<sup>75</sup> These analyses do not test for any causality between SRH and changes in the levels of engagement in the various activities. Given that both changes (in health and engagement) happened simultaneously, it is



demographic factors included in the analyses are not shown in this table since results are similar to the ones described above. Working at follow-up was associated with lower odds of reporting low levels of SRH at time 2 in all countries, significantly among English respondents, French women and Danish men. Respondents who were involved in formal activities at both waves and those who became formally engaged between waves had reduced probabilities of reporting lower health in all subpopulations, significantly among English, French and female Italian respondents.

Findings did not show any clear patterns when changes in the level of informal engagement were considered. Among ELSA respondents, those who became active in informal activities had significantly lower odds of reporting lower levels of SRH; on the other hand, English men who stopped informal engagement were associated with lower health. No association was found among respondents who were 'active' at both waves. Among SHARE respondents, only French women who were 'active' in informal activities at both waves were significantly associated with lower odds of reporting lower levels of SRH; all other associations are not significant. Given the differences in the definition of 'informal and family related' participation, analyses among SHARE respondents were repeated excluding 'looking after grandchildren' from the indicator of informal commitment. Results showed no significant difference.

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impossible to detect whether changes in SRH were the determinants of changes in the engagement levels or vice versa.

**Table 9.7 Association between engagement at baseline and SRH at follow-up, controlling for baseline SRH. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted ordinal logistic regression, by gender and country**

	ITALY		FRANCE		DENMARK		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age (at wave 1)</b>	-0.05 * (-0.10; 0.00)	-0.02 (-0.05; 0.02)	-0.01 (-0.07; 0.05)	0.03 * (-0.00; 0.07)	0.00 (-0.04; 0.04)	-0.01 (-0.05; 0.03)	-0.01 (-0.03; 0.01)	0.00 (-0.01; 0.01)
<b>Education:</b>								
<b>MIDDLE *</b>	0.04 (-0.34; 0.42)	0.28 (-0.21; 0.78)	-0.12 (-0.49; 0.26)	0.26 * (-0.05; 0.58)	0.35 (-0.22; 0.92)	0.14 (-0.36; 0.65)	0.32 *** (0.13; 0.51)	0.30 *** (0.14; 0.46)
<b>Education:</b>								
<b>HIGH *</b>	0.51 * (-0.02; 1.04)	0.10 (-0.46; 0.67)	0.28 (-0.20; 0.76)	0.44 ** (0.05; 0.82)	0.66 ** (0.02; 1.29)	0.57 ** (0.05; 1.10)	0.49 *** (0.30; 0.68)	0.34 *** (0.15; 0.53)
<b>Monthly Rent/ Mortgage free <sup>b</sup></b>	-0.20 (-0.70; 0.29)	-0.08 (-0.43; 0.27)	0.08 (-0.25; 0.42)	0.21 (-0.08; 0.49)	0.15 (-0.29; 0.59)	0.06 (-0.38; 0.50)	0.22 *** (0.05; 0.38)	0.32 *** (0.17; 0.47)
<b>Living Alone <sup>c</sup></b>	-0.44 (-1.13; 0.25)	-0.48 ** (-0.97; -0.01)	0.21 (-0.34; 0.75)	0.04 (-0.31; 0.39)	-0.15 (-0.67; 0.36)	-0.06 (-0.49; 0.37)	-0.13 (-0.36; 0.09)	0.17 * (-0.02; 0.35)
<b>In paid work at time 1 <sup>d</sup></b>	-0.15 (-0.70; 0.41)	0.24 (-0.31; 0.79)	0.49 * (-0.11; 1.09)	0.56 ** (0.08; 1.04)	0.36 * (-0.13; 0.86)	-0.34 (-0.84; 0.16)	0.35 *** (0.15; 0.55)	0.27 *** (0.10; 0.45)
<b>Formally Engaged at time 1 <sup>e</sup></b>	0.08 (-0.39; 0.56)	0.07 (-0.37; 0.52)	0.37 * (-0.07; 0.80)	0.19 (-0.11; 0.50)	0.12 (-0.28; 0.52)	-0.44 ** (-0.83; -0.05)	0.23 ** (0.03; 0.43)	0.07 (-0.10; 0.24)
<b>Informally Engaged at time 1</b>	-0.31 (-0.77; 0.15)	0.25 * (-0.07; 0.57)	-0.03 (-0.49; 0.43)	0.16 (-0.14; 0.46)	0.05 (-0.34; 0.44)	-0.13 (-0.49; 0.24)	-0.20 ** (-0.40; -0.00)	0.04 (-0.12; 0.19)
<b>SRH at wave 1 = Very good <sup>f</sup></b>	-0.93 ** (-1.75; -0.10)	-0.88 ** (-1.74; -0.01)	-1.15 *** (-1.77; -0.52)	-0.95 *** (-1.54; -0.37)	-1.49 *** (-2.03; -0.94)	-1.32 *** (-1.87; -0.76)	-1.22 *** (-1.68; -0.76)	-1.40 *** (-1.63; -1.16)
<b>SRH at wave 1 = Good <sup>f</sup></b>	-1.29 *** (-2.05; -0.53)	-1.60 *** (-2.38; -0.82)	-2.38 *** (-2.93; -1.82)	-2.24 *** (-2.81; -1.68)	-2.47 *** (-3.08; -1.86)	-2.01 *** (-2.60; -1.42)	-2.42 *** (-2.70; -2.15)	-2.41 *** (-2.67; -2.16)
<b>SRH at wave 1 = Fair <sup>f</sup></b>	-3.09 *** (-3.96; -2.22)	-3.19 *** (-3.94; -2.45)	-4.00 *** (-4.72; -3.28)	-4.31 *** (-5.00; -3.62)	-3.69 *** (-4.50; -2.89)	-3.48 *** (-4.31; -2.65)	-3.75 *** (-4.08; -3.42)	-4.04 *** (-4.36; -3.71)
<b>SRH at wave 1 = Poor <sup>f</sup></b>	-4.79 *** (-5.78; -3.81)	-3.83 *** (-4.80; -2.86)	-5.00 *** (-5.88; -4.10)	-5.22 *** (-6.44; 4.00)	-5.69 *** (-7.56; -3.82)	-5.35 *** (-6.54; -4.16)	-5.19 *** (-5.69; -4.69)	-5.44 *** (-5.90; -4.98)
<b>Functional Limits at time 1 <sup>h</sup></b>	-0.26 (-0.62; 0.11)	-0.75 *** (-1.11; -0.41)	-0.35 (-0.91; 0.22)	-0.56 *** (-0.90; -0.22)	-0.85 *** (-1.33; -0.37)	-0.43 ** (-0.86; -0.00)	-0.73 *** (-0.90; -0.57)	-0.57 *** (-0.72; -0.41)
<b>Intercept 1</b>	-2.04 (-5.27; 1.18)	0.18 (-1.87; 2.23)	0.07 (-3.62; 3.76)	3.76 (1.56; 5.96)	0.57 (-1.93; 3.08)	-0.64 (-3.49; 2.19)	0.40 (-0.71; 1.51)	0.53 (-0.43; 1.49)
<b>Intercept 2</b>	-3.31 (-6.46; -0.16)	-1.23 (-3.25; 0.78)	-1.23 (-4.83; 2.36)	2.06 (0.17; 4.30)	-1.46 (-3.99; 1.08)	-2.55 (-5.41; 0.30)	-1.73 (-2.85; -0.61)	-1.65 (-2.61; -0.68)
<b>Intercept 3</b>	-5.85 (-9.00; -2.70)	-3.45 (-5.47; -1.44)	-4.19 (-7.69; -0.69)	-1.08 (-3.29; 1.12)	-3.14 (-5.71; -0.57)	-4.10 (-6.97; -1.24)	-3.83 (-4.96; -2.69)	-3.61 (-4.59; -2.63)
<b>Intercept 4</b>	-8.35 (-11.5; -5.20)	-6.41 (-8.49; -4.33)	-6.63 (-10.3; -2.95)	-3.97 (-6.23; -1.71)	-5.39 (-8.06; -2.71)	-6.67 (-9.58; -3.76)	-5.96 (-7.12; -4.81)	-5.85 (-6.84; -4.85)
<b>N Observations</b>	410	412	544	676	532	713	2,721	3,154

Sources: SHARE 2004/06, ELISA 2002/04; Weighted Data. Ref categories: a) Low Education; b) Paying rent/mortgage; c) Not Alone at time 1 (t1); d) Not in paid work at t1; e) Not formally engaged at t1; f) Not informally engaged at t1; g) Excellent SRH; h) No functional limits at t1. \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

**Table 9.8 Association between changes in levels of engagement over time and SRH at follow-up, controlling for baseline SRH. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted ordinal logistic regression, by gender and country**

	ITALY		FRANCE		DENMARK		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
Not in paid work at both waves								
Not in paid work for less than 2 years	-0.28 (-1.09; 0.52)	0.54 (-0.11; 1.19)	0.62 (-0.46; 1.70)	0.36 (-0.23; 0.94)	0.66 ** (0.01; 1.31)	-0.60 (-1.30; 0.10)	-0.07 (-0.38; 0.24)	0.12 (-0.14; 0.38)
In paid work at time 2	0.12 (-0.52; 0.76)	0.08 (-0.52; 0.68)	0.41 (-0.34; 1.16)	0.70 *** (0.23; 1.16)	1.10 *** (0.48; 1.74)	0.18 (-0.38; 0.74)	0.54 *** (0.38; 0.71)	0.46 *** (0.27; 0.64)
Not active in formal activities in either waves								
No Formal → Formal	0.06 (-0.54; 0.65)	0.61 * (-0.03; 1.25)	0.25 (-0.41; 0.91)	0.69 *** (0.23; 1.15)	0.45 (-0.08; 0.98)	0.21 (-0.25; 0.68)	0.04 (-0.21; 0.29)	0.18 * (-0.02; 0.40)
Formal → No formal	-0.37 (-1.18; 0.44)	-0.63 (-1.44; 0.19)	0.18 (-0.33; 0.70)	0.30 (-0.12; 0.72)	-0.18 (-0.84; 0.48)	-0.62 (-1.58; 0.34)	0.09 (-0.18; 0.37)	-0.07 (-0.29; 0.15)
Active in formal activities at both waves	0.16 (-0.41; 0.72)	0.55 ** (0.05; 1.05)	0.54 ** (-0.03; 1.11)	0.40 ** (-0.00; 0.80)	0.16 (-0.33; 0.65)	0.27 (-0.18; 0.72)	0.35 *** (0.09; 0.62)	0.22 ** (-0.01; 0.45)
Not active in informal activities in either waves								
No informal → informal & family engagement	0.09 (-0.40; 0.57)	0.28 (-0.28; 0.85)	-0.05 (-0.63; 0.53)	0.01 (-0.40; 0.42)	0.28 (-0.29; 0.85)	-0.05 (-0.58; 0.48)	0.43 *** (0.11; 0.75)	0.34 *** (0.09; 0.59)
Informal and Family → No more informal	-0.12 (-0.71; 0.47)	0.46 (-0.05; 0.98)	-0.12 (-0.78; 0.53)	-0.11 (-0.57; 0.35)	-0.02 (-0.54; 0.50)	-0.48 (-1.07; 0.10)	-0.23 ** (-0.47; 0.01)	0.03 (-0.16; 0.21)
Active in informal/family activities at both waves	-0.43 (-1.03; 0.17)	0.27 (-0.14; 0.67)	-0.26 (-0.80; 0.29)	0.35 ** (0.01; 0.69)	0.23 (-0.29; 0.75)	-0.05 (-0.49; 0.39)	-0.03 (-0.36; 0.30)	0.20 (-0.04; 0.43)
Number of Observations	410	412	544	676	532	713	2,721	3,154

Sources: SHARE 2004/06, ELSA 2002/04; Weighted Data \* p<10; \*\* p<0.05; \*\*\* p<0.01

Controlling for age, education, baseline functional health, household composition (alone or not); household living arrangements (mortgage/rent free home or not), baseline SRH (all at baseline).

### **9.3.2 DEPRESSION AT FOLLOW UP CONTROLLING FOR BASELINE DEPRESSION**

Table 9.9 shows the results from a logistic regression model which investigated how depression at follow-up was associated with baseline engagement once socio-economic, demographic characteristics and depression at baseline were controlled for.

Age was significantly associated with incidence of depression symptoms at follow-up only among French women and English: among these subpopulations the odds of being depressed at follow-up increased with age; such an association though might be severely influenced by the characteristics of those who dropped out of the study (see chapter 8). The direction of association between level of education at time 1 and depression at time two suggested that highly educated respondents were less likely to be depressed at follow-up, significantly among French and Danish women and ELSA respondents, even controlling for the baseline depression. Finally, the direction of association between depression at follow-up and baseline household composition showed that survey participants who lived alone at baseline had higher odds of being depressed 24 months later. This association was significant among English respondents and Italian women. Among French men living alone the direction of association was reversed, although not significantly so.

When baseline health characteristics are analysed, findings showed a general positive association between baseline functional limitation and depression at follow-up: people who reported at least one functional limitation at baseline were more likely to be depressed 2 years later, significantly in all subpopulations except Danish respondents and French men. Moreover, baseline depression was positively and significantly associated with higher odds of depression at follow-up in all countries and subpopulations.

Finally, when we consider the three indicators of engagement in paid work, formal and informal or family-related activities at baseline, findings suggested that being in paid work at baseline was associated with lower odds of depression at follow-up, significantly in all groups except Italian and French men and Danish women. Baseline formal and informal/family engagements, however, were not associated with the

likelihood of being depressed 24 months later. Only among Italian female and Danish male respondents was there any indication of a possible negative association between formal engagement at baseline and depression at follow-up, but this relationship was significant only at a 10% level.

Table 9.10 presents results obtained when changes in level of commitment in the various forms of activities were taken into account. Continuity in participation in both formal and informal engagement was not correlated with depression at follow-up, except among Italian and French women, and English men active in formal activities at both waves who had significantly lower depression at follow-up. 'Quitting' formal or informal engagement was not associated with depression, except among English men no longer involved in formal activities at follow-up who had significant higher odds of being depressed compared to those who were not engaged in either waves.

