An examination of the relationship between life course socioeconomic position and quality of life among Europeans in early old age and the influence of the welfare regime

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BSc(Hons) MSc

Submitted in fulfilment of the requirements for the Degree of Doctor of Philosophy

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August 2014

Abstract

Background: Low socioeconomic position throughout the life course is associated with a number of adverse health outcomes in older people. However, whether life course socioeconomic position influences subjective outcomes in early old age, such as quality of life, is not well known. There is a lack of life course research that considers the wider structural determinants of health. In particular, it is not well understood if the association between life course socioeconomic position and quality of life is the same across European societies that have differing welfare state arrangements. This thesis addressed two key aims: (1) Investigate whether, and how, life course socioeconomic position influences the quality of life of Europeans in early old age. (2) Examine differences in this relationship by welfare regime.

Methods: Two methodological approaches were taken to address the research objectives: (1) A systematic review of quantitative studies examining the influence of life course socioeconomic position on quality of life was conducted, with a narrative synthesis. (2) An empirical analysis was carried out examining the influence of life course socioeconomic position on the quality of life of individuals in early old age, as measured by CASP-12 and life satisfaction. This used secondary data (N=18,324) from 13 European countries (representing Southern, Scandinavian, Post-communist, and Bismarckian welfare regimes) that were part of Wave 2 of the Survey of Health, Ageing, and Retirement in Europe (SHARE) and SHARELIFE, which collected retrospective life histories of respondents. Two statistical techniques were used to analyse the data: multilevel modelling and path analysis. Slope indices of inequality were calculated to enable measures of socioeconomic position to be compared.

Results: The systematic review identified 12 relevant studies, which varied in terms of the outcomes examined, study quality, and populations. No studies were identified from Bismarckian or Post-communist welfare regimes, with most containing populations from the Scandinavian or Liberal regime types. Some supportive evidence was found for a latent effect of low childhood socioeconomic position on quality of life among women. Social mobility models were generally not supported. High quality studies addressing inter-generational mobility were lacking and few studies examined cumulative and pathway effects.

Results from the analysis using SHARE suggested that the most proximal measures of socioeconomic position were the strongest predictors of quality of life. In most welfare regimes, inequalities in quality of life were largest by current wealth, but among women in the Southern and Post-communist regimes inequalities by education level were particularly large. In the Scandinavian regime there were very small differences in quality of life between the least and most educated. Generally, there was little difference in the magnitude of socioeconomic inequalities in quality of life between Scandinavian and Bismarckian regimes. Support for a latent effect on quality of life was lacking, using most measures of childhood socioeconomic position. The findings from both the multilevel models and path analysis supported the pathway theory whereby childhood socioeconomic position chiefly influenced quality of life through later socioeconomic experiences. However, the number of books in childhood exhibited a weak association with quality of life even when taking into account current measures of socioeconomic position, suggesting a small latent effect for this measure. When stratifying by welfare regime, the potential direct effect from the number of books in childhood was specific to particular welfare regimes and genders.

A greater number of socioeconomically advantaged positions over the life course was associated with higher quality of life in early old age, but the results suggested this was mainly due to the influence of socioeconomic advantage during adulthood. The association between life course socioeconomic position (as measured by a cumulative socioeconomic advantage score) and quality of life was weaker in the Scandinavian regime and stronger in Southern and Post-communist regimes. Including a measure of current financial distress greatly attenuated these associations. There was generally a lack of supportive evidence for an effect of social mobility on quality of life.

Conclusions: Socioeconomic inequalities in quality of life were apparent in all welfare regimes and were largest by more proximal measures of socioeconomic position. Overall, Scandinavian and Bismarckian welfare regimes exhibited both higher quality of life and narrower inequalities in quality of life, compared to Southern and Post-communist regimes. Interventions to reduce socioeconomic inequalities across the life course are needed, but those which buffer the effect of financial distress in early old age may be particularly beneficial for improving quality of life and producing a more equitable distribution.

Table of Contents

List of Tables

List of Figures

Publications and conference presentations

The following publications and conference presentations have resulted from the research conducted as part of this thesis.

Publications

CL Niedzwiedz, SV Katikireddi, JP Pell, R Mitchell (2014). Socioeconomic inequalities in the quality of life of older Europeans in different welfare regimes. The European Journal of Public Health 24(3): 364-370. doi: 10.1093/eurpub/cku017.

CL Niedzwiedz, SV Katikireddi, JP Pell, R Mitchell (2014). The association between life course socioeconomic position and life satisfaction in different welfare states: comparative study of Europeans in early old age. Age and Ageing 43(3): 431-436. doi: 10.1093/ageing/afu004.

CL Niedzwiedz, SV Katikireddi, JP Pell, R Mitchell (2012). Life course socio-economic position and quality of life in adulthood: a systematic review of life course models. BMC Public Health 12: 628.

Conference presentations

CL Niedzwiedz, SV Katikireddi, JP Pell, R Mitchell. Socio-economic inequalities in the quality of life of older Europeans across the life course: does the welfare state matter? Oral presentation at the European Congress of Epidemiology, Denmark 2013.

CL Niedzwiedz, SV Katikireddi, JP Pell, R Mitchell. Does the type of welfare regime influence associations between life course socio-economic position and the quality of life of older Europeans? European Public Health Conference, Belgium 2013 (considered for Ferenc Bojan Young Investigator Award).

CL Niedzwiedz, SV Katikireddi, JP Pell, R Mitchell. Life course socio-economic position and quality of life in adulthood: a systematic review of life course models. Poster presentation at the Society for Social Medicine Annual Scientific Meeting, London 2012.

Acknowledgements

I am very grateful for the advice, guidance, and feedback provided by my supervisors Professor Richard Mitchell and Professor Jill Pell. I am also thankful for the funding provided by the University of Glasgow.

Thanks are due to the participants of SHARE, who have given up hours of their time to participate in the survey. I am also grateful for the support of the SHARE team who were helpful in answering my data queries. There are a number of members of staff and students based within the Public Health department and in the Medical Research Council Social and Public Health Sciences Unit who have given up their time to provide advice for which I am grateful, particularly Dr Linsay Gray for providing statistical guidance. I am also appreciative of the support provided by the staff and students at the International Centre for Lifecourse Studies. Thanks are especially due to Dr Morten Wahrendorf for sharing syntax files.

Finally, this thesis would not be possible without the support of friends and family. I am particularly grateful for the support, advice, and patience of my partner Vittal, who encouraged me to undertake this PhD and believed in me throughout. Special thanks are also due to my mum and Vittal's parents for proofreading.

Author's declaration

I declare that the contents of this thesis are my own work and where the work of others has been used it has been indicated and appropriately referenced.

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Abbreviations

AH: Adulthood

AIC: Akaike information criteria

BM: Bismarckian welfare regime

BMC: BioMed Central

CAPI: Computer assisted personal interviewing

CASP-12: Control, Autonomy, Self-realisation and Pleasure (12 item version)

CASP-19: Control, Autonomy, Self-realisation and Pleasure (19 item version)

CFI: Comparative fit index

CH: Childhood

CLN: Claire Lynette Niedzwiedz

CSA: Cambridge Scientific Abstracts

EGP: Erikson Goldthorpe Portocarero social class scheme

ELSA: English Longitudinal Study of Ageing

GALI: Global Activity Limitation Indicator

GDP: Gross Domestic Product

HRS: Health and Retirement Study

ICC: Intraclass correlation

ILO: International Labour Organization

ISCED-97: International Standard Classification of Education (1997 version)

ISCO: International Standard Classification of Occupations

ISCO-88: International Standard Classification of Occupations (1988 version)

ISEI: International Socioeconomic Index

LS: Life satisfaction

MAR: Missing at random

MCAR: Missing completely at random

MCS: Mental Component Summary

MeSH: Medical Subject Headings

MNAR: Missing not at random

N: Number of individuals

OECD: Organisation for Economic Co-operation and Development

PC: Post-communist regime

PPP: Purchasing power parity

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

r: Pearson's correlation coefficient

REML: Restricted maximum likelihood estimation

RII: Relative index of inequality

RMSEA: Root Mean Square Error of Approximation

SC: Scandinavian welfare regime

SD: Standard deviation

SE: Standard error

SEM: Structural equation modelling

SEP: Socioeconomic position

SHARE: Survey of Health, Ageing and Retirement in Europe

SHARELIFE: Retrospective wave of the Survey of Health, Ageing and Retirement in Europe

SII: Slope index of inequality

SIOPS: Standard International Occupational Prestige Scale

SF-36: Short Form (36) Health Survey

SO: Southern welfare regime

SVK: Srinivasa Vittal Katikireddi (second reviewer for the systematic review)

TLI: Tucker-Lewis Index

UNESCO: United Nations Educational, Scientific, and Cultural Organisation

VIF: Variance inflation factor

WHO: World Health Organization

1. Background

1.1 Chapter introduction

This thesis quantitatively examines the association between life course socioeconomic position and quality of life among Europeans in early old age and the influence of the welfare state regime in shaping these relationships. It is well established that the experience of low socioeconomic position throughout the life course is associated with adverse health outcomes, such as cardiovascular disease and earlier mortality (Galobardes et al., 2004; Pollitt et al., 2005). However, whether, and how, life course socioeconomic position influences more subjective outcomes in older age groups, such as quality of life, is not well understood. In addition, little is known about whether the association between life course socioeconomic position and quality of life is the same between different societies. The potential for particular welfare state arrangements to modify the relationship between socioeconomic position and quality of life is of specific policy interest. Studying these issues is timely since one of the key objectives of Health 2020, the new World Health Organization (WHO) European policy framework, is to reduce inequalities in health and wellbeing (World Health Organization, 2012).

This introductory chapter provides the background to the thesis and defines key terms and relevant theories in six main sections. First, the social and policy context of the thesis is outlined. The second section discusses the importance, definition, and measurement of quality of life in the population of interest. Third, the measurement of socioeconomic position is discussed. The fourth section details the prevailing theories of health and wellbeing inequalities, with particular focus on life course and political economy approaches. Fifth, the overall aim of the thesis is defined. The final section outlines the structure of the remainder of the thesis.

1.2 Social and policy context

The proportion of the European Union (EU-27) population aged 65 years and above is projected to increase from 17% in 2008, to 30% by the year 2060 (Giannakouris, 2008). This is primarily as a result of increased life expectancy, but declining birth rates have also

contributed (Spijker & MacInnes, 2013). Policy-makers are concerned at this trend, because of the expected rising demands on the welfare state as a result of the increasing numbers of older people who will require pensions, health, and social care. Despite improvements in life expectancy across European countries, stark differences exist both within and between countries. For example, during 2007 the life expectancy at birth for individuals born in Switzerland was 81.9 years, but in Poland it was 6.5 years fewer at 75.4 years (OECD, 2009). A key priority identified by the recent WHO European Review of Social Determinants of Health and the Health Divide is to increase understanding of the underlying determinants of health and inequalities among older people (Marmot et al., 2012). However, what constitutes the start of old age is contested (Higgs, 2008).

The definition of an older person is usually based on the chronological age in which they cease economic activity, enter retirement, and become eligible to receive pension benefits (World Health Organization, 2010). In developed nations, this has traditionally been between the ages of 60 and 65. During the post-World War II period, fertility increased considerably for several decades across most western European countries (Giampaolo, 2011). This demographic event has been called the 'baby boom'. The divide between middle age and old age is becoming increasingly blurred, as members of this generation often chose to retire earlier, sometimes in their 50s (Higgs, 2008). This has sparked debate about whether a new stage of the life course has emerged, termed the 'third age'.

The third age is thought to be a stage of the life course in which individuals are entering into retirement and are more able to pursue their own interests to achieve mental wellbeing (Laslett, 1996). The third age is located after the first (dependency, socialisation, and education) and second (maturity, independence, procreation, familial, and social responsibility) ages. Third agers are, in theory, liberated to pursue their own hobbies and achieve personal fulfilment. Distinct chronological limits for the third age are discouraged due to the high variability in life course patterns from second age independence to later life physical dependency (the fourth age) (Wiggins et al., 2008). However, a definition is required for the purpose of this thesis. In the existing literature, early old age typically encompasses individuals aged from 50 years (Blane et al., 2007a; Siegrist & Wahrendorf, 2010) up to 75 years (Blane et al., 1999a; Blane et al., 2004; Higgs et al., 2003). Therefore, these lower and upper age limits are used in this thesis.

Throughout the thesis, parallel to Wiggins et al. (2008), 'early old age' is used synonymously to represent the 'third age'. The theory of the third age is, however, only one theory of ageing that tries to understand the role of individuals as they approach the end of their working life. It has also been criticised for essentially placing the responsibility for quality of life in the third age at the individual level and encouraging older adults to engage in specific consumer behaviours, which leads to further societal stratification as those who lack economic resources are unable to 'purchase' the third age (Carr, 2008; Gilleard & Higgs, 1998).

An alternative theory concerning the role of individuals as they transition from employment to retirement is not so positive. Townsend (1981) proposed that economic and social institutions create and reinforce the material and psychological dependency of older people on the state, termed 'structured dependency'. The disengagement of older people in society was seen as a function of the low level of state pension benefits, not a result of the ageing process itself (Higgs, 2008). In contrast to Laslett (1996), early old age is therefore viewed as a negative experience in which older people become marginalised and often *"deeply regret their inactivity or loss of status"* (Townsend, 1981, p10). Blane et al. (2004, p2172) consider the theories of structured dependency and the third age as the *"ideal type extremes of a spectrum",* which ranges from dependency to agency. How individuals experience their early old age is likely to be influenced by a range of factors acting at both the individual and societal level.

The speed of life expectancy improvement has not been matched by improvements in healthy life expectancy (defined as the estimated number of years remaining in good health) (Kuh et al., 2014). This contributed to increasing interest among researchers and policy-makers in what it means to age 'healthily', or 'successfully', and whether the focus should be on measuring the subjective quality of life of older people, in addition to their health status (Leplège & Hunt, 1997). Indeed, a core component of Health 2020 relates to the measurement of population wellbeing (World Health Organization, 2013). The WHO defines health as "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*" (World Health Organization, 2006), yet subjective aspects of wellbeing have often been neglected in the measurement of health and healthy ageing.