**Table 9.9 Association between engagement at baseline and depression at follow-up, controlling for baseline depression. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted logistic regression, by gender and country**

	ITALY		FRANCE		DENMARK		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
Age (at wave 1)	0.02 (-0.04; 0.06)	-0.02 (-0.07; 0.03)	-0.05 (-0.10; 0.01)	-0.05 ** (-0.09; -0.01)	-0.06 (-0.13; 0.01)	-0.02 (-0.08; 0.04)	-0.03 ** (-0.05; -0.01)	-0.03 *** (-0.05; -0.01)
Education: MIDDLE <sup>a</sup>	0.08 (-0.75; 0.92)	-0.10 (-0.61; 0.41)	0.01 (-0.59; 0.61)	-0.34 (-0.72; 0.03)	-0.21 (-1.08; 0.67)	-0.57 (-1.24; 0.10)	-0.07 (-0.35; 0.21)	-0.14 (-0.38; 0.08)
Education: HIGH <sup>a</sup>	-0.51 (-2.32; 1.30)	-0.24 (-0.95; 0.47)	-0.66 (-1.51; 0.19)	-0.41 ** (-0.94; 0.13)	-0.05 (-0.99; 0.88)	-0.89 ** (-1.65; -0.14)	-0.38 *** (-0.67; -0.09)	-0.28 ** (-0.55; -0.01)
Monthly Rent/ Mortgage free <sup>b</sup>	-0.46 (-1.13; 0.21)	-0.28 (-0.77; 0.21)	-0.04 (-0.52; 0.44)	0.40 ** (0.04; 0.77)	-0.19 (-0.98; 0.59)	-0.05 (-0.70; 0.60)	-0.31 ** (-0.55; -0.07)	-0.23 ** (-0.44; -0.02)
Living Alone <sup>c</sup>	0.45 (-0.34; 1.24)	0.71 ** (0.07; 1.34)	-0.37 (-1.32; 0.58)	0.26 (-0.28; 0.80)	0.10 (-0.63; 0.83)	0.16 (-0.81; 0.49)	0.45 *** (0.15; 0.75)	0.36 *** (0.12; 0.58)
In paid work at time 1 <sup>d</sup>	-0.30 (-0.88; 0.27)	-0.51 ** (-0.99; -0.03)	-0.38 (-1.11; 0.34)	-0.48 ** (-0.79; -0.17)	-0.99 ** (-1.69; -0.26)	-0.01 (-0.70; 0.68)	-0.39 *** (-0.67; -0.11)	-0.36 *** (-0.58; -0.12)
Active in formal activities at time 1 <sup>e</sup>	0.08 (-0.78; 0.94)	-0.51 * (-1.12; 0.11)	0.16 (-0.43; 0.76)	-0.35 (-0.79; 0.10)	-0.61 * (-1.32; 0.10)	0.51 (-0.09; 1.11)	0.12 (-0.21; 0.45)	-0.05 (-0.32; 0.21)
Active in informal/family activities at time 1 <sup>f</sup>	0.03 (-0.62; 0.68)	-0.11 (-0.49; 0.27)	0.24 (-0.33; 0.81)	-0.33 (-0.71; 0.04)	0.27 (-0.36; 0.89)	0.04 (-0.53; 0.61)	0.20 (-0.08; 0.48)	0.16 (-0.05; 0.38)
Depressed at time 1 <sup>f</sup>	2.02 *** (1.49; 2.55)	1.30 *** (0.88; 1.72)	1.68 *** (1.06; 2.29)	1.88 *** (1.55; 2.12)	1.02 *** (0.28; 1.77)	1.94 *** (1.34; 2.53)	1.86 *** (1.62; 2.11)	1.69 *** (1.49; 1.89)
Functional Limitations at time 1 <sup>h</sup>	0.69 *** (0.27; 1.11)	0.51 ** (0.09; 0.93)	0.59 (-0.16; 1.35)	0.53 *** (0.23; 0.83)	0.33 (-0.37; 1.03)	0.30 (-0.30; 0.90)	0.63 *** (0.39; 0.87)	0.52 *** (0.31; 0.72)
Constant	-2.83 (-6.32; 0.66)	0.31 (2.45; 3.07)	0.40 (-3.24; 4.04)	1.65 (-0.70; 4.00)	2.50 (-1.25; 6.25)	-0.84 (-4.70; 3.02)	-0.25 (1.80; 1.30)	-0.06 (-1.33; 1.20)
<b>Number of Observations</b>	<b>410</b>	<b>412</b>	<b>544</b>	<b>676</b>	<b>532</b>	<b>713</b>	<b>2,721</b>	<b>3,154</b>

Sources: SHARE 2004/06, ELSA 2002/04; Weighted Data. Reference categories: a) Low Education; b) Paying rent/mortgage monthly at time 1; c) Not living alone at time 1; d) Not in paid work at time 1; e) Not formally engaged at time 1; f) Not informally engaged at time 1; g) Not depressed at time 1; h) No functional limitations at time 1. \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

**Table 9.10 Association between changes in levels of engagement over time and depression at follow-up, controlling for baseline depression. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted logistic regression, by gender and country**

	ITALY		FRANCE		DENMARK		England	
	Male	Female	Male	Female	Male	Female	Male	Female
Not in paid work at both waves								
Not in paid work for less than 2 years	-0.22 (-1.06; 0.61)	-1.03 ** (-2.01; -0.05)	-0.15 (-0.93; 0.63)	0.24 (-0.47; 0.95)	-1.80 ** (-3.35; -0.25)	0.33 (-0.63; 1.31)	-0.43 ** (-0.85; -0.01)	-0.26 (-0.61; 0.08)
In paid work at time 2	-0.34 (-1.32; 0.44)	-0.06 (-0.68; 0.56)	-0.69 (-1.86; 0.48)	-0.38 ** (-0.68; -0.08)	-0.84 ** (-1.63; -0.05)	-0.27 (-1.54; 0.34)	-0.52 *** (-0.82; -0.23)	-0.39 *** (-0.65; -0.13)
Not active in formal activities in either waves								
No Formal → Formal	-0.52 (-1.45; 0.41)	-0.40 (-1.06; 0.26)	0.00 (-0.78; 0.78)	-0.12 (-0.66; -0.43)	-0.18 (-1.03; 0.67)	-0.11 (-0.86; 0.65)	-0.61 *** (-1.08; -0.14)	-0.30 * (-0.66; 0.06)
Formal → No formal	-0.15 (-1.46; 1.16)	0.15 (-0.90; 1.20)	0.45 (-0.50; 1.40)	0.18 (-0.41; 0.76)	-0.07 (-1.41; 1.27)	0.90 * (-0.06; 1.86)	0.50 ** (0.08; 0.91)	0.16 (-0.18; 0.51)
Active in formal activities at both waves	-0.09 (-1.07; 0.87)	-1.05 *** (-1.73; -0.37)	-0.08 (-0.80; 0.64)	-0.80 *** (-1.38; -0.21)	-0.43 (-1.20; 0.36)	-0.22 (-0.95; 0.50)	-0.54 ** (-1.05; -0.03)	-0.32 * (-0.67; 0.04)
Not active in informal/family activities in either waves								
No informal → informal & family engagement	0.62 (-0.11; 1.35)	0.27 (-0.21; 0.76)	-0.31 (-1.14; 0.52)	0.25 (-0.36; 0.86)	-0.19 (-1.16; 0.78)	-0.31 (-1.10; 0.48)	0.12 (-0.40; 0.64)	-0.35 (-0.76; 0.06)
Informal and Family → No more informal	0.24 (-0.73; 1.22)	-0.06 (-0.60; 0.48)	0.36 (-0.20; 0.93)	-0.32 (-0.90; 0.27)	0.14 (-0.72; 1.00)	-0.53 (-1.31; 0.24)	0.14 (-0.20; 0.47)	0.13 (-0.13; 0.38)
Active in informal/family activities at both waves	0.12 (-0.59; 0.83)	-0.01 (-0.46; 0.44)	-0.01 (-0.74; 0.72)	-0.20 (-0.68; -0.28)	0.25 (-0.58; 1.08)	0.24 (-0.52; 1.00)	0.37 (-0.08; 0.83)	0.07 (-0.26; 0.39)
<b>Number of Observations</b>	<b>410</b>	<b>412</b>	<b>544</b>	<b>676</b>	<b>532</b>	<b>713</b>	<b>2,721</b>	<b>3,154</b>

Sources: SHARE 2004/06, ELSA 2002/04; Weighted Data. \* p<10; \*\* p<0.05; \*\*\* p<0.01

Controlling for age, education, baseline functional health, household composition (alone or not); household living arrangements (mortgage/rent free home or not), baseline SRH (all at baseline).

### **9.3.3 SRH AND DEPRESSION *CHANGES* OVER TIME**

Tables 9.11 and 9.12 show the results of ordinal logistic models of changes between waves in SRH and in depression respectively by engagement at baseline, controlling for socio-economic and demographic characteristics at baseline.

SRH changes over time display similar associations with socio-economic and demographic characteristics as SRH at follow-up. Only a few exceptions apply. English women living alone at baseline no longer had increased odds of reporting better levels of the SRH scale. Moreover, limitations at baseline were associated with increased odds of either keeping reporting a low health or with a deterioration of SRH at follow-up significantly in all subpopulations under study.

Focusing on engagement at baseline in the three activities, respondents who were in paid work at baseline were more likely to either report improvements in their SRH or to report SRH as good as at baseline, compared to those who were not working at baseline. This association was significant at a 5% level in all subpopulations except Italian male and Danish female respondents. No significant associations were found in the other subpopulations. Similarly, informal and family-related engagement was in none of the subpopulations significantly associated with longitudinal changes in SRH.

Compared to the model which considered SRH at follow-up and controlled for baseline SRH, this model with changes in SRH over time showed a stronger and more significant association with engagement in paid work at baseline whereas the longitudinal associations with the other two indicators of formal and informal activities disappeared in most subpopulations.

Table 9.12 shows the results of the ordinal logistic analysis modelling changes in depression between waves on engagement at baseline. No major differences were observed in the direction of association between changes in depression and baseline socio-economic and demographic characteristics. Limitations at baseline, in this case, were significantly associated with increased odds of becoming depressed at follow-up in all subpopulations under study.

When the main variables of interests were analysed, paid work at baseline was associated with higher odds of either being no longer depressed or remaining not-



depressed also at follow-up, when all other variables in the model are held constant. This association was significant in all subpopulations, except among French male respondents. As regards formal participation, the direction of association suggested that respondents who were actively engaged at baseline had lower odds of becoming depressed, though this association is not significant. Finally, among SHARE respondents, there was neither statistically significant nor clear direction of association between informal and family-related engagement with changes in depression. This finding held also when the indicator of informal commitment did not include the activity 'looking after grandchildren' (data not shown). On the contrary, ELSA respondents who were informally engaged at baseline had significantly higher odds of becoming depressed at follow-up.

**Table Error! No text of specified style in document..1 Association between engagement at baseline and changes (for the better) in SRH over time. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted ordinal logistic regression, by gender and country**

	ITALY		FRANCE		DENMARK		England	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age (at wave 1)</b>	-0.06 ** (-0.11; -0.01)	-0.01 (-0.04; 0.02)	0.01 (-0.04; 0.06)	0.03 (-0.02; 0.07)	0.01 (-0.03; 0.05)	-0.01 (-0.05; 0.03)	0.02 *** (0.00; 0.04)	0.01 (-0.01; 0.03)
<b>Education: MIDDLE *</b>	0.37 (-0.18; 0.93)	0.37 (-0.15; 0.88)	-0.30 (-0.78; 0.18)	0.16 (-0.26; 0.58)	0.32 (-0.28; 0.91)	0.18 (-0.40; 0.76)	0.43 *** (0.22; 0.64)	0.39 *** (0.20; 0.58)
<b>Education: HIGH *</b>	0.88 *** (0.46; 1.30)	0.08 (-0.54; 0.69)	0.25 (-0.21; 0.71)	0.32 ** (0.03; 0.60)	0.38 (-0.28; 1.05)	0.59 ** (0.05; 1.14)	0.67 *** (0.47; 0.87)	0.33 *** (0.13; 0.53)
<b>Monthly Rent/ Mortgage free <sup>b</sup></b>	-0.28 (-0.85; 0.28)	0.05 (-0.23; 0.34)	0.04 (-0.27; 0.36)	0.09 (-0.18; 0.36)	0.16 (-0.35; 0.67)	0.39 (-0.14; 0.91)	0.20 ** (0.03; 0.38)	0.38 *** (0.22; 0.54)
<b>Living Alone <sup>c</sup></b>	-0.57 (-1.19; 0.05)	-0.68 ** (-1.21; -0.03)	-0.16 (-0.56; 0.23)	-0.13 (-0.52; 0.26)	-0.05 (-0.57; 0.48)	0.08 (-0.39; 0.56)	-0.20 (-0.45; 0.05)	0.03 (-0.17; 0.25)
<b>In paid work at time 1 <sup>d</sup></b>	-0.07 (-0.65; 0.51)	0.35 ** (0.00; 0.71)	0.82 ** (0.16; 1.48)	0.69 ** (0.04; 1.34)	0.86 *** (0.28; 1.43)	-0.04 (-0.60; 0.52)	0.59 *** (0.39; -0.79)	0.42 *** (0.23; 0.62)
<b>Formally Engaged at time 1 <sup>e</sup></b>	0.25 (-0.27; 0.77)	0.01 (-0.40; 0.41)	0.31 * (-0.07; 0.69)	0.13 (-0.16; 0.43)	0.26 (-0.21; 0.74)	-0.26 (-0.66; 0.14)	0.19 * (-0.02; 0.41)	0.15 (-0.03; 0.33)
<b>Informally Engaged at time 1</b>	-0.29 (-0.75; 0.17)	0.25 (-0.15; 0.64)	-0.05 (-0.50; 0.40)	0.01 (-0.30; 0.32)	0.07 (-0.36; 0.50)	-0.16 (-0.57; 0.25)	-0.13 (-0.34; 0.08)	-0.01 (-0.17; 0.14)
<b>Functional Limitations at wave 1 <sup>e</sup></b>	-0.45 ** (-0.86; -0.04)	-0.76 *** (-1.11; -0.40)	-0.42 ** (-0.78; -0.08)	-0.62 *** (-0.92; -0.32)	-0.96 *** (-1.60; -0.34)	-1.02 *** (-1.53; -0.51)	-0.88 *** (-1.08; -0.67)	-0.79 *** (-0.97; -0.61)
<b>Intercept 1</b>	-1.30 (-4.37; 1.77)	1.52 (-0.41; 3.45)	3.56 (0.72; 6.40)	4.71 (1.93; 7.49)	4.18 (1.70; 6.67)	2.39 (-0.52; 5.30)	4.48 (3.41; 5.56)	3.79 (2.70; 4.87)
<b>Intercept 2</b>	-4.78 (-7.82; -1.75)	-1.09 (-2.96; 0.78)	-0.32 (-3.20; 2.55)	0.93 (-1.93; 3.79)	-0.18 (-2.56; 2.23)	-1.97 (-4.76; 0.82)	0.54 (-0.49; 1.59)	-0.25 (-1.29; 0.79)
<b>Intercept 3</b>	-6.06 (-9.09; -3.03)	-2.76 (-4.68; 0.85)	-1.36 (-4.24; 1.52)	-0.25 (-2.96; 2.46)	-1.31 (-3.70; 1.07)	-3.11 (-5.88; 0.34)	-0.80 (-1.84; 0.24)	-1.45 (-2.49; 0.41)
<b>Number of Observations</b>	<b>410</b>	<b>412</b>	<b>544</b>	<b>676</b>	<b>532</b>	<b>713</b>	<b>2,721</b>	<b>3,154</b>