1.2.1 'Healthy' and 'successful' ageing

Despite several decades of research, the definition and measurement of healthy and successful ageing remain ambiguous (Depp & Jeste, 2006; Peel et al., 2004). Rowe and Kahn (1997) proposed three criteria that individuals should ideally meet for successful ageing. These were: low risk of disease and disease-related disability, high cognitive and physical functional capacity, and active engagement with life (Rowe and Kahn, 1997). The criteria, and successful ageing literature in general, have been criticised for insinuating a 'gold standard' of ageing (Dillaway & Byrnes, 2009) and placing the responsibility for healthy ageing at the individual level, thereby underestimating the involvement of social and economic factors (Holstein & Minkler, 2003). Additionally, the term 'successful' has been criticised as it stems from western ideals regarding success and failure (Torres, 1999), implies that ageing is a contest with winners and losers (Strawbridge et al., 2002), and marginalises those with chronic and disabling conditions. Still, these specific criteria continue to be used in ageing research (Hank, 2011; McLaughlin et al., 2010). Although Rowe and Kahn's criteria have been highly influential in the debate around healthy ageing, reducing the outcome into a simple binary variable separating the 'successful' from the 'not successful' is problematic as many individuals with inconsequential health conditions are classified as unhealthy and unsuccessful (McLaughlin et al., 2012).

Indeed, research suggests a disconnect between the criteria and self-reported feelings about successful ageing. Using data from the Alameda County Study of individuals aged 65 and above, about half rated themselves as successful agers, including many experiencing chronic health issues, compared to 18.8% who were classified as successful by Rowe and Kahn's criteria (Strawbridge et al., 2002). Further, a multidimensional model of successful ageing which incorporated self-reported feelings of safety, coping, and self-confidence was found to be a better predictor of self-rated quality of life (see section 1.3.1 below for a definition), compared to a purely biomedical model (defined by the number of diagnosed chronic conditions, physical functioning, and psychological morbidity), amongst a sample of individuals aged 65 and above in the United Kingdom (Bowling & Iliffe, 2006). Although biomedical approaches are helpful in terms of health service planning and medical education, especially given the rising trend in multimorbidity (Barnett et al., 2012), this result highlights the multidimensionality of

healthy ageing and the importance of taking into account individuals' feelings. As well as being an important outcome in itself, quality of life is frequently considered a constituent of successful, or healthy, ageing (Bowling & Iliffe, 2006).

1.3 Quality of life

1.3.1 Definition

Quality of life lacks an agreed definition and its conceptualisation and measurement often reflect the academic discipline of the investigating researchers (Bowling & Ebrahim, 2001; Halvorsrud & Kalfoss, 2007). Much like the definition of healthy ageing, definitions of quality of life have previously relied on objective measures of resources, such as health status or economic assets, and lacked any subjective component (George & Bearon, 1980). However, most agree that quality of life is a complex, multi-dimensional concept, reflecting both macro-societal influences (such as the welfare state, see section 1.5.7.1) and micro-individual influences (such as age and gender), which relates to individual perceptions of a 'good life' (Bowling et al., 2002; Bowling & Ebrahim, 2001; Walker, 2005). Subjective quality of life reflects the general experience of life and encompasses feelings of personal wellbeing, satisfaction with life, and self-worth (George & Bearon, 1980). In this thesis, quality of life (also referred to as wellbeing) is considered one component of successful or healthy ageing. Objective indicators, such as financial assets, are considered to influence, but not define, subjective life quality.

1.3.2 Measurement

As a result of its complexity, measuring quality of life, particularly in later life, requires the development of multifaceted tools (Bowling, 2009). A vast number of measurement instruments have been created and, like the definition of quality of life, they reflect the scientific discipline of the researchers (Gill & Feinstein, 1994; Sirgy, 2012). Medical perspectives have traditionally focused on measuring health–related quality of life. Tools such as the Short-Form-36 (SF-36) take physical and mental functioning as a proxy for quality of life (Bowling, 2009). This simplified position fails to take into account the multi-dimensional nature of quality of life and *"reduces old age to a dimension of health, disability and disease"* (Higgs et al., 2003, p239).

Psychological approaches to measuring quality of life can be divided into reflective and formative (Sirgy, 2002). Reflective indicators aim to capture quality of life directly. These include measures such as global life satisfaction (the cognitive evaluation of one's life), whereby individuals are asked to rate how satisfied they are with their lives on a scale from 0 to 10, for example. On the other hand, formative indicators measure quality of life indirectly via other constructs which are thought to contribute to the formation of quality of life. An example of a formative approach to quality of life is provided by needs satisfaction-based measures. The needs satisfaction approach asserts that quality of life can be measured by the extent to which human needs are fulfilled (Hyde et al., 2003). This theory arose from the premise that human beings share a similar array of needs (Maslow, 1968). According to Maslow, following satisfaction of the basic requirements for survival, such as food and shelter, people are motivated by the pursuit of higher order needs such as self-esteem and self-actualisation, or the continuing realisation of one's potentials and talents (Maslow, 1968; Hyde et al., 2003). Needs satisfaction theory has been used to develop quality of life measures across a range of disciplines; including marketing, ecology, and public health (Sirgy, 1986). More recently, needs satisfaction theory has been drawn upon to develop a measure called CASP-19, which is designed to capture the quality of life among individuals in early old age.

CASP-19 stands for control, autonomy, self-realisation, and pleasure (Higgs et al., 2003; Hyde et al., 2003). Control represents the capacity to actively intervene in one's environment, while autonomy can be considered as the right to be free from undesired interference from others (Hyde et al., 2003; Patrick et al., 1993). Self-realisation refers to the fulfilment of one's potential and lastly, pleasure is the sense of enjoyment derived from life experiences (Wiggins et al., 2008). CASP-19 draws upon the theory that needs are not hierarchically organised, but prioritised differently depending on the individual's specific situation and that needs, such as autonomy and social participation, are necessary for life quality (Blane et al., 2004; Doyal & Gough, 1991). Therefore, individuals with unmet needs are considered to be in a worse-off position compared to individuals whose needs are fulfilled and hence, are thought to have a lower quality of life (Higgs et al., 2003). CASP-19 therefore seeks to measure the degree to which control, autonomy, self-realisation, and pleasure needs are fulfilled. The measure consists of a series of 19 statements designed to assess the degree to which people feel the description depicts

their life experience using a Likert scale, ranging from "*often*" to "*never*". An example from the self-realisation domain includes the statement "*I feel that life is full of opportunities*" (Wiggins et al., 2008, p63). This measure of quality of life is designed to be separate from individual and contextual influences, such as health and material circumstances, and is the only theoretically grounded measure intended to capture quality of life in early old age (Hyde et al., 2003). CASP-19 and its shortened version, CASP-12, have been adopted by the major international surveys of ageing, such as the Survey of Health, Ageing, and Retirement (SHARE), the English Longitudinal Survey of Ageing (ELSA), and the Health and Retirement Study (Netuveli et al., 2006). This has enabled examination of the determinants of quality of life, such as socioeconomic position, among older people in different societies (Knesebeck et al., 2007; Wahrendorf et al., 2006).

1.4 Socioeconomic position: definition and measurement

1.4.1 Defining socioeconomic position

Socioeconomic position (or socioeconomic status) is ambiguously defined throughout the literature. Many studies investigating its influence on health and wellbeing do not provide a definition and only specify how it can be measured (Feinstein, 1993; Grundy & Holt, 2001; Singh-Manoux et al., 2002). Generally, the term is used to refer to the social and economic resources that reflect the position of individuals or groups within a stratified society (Galobardes et al., 2007; Krieger et al., 1997). These can relate to material and social resources; including income, wealth, and educational qualifications, as well as occupational skill level or prestige (the symbolic value of occupations resulting from power and economic advantage (Bergman & Joye, 2005)). Socioeconomic position is typically measured at three main levels: the individual, household, and neighbourhood (Krieger et al., 1997).

1.4.1.1 Different levels of measurement

Individual measures, such as education, capture the position of a person within a stratified society. Household measures, such as household income, are often important to capture, in addition to individual based measures. This is because the position of two

individuals who cohabit is often not adequately reflected by their individual economic positions; their access to goods and services is more likely to be better captured in their combined household income. Neighbourhood-based measures aggregate data from individuals and households, like income and employment status, at the area level for varying spatial units (Graham, 2009a). Several studies have demonstrated that in addition to individual and household socioeconomic characteristics, the neighbourhood in which an individual lives may also have an independent effect on health outcomes (Macintyre et al., 1993; Mitchell et al., 2000; Stafford et al., 2001). However, in this thesis, neighbourhood measures are not considered further as the key focus was on the influence of individual and household measures of socioeconomic position on quality of life. In addition to different levels, socioeconomic position can be measured at different stages of the life course (discussed further in section 1.4.2.8). The common approaches to measuring individual and household socioeconomic position are discussed in turn below.

1.4.2 Key measures of socioeconomic position

This section provides a brief overview of the main measures of socioeconomic position and is not intended to be an in-depth analysis of the different interpretations of each measure.

1.4.2.1 Education

Education is usually measured at the individual level and is the principal measure of socioeconomic position in most developed countries (Graham, 2009a). However, in studies examining the influence of childhood socioeconomic position on health and wellbeing, the highest education level of the individual's parents is sometimes used (Marmot et al., 1998). Indicators such as the highest level of educational attainment or years of schooling are often employed in surveys to capture an individual's education level. Education level is considered to capture the knowledge-related assets (or cultural capital) of an individual, which demonstrate an element of social prestige and can lead to greater economic resources via higher paying occupations (Bourdieu, 1986; Galobardes et al., 2006a). Cultural capital refers to the symbolic and informational resources (such as values, behavioural norms, and knowledge) for action, which are mainly gained via

education and social learning (Abel, 2008; Bourdieu, 1986). As most people have at least some level of schooling, education has the advantage of being well recorded in most social and health surveys. However, differences in the meaning of education may exist between cohorts due to the average increase in education levels over time, which can complicate the interpretation of its relationship with health outcomes (Beebe-Dimmer et al., 2004). In most cases, an individual's education level does not change after early adulthood, unlike other measures, such as occupational position and income.

1.4.2.2 Occupational position

Occupation is considered to be a key component of socioeconomic position and it can be interpreted in a number of ways. First, occupation can be viewed as a measure of social status or social prestige, indicating where an individual stands in a hierarchical society (Graham, 2009a). An individual's occupation can also reflect the employment relations and conditions they are exposed to (social class), access to material resources, and their skillset (Bartley et al., 1999; Galobardes et al., 2006b). In this thesis, occupation is viewed primarily as a key positional characteristic to which social status and prestige attaches (Chan & Goldthorpe, 2007).

Occupation-based measures of socioeconomic position have the advantage of being widely collected, particularly within the United Kingdom (Feinstein, 1993). But, they have the disadvantage of being difficult to employ in groups which are outside the labour market, such as individuals who look after the home or family, the unemployed, and the retired. Historically, it has been common practice to assign women to the occupation of their husband (the conventional approach) (Bartley et al., 1999). As a result of the growing female labour market participation, this is now often considered inadequate to adequately capture the situation of women and their own occupation is now often used (the individual approach). However, if the woman is outside of the labour force, their husband's occupation is frequently used to classify a woman's experience (Bartley et al., 2000; Berney et al., 2000). There are also difficulties relating to the cross-national comparability of occupation-based measures. For example, certain occupations may not exhibit the same level of prestige in different countries and over time there may be changes to the level of prestige of particular occupations. However, some researchers

have argued that occupational prestige is relatively stable over time and across countries (Ganzeboom & Treiman, 1996; Treiman, 1977).

1.4.2.3 Income

Income represents current access to, and flow of, material resources and is a commonly used measure of socioeconomic position, especially in the United States of America (Krieger et al., 1997). It is usually measured at the household level, using information relating to the past month or year, and equivalised to take into account the size and composition of the household (Graham, 2009a; OECD, 2006). Income has the advantage of being one of the best measures of material living standards, but has the disadvantage of often not being well recorded because individuals are sometimes reluctant to disclose such information, or simply do not know (Galobardes et al., 2006a). The latter could be because of a number of reasons: they may not deal with the household's finances or they may not be clear what they earn because of a country's complicated tax and benefits system. Further, underreporting of income from property and investments has been documented when comparing survey estimates with tax return data (Crystal & Shea, 1990), which may lead to an underestimation of health inequalities. The analysis of income data is also complicated by the relative value of different currencies, or their purchasing power parity (PPP), between countries and over time. However, this can be overcome by applying PPP exchange rates, such as those produced by the Organisation for Economic Co-operation and Development, which enable the calculation of comparable estimates of income adjusted for differences in purchasing powers (Christelis et al., 2009).

1.4.2.4 Wealth

Wealth can be defined as the total financial and material assets (for example the value of housing and cars) accumulated over the life course (Galobardes et al., 2006b; Pollack et al., 2007). Measures of wealth are often considered more appropriate for older populations as their income may have declined in retirement, but they may have access to savings (Duncan et al., 2002). Net worth is a frequently used indicator of wealth and is calculated by the sum of all assets, minus outstanding debts (Pollack et al., 2007). Like income, collecting wealth data in surveys is often challenging due to its sensitive nature

and the difficulty of remembering such information, or general lack of knowledge relating to the household's assets. In addition, it is often difficult to quantify assets as they are ultimately determined by market forces; a house or car is only worth what someone is willing to pay. There are also difficulties in capturing wealth that might leave the country because of tax reasons and that which is tied up in close family businesses (Roine & Waldenström, 2009). Thus, it is likely that survey estimates of wealth are underestimated.

1.4.2.5 Housing conditions

Housing conditions, such as the number of people sharing a room and the presence of central heating, are often used as indicators of material conditions in the household (Galobardes et al., 2006a). These are frequently utilised when measures of childhood socioeconomic position are needed, as income data are often not readily available and people are more likely to remember these details rather than parental income, for example. As well as relating to a household's income and wealth, poor housing conditions, such as the presence of dampness and overcrowding, have also been directly related to specific health conditions, such as stomach cancer and respiratory health (Barker et al., 1990; Platt et al., 1989; Smith et al., 1998; Walker et al., 2006).

1.4.2.6 Composite indicators

Composite indicators combine multiple measures of socioeconomic position into a single socioeconomic score (Galobardes et al., 2007). This can be helpful if one is interested in trying to capture the combined influence of different aspects of socioeconomic position and the clustering of socioeconomic advantage or disadvantage at one time point, or across the life course (Lawlor et al., 2005b; Luo & Waite, 2005; Singh-Manoux et al., 2004). For example, in a study examining the influence of adverse socioeconomic position on coronary heart disease, Lawlor et al (2005b) divided 10 indicators of socioeconomic position (such as the father's social class, hot water supply during childhood and age at leaving full time education) into binary variables and summed them to produce a composite socioeconomic score reflecting the number of disadvantaged socioeconomic experiences accumulated across the life course. Composite indicators of socioeconomic position are useful when examining the influence of overall

socioeconomic position across the life course on health and wellbeing, described further in section 1.4.2.8.