Sources: SHARE 2004/06, ELISA 2002/04; Weighted Data. Reference categories: a) Low Education; b) Paying rent/mortgage monthly at time 1; c) Not living Alone at time 1; d) Not in paid work at time 1; e) Not formally engaged at time 1; f) Not informally engaged at time 1; g) No functional limitations at time 1. \* p<0.10; \*\* p<0.05; \*\*\* p<0.01

**Table Error!** No text of specified style in document..2 Association between engagement at baseline and changes in depression over time. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted ordinal logistic regression, by gender and country

	ITALY		FRANCE		DENMARK		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age (at wave 1)</b>	0.02 (-0.03; 0.07)	0.02 (-0.01; 0.05)	0.02 (-0.03; 0.07)	0.06 *** (0.03; 0.09)	0.09 *** (0.04; 0.14)	0.07 *** (0.02; 0.12)	0.05 *** (0.03; 0.07)	0.04 *** (0.02; 0.06)
<b>Education: MIDDLE *</b>	0.24 (-0.31; 0.80)	0.05 (-0.42; 0.52)	-0.17 (-0.56; 0.22)	0.21 (-0.14; 0.57)	0.10 (-0.70; 0.90)	0.38 (-0.19; 0.95)	0.32 *** (0.10; 0.56)	0.33 *** (0.14; 0.52)
<b>Education: HIGH *</b>	0.97 ** (0.00; 1.95)	0.50 * (-0.08; 1.09)	0.40 * (-0.10; 0.90)	0.34 * (-0.06; 0.74)	-0.01 (-0.89; 0.87)	0.65 ** (0.29; 1.01)	0.56 *** (0.33; 0.79)	0.46 *** (0.24; 0.67)
<b>Monthly Rent/ Mortgage free <sup>b</sup></b>	0.39 (-0.15; 0.93)	0.36 * (-0.02; 0.73)	0.16 (-0.19; 0.52)	-0.14 (-0.43; 0.16)	0.42 (-0.30; 1.15)	-0.06 (-0.56; 0.44)	0.52 *** (0.32; 0.72)	0.43 *** (0.26; 0.59)
<b>Living Alone <sup>c</sup></b>	0.31 (-1.08; 0.45)	-0.85 *** (-1.41; -0.29)	-0.32 (-0.77; 0.13)	-0.38 * (-0.79; 0.03)	-0.29 (-0.94; 0.35)	-0.08 (-0.56; 0.41)	-0.78 *** (-1.01; -0.55)	-0.55 *** (-0.74; -0.36)
<b>In paid work at time 1 <sup>d</sup></b>	0.34 * (-0.10; 0.79)	0.48 ** (0.12; 0.83)	0.26 (-0.27; 0.79)	0.35 ** (0.02; 0.68)	0.96 *** (0.38; 1.54)	0.44 ** (0.02; 0.86)	0.73 *** (0.50; 0.95)	0.49 *** (0.30; 0.67)
<b>Formally Engaged at time 1 <sup>e</sup></b>	0.47 (-0.28; 1.21)	0.49 ** (0.07; 0.91)	0.19 (-0.21; 0.59)	0.30 (-0.06; 0.66)	0.28 (-0.23; 0.79)	0.14 (-0.30; 0.58)	0.01 (-0.26; 0.28)	0.21 ** (0.00; 0.42)
<b>Informally Engaged at time 1</b>	0.19 (-0.73; 0.34)	0.05 (-0.24; 0.34)	-0.05 (-0.55; 0.44)	0.17 (-0.09; 0.43)	0.05 (-0.45; 0.56)	-0.23 (-0.67; 0.21)	-0.26 ** (-0.50; -0.03)	-0.34 *** (-0.51; -0.16)
<b>Functional Limitations at time 1 <sup>f</sup></b>	-1.18 *** (-1.58; -0.79)	-1.08 ** (-1.47; -0.68)	-1.06 *** (-1.56; -0.56)	-0.97 *** (-1.24; -0.69)	-1.05 *** (-1.59; -0.51)	-0.75 *** (-1.19; -0.30)	-0.99 *** (-1.18; -0.80)	-0.89 *** (-1.06; -0.72)
<b>Intercept 1</b>	0.42 (-2.89; 3.74)	1.21 (-0.99; 3.41)	0.41 (-2.87; 3.69)	3.34 (1.43; 5.24)	4.48 (1.37; 7.59)	3.28 (0.02; 6.55)	1.89 (0.63; 3.15)	1.79 (0.72; 2.86)
<b>Intercept 2</b>	-0.17 (-3.47; 3.13)	0.49 (-1.69; 2.68)	-0.46 (-3.72; 2.80)	2.71 (-0.82; 4.60)	3.80 (-0.69; 6.91)	2.69 (-0.58; 5.97)	1.31 (0.06; 2.57)	1.17 (0.10; 2.25)
<b>Intercept 3</b>	-0.87 (-4.23; 2.49)	-0.27 (-2.46; 1.91)	-1.20 (-4.38; 1.98)	2.12 (0.21; 4.02)	2.45 (-0.70; 5.61)	1.84 (-1.43; 5.12)	0.50 (-0.75; 1.76)	0.40 (-0.67; 1.48)
<b>Number of Observations</b>	<b>410</b>	<b>412</b>	<b>544</b>	<b>676</b>	<b>532</b>	<b>713</b>	<b>2,721</b>	<b>3,154</b>

Sources: SHARE 2004/06, ELISA 2002/04; Weighted Data. Reference categories: a) Low Education; b) Paying rent/mortgage monthly at time 1; c) Not living Alone at time 1; d) Not in paid work at time 1; e) Not formally engaged at time 1; f) Not informally engaged at time 1; g) No functional limitations at time 1. \* p<0.10; \*\* p<0.05; \*\*\* p<0.01

Note: Negative log-odds ratios mean that the respondents has decreased the level of their mental health and has become depressed, whereas positive log odd ratios imply a positive change, i.e. the respondent is still or no longer depressed.

## **9.4 RESULTS FROM THE MULTIVARIATE ANALYSES OF THE MULTIPLE ‘IMPUTED DATASETS’ UNDER MAR AND NMAR.**

The above results referred to the complete-record analyses. Under the MAR assumption, missing values at follow-up were imputed and regression analyses for each outcome repeated. Only a selection of all the analyses ran are presented: Table 9.13 shows the results of the model which regressed SRH and changes between waves in SRH on baseline characteristics whereas Table 9.14 shows the findings from the regression of depression at follow-up controlling for depression at baseline.

### **9.4.1 SELF-RATED HEALTH**

Under the missing at random assumption, MI should correct biases that may otherwise arise in complete record analyses. When SRH at follow-up and changes in SRH over time were examined, the inclusion of imputed values changed substantially the significance level and the direction of certain associations. In particular, age was no longer associated with SRH; English male respondents had no longer significantly increased odds of reporting better health for each unit increase in their age. Italian women who lived alone at baseline were no longer the only subpopulation experiencing a significant increase in their odds of reporting poor or worsened health. Moreover, analyses on the imputed datasets showed a significant association between functional limitations at baseline and SRH at follow-up among Italian and French men (whereas in the complete record analyses these were not significant).

When we focus on the three forms of engagement at baseline, we observe that Italian men and Danish women who were in paid work at baseline now show a similar (though not significant) direction of association with SRH and its changes over time as the other countries under study. As regards formal engagement, among SHARE respondents, MI analyses showed no significant association with SRH. The implausible association which applied only to Danish women is no longer significant when MI datasets under MAR assumptions were analysed: female Danish respondents who were engaged in formal activities had no longer significantly worsened self-reported health. Among ELSA respondents, both men and women who were actively engaged in formal activities at baseline had significantly higher odds of reporting better SRH at follow-up.

Changes in estimates for informal engagement at baseline suggested that participation in such activity was no longer associated with SRH changes in any of the countries under study.

#### **9.4.2 DEPRESSION**

When depression was considered, analyses performed on the imputed datasets showed that age was no longer significantly associated with depression at follow-up. Among SHARE respondents, moreover, living in a mortgage or rent-free house at baseline was no longer significantly associated with increased odds of being depressed at follow-up among French women. Similarly, Italian women living alone were no longer significantly more likely to be depressed at follow-up. Focusing on the three dimensions of participation, whereas among SHARE respondents both formal and informal/family-related engagement were no longer associated with depression, ELSA respondents who were engaged in formal activities were significantly less likely to be depressed at follow-up. Finally, paid work is no longer associated with reduced odds of being depressed at follow-up among Italian and French women as well as English men.

#### **9.4.3 SENSITIVITY ANALYSIS**

Tables 9.15 and 9.16 show a sample of the sensitivity analyses performed. These two tables refer to the logistic regression analyses of depression at follow-up on baseline characteristics under the assumption that, among non-respondents, the proportion of people who were depressed (regardless of their baseline characteristics) was higher by 20% and 33% respectively. In both scenarios, the associations between baseline characteristics and depression at follow-up were weaker and less significant. For instance, paid work at baseline was significantly associated with reduced odds of being depressed at follow-up only among Danish men; formal engagement reduced the likelihood of being depressed only among female ELSA respondents. Also, if the depression rate was arbitrarily and randomly increased among non-respondents, baseline characteristics such as 'reporting at least one functional limitation' are no longer associated with the likelihood of being depressed at follow-up.

**Table 9.13 Association between engagement at baseline and changes (for the better) in SRH over time. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted ordinal logistic regression with imputed datasets (under MAR), by gender and country**

	ITALY		FRANCE		DENMARK		England	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age (at wave 1)</b>	-0.03 (-0.08; 0.01)	-0.01 (-0.04; 0.02)	0.00 (0.04; -0.04)	0.01 (-0.02; 0.05)	-0.01 (-0.03; 0.05)	-0.01 (-0.05; 0.03)	0.00 (-0.02; 0.02)	-0.00 (-0.01; 0.01)
<b>Education: MIDDLE *</b>	0.17 (-0.32; 0.66)	0.42 (-0.09; 0.93)	-0.14 (-0.51; 0.23)	0.26 (-0.26; 0.58)	0.26 (-0.33; 0.85; )	0.28 (-0.27; 0.83)	0.31 *** (0.15; 0.48)	0.31 *** (0.16; 0.45)
<b>Education: HIGH *</b>	0.57 ** (0.04; 1.10)	0.10 (-0.49; 0.68)	0.16 (-0.20; 0.53)	0.41 ** (0.03; 0.79)	0.36 (-0.29; 1.02)	0.63 ** (0.02; 1.23)	0.48 *** (0.32; 0.64)	0.31 *** (0.15; 0.47)
<b>Monthly Rent/ Mortgage free <sup>b</sup></b>	-0.22 (-0.72; 0.28)	0.05 (-0.28; 0.38)	0.08 (-0.23; 0.39)	0.06 (-0.22; 0.35)	0.20 (-0.33; 0.73)	0.28 (-0.24; 0.80)	0.22 *** (0.09; 0.36)	0.34 *** (0.21; 0.47)
<b>Living Alone <sup>c</sup></b>	-0.48 (-1.19; 0.05)	-0.41 (-0.95; 0.13)	-0.15 (-0.58; 0.28)	-0.13 (-0.47; 0.21)	-0.12 (-0.63; 0.38)	0.11 (-0.35; 0.58)	-0.07 (-0.24; 0.11)	0.02 (-0.13; 0.17)
<b>In paid work at time 1 <sup>d</sup></b>	0.15 (-0.40; 0.71)	0.34 ** (0.04; 0.641)	0.56 ** (0.11; 1.00)	0.52 ** (0.02; 1.03)	0.77 *** (0.21; 1.32)	0.11 (-0.42; 0.64)	0.47 *** (0.30; 0.64)	0.33 *** (0.18; 0.49)
<b>Formally Engaged at time 1 <sup>e</sup></b>	0.23 (-0.33; 0.79)	-0.05 (-0.51; 0.40)	0.16 (-0.20; 0.52)	0.12 (-0.20; 0.43)	0.20 (-0.25; 0.65)	-0.16 (-0.55; 0.23)	0.21 *** (0.07; 0.35)	0.32 *** (0.19; 0.45)
<b>Informally Engaged at time 1 <sup>f</sup></b>	-0.17 (-0.24; 0.59)	0.25 (-0.06; 0.57)	0.16 (-0.20; 0.52)	0.07 (-0.23; 0.36)	-0.01 (-0.43; 0.42)	-0.06 (-0.46; 0.34)	-0.05 (-0.22; 0.11)	-0.08 (-0.06; 0.23)
<b>Functional Limitations at time 1 <sup>g</sup></b>	-0.47 ** (-0.88; -0.05)	-0.63 *** (-1.01; -0.26)	-0.46 ** (-0.91; -0.01)	-0.54 *** (-0.83; -0.24)	-0.94 *** (-1.58; -0.31)	-0.94 *** (-1.43; -0.44)	-0.77 *** (-0.93; 0.61)	-0.67 *** (-0.80; -0.53)
<b>Intercept 1</b>	0.29 (-2.60; 3.18)	1.86 (-0.06; 3.78)	2.33 (-0.11; 4.78)	3.59 (1.38; 5.79)	3.75 (1.15; 6.35)	2.45 (-0.36; 5.27)	3.11 (2.48; 3.73)	2.64 (2.05; 2.23)
<b>Intercept 2</b>	-3.03 (-5.95; -0.12)	-0.83 (-2.70; 1.04)	-1.04 (-3.51; 1.41)	0.19 (-2.07; 2.45)	-0.41 (-2.97; 2.15)	-1.76 (-4.48; 0.96)	-0.45 (-1.04; 0.14)	-0.89 (-1.47; 0.32)
<b>Intercept 3</b>	-4.26 (-7.20; -1.32)	-2.30 (-4.18; -0.41)	-2.22 (-4.67; 0.23)	-1.00 (-3.16; 1.16)	-1.66 (-4.23; 0.90)	-2.98 (-5.69; 0.27)	-1.80 (-2.39; -1.21)	-2.20 (-2.78; -1.62)
<b>Number of Observations (% imputed)</b>	<b>532</b> (22.2)	<b>541</b> (23.9)	<b>839</b> (37.1)	<b>951</b> (33.4)	<b>761</b> (32.1)	<b>977</b> (30.1)	<b>3,306</b> (19.7)	<b>3,488</b> (18.8)