1.4.2.7 Absolute and relative position

The above measures of socioeconomic position can be considered in both absolute and relative terms, which may relate to health in different ways. For example, absolute income may affect health as it enables the purchase of healthier food and better quality housing, which contribute to feelings of satisfaction and control over life. An individual's relative position in the income scale may also influence health through social comparisons with others (Lundberg et al., 2010). This is especially important when considering cross-national comparisons of the influence of socioeconomic position on health, as it is likely that individuals compare themselves to others within their own country, rather than for example, with others across the whole of Europe. In the example of income, an individual's health status is hypothesised to depend on their rank within the income distribution and the distance between their income and the average income for a particular country, or other reference group, rather than their absolute level of income (Kawachi et al., 2002; Wilkinson, 1994). The distinction between absolute and relative measures of socioeconomic position is particularly important for the psychosocial and materialist explanations of health inequalities, which are described in sections 1.5.4 and 1.5.5.

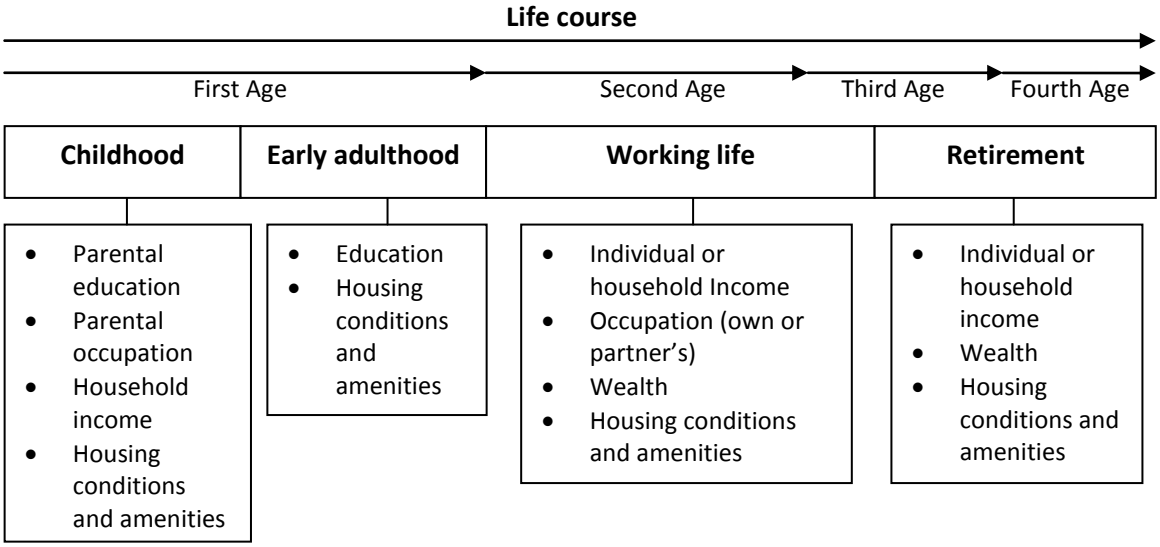
1.4.2.8 Life course socioeconomic position

Socioeconomic position can be considered as a time-varying exposure and most of the above measures can be captured at different stages of the life course (Galobardes et al., 2006b). For example, childhood socioeconomic position is often characterised by household measures, such as the father's occupation, while the longest held occupation can be used to capture adulthood socioeconomic position (Galobardes et al., 2007). Methodologically, life course socioeconomic position is inherently difficult to measure. Studies often rely on the retrospective recall of socioeconomic conditions during childhood, which may be affected by recall bias (Batty et al., 2005; Berney & Blane, 1997; Coughlin, 1990). In addition, it is unlikely that data, such as housing and income, are

available for the entire life course, so studies are often limited to examining particular life course phases, like childhood and adulthood.

Figure 1.1 illustrates some examples of measures used to capture the experience of socioeconomic position at different phases of the life course. Measuring socioeconomic position at different stages of the life span is relevant to the life course approach to health inequalities, which is discussed below in section 1.5.6.

Figure 1.1: Examples of measures of socioeconomic position across the life course. Adapted from (Galobardes et al., 2006a)



1.5 Socioeconomic inequalities in health and wellbeing

1.5.1 Definition

In this thesis, socioeconomic inequalities (or disparities) in health refer to systematic differences in health and wellbeing between socioeconomic positions (Marmot et al., 2012), as captured by the various measures described in the section above. When these are considered avoidable by reasonable means and hence unfair, the term health inequity is sometimes used (Kawachi et al., 2002). Inequalities in health by socioeconomic position are recognised to exist in most societies, even in the advanced welfare states of Europe (discussed further in section 1.5.7), which might be expected to have alleviated the influence of social conditions on health (Mackenbach, 2012).

1.5.1.1 Do they exist in older age groups?

Whether socioeconomic inequalities in health and wellbeing converge with age is debated (Benzeval et al., 2011; Chandola et al., 2003). If individuals from a lower socioeconomic position are more likely to die earlier (Borrell et al., 1999; Davey Smith et al., 1998; Huisman et al., 2004; Mackenbach et al., 2003; Mackenbach et al., 1997), then socioeconomic inequalities in morbidity might not be apparent in older age groups. However, inequalities in health by socioeconomic position have been identified among older persons using a number of health outcomes, such as grip strength and self-rated health (Avendano et al., 2009; Benzeval et al., 2011; Chandola et al., 2007; Huisman et al., 2003; Knesebeck et al., 2003; Matthews et al., 2005; Mohd Hairi et al., 2010; Semyonov et al., 2013). Current socioeconomic advantage has also been repeatedly associated with higher subjective quality of life among older people (Blane et al., 2004; Blane et al., 2007a; Knesebeck et al., 2007; Netuveli et al., 2006; Webb et al., 2010; Wiggins et al., 2004; Wikman et al., 2011).

1.5.2 Explanations

The main theories of socioeconomic inequalities in health and wellbeing can be divided into cultural and behavioural, psychosocial, materialist, life course, and political economy (Bartley, 2004). This section is intended to provide a brief overview of the main theories of health inequalities as in-depth explorations of the different explanations have been published elsewhere (Bartley, 2004; Graham, 2009a). The life course and political economy theories are discussed in greater detail as these are the predominant approaches taken in this thesis. The various approaches should not be considered to be competing explanations as they overlap considerably and it is likely that each makes a contribution to the socioeconomic gradient in health and wellbeing.

It should be noted that alternative explanations may also exist, for example, artefact and social (or health) selection (Black et al., 1980). An artefact explanation proposes that health inequalities are not in fact 'real', but are a product of the data used and the methods of measurement (Bambra, 2011). This explanation is unlikely given the vast literature identifying socioeconomic inequalities in health within and between countries, using numerous outcomes and measures of socioeconomic position. Social selection

posits that those with poorer health are more likely to become downwardly mobile and that individuals with particular personal characteristics (such as higher intelligence) are more likely to be upwardly mobile (Bartley, 2004; West, 1991). Given that social selection has been demonstrated to make a modest contribution to inequalities in health (Blane et al., 1993), it is unlikely to be a key mechanism underlying inequalities in quality of life. Therefore, artefact and social selection explanations are not discussed further here, but are acknowledged as potential, but unlikely, alternatives.

1.5.3 Cultural and behavioural explanations

Cultural and behavioural explanations focus on the role of particular health behaviours in explaining the socioeconomic gradient in health, such as smoking and drug misuse, which tend to be more prevalent and culturally acceptable among lower socioeconomic groups (Bambra, 2011; Bartley, 2004). The behavioural approach often frames health inequalities as a problem for the individual and ignores the wider structural factors, or 'fundamental causes' which influence unhealthy behaviours (Katikireddi et al., 2013; Link & Phelan, 1995; McCartney et al., 2013). As there is a wealth of existing academic literature relating to the contribution of lifestyle and behavioural factors to health inequalities (Lynch et al., 1997; Stringhini et al., 2010), and the approach is less relevant for quality of life in early old age, the behavioural approach is not considered further here.

Cultural capital (as defined in section 1.4.2.1) is also recognised as a potential mechanism in the conversion of social inequality into health and wellbeing inequality (Abel, 2008; Bourdieu, 1986). Cultural capital can be considered as the internal values, skills, and knowledge acquired early in life via socialisation and learning. Individuals are thought to accrue cultural capital via items such as books, paintings, and musical instruments, not just through educational qualifications (Abel, 2008; Bourdieu, 1986). Cultural resources are thought to influence both educational and occupational attainment, as well as the lifestyle of an individual (Georg, 2004). Therefore the theory of 'cultural capital' attempts to explain socioeconomic inequalities in consumption behaviour by "*differences in attitude, knowledge and competency between socioeconomic groups, which are transmitted across generations*" (Mackenbach, 2012, p766). Those with higher cultural capital might be more knowledgeable about the availability of leisure and cultural

activities and able to appreciate these more, which might contribute to better health and quality of life. However, it is also acknowledged that a lot of cultural activities require financial assets for involvement and cultural capital is therefore unequally distributed; this explanation therefore overlaps with the materialist explanation below. Despite its relevance for socioeconomic inequalities in health, the role of cultural capital has been little researched (Abel, 2008).

1.5.4 Psychosocial explanations

Psychosocial explanations of socioeconomic inequalities in health relate to people's potential feelings of inferiority associated with experiencing a lower socioeconomic position relative to others across the whole socioeconomic distribution, which are thought to activate chronic stress responses (Bartley, 2004; Marmot, 2006). The socioeconomic gradient in health is therefore viewed as a result of the unequal distribution of psychosocial risk factors in the population (like low control over one's job) and the way these make people feel about themselves, as well as the perception of social status in comparison to others (Bambra, 2012). Experiencing a low social status is thus thought to result in a perception of inferiority, which induces negative emotions, such as shame and distrust, and impacts on health via psycho-endocrine mechanisms (Layte, 2012; Wilkinson & Pickett, 2009).

1.5.5 Materialist explanations

Materialist approaches emphasise the role of financial resources in enabling the purchase of goods and services, which reduce the risk of exposure to particular risk factors for poor health and wellbeing (Bambra, 2011). For example, higher income facilitates the purchase of a better diet, housing, and healthcare. As noted above, greater material resources may also enable individuals to participate in cultural and leisure activities, which may contribute to quality of life (Siegrist & Wahrendorf, 2009; Wahrendorf et al., 2008; Wahrendorf & Siegrist, 2010). The neo-materialist explanation is a related theory which takes the emphasis away from the individual and highlights the role of structural factors, such as the investment in the public provision of services (like education and welfare), in the social patterning of health and wellbeing (Bambra, 2012; Lynch et al.,

2000). This theory considerably overlaps with the political economy explanation (discussed in section 1.5.7) and the extent to which these two differ is debatable.

1.5.6 Life course explanations

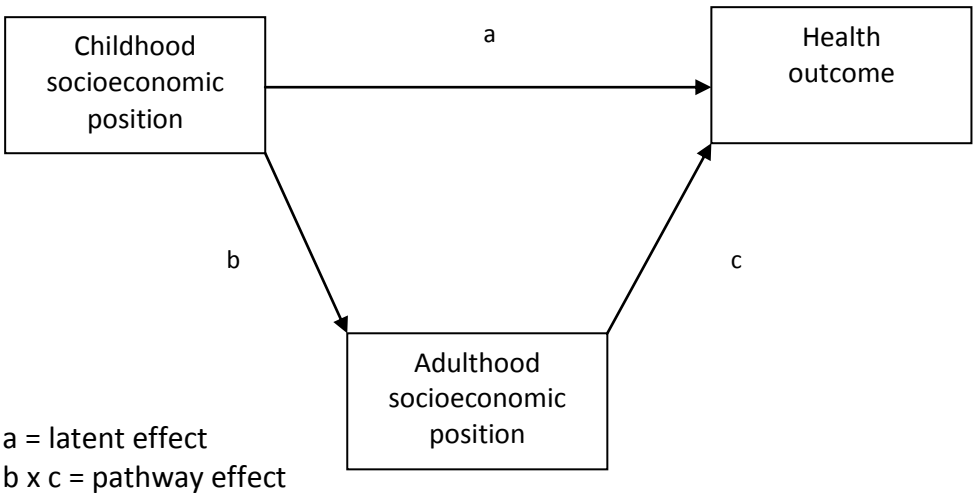
A life course approach integrates aspects of each of the above explanations and posits that a number of different social, psychological, and biological factors accumulate and interact across the life course to produce the social gradient in health and wellbeing (Bambra, 2012; Smith et al., 1994). In particular, life course researchers are interested in understanding how certain exposures, such as disadvantaged socioeconomic conditions during childhood, get 'under the skin' and into the biology and psychology of older individuals and subsequently result in adverse health events and lower psychological wellbeing (Ferraro & Shippee, 2009). In life course epidemiology, a number of empirical models have been developed that help to uncover specific social processes underlying life course influences on health (Kuh et al., 2003). These provide a useful framework for understanding potential life course influences on quality of life in early old age, but have been criticised for their weak theoretical underpinning (Netuveli & Bartley, 2012). In the following chapter, the literature on the evidence relating to the influence of life course socioeconomic position on quality of life is systematically reviewed in relation to these models. It should be noted that the models (described below) are not intended to be competing explanations and they are indeed difficult to separate both theoretically and empirically (Bartley & Blane, 2009; Blane et al., 2007b; Hallqvist et al., 2004).

1.5.6.1 Life course models

The key social processes thought to underlie the influence of life course socioeconomic position on later health outcomes are latent, pathway, and cumulative effects (Ben-Shlomo & Kuh, 2002; Pollitt et al., 2005). Figure 1.2 summarises the latent, pathway, and cumulative processes. In brief, a latent effect supposes that childhood socioeconomic position has a direct influence on health (path a). Under a pathway model childhood socioeconomic position is thought to influence health, indirectly, through adulthood socioeconomic position (path b x c). A cumulative effect (path a + c) may result from the additive influence of both childhood and adulthood socioeconomic position on health (Ploubidis et al., 2014). Social mobility can also be considered as a separate process that

may underlie the influence of socioeconomic position on health (Pollitt et al., 2005). It suggests that the *movement* from one socioeconomic position to another may be detrimental or protective to later health, on top of the prior and current experience of a low or high position (Houle, 2011).

Figure 1.2 Diagram of the hypothesised relationships between life course socioeconomic position and health. Adapted from (Ploubidis et al., 2014).