Sources: SHARE 2004/06, ELSA 2002/04; Weighted Data. Imputed Data. Reference categories: a) Low Education; b) Paying rent/mortgage monthly at time 1; c) Not living Alone at time 1; d) Not in paid work at time 1; e) Not formally engaged at time 1; f) Not informally engaged at time 1; g) No functional limitations at time 1. \* p<10; \*\* p<0.05; \*\*\* p<0.01

**Table 9.14 Association between engagement at baseline and depression at follow-up, controlling for baseline depression. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted logistic regression with imputed datasets (under MAR), by gender and country**

	ITALY		FRANCE		DENMARK		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Age (at wave 1)</b>	0.00 (-0.06; 0.06)	-0.03 (-0.07; 0.02)	-0.04 (-0.09; 0.01)	-0.04 (-0.08; 0.01)	-0.05 (-0.11; 0.01)	-0.00 (-0.06; 0.06)	-0.00 (-0.01; 0.01)	0.03 (-0.01; 0.01)
<b>Education: MIDDLE *</b>	-0.04 (-0.77; 0.68)	-0.17 (-0.70; 0.36)	-0.13 (-0.66; 0.40)	-0.30 (-0.67; 0.07)	-0.21 (-1.08; 0.66)	-0.46 (-1.12; 0.20)	-0.13 (-0.37; 0.10)	-0.17 (-0.36; 0.01)
<b>Education: HIGH *</b>	-0.32 (-1.78; 1.14)	-0.18 (-0.87; 0.51)	-0.49 (-1.51; 0.19)	-0.49 * (-1.01; 0.03)	0.01 (-0.94; 0.95)	-0.72 * (-1.49; 0.05)	-0.32 *** (-0.55; -0.09)	-0.26 ** (-0.48; -0.04)
<b>Monthly Rent/ Mortgage free <sup>b</sup></b>	-0.29 (-0.96; 0.38)	-0.17 (-0.68; 0.33)	-0.15 (-0.60; 0.31)	0.16 (-0.20; 0.52)	-0.10 (-0.92; 0.71)	-0.18 (-0.82; 0.46)	-0.26 ** (-0.46; -0.06)	-0.21 ** (-0.37; -0.52)
<b>Living Alone <sup>c</sup></b>	0.36 (-0.59; 1.30)	0.51 (-0.15; 1.16)	-0.27 (-1.00; 0.47)	0.20 (-0.26; 0.66)	0.32 (-0.40; 1.03)	0.22 (-0.83; 0.39)	0.38 *** (0.15; 0.60)	0.28 *** (0.11; 0.46)
<b>In paid work at time 1 <sup>d</sup></b>	-0.33 (-1.03; 0.37)	-0.31 (-0.87; 0.24)	-0.31 (-0.94; 0.32)	-0.08 (-0.58; 0.42)	-0.76 ** (-1.44; -0.09)	-0.10 (-0.80; 0.59)	-0.19 (-0.43; 0.06)	-0.23 ** (-0.45; -0.02)
<b>Formally Engaged at time 1 <sup>e</sup></b>	-0.01 (-0.86; 0.85)	-0.22 (-0.82; 0.38)	0.02 (-0.54; 0.59)	-0.19 (-0.61; 0.22)	-0.55 (-1.23; 0.14)	0.27 (-0.30; 0.85)	-0.21 ** (-0.40; -0.02)	-0.30 *** (-0.46; -0.15)
<b>Informally Engaged at time 1 <sup>f</sup></b>	0.06 (-0.58; 0.70)	-0.10 (-0.51; 0.30)	0.07 (-0.44; 0.57)	-0.25 (-0.60; 0.09)	0.22 (-0.40; 0.84)	-0.03 (-0.59; 0.53)	0.13 (-0.10; 0.36)	0.15 (-0.04; 0.34)
<b>Depressed at time 1 <sup>g</sup></b>	1.87 *** (1.30; 2.44)	1.37 *** (0.98; 1.76)	1.67 *** (1.14; 2.20)	1.76 *** (1.42; 2.09)	1.15 *** (0.42; 1.89)	1.96 *** (1.37; 2.55)	1.77 *** (1.57; 1.97)	1.67 *** (1.51; 1.83)
<b>Functional Limitations at time 1 <sup>h</sup></b>	0.61 ** (0.12; 1.10)	0.54 ** (0.15; 0.93)	0.56 (-0.14; 1.26)	0.48 *** (0.17; 0.79)	0.27 (-0.42; 0.96)	0.28 (-0.29; 0.85)	0.66 *** (0.46; 0.86)	0.56 *** (0.38; 0.74)
<b>Constant</b>	-1.89 (-5.52; 1.74)	0.51 (-2.06; 3.10)	0.20 (-3.07; 3.47)	1.19 (-1.06; 3.44)	1.28 (-2.33; 4.89)	-1.30 (-5.11; 2.51)	-1.89 (-2.76; -1.04)	-1.65 (-2.33; -0.98)
<b>N of Observations</b>	<b>532</b>	<b>541</b>	<b>839</b>	<b>951</b>	<b>761</b>	<b>977</b>	<b>3,306</b>	<b>3,488</b>
<b>(% imputed)</b>	(22.2)	(23.9)	(37.1)	(33.4)	(32.1)	(30.1)	(19.7)	(18.8)

Sources: SHARE 2004/06, ELSA 2002/04; Weighted Data. Imputed Datasets. Reference categories: a) Low Education; b) Paying rent/mortgage monthly at time 1; c) Not living Alone at time 1; d) Not in paid work at time 1; e) Not formally engaged at time 1; f) Not informally engaged at time 1; g) Not depressed at time 1; h) functional limitations at time 1. \* p<10; \*\* p<0.05; \*\*\* p<0.01

**Table 9.15 Association between engagement at baseline and depression at follow-up, controlling for baseline depression. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted logistic regression with imputed datasets under MNAR (assuming depression among non-respondents increased by 20%), by gender and country**

	ITALY		FRANCE		DENMARK		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Living Alone <sup>a</sup></b>	0.47 (-0.53; 1.46)	0.55 (-0.15; 1.16)	-0.25 (-0.96; 0.45)	0.20 (-0.26; 0.66)	0.27 (-0.42; 0.97)	0.26 (-0.85; 0.33)	0.34 ** (0.06; 0.61)	0.22 (-0.09; 0.53)
<b>In paid work at time 1 <sup>b</sup></b>	-0.27 (-0.97; 0.42)	-0.28 (-0.83; 0.28)	-0.23 (-0.94; 0.48)	-0.11 (-0.60; 0.38)	-0.73 ** (-1.38; -0.08)	-0.03 (-0.76; 0.70)	-0.17 (-0.40; 0.07)	-0.20 * (-0.44; 0.04)
<b>Formally Engaged at time 1 <sup>c</sup></b>	-0.12 (-1.04; 0.80)	-0.21 (-0.79; 0.37)	-0.00 (-0.55; 0.54)	-0.22 (-0.63; 0.20)	-0.60 (-1.25; 0.04)	0.24 (-0.33; 0.81)	-0.26 (-0.54; 0.01)	-0.37 ** (-0.65; -0.08)
<b>Informally Engaged at time 1 <sup>d</sup></b>	0.05 (-0.56; 0.66)	-0.10 (-0.49; 0.28)	0.05 (-0.45; 0.54)	-0.28 (-0.64; 0.07)	0.16 (-0.46; 0.78)	0.00 (-0.55; 0.55)	0.09 (-0.18; 0.37)	0.14 (-0.03; 0.31)
<b>Functional Limitations at time 1 <sup>e</sup></b>	0.46 (-0.34; 1.26)	0.47 * (-0.04; 0.97)	0.54 ** (0.01; 1.07)	0.39 (-0.09; 0.88)	0.29 (-0.37; 0.95)	0.27 (-0.27; 0.81)	0.60 *** (0.27; 0.92)	0.49 *** (0.15; 0.82)
<b>N of Observations (% imputed)</b>	<b>532</b> (22.2)	<b>541</b> (23.9)	<b>839</b> (37.1)	<b>951</b> (33.4)	<b>761</b> (32.1)	<b>977</b> (30.1)	<b>3,306</b> (19.7)	<b>3,488</b> (18.8)

Sources: SHARE 2004/06, ELISA 2002/04; Weighted Data. Imputed Datasets. Reference categories: a) Not living Alone at time 1; b) Not in paid work at time 1; c) Not formally engaged at time 1; d) Not informally engaged at time 1; e) functional limitations at time 1. \* p<10; \*\* p<0.05; \*\*\* p<0.01  
Controlling for age, education, household composition (alone or not), household arrangements (mortgage/rent free home or not), depression (all at baseline).



**Table 9.16 Association between engagement at baseline and depression at follow-up, controlling for baseline depression. Log Odds Ratios and 95% Confidence Intervals obtained from fully adjusted logistic regression with imputed datasets under MNAR (assuming depression among non-respondents increased by 33%), by gender and country**

	ITALY		FRANCE		DENMARK		ENGLAND	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Living Alone <sup>a</sup></b>	0.53 (-0.46; 1.52)	0.59 (-0.08; 1.27)	-0.24 (-0.92; 0.43)	0.19 (-0.26; 0.65)	0.25 (-0.42; 0.93)	-0.28 (-0.85; 0.30)	0.31 ** (0.01; 0.60)	0.19 (0.16; 0.53)
<b>In paid work at time 1 <sup>b</sup></b>	-0.23 (-0.89; 0.43)	-0.25 (-0.80; 0.29)	-0.12 (-0.88; 0.63)	-0.12 (-0.61 -0.37)	-0.72 ** (-1.35; -0.09)	-0.03 (-0.71; 0.76)	-0.16 (-0.40; 0.08)	-0.19 (-0.44; 0.07)
<b>Formally Engaged at time 1 <sup>c</sup></b>	-0.18 (-1.12; 0.75)	-0.19 (-0.75; 0.36)	-0.01 (-0.54; 0.52)	-0.23 (-0.63; 0.17)	-0.56 (-1.24; 0.04)	0.20 (-0.30; 0.85)	-0.20 (-0.50; 0.10)	-0.32 ** (-0.62; -0.04)
<b>Informally Engaged at time 1 <sup>d</sup></b>	0.05 (-0.55; 0.65)	-0.11 (-0.48; 0.27)	0.00 (-0.47; 0.47)	-0.30 (-0.66; 0.06)	0.13 (-0.48; 0.73)	0.02 (-0.51; 0.55)	0.07 (-0.22; 0.36)	0.13 (-0.04; 0.30)
<b>Functional Limitations at time 1 <sup>e</sup></b>	0.37 (0.51; 1.24)	0.41 (0.14; 0.96)	0.52 ** (0.03; 1.01)	0.32 (-0.22; 0.86)	0.30 (-0.33; 0.94)	0.26 (-0.26; 0.78)	0.55 *** (0.18; 0.92)	0.45 ** (0.07; 0.82)
<b>N of Observations</b>	<b>532</b>	<b>541</b>	<b>839</b>	<b>951</b>	<b>761</b>	<b>977</b>	<b>3,306</b>	<b>3,488</b>
<b>(% imputed)</b>	(22.2)	(23.9)	(37.1)	(33.4)	(32.1)	(30.1)	(19.7)	(18.8)

Sources: SHARE 2004/06, ELSA 2002/04; Weighted Data. Imputed Datasets. Reference categories: a) Not living Alone at time 1; b) Not in paid work at time 1;

c) Not formally engaged at time 1; d) Not informally engaged at time 1; \* p<10; \*\* p<0.05; \*\*\* p<0.01

Controlling for age, education, household composition (alone or not); household arrangements (mortgage/rent free home or not), depression (all at baseline).

## 9.5 CONCLUSIONS

Among the four countries under study, descriptive statistics suggested that Danish and English respondents had comparatively better self-reported health and lower prevalence of depression than Italian and French, at both baseline and follow-up. Denmark and England also showed a slower decline in these indicators over time.

Despite these differences, it appeared that –out of the three engagement indicators – being active in the labour market was the only factor significantly associated with better health; this association applied to all countries. Formal assessment of these associations supported these observations and showed that respondents who were in paid work at baseline, rated their health better than those who were ‘inactive’ and had higher odds of increasing their SRH or maintaining it ‘good’. Similarly, they had decreased odds of being or becoming depressed. Findings were in line with those from similar longitudinal studies which have shown that work has an important influence on health outcomes such as depression and SRH (Badley et al., 2000, Innstrand et al., 2011) and employment is generally associated with slower decline in mental health (Butterworth et al., 2011). The directions of such associations as well as their significance levels, though, were not consistent among all subpopulations under study.

Formal engagement appears to be longitudinally associated with good health and lower incidence of depression though such associations are rarely significant. Findings in this research study seemed to suggest that when the holistic indicator of formal engagement is considered, its direction of association with SRH and depression at follow-up was beneficial but weak. Only among ELSA respondents, was formal engagement (which mainly refers to volunteering) associated with enhanced self-rated health and positive mental health outcomes, lending support to studies which focused just on volunteering (Van Willigen, 2000, Thoits and N., 2001, Morrow-Howell et al., 2003, Musick and Wilson, 2003).