Cumulative effects

A key social process thought to contribute to socioeconomic inequalities in health and wellbeing is the accumulation of advantage and disadvantage across the life course. Socioeconomic advantages and disadvantages (as well as other adversities) tend to cluster both cross-sectionally and longitudinally (Bartley & Blane, 2009). For example, high parental education and affluence during childhood increases the chance that a child achieves a high education level, continues into a professional occupation, inherits wealth from family, and receives an occupational pension in retirement, which leads to a reduced risk of adverse health outcomes. The accumulation of advantage and disadvantage across the life course has been shown to influence a range of health outcomes, including limiting long-term illness, self-rated health, adverse cardiovascular events, and psychological health (Bartley & Plewis, 2002; Kjellsson; Ljung & Hallqvist, 2006; Luo & Waite, 2005; Pollitt et al., 2005).

Researchers usually test this theory by summing socioeconomic exposures over the life course (Pollitt et al., 2005) and investigating whether a dose-response relationship is observed between the exposure and outcome (Singh-Manoux et al., 2004). Under this theory, no period of the life course is considered crucial for the outcome under investigation. Rather, it is experiences over the whole life course that accrue and affect later health and wellbeing. A difficulty with this approach is that socioeconomic exposures across the entire life course are rarely collected in surveys, therefore, it is unlikely that the true degree of exposure to socioeconomic advantage or disadvantage over the life course will be captured. This theory has important policy implications. If socioeconomic advantage over the life course is associated with better health and quality of life in a dose-response manner, it suggests interventions need to be spread across the whole life course rather than targeted at a particular stage of life.

Latent and pathway effects

In contrast, early experiences are thought to be central to later outcomes under latent and pathway models. Childhood socioeconomic disadvantage has been shown to be associated with a number of adverse health outcomes, independent of current circumstances (Pollitt et al., 2005; Power & Hertzman, 1997). Therefore, socioeconomic position is said to have a latent (direct) effect on health and wellbeing. Under this model (also often termed the critical period), specific exposures, such as socioeconomic disadvantage, at sensitive periods in the life course are thought to have a long-lasting effect on later health and wellbeing outcomes (Hertzman et al., 2001). A key example from the health literature is the demonstration that coronary heart disease is influenced by foetal under-nutrition during middle to late gestation (Barker, 1995).

At first, it might seem implausible that a specific exposure during childhood would have a lasting direct effect on quality of life in early old age. However, drawing on the theory of cultural capital (as described above) helps to illuminate why a latent effect might be observed. For example, if the use of books or musical instruments is established early in life, they may have long-lasting direct and indirect effects on quality of life in early old age. As early old age is considered a time for pursuing self-actualisation and pleasure, hobbies which were established earlier in life may become more valued for quality of life during this stage of the life course. In addition, skills and knowledge may have indirect

effects on later quality of life via educational attainment and occupational success, which may contribute to feelings of contentment and satisfaction in early old age. This would therefore point to a pathway mechanism whereby the cultural and related economic resources present early in life have an indirect influence on quality of life via later education and occupation.

To test the latent theory, researchers often examine the association between the early exposure and the later outcome and if the association between the two is still strong and statistically significant after controlling for current circumstances, a latent effect is suggested (Galobardes et al., 2004; Pollitt et al., 2005). However, if the association is mostly diminished after accounting for current socioeconomic position, this lends support for a pathway effect. Latent and pathway effects can be viewed as complementary. An exposure which exerts a latent effect may not act independently; it may also influence the path which the individual follows across the life course (Power & Hertzman, 1997). However, separating the two is useful in terms of policy responses. For example, if quality of life in early old age is found to be primarily influenced by current socioeconomic circumstances, it would suggest that it is not too late to intervene to try to reduce socioeconomic inequalities in quality of life. In contrast, if earlier socioeconomic circumstances are found to influence quality of life directly or indirectly, it suggests interventions early in life may be more effective.

Social mobility

The social mobility theory can also be used to help understand socioeconomic gradients in health and wellbeing in later life. Social mobility refers to the movement between socioeconomic groups, traditionally using measures of social class, over the life course. Social mobility can be considered analogous to a latent model with subsequent effect modification. In other words, the effect of childhood socioeconomic position on the outcome varies across levels of adulthood socioeconomic position (Mishra et al., 2009). Social mobility can be separated into inter-generational and intra-generational mobility (Blane et al., 1993). Inter-generational mobility refers to a change in socioeconomic position between generations, often measured by comparing parental occupation to one's own occupation in adulthood. Intra-generational mobility is the movement between socioeconomic groups during adulthood, such as the first and last occupations.

No consensus regarding the health consequences of social mobility has been reached. However, several studies have shown that socially mobile individuals experience levels of health and wellbeing between those of their current class and class of origin, closest to the current social class (Bartley & Plewis, 1997, 2007; Blane et al., 1999b; Claussen et al., 2005). In this respect, social mobility may act to narrow the socioeconomic gradient in health. However, other studies have shown that social mobility may also act to widen the socioeconomic gradient in health if, for example, the health of the downwardly mobile group is worse than that of the people they left behind and those they joined (Boyle et al., 2009; Claussen et al., 2005). In terms of quality of life, it could be hypothesised that if someone experiences a high socioeconomic position during childhood and this guides their future expectations in life, experiencing downward mobility may be associated with a sense of disappointment and negative evaluation of life: a 'disappointment paradox' (Osika & Montgomery, 2008).

1.5.7 Political economy explanations

The political economy approach to socioeconomic inequality in health and wellbeing integrates parts of the materialist and psychosocial explanations to help explain socioeconomic inequalities in health and wellbeing (Bambra, 2012). It focuses on how the broader determinants, such as the economy and political system, shape the material and psychosocial determinants of health inequalities (Bambra et al., 2005; Beckfield & Krieger, 2009). Of the explanations of socioeconomic inequalities in health, the political economy approach may be considered the least investigated and is pursued by only a small number of scholars researching health inequalities. One of the key ways in which the political economy approach has been employed in social epidemiology is via the study of welfare state influences on population health and health inequalities (Bambra, 2007; Beckfield & Krieger, 2009; Eikemo & Bambra, 2008). The political economy theory has particular relevance for quality of life as one of the overarching responsibilities of the welfare state is to maintain living standards and fulfil the basic needs of its citizens (Kuhnle & Sander, 2012).

1.5.7.1 Methodological approaches to studying the welfare state in a comparative perspective

The welfare state is typically considered as a social system that provides a number of assistances to protect the welfare of citizens, including education, health services, social insurance, housing, and relief to the poor (Eikemo & Bambra, 2008). As it has a direct influence on the stratification of society, the welfare state is considered a key determinant of inequalities in health (Bambra, 2012). Three methodological approaches are most widely used in comparative welfare state research: the expenditure approach, the institutional approach and the welfare regime approach (Dahl & van der Wel, 2013).

Expenditure approach

The expenditure approach typically uses data on government spending on social protection and services as indicators of welfare state generosity (Bergqvist et al., 2013). It is often hypothesised that greater welfare expenditure will be associated with better health and narrower health inequalities. There are problems with this approach as higher social spending may not be related to greater welfare generosity or coverage, but may be a reflection of, for example, high unemployment rates (Dahl & van der Wel, 2013). Overall welfare spending also does not provide information relating to which groups receive the benefits and the linear use of variables simplifies the complexity and qualitative nature of the welfare state. This approach is also limited by the lack of available data over long time periods, which is often needed when taking a life course perspective. The comparability of data is a further complicating issue, for example, the changing definitions of unemployment and incapacity over time and across countries (Bartley & Owen, 1996; Jones & Riddell, 1999).

Institutional approach

The institutional approach focuses more on the design of welfare states and specific social policies by comparing the features of social policies, such as the qualifying criteria, conditions of receipt, and coverage (Dahl & van der Wel, 2013). In practice, this approach is difficult to implement in comparative research because of a lack of available data and the databases which have synthesised the features of social policy programmes, such as pensions and unemployment benefits, often apply assumptions regarding the characteristics of the 'standard worker', which few people fit neatly into (Bergqvist et al.,

2013; Dahl & van der Wel, 2013). For example, in the Social Citizenship Indicator Programme, the institutional data is based on a male, who is 30 years of age and has been employed for 10 years (Dahl & van der Wel, 2013).

Welfare regime approach

The third method considered here is the welfare regime approach, which is most frequently used within public health research, although the published studies using this approach are dominated by one group of authors: Clare Bambra and Terje Eikemo (Bergqvist et al., 2013). The regime approach is based on the notion that welfare states can be grouped into ideal types ('regimes') based on their shared policies, political traditions, and ideologies, which persist over time (Bergqvist et al., 2013; Esping-Andersen, 1990). It should be noted that welfare regimes are a simplification of reality and are 'ideal', not 'real', types (Arts & Gelissen, 2012). Variation exists within and between countries in terms of the policies implemented and no single country rigidly follows all aspects of a defined welfare regime (Bambra, 2012). Compared to the other methodological approaches to comparative welfare state research, the welfare regime approach has particular merit as welfare regimes embody the history, values, and generosity of welfare states. That is not to say the welfare regime method is not subject to criticism. For example, some authors dispute the notion that welfare states cluster into defined regimes and highlight that countries within a 'regime' often exhibit contradictory policies (Kasza, 2002).

Much of the research into welfare regimes has been highly influenced by Esping-Andersen's analysis of the institutional arrangements of 18 Western European nations (Bergqvist et al., 2013; Esping-Andersen, 1990). Esping-Andersen concluded that three distinct regimes (Liberal, Social Democratic, and Conservative) could be distinguished based on their shared levels of decommodification (the extent to which individuals and families could maintain a reasonable living standard without relying on income derived from the labour market), social stratification (the role of the welfare state in strengthening or weakening the socioeconomic and demographic stratification created by the labour market) and the public-private mix (the relative roles of the state, family, and the market in the delivery of welfare) (Bambra, 2012; Esping-Andersen, 1990).

Esping-Andersen defined the Liberal regime as having minimal welfare provision, which is subject to stringent entitlement criteria (Bambra, 2012). Market dominance is encouraged by providing minimum benefits and subsidising private welfare schemes, thus, stratification exists between those who rely on public benefits and those who can afford private insurance (Bambra, 2012; Esping-Andersen, 1990). The United States and the United Kingdom are often considered as examples of the Liberal welfare regime type. However, this highlights the diversity of countries which are considered to comprise a welfare regime, as the United Kingdom has a public healthcare system which is, at present, universal and largely free of charge (Bergqvist et al., 2013). Indeed, the Liberal regime is considered by some to be the most heterogeneous model (Ferragina & Seeleib-Kaiser, 2011).

In the Conservative (or Bismarckian) regime, social policies are based on social insurance, benefits are generous but often administered by the employer and are earnings-related, the supportive role of the family is encouraged and social divisions are maintained (Bonoli, 1997; Eikemo & Bambra, 2008). The vertical redistributive impact (from higher to lower incomes) of this welfare state model is minimal as benefits reflect previous earnings (Bambra, 2012). Therefore, redistribution is primary horizontal (between those on similar income levels) because entitlements are contributions-based and earnings-related (Bonoli, 1997). Germany is often cited as the key example of a Conservative welfare state.

In contrast, the Social Democratic regime is considered the most redistributive and the least stratified, epitomised by the Swedish case. Welfare provision is characterised by universalism and relatively generous benefits, a commitment to full employment and income protection, and a highly interventionist state which encourages equality through a redistributive social security system (Bambra, 2007; Esping-Andersen, 1990). Access to welfare, including social benefits as well as education, is considered an individual's right, therefore recipients face less stigmatisation compared to other countries (Andersen, 2004). In addition, compulsory education is considered to be an extension of the state's obligation to provide equality of opportunity for all citizens in society (Telhaug et al., 2006). The Scandinavian welfare regime is financed collectively via relatively high taxation levels, which generally receives a consistent level of public support (Edlund, 1999; Svallfors, 2011). Although in Sweden, for example, the welfare state has been

successful at maintaining a relatively low level of income inequality, recent years have seen growth in wealth inequality, with it now being considered one of the most unequal in Europe in terms of wealth distribution (Bonesmo Fredriksen, 2012). In addition, there is some evidence to suggest that Nordic countries are now moving towards a less generous welfare system, in response to political, economic, and demographic changes (Kuivalainen et al., 2012).

Since Esping-Andersen's analysis was published it has been extensively critiqued and many others have produced alternative typologies (Bambra, 2007; Ferrera, 1996; Navarro & Shi, 2001). The main criticisms of Esping-Andersen's work were that it neglected the gender dimension in social policy, misclassified the few Mediterranean countries as Conservative, ignored the contribution of employers to welfare state formation, and focused too highly on welfare transfers and social security (Arts & Gelissen, 2012). In addition, Esping-Andersen's approach has been criticised because it focuses mainly on the quantity of welfare provided and neglects differences in the way that welfare is provided between countries (Bonoli, 1997; Eikemo et al., 2008c). Of the alternative classification schemes suggested, Ferrara's is considered to be the most empirically accurate and is intended to account for variation in the way welfare is delivered, rather than concentrating on the quantity provided (Bonoli, 1997; Eikemo et al., 2008c). Accordingly, most schemes now classify Greece, Portugal, Italy, and Spain into a fourth 'Southern' regime type (Arts & Gelissen, 2012; Bambra et al., 2010; Ferrera, 1996).

The Southern regime is characterised by welfare states with weak safety nets and a distinctive welfare mix comprised of charity, family, church, and state (Ferrera, 2012; Rhodes, 1996). Southern welfare states have tended to develop in a way that privileges certain groups in society, particularly the well-off elderly (Rhodes, 1996). They typically have fragmented income maintenance schemes and health care systems which provide only partial coverage (Bambra, 2007; Ferrera, 1996). The Southern model's high reliance on the family as a source of welfare means that the costs for those without a functional family unit are high (Rhodes, 1996).

Increasingly, comparative welfare state research has begun to incorporate Central and Eastern European countries, such as Poland and the Czech Republic. These countries are characterised by their transition from centrally planned, to market economies (The World

Bank, 2002). It is debated whether they represent their own distinct regime or can be incorporated into existing typologies (Cook, 2012). Most public health research now considers the Eastern European countries as a separate 'Post-communist' welfare regime, which has been less studied and is therefore less well defined (Bergqvist et al., 2013; Eikemo et al., 2008a; Eikemo et al., 2008b; Eikemo et al., 2008c). Historically, Eastern European countries exhibited highly a redistributive state, which aimed to reverse the key mechanisms of social stratification via the enforced redistribution of societal rewards (Ganzeboom & Nieuwbeerta, 1999). Post-communist countries have experienced widespread economic upheaval and undertook comprehensive social reforms throughout the 1990s, which have followed a more Liberal approach, with limited health service provision, privatisation of public welfare services, and decreasing state intervention (Eikemo et al., 2008c; Kovács, 2002). Therefore Post-communist countries can now be characterised by 'layering' of inherited communist and market-oriented elements (Cook, 2012). However, it is recognised that a degree of heterogeneity exists between Eastern European countries, with some arguing that the Post-communist countries have not followed the same path in terms of welfare state development (Aidukaite, 2009). Table 1.1 summarises the characteristics of the main European welfare regime typologies.

Table 1.1: Characteristics of welfare regimes within Europe. Adapted from Eikemo & Bambra (2008)

Welfare regime type	Characteristics
Liberal (e.g. United Kingdom, Ireland, United States)	State provision of welfare is minimal, social transfers are modest and often attract strict entitlement criteria, and recipients are usually means tested and stigmatised (Esping-Andersen, 1990). Dominance of the market is encouraged both passively, by guaranteeing only a minimum, and actively, by subsidising private welfare schemes. The liberal regime minimises the decommodification effects of the welfare state and a stark division exists between those, largely the poor, who rely on state aid and those who are able to afford private provision.
Conservative/Bismarckian (e.g. Germany, France, Austria, Belgium, the Netherlands, Switzerland)	Distinguished by its ''status differentiating'' welfare programmes in which benefits are often generous but earnings related, administered through the employer; and geared towards maintaining existing social patterns. The role of the family is emphasised and the redistributive impact is minimal, but the role of the market is marginalised (Esping-Andersen, 1990).
Social democratic/Scandinavian/Nordic (e.g. Sweden, Denmark, Norway)	Characterised by universalism, comparatively generous social transfers, a commitment to full employment and income protection; and a strongly interventionist state. The state is used to promote social equality through a redistributive social security system. It promotes an equality of the highest standards, not an equality of minimal needs and it provides highly decommodifying programmes (Esping-Andersen, 1990).
Southern/Mediterranean (e.g. Greece, Italy, Spain)	Described as ''rudimentary'' because they are characterised by their fragmented system of welfare provision, which consists of diverse income maintenance schemes that range from the meagre to the generous, and welfare services, particularly the healthcare system, that provide only limited and partial coverage. Reliance on the family and voluntary sector is also a prominent feature (Ferrera, 1996).
Post-communist/Eastern European (e.g. Poland, Czech Republic)	The formerly Communist countries of Eastern Europe have experienced extensive economic upheaval and have undertaken extensive social reforms throughout the 1990s. These have seen the decline of universalism and a shift towards policies associated more with the liberal welfare state regime, notably marketisation and decentralisation (Cook, 2012).

1.6 Overall aim of the thesis

1.6.1 Life course approach to quality of life

This thesis first aims to investigate the relationship between life course socioeconomic position and quality of life in early old age within Europe, where welfare states are most developed. Investigating socioeconomic inequalities in quality of life using a number of different measures of socioeconomic position helps to untangle the underlying mechanisms. As demonstrated above, each measure of socioeconomic position can be considered to capture different aspects of social stratification. In addition, adopting a life course approach, using the models outlined above, further enables the investigation of how current socioeconomic inequalities in quality of life were established, which has important policy implications.

1.6.2 Differences between welfare regimes

There have been recent calls to better integrate the theories of inequalities in health and wellbeing, especially in terms of considering the institutional and structural factors which shape socioeconomic position over the life course (Corna, 2013). Welfare regimes vary in terms of the degree to which they value the reduction of inequalities in living standards between population groups (Kautto, 2012). The welfare regime could therefore be expected to modify the influence of life course socioeconomic position on quality of life. For example, as the Scandinavian welfare regime could be considered the most committed to reducing social inequality, it may be hypothesised that socioeconomic inequalities in quality of life are narrower within the countries of this regime. No specific part of the welfare system, for example education, health, or social protection, is solely responsible for the maintenance of quality of life (World Health Organization, 2013). Overall quality of life, and inequalities in quality of life, could therefore be considered as an outcome of the collection and interaction of social policies across the life course. Thus, despite its limitations, taking a welfare regime approach is considered the most appropriate method to initiate this analysis. The second key aim of this thesis is to investigate whether there are differences between welfare regimes in the relationship between life course socioeconomic position and quality of life in early old age.

1.7 Chapter contents

The next chapter outlines the specific objectives of the thesis. Chapter 3 systematically reviews the literature on the influence of life course socioeconomic position on quality of life, using the life course models outlined above as a framework to assess the evidence and identify research gaps. In chapter 4, the data used in the thesis are described and the operationalisation of the variables is outlined. Chapter 5 then presents the methodology employed to analyse the data, including the statistical techniques used. The results from the empirical analyses are presented in chapters 6 to 11. Finally, in chapter 12, the key findings of the thesis are discussed and recommendations for future research and policy are outlined.

2. Aims and objectives

2.1 Aims

The two overall aims of this thesis were to:

1. Investigate whether, and how, life course socioeconomic position influences the quality of life of Europeans in early old age.
2. Examine differences in this relationship by welfare regime.

2.2 Objectives

The specific objectives of the project were divided into those relating to a systematic review of the evidence and an empirical analysis of European survey data.

2.2.1 Systematic review

- To systematically review the research evidence relating to the relationship between life course socioeconomic position and quality of life.

2.2.2 Empirical analysis

2.2.2.1 Independent associations between socioeconomic position and quality of life

- Investigate the independent influence of different measures of socioeconomic position from across the life course on quality of life in early old age.

- Examine the role of the welfare regime in moderating the relationships between different measures of socioeconomic position and quality of life in early old age.

2.2.2.2 Latent and pathway effects

- Explore potential latent and pathway effects from childhood socioeconomic position to quality of life in early old age.

- Investigate the relationships by welfare regime.

2.2.2.3 Cumulative and social mobility effects

- Explore potential cumulative and social mobility effects of socioeconomic position over the life course on quality of life in early old age.

- Investigate the relationships by welfare regime.

2.2.2.4 Explaining the relationships

- Examine potential factors which may help to explain a relationship between life course socioeconomic position and quality of life in early old age.

- Investigate the relationships by welfare regime.

The next chapter presents a systematic review of the literature on the relationship between life course socioeconomic position and quality of life.

3. Systematic Review

3.1 Chapter introduction

This chapter presents a systematic review of the literature on the relationship between life course socioeconomic position and quality of life. Systematic reviews aim to reproducibly identify, evaluate and summarise the results of all relevant studies relating to a specific research question in a transparent manner (Centre for Reviews and Dissemination, 2009). In addition to summarising the available evidence, systematic reviews help to highlight where knowledge is deficient and therefore assist in guiding future research and inspiring new research questions (Mullen & Ramirez, 2006). The use of a systematic and pre-defined methodology, including a rigorous search strategy and quality appraisal, minimises the potential for bias resulting from the selection of studies which are most visible and accessible, and prevents poorer quality studies from biasing overall conclusions (Gough et al., 2012).

The aim of the review was to systematically search the literature for studies that investigated the association between life course socioeconomic position and quality of life, in order to assess whether the literature supported a relationship between the two and identify gaps in the research evidence.

Chapter 1 described the latent, pathway, cumulative and social mobility life course epidemiological models, which provide a useful starting point to investigate the influence of life course exposures on health and wellbeing outcomes. These were used to guide and structure the review.

The next section outlines the methodology of the systematic review, including the inclusion and exclusion criteria, and the procedures used to assess the quality of studies. This is followed by an outline of the results using narrative synthesis, a discussion of the findings, and the implications for this thesis.

3.2 Methodology

3.2.1 Search Strategy

Articles were identified by searching (via Ovid) the following electronic databases: Medline (1948-present), Embase (1947-present) and PsycInfo (1987-present). Additional searches were executed in Web of Science and Cambridge Scientific Abstracts (CSA) Illumina. Web of Science covered the databases Science Citation Index Expanded (1945-present), Social Sciences Citation Index (1956-present), Arts & Humanities Citation Index (1975-present), Conference Proceedings Citation Index- Science (1990-present) and Conference Proceedings Citation Index- Social Science & Humanities (1990-present). CSA Illumina covered Applied Social Sciences Index and Abstracts (1987-present), International Bibliography of the Social Sciences (1951-present), CSA Sociological Abstracts (1952-present), and Worldwide Political Science Abstracts (1975-present). All searches were carried out on January 2nd 2012 and limited to English language articles. No restrictions were placed on the publication date of articles. Reference lists and citations (via Google Scholar) of included articles were checked for any additional articles.

Searches included terms used to describe socioeconomic position, such as 'education' and 'occupation', combined with terms used to describe the life course and quality of life. Relevant MeSH headings were used when available. A full example of the search strategy executed in Medline is found in Appendix 3.1, which was reviewed by a medical librarian.

3.2.2 Eligibility criteria

Studies were included if they met the following criteria:

- Primary studies published in a scholarly journal.
- Included populations within industrialised countries as defined by Organisation for Economic Co-operation and Development criteria (OECD, 2012).
- Reported subjective quality of life as an outcome (using indicators separate from physical health, such as wellbeing, life satisfaction or specific quality of life scales like CASP-19).

- Reported outcomes in males and/or females aged 25 years or over.[1]
- Contained individual or household measures of socioeconomic position from at least two time points (childhood and adulthood, or two time points in adulthood, regardless of the length of time between measurement points).

Articles were excluded if they:

- Contained only qualitative data.
- Were review articles.
- Did not specify any information regarding the age of participants.
- Only considered employment status, job (without a measure of occupational position), or income mobility.
- Contained only measures of physical health-related quality of life as outcomes, or which did not separate between physical and mental components of health-related quality of life (as the focus was on outcomes capturing aspects of quality of life separate from physical health).
- Included only individuals with specific health conditions (e.g. dementia or psychiatric illness) as their population of interest.

3.2.3 Study selection and data extraction

Title and abstract screening for immediately irrelevant articles was performed by one reviewer (CLN). Two reviewers (CLN and SVK) independently assessed the full-texts of articles short-listed against the eligibility criteria. Disagreements were resolved by consensus. All extracted records were stored in EndNote X4. An Excel proforma was developed to assist in the data extraction procedure and included: the publication information (authors, year, journal), study characteristics (sample size, study design, response and attrition rates, time period), participant demographics (age at recruitment, gender, country), measurement of socioeconomic position (collection method, age at measurement, missing data), outcomes (summary measure such as mean quality of life scores or odds ratio of experiencing low quality of life, collection method, age at

[1] Originally the protocol included only individuals aged over 50 years, however this was later amended to include all individuals aged 25 years and over as there were a number of studies which measured the outcome in both younger and older individuals (e.g. aged 25 to 74 years) or individuals aged 49 years. Excluding these studies on the basis of age was considered unreasonable. This also helped to get an overall idea of the number of studies relating to adults (who at aged 25 and over were likely to have completed their education) and identify potential gaps in the literature focusing on older age groups.

measurement, missing data), analysis methods (statistical techniques, variables controlled for, treatment of missing data) and results. Data were extracted by CLN and checked by SVK.

3.2.4 Quality appraisal

Quality appraisal was performed using an adapted version of the 'Quality Assessment Tool for Quantitative Studies' (Effective Public Health Practice Project, 1998). The following items were used to assess the quality and risk of bias within studies: sampling method, sample representativeness, study design, response rates, attrition rates and reasons (including death and loss to follow-up), whether the characteristics of those lost by attrition or non-response differed from those of responders, measurement of socioeconomic position variables (such as via retrospective recall or register data) and quality of life, reporting of missing data, and variables controlled for in the analysis to reduce confounding. The quality of articles was considered during the synthesis process using the above items. Three items which were considered the most important indicators of study quality were *a priori* selected to be part of a quality appraisal rating system in order to provide an overall indication of study quality. These items were: the response and attrition rates, measurement of socioeconomic position, and sample size. A grade of higher, average, or lower quality was given to studies based on the sum of scores for these items (refer to Appendix 3.2 for full details of the quality appraisal rating system).

3.2.5 Data analysis and presentation

Studies differed in terms of the measures of socioeconomic position, outcomes, time points considered and analysis techniques implemented. For these reasons, meta-analysis was not appropriate and narrative synthesis was used to analyse the extracted data. Studies were categorised based on the life course model analysed: cumulative, latent, pathway, or social mobility (inter-generational and/or intra-generational). Studies were grouped into the relevant life course model based on their aim, analytic approach, and findings, as in a previous systematic review looking at life course effects on cardiovascular outcomes (Pollitt et al., 2005). The categorisations were compared with those of the authors, if provided, but no conflicting groupings occurred. If more than one model was assessed within the same study, the results are presented under multiple

groups according to the life course models investigated. It should be noted that positive results may be found for more than one model within the same study; they are not intended to be competing hypotheses but empirical models which help to operationalise the relationship between socioeconomic position across the life course and quality of life.