Furthermore, informal and family-related commitment at baseline was not significantly associated with follow-up SRH and depression among SHARE respondents. Only English respondents engaged in informal activities were more likely to become depressed, though this association did not hold for the other three outcomes considered. These findings were in line with the literature review which suggests that factors such as

satisfaction, intention to care, time and intensity of care as well as the conditions of the recipient and the relationship with the caregiver tend to be more important in 'predicting' health measurements than the activity itself (Hubley et al., 2003, Gruenewald et al., 2007, Yajima et al., 2007). Given that informal engagement covers a wide range of activities (from caring for sick people to looking after and helping friends and family members), and given the lack of information on the intensity of care, on the kind of help provided or on the characteristics of the recipient of care, it is not surprising that the effects of informal activities on health is unclear.

Finally, it is worth mentioning that, when the dataset restricted to participants with complete information on all the factors considered in this chapter was analysed, a few exceptions to the general trends were found. For instance, formal engagement and paid work at baseline were associated with decreased SRH and higher prevalence of depression among Danish female respondents (but not among Danish male respondents, despite similar patterns in changes of health and baseline commitment in the various activities). Similarly, it seems implausible that French and Italian men are the only exceptions among which functional limitations at baseline are not associated with SRH at follow-up; or that age is a protective factor against depression and poor SRH at follow up among English respondents and French women. In these cases, it seemed plausible to assume that attrition introduced some bias in the analyses. Indeed, analyses carried out under the MAR assumption showed how certain associations might have been mainly caused by informative drop-outs. Of course, caution is needed –just as with any statistical methodology –when imputed datasets and sensitivity analyses are considered. Indeed, analyses based on MI might also be flawed should the imputation models fail to capture the missing-data mechanism, as 'departures' from MAR analyses showed. In all cases it is undeniable that missing data can have an impact on the results and associations found, an issue which is generally either not recognised as such or "is considered a nuisance that is best hidden" (p.6) (Burton and Altman, 2004).

## 10. CONCLUSIONS AND DISCUSSION

Various international bodies (EU, OECD, WHO) are promoting the concept of 'active ageing': in particular, the WHO has argued that ageing well can be achieved by keeping active and involved in paid work and by being engaged with the wider community through activities such as volunteering or helping family members and friends. Extending participation beyond the labour market has the potential to help ensure that more people continue to play a full and active role in the society.

The aim of this study was to assess whether being 'active' was positively associated with people's health. In particular, this research had three objectives. Firstly, this study investigated the personal and household characteristics associated with various forms of engagement among older people in four European countries (Denmark, Italy, France and England) to evaluate the extent to which different levels of engagement could be explained by demographic, socio-economic, and health characteristics of older people. Moreover, this research study assessed whether engagement in certain activities conflicted with the participation in others. In particular, it was decided to distinguish between three main activities: paid work, formal activities (such as volunteering and attending educational courses) and informal activities (such as caring for sick people and looking after grandchildren). Secondly, this study investigated whether baseline engagement was longitudinally associated with health and depression at follow-up, and the extent to which such longitudinal associations were associated with other factors. Thirdly, this research study investigated whether or not longitudinal associations found were biased by sample attrition.

Data drawn from the first two waves of two parallel European longitudinal surveys, the Surveys of Health and Retirement in Europe (SHARE) and the English Longitudinal Study of Ageing (ELSA) were used to analyse characteristics associated with older people's engagement and to better understand the reciprocal influence of activity and health in ageing populations in four European countries selected to 'represent' different welfare regimes. Descriptive results for all survey members were presented but the main analyses focused on participants aged 50-69 at baseline.

The present chapter seeks to bring together and discuss –trying to avoid repetitions –the findings from the cross-sectional and longitudinal analyses, which have already been described and situated within the literature in the chapters where findings were presented. The following sections also discuss the strengths and limitations of this research project, the implications of the study findings and possible future research.

## **10.1 MAIN FINDINGS**

### **10.1.1 CROSS-SECTIONAL ASSOCIATIONS OF OLDER PEOPLE'S CHARACTERISTICS WITH ENGAGEMENT, AND RELATIONSHIPS BETWEEN DIFFERENT FORMS OF ACTIVITIES**

Cross-sectional analyses showed that older people's level of engagement in paid work, formal, informal and family activities differed in each of the countries considered. Descriptive analyses showed large variations by country, gender and age-groups particularly when paid work and formal engagement were considered. The proportion of Danish SHARE female respondents in paid work was more than double the Italian proportion; similarly, almost 60% of the Danish men were in paid work compared to 40% of the Italian male respondents. Danish respondents consistently also had participation rates in informal activities between two and three times higher than those of the Italians. Differences between countries were hardly noticeable when participation in informal and family-related activities was analysed. In all countries, women were more involved than men in informal and family-related activities in all age-groups considered. Among survey respondents, the gap between genders was higher among the Italians and French than the English and Danish.

Interestingly, in all countries under study between almost one fifth (Denmark) and a third (Italy) of the respondents were not engaged in any of the above-mentioned activities whereas only a very small proportion of the samples (between 7% in Denmark and 2% in Italy) was simultaneously engaged in paid work, formal and informal activities. Among French and Italian women, almost 20% and 33% of respondents were engaged only in informal activities – the category which represented the second highest after 'no engagement'. In the other subpopulations, among those engaged, the majority of the samples were in paid work and –with the exception of Denmark –the proportion

of respondents who were engaged only in formal or informal activities was higher than that of respondents who combined either of these activities with work. Denmark, on the contrary, seems the only country where there were more respondents who combined work with at least one of the formal or informal activities than those who just engaged in the latter alone.

### **Association of socio-economic, demographic, health-related, personal and household characteristics with the various forms of engagement**

Cross-sectional multivariate analyses showed that, in both SHARE and ELSA countries, age of the respondents was consistently and significantly correlated only with paid work whereas there was no significant association between age and formal and informal engagement. These findings suggested that paid work was the only domain where factors such as statutory retirement age and pension benefit entitlements were probably more important than age itself in shaping older people's participation. In fact, whereas involvement in paid work dropped significantly after the age of 60 in all countries, such patterns were not present among the other two spheres of engagement.

Level of education was the most consistent predictor of participation in work and, in certain subgroups and countries, higher education levels were also associated with higher involvement in formal activities whereas its association with the participation of older people in informal activities was undetectable. These findings were in line with previous studies (Hank and Stuck, 2008, De Koker, 2009, Kohli et al., 2009), suggesting that education may have the ability to stimulate civic skills and values, increase awareness of problems and enhance social skills and networks (Wilson, 2000, van Ingen and Dekker, 2010) boosting participation in formal activities and civic organizations.

The role of health in older people's engagement was less clear. Ill-health indicators were negatively associated with work in all countries but not significantly so among Italian male respondents. The associations with the other forms of activities were much weaker and differential depending on country and gender: bad health tended to be negatively associated with participation in formal activities whereas it was positively associated with family and informal participation. Such cross-sectional positive association may be explained by the fact that providing help, caring for sick people and looking after

grandchildren could be potential risk factors for health (Schulz and Beach, 1999b, Hirst, 2003, Hughes et al., 2007).

### **Relationship between the various forms of engagement**

Analyses also showed that the association between informal and formal engagement was positive, suggesting complementarity between the two activities and therefore a possible accumulation of these two forms of engagement. This confirmed results reported in a number of both European and American studies (Burr et al., 2005, Caro et al., 2005, Burr et al., 2007, Choi et al., 2007, Hank and Stuck, 2007, Kohli et al., 2009), providing some evidence for the existence of a general motivation to be active in different activities even when general individual characteristics are controlled for. Paid work, on the contrary, was negatively associated with the probability to engage in formal activities, for both men and women. Time constraints may be a reason. However, paid work was not a deterrent to family and informal commitment (with the exception of England<sup>76</sup>). In other studies, respondents seemed to engage, either by choice or because of sense of normative obligation, in helping and caring for kith and kin even when they were also engaged in paid work (Caro et al., 2005, Choi et al., 2007). This relationship applied to all countries, i.e. both countries where family relationships and ties were believed stronger and countries where family support was high and ties weaker (Reher, 1998, Trifiletti, 1999, Pierson, 2000, Giuliano, 2007).

### **The Role of Welfare Regimes and Policies**

In the fully adjusted regression models, socio-economic, demographic and health-related variables showed similar associations with the three variables of interest, both among men and women and in all four countries under study. As a consequence, differences between countries in the proportion of older people who engaged in paid work or formal activities suggest that country-specific factors, such as elements of welfare state regimes, play an important role in determining older people's level of engagement, (Pichler and Wallace, 2007, Hank and Stuck, 2008). The Italian statutory retirement age, social security benefits and pension wealth (see Chapter 3) may be an incentive for

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<sup>76</sup> The measure of outcome for ELSA respondents, however, is different and includes fewer activities.

Italian respondents to retire at relatively younger ages compared to the other countries under study. Similarly, policies rather than socio-demographic and health gender- and country-specific differences may also help to explain the general lower participation of Italian women in the labour market. Moreover, the fact that Italian male respondents with ill-health (whose health indicators did not differ much from French and Danish respondents –see sections 6.4.1, 6.4.2 and 6.4.3) did not have significantly lower odds of being in paid work reinforces that idea of an ‘unused capacity’ for active work among Italian respondents. Where retirement is offered at a relatively lower age, people tend to take it regardless of health limitations, whereas in countries with a higher retirement age early retirement is more dependent on ill-health. (Blanchet and Debrand, 2007, Debrand and Lengagne, 2007, Siegrist et al., 2007, Börsch-Supan et al., 2009, Siegrist and Wahrendorf, 2009b, Westerlund et al., 2009).

Similarly, differences in the level of engagement in formal activities reinforce the idea that older people’s engagement in volunteering, political and religious organisations is shaped mainly by the societal context, norms and values as proposed in several studies focusing primarily on volunteering (Salamon and Sokolowski, 2001, Smith and Shen, 2002, Erlinghagen and Hank, 2006, Pichler and Wallace, 2007, Hank and Stuck, 2008, Hank, 2010, Hank and Erlinghagen, 2010). As an illustrative example, even accounting for differences in the educational level and in the level of participation in paid work, Danish respondents reported much higher levels of engagement in formal activities compared to French and Italian participants. Paraphrasing Salaman and Sokolowski (2001), findings suggest that the level of engagement in formal activities did not depend on mere individual spontaneous decisions but was affected also by larger social and institutional forces, values and expectations of what is socially appropriate.

Finally, factors associated with family-related and informal participation were similar in all countries under study as were the levels of engagement in such activities. This challenged the idea of a divide between the Nordic and Southern experiences of informal engagement. The patterns and levels of informal engagement were similar among all countries under study, despite the strong family traditions in southern European countries (Reher, 1998) and the higher levels and expenditure for formal care



provisions in the Northern countries (Rostgaard, 2002, Bettio and Plantenga, 2004, Viitanen, 2007).

### **10.1.2 LONGITUDINAL ASSOCIATION BETWEEN BASELINE ENGAGEMENT AND HEALTH AT FOLLOW-UP**

The overall aim of this research project was to assess whether activity had a positive impact on people's health. The cross-sectional associations between the three forms of activities seemed to suggest that work and formal engagement were associated with good health, whereas informal and family activities were associated with bad health among certain subpopulations. Given the nature of these analyses, however, it was not possible to disentangle the direction of these associations. Although it is plausible that being in paid work or formal activities, for instance, sustain health and well-being, it is equally plausible that better health provides an impetus for being more socially active in a wider variety of activities. As illustrated by several authors, for example, subjects with poor health are less likely to enter into the workplace whereas workers in poor health are more likely to drop out of work (healthy worker effect), and the higher health outcomes of workers when compared to people who are not in paid work may reflect these selection effects, rather than indicating a causal effect of work on health (Tsai et al., 2005, Barnay, 2006, Barnay and Debrand, 2006, Blanchet and Debrand, 2007, Alavinia and Burdorf, 2008, Hult et al., 2010). Both mechanisms are equally plausible: being in paid work could have a favourable and positive impact on people's health but at the same time it might be less likely for ill people to enter into work (Thomas et al., 2005). Similarly, caring for sick people could be a risk factor for older people's health though it is equally possible that care providers are those who are not in paid work for health reasons.

Longitudinal data provide a better way to understand whether engagement was beneficial for older people's health. The first two waves of both ELSA and SHARE were used to investigate whether engagement in paid work, formal and informal activities at baseline were associated with health after two years (controlling for baseline measures of health) and whether such associations differed between countries and gender. In particular, self-rated health and depression were analysed.

Among the three domains of engagement considered, it appeared that, at follow-up, only respondents who were in paid work at baseline rated their health better than those who were 'inactive' and had higher odds of improving their SRH or maintaining it at a 'good' level. Similarly, they had decreased odds of being or becoming depressed, in line with results from similar longitudinal studies (Badley et al., 2000, Butterworth et al., 2011, Innstrand et al., 2011). Formal engagement at baseline was rarely significantly associated with health at follow-up. This weak relationship, though, may be partly explained by the fact that formal engagement was low at baseline; moreover, because formal engagement 'competes' with paid work, and paid work explains most of the health outcomes at follow-up, the effect of formal engagement might be weakened as a result. Informal and family-related commitments at baseline were not significantly associated with follow-up SRH and depression. Caregiver status alone does not appear to result in lower levels of quality of life, poorer mental and physical health (Hubley et al., 2003).