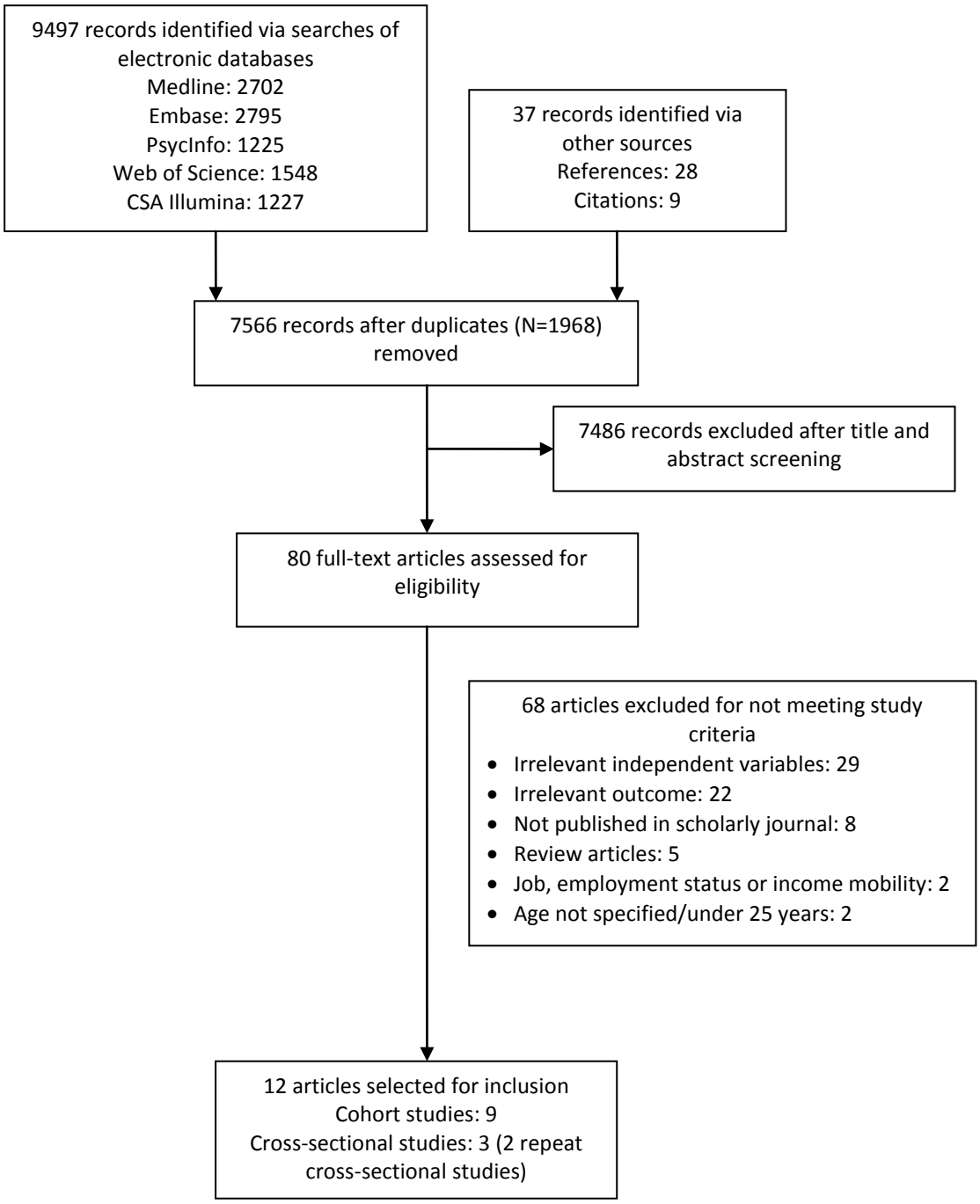
A summary of the search results and the quality of included studies is first provided. Then the evidence for each life course model is presented (studies considered higher quality are described first). As the results were generated by narrative synthesis some specific discussion of the findings is included in the results section. An overall discussion of the review's results and implications then follows.

3.3 Results

3.3.1 Search Results

The electronic searches identified 7,529 publications, following removal of duplicates. Thirty-seven additional records were identified via reference and citation checks (Figure 3). Following title and abstract screening, 7,486 irrelevant records were excluded. Examples of records excluded at this stage included those assessing health-related quality of life in disease-specific patient groups. Eighty full-text articles were assessed for eligibility, of which, 12 were selected for inclusion. Eleven articles were included by CLN; an additional article was identified by SVK and included following discussion.

Figure 3: Flow diagram of article identification, screening, eligibility and inclusion



3.3.2 Study Characteristics

The 12 included articles used 10 different datasets and represented findings from a total of 35,022 individuals. Appendix 3.3 contains further details of each study's variables, analysis techniques and results. The findings spanned five countries (the United States, United Kingdom, Finland, Sweden and Spain); representing Liberal, Scandinavian and Southern welfare regimes (refer to the previous chapter for a discussion of their specific characteristics). No studies were identified from Bismarckian or Post-Communist

regimes. There was little pattern in the associations by the type of welfare regime (Table 3.1). Five articles were specific to those aged over 50 years (Blane et al., 2004; Breeze et al., 2001; Houle, 2011; Otero-Rodriguez et al., 2011; Singh-Manoux et al., 2004), three studies included both the over 50s and under 50s in their study population (Laaksonen et al., 2007; Mäkinen et al., 2006; Marmot et al., 1998), and four studies were specific to those aged under 50 years (Huang & Sverke, 2007; Huurre et al., 2003; Johansson et al., 2007; Runyan, 1980).

Table 3.1: Studies included in the review categorised by welfare state regime type, showing the level of support for the association between life course socioeconomic position and quality of life

	Bismarckian	Liberal	Post-communist	Scandinavian	Southern
Country (N)	-	United Kingdom (3) United States (3)	-	Finland (3) Sweden (2)	Spain (1)
Support for an association (N)	-	None (3) Some (3)	-	None (1) Some (2) Mixed (2)	Some (1)
Total	0	6	0	5	1

N=number of studies; None (no statistical support for an association); Some (some statistical support for an association but association may differ by gender, outcome, and life course model investigated); Mixed (results in opposite direction to that expected)

Two studies used data from the same repeat cross-sectional surveys of the Helsinki Health Study, but used different measures of socioeconomic position and analysis techniques (Laaksonen et al., 2007; Mäkinen et al., 2006). Two studies also used the Swedish Individual Development and Adaptation Cohort (Huang & Sverke, 2007; Johansson et al., 2007); Johansson *et al* (2007) included a later survey wave and a different outcome. The publications by Breeze *et al.* (2001) and Singh-Manoux *et al.* (2004) were based on the Whitehall I and II studies respectively, which included only British civil servants as the target population. Several outcomes were used, including wellbeing (using self-esteem, self-acceptance or positive psychological functioning indicators), life satisfaction, CASP-19, and the mental component summary (MCS) of SF-36. Nine studies assessed a single life course model and three assessed more than one (Table 3.2).

Table 3.2: Summary of articles included in the systematic review categorised by life course model

First author Year Country	*Study design N*	*Quality Rating*	*Gender Age at which outcome measured*	*Measures of socioeconomic position*	*Model*	*Outcomes*	*Results*
Mäkinen 2006 Finland	Repeat cross-sectional N=8970	Average	20% male Aged 40 to 60 years	Childhood socioeconomic position: parent's education level & childhood circumstances. Adulthood socioeconomic position: own education level	Cumulative	SF-36 MCS	No support.
Otero-Rodríguez 2010 Spain	Cohort N=2117	Average	45% male 60+ years	Childhood socioeconomic position: father's occupation. Own education level. Adulthood socioeconomic position: current/last occupation of household head	Cumulative	Change in SF-36 MCS	Support for cumulative model – risk of decline in MCS increased linearly with increasing number of low socioeconomic positions.
Singh-Manoux 2004 United Kingdom	Cohort N=6128	Average	72% male 50+ years	Childhood socioeconomic position: father's occupation & childhood socioeconomic circumstances. Own education level. Adulthood socioeconomic position: employment grade	Cumulative	SF-36 MCS	Support for cumulative model among men only – risk of being in lowest quintile increased linearly with increasing number of low socioeconomic positions.
Huurre 2003 Finland	Cohort N=1592	Higher	45% male 32 years	Childhood socioeconomic position: father's occupation. Adulthood socioeconomic position: own occupation	Latent	Wellbeing	Support for latent model among women only – lower childhood socioeconomic position associated with poorer wellbeing.
Marmot 1998 United States	Cross-sectional N=3032	Average	48% male 25 to 74 years	Childhood socioeconomic position: parent's education level. Adulthood socioeconomic position: own education level	Latent	Wellbeing	Some support for latent model among women who had mothers with lowest education – lower childhood socioeconomic position associated with poorer wellbeing.

Otero-Rodríguez 2010 Spain	Cohort N=2117	Average	45% male 60+ years	Childhood socioeconomic position: father's occupation. Own education level. Adulthood socioeconomic position: current/last occupation of household head	Latent	Change in SF-36 MCS	Support for latent model – low childhood socioeconomic position associated with highest risk of decline and improvement in MCS.
Laaksonen 2007 Finland	Repeat cross-sectional N=8970	Average	20% male Aged 40 to 60 years	Childhood socioeconomic position: parent's education level, economic difficulties. Adulthood socioeconomic position: own education level, income & occupation	Latent & Pathway	SF-36 MCS	No evidence for latent model in men or women. Support for pathway model in men & women – higher adulthood socioeconomic position (via childhood socioeconomic position) associated with increased risk of lower MCS scores.
Mäkinen 2006 Finland	Repeat cross-sectional N=8970	Average	20% male Aged 40 to 60 years	Childhood socioeconomic position: parent's education level. Adulthood socioeconomic position: own education level	Latent & Pathway	SF-36 MCS	In women only – higher childhood socioeconomic position associated with increased risk of low MCS. Little support for pathway model in men or women.
Blane 2004 United Kingdom	Cohort N=254	Poorer	47% male 55+ years	Inter-generational mobility: father's occupation & respondent's longest held occupation. Intra-generational mobility: respondent's occupation aged 25 & 50 years	Social Mobility (inter & intra)	CASP-19	No support.
Otero-Rodríguez 2010 Spain	Cohort N=2117	Average	45% male 60+ years	Inter-generational mobility: father's occupation & current or last occupation of household head	Social Mobility (inter)	Change in SF-36 MCS	Support for social mobility – upwardly mobile more likely to experience change in MCS scores. No evidence for downwardly mobile.
Runyan 1980 United States	Cohort N=91	Poorer	49% male 34 to 38 years	Inter-generational mobility: father's occupation & respondent's occupation aged around 38 years	Social Mobility (inter)	Life satisfaction	No support.
Breeze 2001 United Kingdom	Cohort N=7041	Average	100% male 67 to 97 years	Intra-generational mobility: employment grade at baseline & employment grade at retirement	Social Mobility (intra)	SF-36 MCS	Support for intra-generational effect – upwardly mobile less likely to have poor MCS score.
Houle 2011	Cohort N=4992	Higher	100% male	Intra-generational mobility: occupation aged around 36 years & 52 years	Social Mobility (intra)	Wellbeing	No support for intra-generational effect when accounting for prior and current

United States			Around 52 years				class – mobile individuals more likely to report wellbeing resembling current class than prior class.
Huang 2007 Sweden	Cohort N=291	Average	100% female 43 years	Intra-generational mobility: respondent's occupational history from ages 16 to 43 years	Social Mobility (intra)	Life satisfaction	No support.
Johansson 2007 Sweden	Cohort N=514	Average	100% female 49 years	Intra-generational mobility: respondent's occupational history from ages 16 to 43	Social Mobility (intra)	Life satisfaction & wellbeing	Life satisfaction: no support. Wellbeing: some support – downwardly mobile reported lower wellbeing.

Inter=inter-generational; Intra= Intra-generational; MCS= mental component summary; N=Sample size; socioeconomic position= socioeconomic position; SF-36= short-form 36

3.3.3 Quality assessment summary

The sample size of included studies ranged from 91 (Runyan, 1980) to 8,970 individuals (Laaksonen et al., 2007; Mäkinen et al., 2006), with a median of 2,117 individuals. Attrition rates ranged from 3% over 14 years (Singh-Manoux et al., 2004), to 57% over 27 years (Runyan, 1980). Response rates for the last wave of study reported varied from 61% (Marmot et al., 1998) to 90% (Blane et al., 2004), median 76.5%. Full details of each quality appraisal item for the included articles are found in Appendix 3.4. Using the quality criteria, two studies were rated as higher quality (Houle, 2011; Huurre et al., 2003), eight average quality (Breeze et al., 2001; Huang & Sverke, 2007; Johansson et al., 2007; Laaksonen et al., 2007; Mäkinen et al., 2006; Marmot et al., 1998; Otero-Rodriguez et al., 2011; Singh-Manoux et al., 2004), and two poorer quality (Blane et al., 2004; Runyan, 1980). Appendix 3.5 contains full details of the ratings for each article included.

3.3.4 Cumulative model

Three studies tested the relationship between life course socioeconomic position and quality of life using the cumulative model (Mäkinen et al., 2006; Otero-Rodriguez et al., 2011; Singh-Manoux et al., 2004). All three studies were assessed as being of average quality. Singh-Manoux *et al.* (2004) found some support among men; as the number of occasions in a low socioeconomic position increased, the more likely the respondent was to report MCS scores in the lowest category. A significant linear trend was also identified. However, no evidence was found among women, with the highest odds ratio being found in those who had an intermediate socioeconomic position score (between those who experienced being in a low socioeconomic position at the three time points and those who experienced three high positions). Highest odds ratios for men were evident in trajectories that began in an intermediate or low socioeconomic position during childhood and moved to a high socioeconomic position in adulthood. Otero-Rodriguez *et al.* (2011) used polytomous logistic regression models with risk of decline, no change (reference category) and improvement in MCS scores over a two year period as the outcome. They found the risk of decline was highest in individuals reporting three low socioeconomic positions at key points in the life course, compared to those with one low socioeconomic position, and a significant linear trend was identified. The risk of improvement was also highest in those reporting three low socioeconomic positions, but

no linear trend was identified. Mäkinen *et al.* (2006) found no support for the cumulative model using education level as the only measure of socioeconomic position. The prevalence of MCS scores in the 'limited functioning' range was slightly increased for men and women who experienced a low childhood socioeconomic position and high adulthood socioeconomic position, compared to those with a low socioeconomic position at both time points.

In summary, mixed evidence was found for the cumulative model and differing results were found between genders. The contradictory results of Mäkinen *et al.* (2006) could be explained by heterogeneity between studies in terms of the socioeconomic position measures and study contexts. Mäkinen *et al.* (2006) used the respondent's own education level and parental education level, whereas Singh-Manoux *et al.* (2004) used a combination of the respondent's employment grade, education level, and parental occupation. Perhaps education levels alone do not capture accumulated socioeconomic disadvantage to the same extent as including both educational and occupational information. Education level may also be considered a more distal measure of socioeconomic position, which reflects both cognitive ability and parental socioeconomic position. Cohort differences in the meaning of education between generations may also exist. For example, Mäkinen *et al.* (2006) used a Finnish population aged 40 to 60 years old. It is likely that the respondents' parents completed their education at a time before the rapid expansion in higher education. Over half of respondents had high education levels, but over half of their parents had low education levels. Therefore, perhaps a low education level may not convey disadvantage in the same way between generations; a lower education level relative to others in the same cohort may be particularly detrimental. The context of the paper by Singh-Manoux *et al.* (2004) is also important to consider. They used the Whitehall II study based on British civil servants, in which the social hierarchy is more amenable to measurement due to the distinct civil service employment grades.

3.3.5 Latent and pathway effects

Five studies assessed life course effects on quality of life and tested for a potential latent effect (Huurre et al., 2003; Laaksonen et al., 2007; Mäkinen et al., 2006; Marmot et al.,

1998; Otero-Rodriguez et al., 2011). One study was assessed as being of higher quality (Huurre et al., 2003) and four were of average quality (Laaksonen et al., 2007; Mäkinen et al., 2006; Marmot et al., 1998; Otero-Rodriguez et al., 2011). Laaksonen *et al.* (2007) and Mäkinen *et al.* (2006) used the same dataset, but different methods, to simultaneously test the pathway model.

Huurre *et al.* (2003) found poorer mean wellbeing scores among female respondents reporting their parents had a manual occupation, compared to non-manual occupation. When adjusting for the respondent's own current social class, this difference remained statistically significant. The effect was not observed among men. This finding could be because women were less attached to the labour market, so their parent's socioeconomic position retained an influence above that of their own current situation. Otero-Rodriguez *et al.* (2011) found that individuals reporting a low childhood socioeconomic position were more likely to experience change in MCS scores compared to those with a high childhood socioeconomic position. Adulthood socioeconomic position did not have an independent effect on change in MCS scores. Marmot *et al.* (1998) found no support for the latent model among men and some support among women. Using father's education, the odds ratios for low wellbeing among women were not significantly different between education levels. However, using mother's education level, the odds ratio for low wellbeing was significantly elevated among women with the lowest educated mothers. This indicates that, for women, a latent effect of low childhood socioeconomic position may operate via the mother's socioeconomic position.

Conflicting results were found between the two studies by Laaksonen *et al.* (2007) and Mäkinen *et al.* (2006). Mäkinen *et al.* (2006) used a similar method to the above studies to test the latent model, women who had a low or intermediate socioeconomic position in childhood exhibited lower odds of having MCS scores in the 'low functioning' range, compared to those recording a high childhood socioeconomic position - the opposite direction to that expected. This effect was not present in men. No significant pathway effect was suggested in men or women. On the other hand, Laaksonen *et al.* (2007) implemented a structural equation modelling approach and found no evidence for a direct effect of childhood socioeconomic position on MCS scores. However, they identified a direct effect of adulthood socioeconomic position in the opposite direction to

that hypothesised; experiencing higher adulthood socioeconomic position was associated with poorer MCS scores in both men and women. The results indicated evidence for a pathway effect in which childhood socioeconomic position influenced MCS scores, via adulthood socioeconomic position.

To summarise, mixed evidence was found for a latent effect of childhood socioeconomic position, with an indication that childhood socioeconomic position may be more likely to have an independent effect among women. Care should be taken when making overall conclusions due to differing exposure and outcome variables, and inconsistent analysis methods. The results by Mäkinen *et al.* (2006) and Laaksonen *et al.* (2007) highlight that contrasting results for different life course models may be found using different analysis techniques and measures of socioeconomic position, despite using similar data. Modelling socioeconomic position as a latent variable including education, occupation and income, as in the paper by Laaksonen *et al.* (2007), may provide a better overall measure of adulthood socioeconomic position and act to diminish any effect of childhood socioeconomic position. However, it does not help to untangle the mechanisms underlying the influence of socioeconomic position on quality of life. This does not explain why studies found an association in the opposite direction to that expected. The two studies used data from a Finnish public sector occupational cohort where 80% of participants were female. Compared to the studies by Huurre *et al.* (2003) and Marmot *et al.* (1998), the women employed may work in jobs requiring higher demand, with higher status and stress. This could explain why Laaksonen *et al.* (2007) identified evidence for a pathway effect in which current socioeconomic circumstances had most influence on quality of life.

3.3.6 Social mobility models

Seven publications investigated the effect of social mobility on quality of life. Inter-generational mobility was tested in three (Blane et al., 2004; Otero-Rodriguez et al., 2011; Runyan, 1980), intra-generational mobility in five (Blane et al., 2004; Breeze et al., 2001; Houle, 2011; Huang & Sverke, 2007; Johansson et al., 2007) and one assessed both types (Blane et al., 2004). First, the results for inter-generational mobility are presented, followed by those for intra-generational mobility.

3.3.6.1 Inter-generational mobility

Few studies investigated the effect of inter-generational mobility. Otero-Rodriguez *et al.* (2011) found that the upwardly mobile had the highest odds of experiencing a change in MCS scores, but no evidence for downward mobility was identified. Blane *et al.* (2004) found no support for inter-generational mobility on mean CASP-19 scores. The mean scores differed very little between those who were upwardly and downwardly mobile, or who had experienced the same position at both time points. However, the number of individuals in some mobility categories was small. Runyan (1980) also found no supportive evidence for an effect of social mobility on mean life satisfaction. The outcome was measured using retrospective recall of life satisfaction levels from the previous four years, which may have introduced recall bias in the outcome. Low numbers were also apparent in most mobility categories. The study was ranked as poorer quality, exemplified by a low mark in all quality criteria items.

3.3.6.2 Intra-generational mobility

No supportive evidence was found in three of five studies assessing intra-generational mobility and quality of life (Blane et al., 2004; Houle, 2011; Huang & Sverke, 2007). Neither upward nor downward mobility was associated with wellbeing in the study by Houle (2011). However, socially mobile individuals were twice as likely to report levels of wellbeing that resembled non-mobile individuals in their social class of entry (or current class), rather than their prior class. Further, when controlling for the number of years in the current social class, the effect became stronger. Breeze *et al.* (2001) found that the upwardly mobile were less likely to report poor MCS scores. The effect size among those who were in a low grade at baseline and moved to a higher grade at retirement was smaller, compared to those from a middle grade who moved to a higher grade. Huang and Sverke (2007) found no difference in mean life satisfaction between those who had upward, downward and stable mobility patterns using two waves of a Swedish cohort study. Johansson *et al.* (2007) also found no difference in life satisfaction outcomes using three waves of the same study, but using a different wellbeing scale the upwardly mobile reported significantly higher mean wellbeing scores, compared to those who were downwardly mobile. The study by Johansson *et al.* (2007) was strengthened by a larger

sample size compared to Huang and Sverke (2007). Blane *et al.* (2004) found no supportive evidence for an effect of intra-generational mobility on mean CASP-19 scores.

To summarise, mixed evidence was found for an effect of intra-generational mobility on quality of life. Only one study included both genders, but did not control for gender effects (Blane et al., 2004). Johansson *et al.* (2007) investigated wellbeing and life satisfaction outcomes and found the results differed depending on the measure used. Additionally, Breeze *et al.* (2001) included only male British Civil Servants, where upward mobility may have been more common. Country-level factors may also have influenced the results. As the authors highlighted, the women included in the studies by Huang and Sverke (2007) and Johannsson *et al.* (2007) were relatively privileged compared to other countries, with greater choice regarding their career construction and benefiting from better parental leave and availability of childcare (Huang & Sverke, 2007). Therefore, upward mobility may have been easier for these women, compared to countries such as the United States and the United Kingdom.

3.4 Chapter discussion

3.4.1 Summary of results

Twelve studies were identified that investigated the association between life course socioeconomic position and quality of life but only five were specific to individuals in older age groups. Half were conducted in either the United States or the United Kingdom, and Scandinavian studies were also common. The review provided some evidence to suggest that experiencing a low socioeconomic position across the life course may affect later quality of life. However, results for each life course model were mixed and the synthesis of results was limited by heterogeneity between studies. Some supportive evidence was found for a latent effect of low childhood socioeconomic position on quality of life among women, but a number of studies were contradictory suggesting that higher socioeconomic position in childhood may be associated with poorer outcomes. Social mobility models were generally not supported, but some studies investigating intra-generational mobility suggested that upwardly mobile individuals

experienced higher quality of life, compared to those who moved downward or remained in the same position. However, one higher quality study found no effect of intra-generational mobility; mobile individuals were more likely to report levels of quality of life closer to their current class, rather than their prior class. High quality studies addressing inter-generational mobility were lacking and few studies addressed cumulative and pathway effects.

3.4.2 Strengths and limitations of the review

Methodologically, a particular strength of this systematic review was the number of databases searched. However, the grey literature was not explored and only quantitative English language articles were included. Important unpublished articles and foreign language studies may exist which were not considered. It is also possible that key insights into the individual experience of different life course socioeconomic trajectories may be provided by qualitative studies (although no relevant qualitative studies were identified in searches). For the purposes of this thesis, which focuses on quantitative methods, the review was restricted to quantitative data only. Quality assessment was performed by considering all quality items relevant to a study and by ranking studies based on key quality appraisal items defined beforehand. The latter system may be crude and opinions are likely to differ regarding the key criteria. However, compared to the pure description of studies, the criteria enable the reader to better discern between studies considered to be higher or lower quality. It is also an improvement on the general (unsystematic) literature review which often does not consider the quality of studies.

3.4.3 Gaps in the literature

This review has helped to identify key gaps in the literature relating to whether socioeconomic position across the life course influences quality of life. The main gaps concern the study populations, data, and methods used.

3.4.3.1 Study populations

- There are few studies which have examined the relationship in older adults specifically.
- The evidence base is dominated by research from the United States and Northern Europe. Studies from Bismarckian and Post-communist welfare regimes were lacking.
- The literature contained a high number of studies that utilised occupational cohorts; although these are informative there is a need for more studies that are representative of the general population.

3.4.3.2 Data and methods

- There is a need for research that investigates the relationship in different countries using comparable cross-national data, as at present, heterogeneity limits the degree to which differences in the associations between contexts can be examined appropriately.
- Studies have rarely adopted a path analysis approach to analyse the data. This can help quantify the indirect effects of particular life course periods and better test the pathway life course model.
- Most studies contained only one measure of socioeconomic position at each life course period studied, which is unlikely to fully capture the multi-dimensional nature of socioeconomic position at a particular time point. Inadequate measurement of current socioeconomic position could also overestimate the influence of earlier circumstances.
- All included studies focused on absolute measures of socioeconomic position and there is a need to consider relative aspects.
- The included studies focused on negative measures of quality of life, often reducing the outcome to a binary variable; therefore there is a need to examine socioeconomic factors which foster higher quality of life.

The next chapter describes the data source and operationalisation of variables used to address the research objectives outlined in the previous chapter.

4. Data

4.1 Chapter introduction

This chapter is divided into four main sections. The first section describes the data source used in this project; the Survey of Health, Ageing, and Retirement in Europe. The selection and operationalisation of the variables included in the analysis is outlined in the second section, including a description of the extent of missing values for each variable. In the third section the data preparation and cleaning is described. The fourth section contains details of the final dataset used in the analysis.

4.2 Survey of Health, Ageing, and Retirement in Europe (SHARE)

4.2.1 Overview

This section will provide an overview of SHARE, which was selected as the data source for this study because it is the largest cross-national database providing detailed and comparable individual-level data on the social circumstances, health, and wellbeing of older people. Further details of the survey, including gaining access to the data, can be found on the SHARE website (http://www.share-project.org) and in the methodology manual produced by the SHARE team (Börsch-Supan & Jürges, 2005). The survey is modelled on the English Longitudinal Survey of Ageing (ELSA) and the United States Health and Retirement Study (HRS). Originally, it was planned to also use ELSA data to represent England in this project. However, detailed and comparable occupational data from across the life course were not available. Therefore, SHARE was the sole source of the individual level data used in this study.

SHARE is a bi-annual longitudinal panel survey collected via face-to-face Computer Assisted Personal Interview (CAPI) and a paper and pencil self-administered drop-off questionnaire. The target population of the first wave consisted of all individuals born during 1954 or earlier (and their spouses or partners independent of their age), speaking the native language of the country under study, excluding those living abroad or in an

institution (e.g. prison or hospital) during the field work period (Mannheim Research Institute for the Economics of Aging, 2011).

4.2.1.1 Sampling procedure

SHARE was designed to be representative of the population aged over 50 years and used probability samples for each country included. Inevitably, however, the sampling frames differed slightly by country. For example, in some countries, such as Germany and the Netherlands, multi-stage designs were required as the population register data are administered at a regional, rather than national, level (Börsch-Supan & Jürges, 2005). Sampling methods also varied depending on the availability of data, with countries often using either population registers or telephone directories.

4.2.1.2 Data releases and participating countries

Four waves of data have been released to date and another six are planned until 2024 (Börsch-Supan et al., 2013). Wave 1 was conducted in 11 countries (Denmark, Sweden, Austria, Germany, Netherlands, Switzerland, France, Belgium, Greece, Italy and Spain) during 2004 and included nearly 30,000 participants. Table 4.1 summarises the first three Waves of data collection.

Table 4.1: Participating countries in SHARE and times of data collection, adapted from (Mannheim Research Institute for the Economics of Aging, 2010)

Country	Wave 1	Wave 2	Wave 3 (SHARELIFE)
Austria	2004	2006/07	2008/09
Germany	2004	2006/07	2008/09
Sweden	2004	2006/07	2008/09
Netherlands	2004	2007	2008/09
Spain	2004	2006/07	2008/09
Ireland[1]	-	2007	-
Israel[1]	2005/06	-	-
Italy	2004	2006/07	2008/09
France	2004/05	2006/07	2009
Denmark	2004	2006/07	2008/09
Greece	2004/05	2007	2008/09
Switzerland	2004	2006/07	2008/09
Belgium	2004/05	2006/07	2008/09
Czech Republic[2]	-	2006/07	2008/09
Poland[2]	-	2006/07	2008/09

[1] These countries were not included in this project as the data were not available for Waves 2 and 3;
[2] Baseline data collection

Wave 2 was collected during 2006/07 and included longitudinal data from individuals in the original 11 countries, as well as baseline data from Poland and the Czech Republic. The target population was similar to Wave 1 except it was all individuals born in 1956 or earlier. A 'refreshment' sample was also collected from the 11 original countries, excluding Austria and the Flemish area of Belgium. The refreshment sample oversampled cohorts born in 1955 and 1956 to maintain representativeness of the population aged 50 years and over, as the longitudinal sample included only those born in 1954 or earlier (De Luca & Rossetti, 2008).

Wave 3 was conducted in 2008/09 and included 13 countries (Denmark, Sweden, Austria, Germany, Netherlands, Switzerland, France, Belgium, Greece, Italy, Spain, Poland, and Czech Republic). This wave (called SHARELIFE) was dedicated to collecting retrospective data on the life-histories of respondents and included a wealth of information such as respondents' occupational histories and information relating to their childhood socioeconomic conditions. The data were collected via CAPI using the life-grid or Life History Calendar method. This is designed to facilitate recall of life experiences by mapping different events (such as the birth of a child or start of a new job) onto a large timeline. Combining events onto one timeline, which the respondent is able to view, helps them to recount the timing of events, both visually and mentally (Freedman et al., 1988). It also allows the interviewer to prompt the respondent using personal or public events that are displayed on the timeline (Schröder, 2011) and helps to trigger the release of detail from memory by putting together different information from the same period of the life course, such as a marriage and the start of a new job (Blane, 1996). A discussion of the accuracy of information collected via retrospective recall is provided in section 4.2.2.2.