### **10.1.3 SAMPLE ATTRITION AND ITS IMPACT**

The findings described above were obtained limiting the analyses to the dataset restricted to participants with complete information on all the factors considered. It is however important to recall that the ELSA and SHARE surveys both suffered from attrition over time. In particular, between 20% (England) and 35% (France) of the samples dropped out of the survey between the first and the second waves. Multivariate logistic regression analyses indicated that –although the attrition mechanism varied in each subpopulation –highly educated respondents were more likely to stay in the study as were respondents engaged in formal and informal activities whereas workers and respondents who rated their health as poor or fair were more likely to drop out of the study. This selectivity effect of the sample might therefore weaken the generalisability of the findings and confound some of the reported associations. Findings might overestimate the level of active people at follow-up as well as the effect of activities on health over time. In order to account for attrition in the survey, multiple imputation techniques and sensitivity analyses were explored. Analyses carried out under the MAR assumption showed how certain associations might have been mainly caused by

informative drop-outs: for instance, formal engagement and paid work at baseline were no longer associated with decreased SRH and higher prevalence of depression among Danish female respondents when analyses based on imputed datasets were considered. Changing assumptions on the pattern of missingness, we also showed how sensitive findings are to ‘departures’ from MAR assumptions: assuming a higher proportion of people with depressive symptoms among drop-outs, for instance, weakened significantly the associations between baseline characteristics and depression at follow-up. Attrition, in this research, has had an undeniable impact on the results and associations found which should not be ignored. Even though MI is not a panacea (especially for cases such as France where almost 40% of male respondents dropped out of the study), it is important to acknowledge the impact that attrition had on longitudinal associations and to recall that different hypotheses on the characteristics of people who dropped out of the study could yield substantially different findings.

## **10.2 STRENGTH OF STUDY**

The current research project investigated associations between engagement and health comparing data collected from SHARE and ELSA, two surveys built to maximize comparability of data and therefore to extend comparisons from the Anglo-Saxon countries to continental Europe. The standardisation of these two datasets included substantial data management as well as file manipulations, necessary to harmonise measurements such as education level and create comparable and homogeneous indicators of health and engagement. The UK has mainly been compared with the US “because of similarities in the demographic, economic and social contexts alongside important differences in institutional systems, for example in relation to health and social care, retirement provision and retirement incentives” (Scholes et al., 2009)(pg. 7). This project, instead, compared the UK with three other Continental European countries. Few studies have compared ELSA and SHARE; furthermore they mainly examined differences in health by gender, wealth or education (Avendano et al., 2009, Jürges, 2009, Jürges, 2010, Crimmins et al., 2011). This study included, among the principal variables of interest, not only demographic, socio-economic, household characteristics and health-related variables but also, and primarily, various indicators of engagement.

Moreover, this study compared the distribution of age, gender, education and other socio-demographic and health variables with those obtained from other sources such as censuses and other surveys with better response rates and higher number of respondents. These comparisons were believed necessary in order to provide some indication of the extent of possible bias due to initial non-response and in order to assure validity on the ability of the surveys to be representative of and describe large populations without bias. Assessment of data quality for SHARE has never been formally carried out and distributions of variables such as employment, education and health were compared only with those obtained in other surveys with similarly low-response rates and low number of respondents.

Similarly, most studies using SHARE and ELSA longitudinal data mainly relied on the use of longitudinal weights to correct for bias due to attrition and account for panel attrition, without assessing the characteristics of respondents who dropped out. This research, in contrast, not only assessed formally whether respondents who were successfully re-interviewed at follow-up differed from those who dropped-out in each of the countries under study, but also explored multiple imputations techniques to account for attrition in the surveys. Whereas the common practice is to restrict analyses and findings to ‘‘complete record’’ dataset which could however lead to biased results, this research study proposed multiple imputations as a possible remedy to address missing data. Findings confirmed that the self-selectivity of the sample cannot just be ignored without weakening or jeopardising the generalisability of the findings and confounding some of the reported associations.

Additionally, this research study adopted a multifaceted inclusive approach to activities: the concept of ‘active ageing’ was operationalised holistically, including as many activities as possible, within the boundaries of available data. Most studies have considered very few activities at a time and focused merely on paid work, the transition into retirement, caring for a sick person and volunteering while this research project tried to bring together the various dimensions older people engage in, given that older people can be involved in an increasing number of simultaneous activities.

Moreover, this study compared four different countries, whose policies are believed to reflect principles and values of distinct welfare regimes. This comparative approach explored *indirectly* the existing influence between welfare state policies and participation of older people, without studying in detail specific policies or programmes. Our finding that the levels of participation varied between countries –even after controlling for potential confounders –suggests that social and economic policies are important in shaping the way older people engage with the wider society. Governments may encourage participation in the labour market or in other activities by adopting specific policies to promote employment of the older workers or programmes which promote activity in non-work time. This represents one possible explanation of the observed country differences at the macro level. This work showed the potential of cross-national, longitudinal and comparative individual- level data to provide a first assessment of a larger research question linking micro-data findings with macro data and specific policies which were not analysed in this study.

Furthermore, this study identified characteristics associated with engagement in different countries. This could help identify possible strategies or interventions to increase the level of participation of older people and contribute to improving or maintaining favourable health. This might be of particular relevance to public policy. A better understanding of the determinants of participation in paid work and formal activities, for instance, may help policy interventions target those groups which are likely to be most vulnerable and less likely to participate in the various forms of activities, alleviating the effects socioeconomic status or household characteristics exert on health and engagement.

### **10.3 LIMITATIONS**

A number of limitations apply to both the cross-sectional and the longitudinal findings of this study. In particular, when longitudinal findings are analysed, it is important to recall that, although this study employs longitudinal data with controls for confounding variables, it is not possible to make causal conclusions. In fact, this study was not a true experiment in which people were randomly assigned to groups of workers and non-workers, for instance. Findings seem to suggest that engagement itself relates to late life

health. Nonetheless, given that the indicators used to summarise the various forms of engagement are grossly summative measures which did not consider the significance attached to them and given that panel data –not experimental data –were used, *alternative causal interpretations are possible*. For instance, when we try to understand the underlying mechanisms linking ‘activities’ to ‘health’, the value attached by society to specific activities or the role perceived by the individual may be responsible for such links. Activities can also indirectly enhance health by providing individuals with power, prestige, privilege, status, and emotional gratification or by providing them with social support or continued income. Conversely, initial health could determine individual’s capacity for engagement: engagement may lead to and result from higher levels of health. As cross-sectional findings showed, individuals engaged in paid work and formal engagement were already ‘healthier’ than those who were not engaged in such activities: these respondents might have merely maintained this advantage over time. As a consequence, even accounting for baseline health, the effect of the baseline participation on health at follow-up might be overestimated simply because only those in good health were engaged at baseline. These direct and indirect causal connections between engagement and health merit more careful exploration.

Both ELSA and SHARE surveys suffered from initial low response. As a consequence, data quality and its representativeness are affected and therefore the generalization of the findings might not hold had the non-respondents also been included in the sample. In particular, younger respondents (particularly men and people who were in paid work) were under-represented whereas there was an indication of an over-representation of people ‘in good health’. Given the scope of this research study, the reciprocal influence of health and engagement might potentially be jeopardised and biased.

Moreover, in addition to the methodological weaknesses of ELSA and SHARE and the problems due to institutional and cultural differences arising when comparing different countries (as highlighted in Chapter 5.7), other limitations are mainly due to the availability of the data. Neither questionnaire asked detailed questions about activities; nothing is known about hours of commitment in educational and training classes; no information was collected on the number of voluntary organisations people are involved with, rendering hard to distinguish between ‘super’ and ‘regular’ volunteers, for

instance. Similarly, SHARE and ELSA do not distinguish different kinds of voluntary activities nor do they distinguish the kind of help provided to family or friends. Moreover, the discretionary or 'obligatory' nature of the activities carried out is not investigated: the same activity, though, could be beneficial or detrimental depending on the value and the meaning attached to the specific experience as well as people perceive it. Furthermore, questions on the efforts and rewards or on satisfaction gained are only asked for specific activities such as paid work and the workplace. Similarly, the quality of social relationships obtained through civic participation or informal activities as well as the feeling of reciprocity of efforts and rewards or lack thereof are not accounted for. Additionally, the SHARE respondents were not asked to specify the recipient of their care and both questionnaires failed to ask whether caring for sick relatives represented a burden for the carer. Finally, activities such as getting together with friends or just visiting family members to have a chat could not be considered in this research study since neither questionnaire contemplated leisure or solitary activities. It could be argued that those who have a more active social life are less prone to engaging in other formal social activities. Only ELSA enquired about activities such as visits to museum or overnight trips though these questions investigated the *average* frequency on a *yearly* basis rather than the actual participation in a specific temporal frame. The datasets used, therefore, did not provide enough information able to capture the complexity of the experiences and activities older people are engaged in, the appraisal of the engagement experience, the meaning attached to it and the personal benefits or satisfaction gained from it.

It is also worth mentioning that the measurements considered in this study were sensitive to the time frame they referred to. The activity indicators mainly focused on the month prior to the interview and this, for certain activities, resulted in 'seasonal' changes. Particularly for formal engagement (see 6.5.1), the percentage of SHARE respondents who declared they were involved at least weekly in the month prior to the interview was significantly lower if the interview was held between July and September (data not shown). Furthermore, when interpreting the longitudinal results one must keep in mind the indicators of both engagement and depression refer to the month prior to the interview (i.e. nothing is known about changes in the rest of the 2-year between-

interview interval); also, changes in health refer to changes in SRH occurring between the two dates of the interviews.

A further limitation concerns the fact that all data rely on self-reports: measurements such as SRH or participation in certain informal and formal activities (such as volunteering) may be sensitive to cultural differences of definitions (Cnaan et al., 1996, Jylhä et al., 1998 ). Health expectations may vary according to culture: direct gender and cultural comparisons of self-rated health outcomes, in general, should be made with caution.

#### **10.4 IMPLICATIONS OF FINDINGS**

Analyses in this study advance our understanding of the relationship between engagement and health in later life, given that ‘active ageing’ is emerging as a hallmark of ‘new ageing’. Older people aged 50-69 seem to be actively engaged with the wider society, their community and family: overall, almost 40% of SHARE and ELSA respondents aged 50-69 were in paid work, one quarter were engaged in formal activities, and one third provided regular help and care for family members, friends and neighbours. In our sample, older people seem to have opportunities for continuing participation in the society, engaging through a range of different activities (and not just paid work). Older people are therefore recognised as an integral part of families, communities and the wider society thanks to their contributions and their participation in a broader range of activities than those normally associated with the labour market.

Evidence seems to support the WHO concept of ‘active ageing’ and the connection between activity and health. Indeed, the current research study supports the general assumption that engaging with the wider society contributes to the maintenance of good self-rated health and non-depressive symptoms among European older people aged 50-69 years, despite the above-mentioned restrictions and limitations. In particular, the findings illuminate that engagement in work is an important (but not necessarily causal) pathway to health in late life (Hinterlong et al., 2007, Wahrendorf and Siegrist, 2010). This positive relationship was consistent across Europe, both among men and women.

However, if ‘active ageing’ is a significant policy initiative which pushes boundaries towards a gradual broadening of the idea of engagement providing new opportunities to



older people to combine various forms of participation, new balances between work and other forms of engagement are still to be found. In fact, in all countries of interest in this study, independent of the general level of participation, paid work was negatively associated with the probability to engage in formal or informal activities; on the other hand, a strong positive correlation was found between active involvement in informal activities and the propensity to be engaged in formal activities. Finally, if being 'active' is the new paradigm for older people, overall participation rates also indicate that between 17% (Denmark) and 35% (Italy) of respondents were not regularly engaged in any of the above-mentioned activities.

Overall results also indicate that participation rates and the general health of respondents at baseline and follow-up varied by country, suggesting that policies may exert effects on both occupational levels (particularly among women) through labour policies and social protection measures (Dragano et al., 2010) and health, through the magnitude and generosity of their welfare state regimes, such as policies to tackle unemployment and relative poverty (Bambra and Eikemo, 2009).

The longitudinal association between paid work and health at follow-up, nonetheless, does not necessarily suggest that encouraging a fuller and longer participation of older citizens in the labour market would necessarily contribute towards weakening the detrimental advance of depression and towards increasing the self-rated health of the general population. Improvements in population level participation may not automatically lead to improvements in population health, given that the causal pathway between engagement and health is not straightforward. Similarly, assuming that encouraging older people to stay in paid work –regardless of the health conditions of the worker, the occupational class and the quality of the workplace –is beneficial for their health would be reductive. Indeed, a number of factors such as the well-being in the workplace and work conditions which are equally important in determining both the likelihood of workers to stay in their work and affect their health (Gollac and Volkoff, 2000, Phillipson, 2002b, Debrand and Lengagne, 2007, Siegrist et al., 2007, Alavinia and Burdorf, 2008) were not considered in this study. Even if modern pension reforms have mainly been promulgated in order to limit the increasing cost of an ageing society, it would seem important to pay attention to people's working lives, including the quality

of the work environment itself, in order to increase the level of participation in paid work and maintain the health of people as they age.

## **10.5 FUTURE RESEARCH**

Given the limitations mentioned above, more refined analyses are desirable to explore the relationships between engagement and health more precisely. For instance, given that several authors have shown that the beneficial effect of activities also relies on the feeling of reciprocity of efforts and rewards or lack thereof (Wenger, 1997, Jerrome and Wenger, 1999), on the experience of reward, autonomy and personal control, on the level of satisfaction, on the work conditions and quality of work (Gollac and Volkoff, 2000, Debrand and Lengagne, 2007, Siegrist et al., 2007, Alavinia and Burdorf, 2008, Siegrist and Wahrendorf, 2009a) as well as on the quality of social relationships obtained through civic participation or informal activities, it would be helpful to have more detailed information about these aspects of the participation in the various activities. Moreover, it would also be desirable to have data on both high and low-demand leisure activities (such as theatre or reading or just gathering with friends), given that these are also associated with higher mental health scores (Everard et al., 2000).

Furthermore, more detailed information about the kind and intensity of care or help, and the characteristics of the recipient of care might be helpful, since numerous studies suggest that factors such as satisfaction, intention to care, time and intensity of care as well as the conditions of the recipient and the relationship with the caregiver tend to be more important in 'predicting' health measurements than the activity itself (Hubley et al., 2003, Gruenewald et al., 2007, Yajima et al., 2007). The simplistic assumption that helping a friend carries the same meaning as caring for a family member may partly explain the lack of significant results in our analyses. Evidence also suggests that older people helping their partners or providing support to their friends could derive mental health benefits (Beach et al., 2000, Brown et al., 2003, Pinquart and Sörensen, 2003 ) or generate high levels of distress and depression when the burden becomes too heavy (Schulz and Beach, 1999a; Fredman et al., 2008, Schulz and Sherwood, 2008 , Kuzuya et al., 2011). More detailed information would help us to factor into the model the level

of burden or stress older people experience in the various informal activities they engage in and the way this relates to health.

It would be beneficial to also have larger samples for each of the country under study. For instance, the weak association between formal engagement at baseline and health at follow-up might have been weakened as a result of the low participation at baseline combined with small sample sizes. Effects and associations are harder to detect in smaller samples; ideally, then, it would be important to perform the same analyses using equally comparable surveys with bigger sample sizes in order to boost the statistical power of the relationships and associations found.

Given that a third round of the SHARE questionnaire has recently become available, it would also be interesting to assess whether the same longitudinal relationships would hold if a third wave were considered. Using observations in three time points would allow us to examine whether engagement at baseline and at the first follow-up are longitudinally and equally associated with health at the last point in time. The use of a third wave would also allow us to determine how changes in activities and other socio-economic characteristics between baseline and the wave two were associated with health at time three, controlling for baseline characteristics. As SHARE continues with further waves, the potential for more detailed analyses increase substantially, although such potential is paralleled with the increasing problems due to attrition.

Finally, although these analyses suggested that some country-specific differences may have been affected by policy/welfare regimes, limited attention to national-level policies and programmes restricts the conclusions that may be drawn in this regard. For example, there was no attention to the degree to which any relevant policies are implemented in each country. Although beyond the scope of this study, additional country-specific research in this area could provide useful insights into policy implications in this field. Moreover, this research project did not link micro-data estimations to macro-data on welfare policies potentially relevant to participation in various activities or health. Future work may investigate variations across Europe in the diversity of the characteristics of older people engaged in various activities relating patterns of engagement to policies, encompassing analyses of both micro- and macro-level data

using a range of existing sources, including EUROSTAT and OECD statistics, to assemble contextual information.

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# APPENDIX

**Table 6A.1 Distribution of the highest educational level attained by Italian SHARE respondents by age group and sex (with and without weights); comparison with ISTAT census data**

				50-54	55-59	60-64	65-69	70+	
MEN	LOW	Istat		62.7	70.9	77.5	83.5	84.1	
		SHARE	W	56.3 (46.6; 65.5)	66.1 (55.2; 73.9)	73.8 (66.4; 80.0)	72.1 (63.3; 79.4)	84.5 (77.2; 89.7)	
			U	52.4 (43.0; 61.7)	65.4 (58.0; 72.0)	74.1 (67.4; 79.8)	77.1 (71.2; 82.1)	87.9 (81.8; 92.2)	
	MEDIUM	Istat		26.4	20.1	15.1	10.5	9.7	
		SHARE	W	33.6 (25.0; 43.4)	21.8 (15.9; 28.2)	17.4 (12.5; 23.6)	17.2 (11.5; 24.9)	10.4 (5.9; 17.7)	
			U	36.3 (26.6; 47.2)	23.7 (18.0; 30.5)	16.8 (12.5; 22.3)	15.4 (11.0; 21.3)	7.7 (4.3; 13.4)	
	HIGH	Istat		10.9	8.9	7.3	6.0	6.2	
		SHARE	W	11.3 (6.2; 19.7)	12.1 (6.4; 21.3)	8.8 (5.8; 13.3)	10.7 (5.4; 20.2)	5.1 (2.5; 10.3)	
			U	10.1 (5.8; 17.2)	10.1 (6.6; 15.1)	9.1 (6.0; 13.5)	7.5 (4.4; 12.4)	4.4 (2.2; 8.4)	
					100	100	100	100	100
	WOMEN	LOW	Istat		70.0	78.6	83.9	88.3	88.7
			SHARE	W	60.0 (50.6; 68.8)	70.8 (64.4; 76.5)	74.3 (67.3; 78.5)	78.1 (67.6; 85.9)	87.4 (77.4; 92.5)
U				63.8 (55.5; 71.3)	73.7 (67.7; 78.9)	75.9 (70.7; 80.5)	85.9 (80.5; 90.0)	90.5 (84.8; 94.2)	
MEDIUM		Istat		20.5	14.8	11.5	8.2	7.8	
		SHARE	W	26.1 (19.4; 34.1)	16.1 (11.8; 21.7)	17.6 (13.1; 22.9)	13.3 (9.0; 19.1)	10.0 (5.4; 17.7)	
			U	24.1 (18.0; 31.6)	15.0 (11.2; 19.7)	17.5 (13.3; 22.7)	9.0 (6.2; 12.7)	7.1 (4.2; 12.0)	
HIGH		Istat		9.5	6.6	4.5	3.5	3.5	
		SHARE	W	13.9 (7.6; 24.0)	13.1 (8.8; 18.9)	8.0 (5.6; 11.0)	8.6 (4.3; 16.6)	2.6 (0.7; 8.8)	
			U	12.0 (7.8; 18.3)	11.3 (7.8; 16.1)	6.2 (4.2; 9.0)	5.1 (2.9; 8.9)	1.8 (0.6; 4.2)	
				100	100	100	100	100	

This table compares the age-sex distribution of the education level between census respondents (ISTAT) and SHARE respondents; weighted (W) and unweighted (U) data and 95% CI. Sources: ISTAT, 2004; SHARE 2004.

**Table 6A.2 Distribution of the highest educational level attained by Danish SHARE respondents by age and sex (with and without weights); comparisons with DST census data**

			50-54	55-59	60-64	65-69	
<b>MEN</b>	<b>LOW</b>	<b>DST</b>	23.7	28.0	34.7	40.3	
		<b>SHARE</b>	Weighted	13.3 (8.9; 19.8)	8.6 (4.7; 15.1)	14.6 (9.2; 22.3)	18.0 (11.0; 28.1)
			Unweighted	14.8 (10.1; 21.0)	7.5 (4.2; 13.1)	13.9 (9.1; 20.9)	17.4 (10.9; 26.5)
	<b>MEDIUM</b>	<b>DST</b>	50.5	46.7	43.6	41.0	
		<b>SHARE</b>	Weighted	52.2 (43.7; 51.7)	56.1 (47.3; 63.9)	49.6 (40.9; 58.3)	47.1 (36.8; 57.7)
			Unweighted	53.3 (45.7; 60.7)	56.8 (48.7; 64.6)	52.9 (44.5; 61.2)	50.0 (39.9; 60.1)
	<b>HIGH</b>	<b>DST</b>	25.8	25.2	21.7	18.6	
		<b>SHARE</b>	Weighted	34.5 (26.8; 42.2)	35.3 (27.5; 43.5)	35.8 (27.7; 44.7)	34.9 (25.4; 45.7)
			Unweighted	30.8 (24.2; 38.1)	34.9 (27.6; 43.0)	33.1 (25.7; 41.4)	32.6 (23.8; 42.8)
				100	100	100	100
	<b>WOMEN</b>	<b>LOW</b>	<b>DST</b>	30.5	36.6	47.4	56.8
			<b>SHARE</b>	Weighted	11.2 (7.2; 16.7)	18.3 (13.1; 25.1)	27.8 (20.6; 36.2)
Unweighted				13.2 (8.6; 19.5)	18.7 (13.6; 25.2)	28.1 (21.2; 36.3)	37.2 (28.1; 47.40)
<b>MEDIUM</b>		<b>DST</b>	38.9	40.5	35.2	29.4	
		<b>SHARE</b>	Weighted	34.1 (26.2; 41.8)	36.3 (29.3; 43.9)	45.6 (37.2; 54.4)	40.1 (30.4; 50.7)
			Unweighted	33.6 (26.5; 41.4)	38.6 (31.7; 46.1)	45.9 (37.7; 54.4)	41.5 (32.0; 51.7)
<b>HIGH</b>		<b>DST</b>	30.7	22.9	17.4	13.8	
		<b>SHARE</b>	Weighted	54.7 (45.6; 62.0)	45.4 (37.8; 53.3)	26.6 (19.5; 35.1)	24.3 (16.1; 34.9)
			Unweighted	51.9 (44.0; 51.9)	42.6 (35.5; 50.0)	25.9 (19.3; 33.9)	21.3 (14.1; 30.7)
			100	100	100	100	

This table compares the age-sex distribution of the education level between census respondents (DST) and SHARE respondents. Sources: DST, 2002; SHARE 2004.



**Table 6A.3 Distribution of the highest educational level attained by French SHARE respondents by age and sex (with and without weights); comparisons with INSEE census data**

			50-59	60-64	65+	
<b>MEN</b>	<b>LOW</b>	<b>INSEE</b>	49.9	57.7	60.6	
		<b>SHARE</b>	Weighted	31.9 (27.0; 36.6)	50.0 (42.1; 56.3)	61.0 (53.4; 66.8)
			Unweighted	32.4 (27.7; 37.5)	47.8 (41.0; 54.8)	60.1 (53.6; 66.2)
	<b>MEDIUM</b>	<b>INSEE</b>	35.7	29.8	27.9	
		<b>SHARE</b>	Weighted	40.3 (34.8; 45.2)	27.5 (19.4; 36.4)	23.6 (19.6; 27.5)
			Unweighted	40.0 (34.6; 46.3)	28.0 (20.2; 37.3)	23.1 (19.7; 26.9)
	<b>HIGH</b>	<b>INSEE</b>	14.4	12.5	11.5	
		<b>SHARE</b>	Weighted	27.8 (23.3; 32.3)	22.5 (17.0; 28.2)	15.4 (11.7; 19.4)
			Unweighted	26.4 (22.2; 31.0)	22.6 (17.4; 28.8)	15.6 (12.0; 20.8)
				100	100	100
	<b>WOMEN</b>	<b>LOW</b>	<b>INSEE</b>	43.4	52.2	73.8
			<b>SHARE</b>	Weighted	40.7 (34.8; 45.7)	49.4 (41.0; 56.9)
Unweighted				41.2 (36.1; 46.6)	48.4 (40.7; 56.2)	75.4 (69.9; 80.1)
<b>MEDIUM</b>		<b>INSEE</b>	37.6	33.5	18.9	
		<b>SHARE</b>	Weighted	35.5 (31.7; 38.5)	27.1 (21.1; 33.2)	15.4 (13.1; 17.9)
			Unweighted	35.0 (31.9; 38.2)	26.9 (21.4; 33.3)	16.0 (13.8; 18.5)
<b>HIGH</b>		<b>INSEE</b>	18.9	14.3	7.3	
		<b>SHARE</b>	Weighted	23.8 (19.9; 27.6)	23.5 (15.0; 34.3)	7.6 (4.6; 12.3)
			Unweighted	22.4 (18.6; 26.8)	23.8 (15.6; 34.8)	8.1 (4.9; 13.1)
			100	100	100	

This table compares the age-sex distribution of the education level between census respondents (INSEE) and SHARE respondents. Sources: INSEE, 2004; SHARE 2004.

**Table 6A.4 Distribution of the highest educational level attained by English ELSA respondents by age and sex (with and without weights); comparisons with ONS census data**

				50-54	55-59	60-64	65-69	
<b>MEN</b>	<b>LOW</b>	ONS		44.8	51.0	57.3	61.0	
		<b>ELSA</b>	Weighted	25.7 (22.9; 28.7)	33.6 (30.7; 36.6)	43.3 (39.9; 46.8)	52.6 (49.1; 56.1)	
			Unweighted	24.7 (21.9; 27.5)	32.4 (29.6; 35.3)	42.6 (39.2; 46.1)	51.6 (48.1; 55.0)	
	<b>MEDIUM</b>	ONS		17.8	15.1	12.5	13.0	
		<b>ELSA</b>	Weighted	30.6 (27.6; 33.7)	28.9 (26.1; 31.8)	21.4 (18.6; 24.3)	21.7 (19.0; 24.7)	
			Unweighted	30.1 (27.2; 33.1)	29.2 (26.4; 32.0)	21.4 (18.6; 24.2)	22.0 (19.2; 24.9)	
	<b>HIGH</b>	ONS		20.6	16.9	14.7	13.2	
		<b>ELSA</b>	Weighted	38.8 (35.6; 42.1)	32.6 (29.7; 35.5)	31.6 (28.5; 34.9)	20.1 (17.5; 23.0)	
			Unweighted	40.3 (37.1; 43.5)	33.6 (30.7; 36.5)	32.4 (29.1; 35.7)	20.8 (18.0; 23.6)	
	<b>OTHER</b>	ONS		16.8	17.0	15.4	12.8	
		<b>ELSA</b>	Weighted	4.9 (3.7; 6.6)	5.0 (3.8; 6.6)	3.7 (2.5; 5.3)	5.6 (4.2; 7.5)	
			Unweighted	4.8 (3.4; 6.2)	4.8 (3.4; 6.0)	3.6 (2.3; 4.9)	5.6 (4.0; 7.2)	
					100	100	100	100
	<b>WOMEN</b>	<b>LOW</b>	ONS		52.4	59.4	67.0	69.6
			<b>ELSA</b>	Weighted	32.8 (30.0; 35.7)	38.6 (35.8; 41.5)	46.7 (43.3; 50.0)	53.0 (49.7; 56.3)
				Unweighted	31.6 (28.9; 34.2)	38.0 (35.2; 40.8)	46.1 (42.8; 49.3)	52.0 (48.8; 55.2)
<b>MEDIUM</b>		ONS		19.4	15.8	12.1	11.8	
		<b>ELSA</b>	Weighted	33.6 (30.8; 36.5)	29.1 (26.5; 31.8)	22.6 (19.9; 25.5)	19.0 (16.6; 21.7)	
			Unweighted	33.6 (30.9; 36.3)	29.2 (26.6; 31.8)	22.8 (20.0; 25.5)	19.4 (16.7; 21.9)	
<b>HIGH</b>		ONS		18.8	15.2	13.3	11.8	
		<b>ELSA</b>	Weighted	24.2 (21.7; 26.8)	20.5 (18.3; 22.9)	19.5 (17.0; 22.2)	15.4 (13.2; 17.9)	
			Unweighted	25.5 (23.0; 28.0)	20.9 (18.6; 23.3)	19.8 (17.1; 22.4)	16.1 (13.7; 18.4)	
<b>OTHER</b>		ONS		9.4	9.7	7.6	6.8	
		<b>ELSA</b>	Weighted	9.5 (7.9; 11.4)	11.8 (10.1; 13.8)	11.3 (9.4; 13.6)	12.6 (10.5; 14.9)	
			Unweighted	9.2 (7.6; 10.9)	11.8 (9.9; 13.6)	11.3 (9.2; 13.5)	12.5 (10.4; 14.7)	
				100	100	100	100	

This table compares the age-sex distribution of the education level between census respondents (ONS) and ELSA respondents. Sources: ONS, 2001; ELSA 2001.

**Table 6A.5 Distribution of Self-Reported Health among SHARE and ELSA respondents and other nationally representative sources, by age-group, sex and country**

		Very bad		Bad		Fair		Good		Very good			
		INSEE	SHARE	INSEE	SHARE	INSEE	SHARE	INSEE	SHARE	INSEE	SHARE		
FRANCE	Men	45-59	0.7	1.3	4.1	5.6	17.6	18.6	49.9	50.7	27.7	23.8	
		60-74	1.3	1.5	5.4	6.5	31.1	31.4	48.7	49.5	13.5	11.1	
		75+	2.6	4.0	14.2	20.7	46.1	38.2	31.9	33.0	5.2	4.1	
	Women	45-59	0.5	1.5	3.6	4.5	19.5	18.8	50.6	55.3	25.8	19.9	
		60-74	1.2	1.6	5.8	6.1	33.5	30.7	47.6	50.7	11.9	10.9	
		75+	2.9	5.2	14.1	9.9	49.0	44.1	28.9	37.1	5.1	3.7	
		ISTAT	SHARE	ISTAT	SHARE	ISTAT	SHARE	ISTAT	SHARE	ISTAT	SHARE		
ITALY	Men	45-54	0.5	1.2	2.6	2.6	29.3	25.0	53.0	53.4	14.5	17.7	
		55-64	0.9	1.9	5.2	5.7	43.4	27.5	42.1	52.4	8.4	12.5	
		65-74	2.1	2.7	9.1	10.8	54.9	42.7	30.0	35.6	3.9	7.9	
		75+	5.4	4.1	17.4	19.6	57.9	40.7	17.2	30.7	2.1	4.8	
	Women	45-54	0.6	0.3	4.1	2.7	38.2	32.0	47.8	49.9	9.3	15.1	
		55-64	1.3	1.2	7.4	7.7	51.6	37.2	34.4	46.0	5.3	7.9	
		65-74	2.3	1.9	14.5	14.5	58.4	47.9	22.4	31.0	2.4	4.7	
		75+	6.7	4.5	23.9	23.6	55.3	47.0	12.6	23.9	1.6	1.0	
		Not Good				Fairly good				Good			
		Census		ELSA		Census		ELSA		Census		ELSA	
ENGLAND	Men	50-54	11.5		5.2		25.3		16.2		63.2		78.6
		55-59	15.3		7.4		27.6		18.7		57.1		73.8
		60-64	19.5		8.7		31.3		23.1		49.3		68.2
		65-69	17.4		8.4		37.1		24.4		45.4		67.2
		70-74	19.6		7.4		41.1		27.6		39.3		64.9
		75+	26.8		10.9		42.9		31.7		30.3		57.2
	Women	50-54	12.6		4.6		28.9		17.5		58.5		77.9
		55-59	15.3		6.9		31.3		21.5		53.4		71.6
		60-64	15.4		5.9		35.7		21.8		48.9		72.2
		65-69	17.0		4.9		40.0		22.9		43.0		72.2
		70-74	20.5		8.9		43.5		30.6		36.0		60.4
		75+	29.2		9.4		43.8		21.1		27.0		59.4

This table compares the age-sex distribution of the self-assessed health between INSEE "Day Life and Health" Survey and French SHARE respondents, between ISTAT "Health conditions and access to health services" survey respondents and Italian SHARE respondents and between the English 2001 census and ELSA respondents. Sources: INSEE, 2007; ISTAT, 2005; SHARE 2004; ONS 2001; ELSA 2002.

**Table 6.A6 Percentage of respondents reporting difficulty with each mobility item, by sex**

	DENMARK		FRANCE		ITALY		ENGLAND	
	M	W	M	W	M	W	M	W
<b>Mobility, Arm Function &amp; fine motor limitations</b>								
walking 100 metres	6.6	9.9	9.4	11.9	8.8	16.5	11.8	13.2
sitting for about two hours	7.5	12.6	6.7	10.0	8.0	14.3	12.5	14.9
getting up from a chair	12.7	19.0	12.2	18.7	11.9	23.3	21.8	29.0
climbing + flights of stairs	15.8	26.9	22.9	35.3	24.3	39.5	28.7	41.9
climbing 1 flight of stairs	7.9	11.3	8.7	12.1	10.7	20.0	12.2	17.4
stooping/kneeling/crouching	16.9	27.5	20.6	34.0	24.9	39.9	30.9	39.3
extending your arms	4.2	7.8	6.3	12.1	5.0	12.0	9.0	12.7
pushing large objects	5.2	12.4	10.1	19.9	7.0	15.8	12.9	22.6
lifting or carrying weights	7.9	25.76	10.0	28.2	12.3	32.7	16.7	33.8
picking up a small coin	2.0	2.7	3.0	3.3	2.8	7.1	4.4	5.8
<b>Total (N)</b>	<b>756</b>	<b>857</b>	<b>1,362</b>	<b>1,670</b>	<b>1,125</b>	<b>,1382</b>	<b>5,182</b>	<b>6,195</b>

This table shows the percentage of people in each country (Denmark, France, Italy and England) per sex who reported having problems with each of the stated activity. Sources: ELSA, 2002; SHARE, 2004. Weighted data.

**Table 6.A7 Percentages of respondents declaring difficulty with ADLs, by sex and country**

	DENMARK		FRANCE		ITALY		ENGLAND	
	M	W	M	W	M	W	M	W
<b>Activities of daily living (ADL)</b>								
dressing	7.4	5.4	9.8	8.0	7.2	9.9	14.2	12.2
walking across a room	9.8	2.4	1.5	1.7	2.0	3.6	2.9	3.8
bathing or showering	3.3	6.1	5.8	7.6	6.0	9.5	10.3	14.1
eating	1.7	1.9	1.5	1.7	1.1	1.7	1.7	2.0
getting in or out of bed	3.4	3.8	2.5	2.7	3.0	4.6	6.2	6.9
using the toilet	1.5	1.9	1.3	2.3	1.5	3.6	3.3	3.8
<b>Total (N)</b>	<b>756</b>	<b>857</b>	<b>1,363</b>	<b>1,670</b>	<b>1,125</b>	<b>,1382</b>	<b>5,182</b>	<b>6,195</b>

This table shows the percentages of older women and men reporting problems with each of the listed activities in each country (Denmark, France, Italy and England). Sources: ELSA, 2002; SHARE, 2004. Weighted data

**Table 6.A8 Percentages of respondents declaring difficulty with IADLs, by sex and country**

Instrumental ADLs	DENMARK		FRANCE		ITALY		ENGLAND	
	M	W	M	W	M	W	M	W
using a map	2.9	8.6	6.3	11.3	6.2	15.0	2.8	7.8
preparing a hot meal	4.5	5.5	3.7	3.5	3.1	4.0	4.0	5.0
shopping for groceries	4.2	9.9	6.5	9.7	4.1	10.0	6.7	11.9
making telephone calls	1.6	1.7	2.6	2.8	1.8	3.7	2.5	2.5
taking medications	2.2	2.2	2.1	2.8	2.2	3.2	1.5	1.4
doing work around the house	8.8	16.0	7.1	12.8	5.3	11.3	13.2	17.3
managing money	2.6	4.2	3.8	5.7	3.8	7.2	2.1	2.2
<b>Total (N)</b>	<b>756</b>	<b>857</b>	<b>1,363</b>	<b>1,670</b>	<b>1,125</b>	<b>1,382</b>	<b>5,182</b>	<b>6,195</b>

This table shows the percentages of older women and men reporting problems with each of the listed activities in each country (Denmark, France, Italy and England). Sources: ELSA, 2002; SHARE, 2004. Weighted data

**Table 6.A9 Engagement in civic and cultural activities (%) by sex and age group – England**

Activities in the last year	Age				Total (N)	Eligible Total N
	50-59	60- 69	70-79	80+		
<b>Men</b>						
Voted*	80.4	83.3	89.0	88.9	<b>83.8</b> (3,939)	4,674
Read a daily newspaper+	65.0	75.0	78.4	74.3	<b>71.6</b> (3,370)	4,674
Have a hobby+	81.8	82.0	75.4	62.3	<b>78.9</b> (3,694)	4,674
Holiday in UK	59.9	60.4	55.6	39.9	<b>57.5</b> (2,705)	4,674
Holiday abroad	56.3	50.5	37.1	19.5	<b>47.5</b> (2,226)	4,674
Daytrip	76.8	69.5	58.6	45.8	<b>68.2</b> (3,177)	4,674
Go to the cinema ✓	42.5	28.0	14.9	6.6	<b>29.5</b> (1,457)	5,104
Eat out of the house ✓	91.4	87.4	84.6	78.7	<b>87.7</b> (4,483)	5,104
Go to the theatre/opera ✓	45.8	41.6	35.4	21.4	<b>40.2</b> (2,070)	5,104
Visit a museum ✓	41.9	40.6	31.4	16.3	<b>37.0</b> (1,902)	5,104
<b>TOTAL</b>	<b>1,893</b>	<b>1,585</b>	<b>1,156</b>	<b>470</b>		
<b>Women</b>						
Voted*	77.4	85.1	83.9	80.7	<b>81.5</b> (4,568)	5,600
Read a daily newspaper+	63.6	72.2	68.8	69.0	<b>67.9</b> (3,793)	5,600
Have a hobby+	79.8	81.2	73.3	63.6	<b>76.9</b> (4,348)	5,600
Holiday in UK	61.1	62.9	54.0	43.9	<b>57.9</b> (3,278)	5,600
Holiday abroad	57.8	51.1	33.9	18.9	<b>45.7</b> (2,603)	5,600
Daytrip	76.7	73.2	62.0	53.5	<b>69.5</b> (3,926)	5,600
Go to the cinema ✓	45.1	34.4	18.1	9.9	<b>31.1</b> (2,397)	6,115
Eat out of the house ✓	91.4	91.1	83.8	73.7	<b>87.1</b> (5,367)	6,114
Go to the theatre/opera ✓	55.1	54.2	40.1	26.8	<b>47.5</b> (3,044)	6,114
Visit a museum ✓	42.4	43.2	30.7	14.5	<b>36.1</b> (2,285)	6,114
<b>TOTAL</b>	<b>2,237</b>	<b>1,767</b>	<b>1,374</b>	<b>737</b>		

This table shows the percentage of English older people who did the listed activities by age-group and gender. Each cell then indicates the percentage of either men or women in a specific age-group who did a specific activity. Notes: \* refers to the previous general election; + indicates activities with no temporal reference; ✓ excludes people who answered 'never' and those who answered 'less than once per year'.

Source: ELSA, 2002.

**Table 7.A1 Distribution of the economic status of the members in the household (%) by sex and country**

	Denmark		France		Italy		England	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Other member(s) in HH not in paid work</b>	26.7 (154)	30.0 (168)	40.2 (372)	41.2 (422)	43.9 (411)	38.2 (464)	39.4 (1,463)	36.8 (1,490)
<b>Other member(s) in HH in paid work</b>	41.9 (228)	31.5 (182)	36.9 (345)	24.6 (248)	13.1 (103)	11.1 (123)	39.7 (1,365)	33.2 (1,262)
<b>Living alone</b>	18.8 (101)	27.9 (147)	13.3 (119)	21.3 (219)	13.5 (53)	15.2 (94)	14.5 (494)	17.6 (774)
<b>Only 50+ Member in the Household</b>	3.9 (19)	3.8 (21)	5.0 (48)	8.9 (93)	20.2 (139)	23.5 (189)	2.8 (92)	6.7 (279)
<b>With other members who refused to answer</b>	8.6 (43)	6.8 (37)	4.6 (43)	4.0 (41)	9.3 (69)	11.9 (126)	3.5 (112)	5.6 (231)
<b>Total Observations (N)</b>	545	555	927	1,021	775	996	3,526	4,036

**Table 7.A2 Participation in Formal Activities – Fully adjusted Logistic Regressions, by country and sex. Selected results obtained when employment status included the category ‘recently retired’**

		Not in paid work <2 years	In paid work	N
<b>Denmark</b>	<b>Male</b>	0.72 (0.38–1.36)	0.54 ** (0.31–0.95)	<b>532</b>
	<b>Female</b>	0.98 (0.53–1.81)	0.47 *** (0.27–0.81)	<b>548</b>
<b>France</b>	<b>Male</b>	1.04 (0.68–1.61)	0.74 (0.45–1.21)	<b>851</b>
	<b>Female</b>	0.57 ** (0.36–0.89)	0.57 *** (0.38–0.86)	<b>981</b>
<b>Italy</b>	<b>Male</b>	0.92 (0.36–2.32)	0.84 (0.40–1.77)	<b>763</b>
	<b>Female</b>	2.59 *** (1.38–4.89)	0.86 (0.48–1.52)	<b>988</b>
<b>England</b>	<b>Male</b>	0.69 ** (0.48–0.98)	0.60 *** (0.46–0.78)	<b>3,309</b>
	<b>Female</b>	0.73 (0.52–1.03)	0.70 *** (0.57–0.88)	<b>3,547</b>

Sources: SHARE, 2004; ELSA, 2002. The reference category is “The person has never been in paid work or has not been in paid work for more than 2 years”

**Table 9A.1 Proportion of wave 2 respondents who self-rated their health as better, about the same or worse compared to their wave 1 interview, by sex and country - SHARE respondents only**

	Denmark		France		Italy	
	Wave 2		Wave 2		Wave 2	
	Male	Female	Male	Female	Male	Female
<b>Better</b>	7.1 (29)	8.0 (33)	7.1 (40)	7.1 (48)	3.5 (18)	4.6 (32)
<b>About the same</b>	69.3 (284)	65.6 (271)	77.5 (438)	71.3 (483)	66.9 (349)	60.5 (425)
<b>Worse</b>	23.6 (97)	26.4 (109)	15.4 (87)	21.6 (146)	29.6 (155)	34.9 (245)
<b>Tot (N)</b>	410	413	565	677	522	702

Sources: SHARE, 2006. Weighted Data.