This study uses Wave 2 outcome data (release 2.5.0) collected during 2006/07. Exposure and control variables were taken from Wave 2 and SHARELIFE (Wave 3 release 1.0.0). Wave 2 outcome data were chosen specifically as in Wave 1 the outcomes of interest were collected in the drop-off questionnaire. This questionnaire was left for the respondent to complete and return at the end of the CAPI interview and hence, resulted in a lower sample size due to additional non-response. In Wave 2 (and further waves) the outcomes of interest were asked as part of the main questionnaire. Wave 2 also included

two additional countries from Eastern Europe, thus increasing the sample size and introducing a new type of welfare state regime (section 4.3.3.2). It should be noted that Wave 4 was also released during November 2012 and included baseline data from an additional four countries (Estonia, Hungary, Slovenia, and Portugal). However, as most of the analysis was completed before this release and no retrospective life history data were collected for the new countries, it was not practical to use this wave of data.

4.2.2 Data quality

4.2.2.1 Response rates and attrition

The overall individual level response rate for Wave 1 was 85.3% (ranging from 73.7% in Spain to 93.3% in France) and the overall household level response rate was 61.6% (ranging from 38.8% in Switzerland to 81.0% in France) (Table 4.2). Unfortunately, response rates for the second wave have not been published and attempts to source this information were unsuccessful. Wave 3 did not include a refreshment sample so baseline response rates did not apply. However, in any longitudinal panel survey attrition can be an issue.

Table 4.2: Breakdown of SHARE Wave 1 participants (release 2.5.0) by country, gender, and age. Adapted from SHARE (2012).

Country	*Total*	*Male*	*Female*	*Under 50 years*	*50 to 64 years*	*65 to 74 years*	*75+ years*	*Household Response Rate**	*Individual Response Rate**
Austria	1,893	783	1,110	44	949	544	356	55.6%	87.5%
Belgium	3,827	1,741	2,086	128	1,947	992	760	39.2%	90.5%
Denmark	1,707	771	936	92	916	369	330	63.2%	93.0%
France	3,193	1,384	1,809	141	1,627	768	657	81.0%	93.3%
Germany	3,008	1,380	1,628	65	1,569	887	486	63.4%	86.2%
Greece	2,898	1,244	1,654	218	1,450	714	516	63.1%	91.8%
Israel	2,598	1,139	1,459	97	1,339	716	443	60.1%	83.9%
Italy	2,559	1,132	1,427	51	1,342	785	381	54.5%	79.7%
Netherlands	2,979	1,367	1,612	102	1,693	715	462	61.6%	87.8%
Spain	2,396	996	1,400	42	1,079	701	574	53.0%	73.7%
Sweden	3,053	1,412	1,641	56	1,589	816	592	46.9%	84.6%
Switzerland	1,004	462	542	42	505	252	204	38.8%	86.9%
Total	**31,115**	**13,811**	**17,304**	**1,078**	**16,005**	**8,259**	**5,761**	**61.6%**	**85.3%**

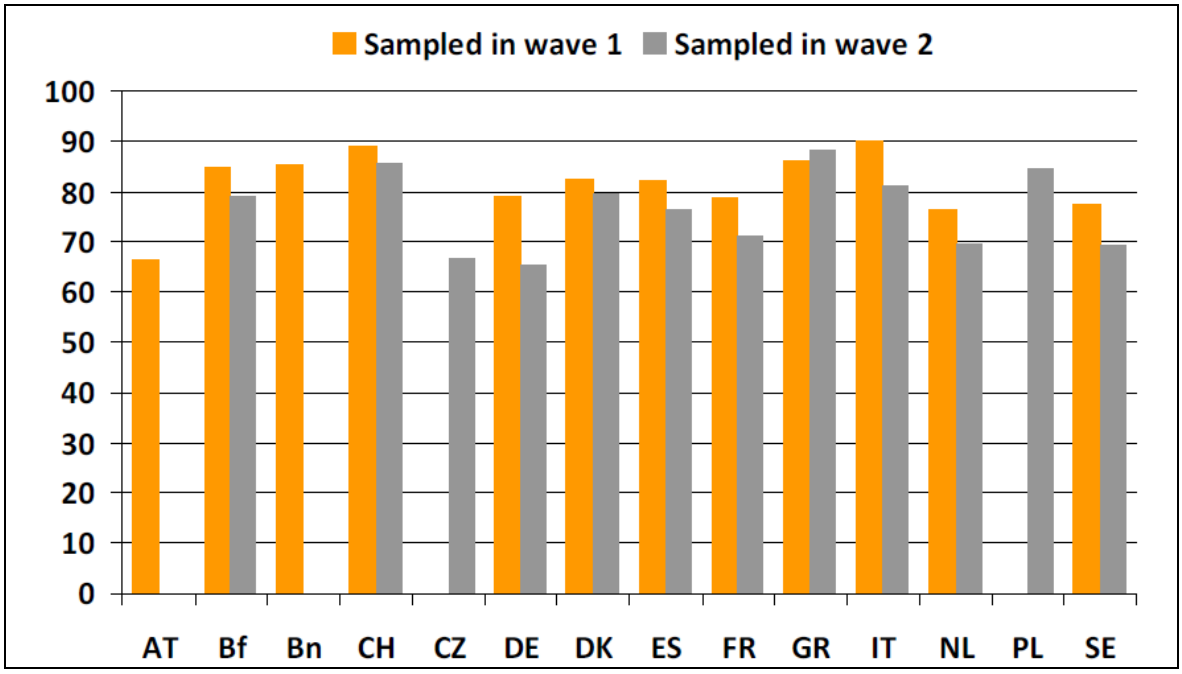
* Weighted average

Attrition is a major concern for the data quality of panel surveys (Hill & Willis, 2001). A survey may begin with a representative sample of the general population but, over time, attrition may result in the sample becoming less representative. Attrition occurs when individuals drop out of the survey due to reasons such as death, emigration, or the refusal to be interviewed again (Schröder, 2008). In SHARE, between Waves 1 and 2, the overall attrition rate was 28%, lowest in Greece (13%) and highest in Germany (41%), from an overall sample of 28,296 respondents (Schröder, 2008). This rate did not include individuals who were unable to participate in Wave 2 from the outset due to death (2.7%, N=757), migration out of the country (1.7%, N=480), or strict data protection rules which meant that Wave 1 respondents in Italy who refused permission to have their address stored on file could not be contacted again (1.0%, N=274). Preliminary analysis by the SHARE team suggested that attrition between Waves 1 and 2 did not seem to differ by gender. Younger (aged 50 to 58 years) and older age groups (75 years and over) were both more likely to drop out compared to middle age groups. Those reporting good

health were more likely to remain in the survey compared to those in poor health (but this was not the case for all countries), and those living in detached homes were more likely to participate in Wave 2 (Schröder, 2008).

Household retention rates between Waves 2 and 3 (Figure 4.1) show no clear gender or age group differences, and did not drop below 60% for any country (Blom & Schröder, 2011). The number of deaths between Wave 2 and 3 was recorded at 1,138 (these are not included in the retention rates). Figure 4.1 shows retention rates broken down by whether they were sampled in Wave 1 or Wave 2. As the Czech Republic and Poland entered the survey during Wave 2, retention rates for 'Sampled in Wave 1'are not applicable. Bf (Flemish Belgium) and Bn (Walloon Belgium) refer to the two different survey agencies which carried out data collection in the different parts of Belgium. As no refreshment sample was taken for the Flemish area of Belgium or for Austria, 'Sampled in Wave 2' retention rates are not relevant for these areas. Individual retention rates varied only slightly compared to household retention rates as a result of the high percentage (82%) of households containing two members who were both successfully interviewed at Wave 3. Differences in the retention rates between countries may be apparent for a number of reasons, including variations in the acceptability of surveys (survey climate), legal restrictions preventing the re-contact of individuals who refused to take part in Wave 2, and fieldwork procedures (Blom & Schröder, 2011).

Figure 4.1: Household retention rates (%) across SHARELIFE countries. Adapted from Blom & Schröder (2011)



AT=Austria; Bf=Flemish Belgium; Bn=Walloon Belgium; CH=Switzerland; CZ=Czech Republic; DE=Germany; DK=Denmark; ES=Spain; FR=France; GR=Greece; IT=Italy; NL=Netherlands; PL=Poland; SE=Sweden

4.2.2.2 Accuracy of retrospective data

As mentioned above, SHARE utilised the life-grid method to collect information relating to the childhood socioeconomic circumstances and occupational histories of respondents. The life-grid method of data collection has been shown to facilitate the recall of childhood conditions (Berney & Blane, 1997; Blane, 1996). Berney and Blane (1997) compared interview data relating to the childhood social circumstances of 57 subjects in early old age collected via the life-grid method with archive data collected 50 years previously. All items, including information relating to the father's occupation, number of rooms in the house, and facilities in childhood, achieved an 80% exact match or matched within one unit. Other studies have found that the general recall of childhood conditions is adequate (Krieger et al., 1998; Lin et al., 2002). Krieger et al (1998) demonstrated that among 352 female twin pairs aged 18 to 85 years, 91% agreed on the recall of their father's education level and 81% agreed on the childhood social class. Lin et al (2002) also found excellent test-retest reliability (kappa statistic > 0.75) among 46 women asked to recall their birth weight, number of childhood playmates, and childhood illness, at two occasions around eight months apart. However, Batty et al (2005) found only moderate agreement (kappa > 0.45) when comparing prospective data from 7,183 individuals

relating to their social class at birth and aged 12 years with those retrospectively recalled up to 50 years later. Most discrepancies were a result of recalling a higher class than recorded in childhood, which meant health inequalities were underestimated using the recalled data. Kauhanen et al (2006) demonstrated similar under-estimation of health inequalities comparing prospective data on childhood socioeconomic conditions with retrospectively recalled data from men aged from 42 to 60 years.

Few studies have investigated the validity of retrospectively recalled work histories. Two studies demonstrated that the recall of unemployment spells in the previous year was reasonably accurate (Jürges, 2007; Mathiowetz & Ouncan, 1988). A study recording the occupational histories of 297 men aged 35 to 70 years found 82% agreement between recalled data, covering a period of 13 years, and government pension records (Baumgarten et al., 1983). No differences in the accuracy of recall were found by age group, education level, social class, or when comparing the earlier period of recall with the most recent. This demonstrates that childhood socioeconomic conditions and work history data are recollected with a reasonable degree of accuracy and are a valid alternative, in epidemiologic studies, when prospective or register data are not available.

As a few of the variables collected during the first two waves of SHARE were also collected in SHARELIFE, some indication of the reliability of the retrospective data can be obtained. The SHARE team have compared variables relating to respondents' employment status, marital status, and the number of children alive. Discrepancies between the SHARELIFE data in marital status were found amongst 1.6% and 1.1% of cases in Wave 1 and Wave 2 respectively, for employment status 7.7% and 6.4%, and for the number of children 10.3% and 8.2% (Garrouste & Paccagnella, 2011). Employment status data for women were more likely to contain errors compared to men, and these data were on the whole more consistent in Denmark, Belgium, the Netherlands, and Sweden, compared to the Mediterranean countries, Switzerland and Austria. For this variable, older age groups (aged 70-79 and 80+ years) also contained more contradictions. In this thesis, the focus was on individuals in early old age (50 to 75 years), therefore the potential for error is reduced since the oldest age group was excluded. It should be noted, however, that the questionnaire items relating to employment status (and the number of children) were not strictly identical between the first two Waves of SHARE and SHARELIFE. Thus, this may have resulted in an over-

estimation of the degree of error. Taking this into account and the fact that the percentage of discrepancy was less than 10% across all items investigated, the retrospective data can be considered of reasonable quality. The selection and operationalisation of the key variables included in this study is outlined below.

4.3 Selection and operationalisation of key variables

This section contains details of the measures of quality of life and socioeconomic position used in this study to address the research objectives. Here, the treatment of variables considered as confounders, moderators, and mediators in the relationship between life course socioeconomic position and quality of life are also described. Furthermore, it describes the extent of missing values for each variable, which guided the choice of strategy to deal with this issue.

4.3.1 Quality of life

Two key measures of quality of life were included in SHARE: CASP-12 and general life satisfaction. The selection of outcome variables was restricted by what was included in the SHARE data. However, the measures included can be considered to be the best of what is available for cross-national surveys at present, especially for the population of interest here.

4.3.1.1 CASP-12

Quality of life was measured during Wave 2 via CASP-12, standing for the domains of Control, Autonomy, Self-realisation and Pleasure (Knesebeck et al., 2005). CASP-12 is a shortened version of CASP-19 (described in Chapter 1), a validated needs satisfaction-based measure of positive quality of life in early old age (Howel, 2012; Hyde et al., 2003; Wiggins et al., 2008). The measure has adequate discriminatory power (Howel, 2012) and correlates well with the Life Satisfaction Index-Wellbeing Scale (James et al., 1986), indicating good concurrent validity (Hyde et al., 2003). Due to the restrictions in the number of questions asked in SHARE, the 19-item version was not included in the survey. However, studies have demonstrated that the shortened versions of CASP exhibit better psychometric properties, including superior fit statistics, compared to the longer version

(Sim et al., 2011; Wu et al., 2013). See Wiggins et al (2008) and Sim et al. (2011) for further discussion on the psychometric properties.

CASP-12 questionnaire items were asked as part of the activities module towards the end of the survey, which included questions on general wellbeing and participation in voluntary work. CASP-12 contains twelve questions relating to feelings about experiences in life (Table 4.3). Respondents were asked to rate (on a 4 item Likert scale) how often, in the past four weeks, they had experienced these thoughts and feelings (SHARE, 2006). The response categories were coded as 1 (often), 2 (sometimes), 3 (rarely) or 4 (never). Positively worded items were reverse coded so that the sum of the 12 items ranged from 12 to 48 and higher scores reflected higher quality of life. This maintained consistency with previous studies using the scale (Knesebeck et al., 2007; Siegrist & Wahrendorf, 2009; Wahrendorf & Siegrist, 2010; Wahrendorf et al., 2006).

Previous analysis using second-order factor analysis has demonstrated that a common latent construct underlies the four CASP domains so that the twelve scores can be summed onto a general quality of life scale (Knesebeck et al., 2007), which represents the interaction between the different underlying domains (Hyde et al., 2003). In this thesis, CASP-12 scores are treated as a continuous variable similar to previous studies (Blane et al., 2008; Netuveli et al., 2006; Siegrist & Wahrendorf, 2009; Wiggins et al., 2004). Some studies have converted the scores to a binary variable distinguishing those experiencing 'low' and 'high' quality of life (Knesebeck et al., 2007). However, as there is no theoretical reason for doing so and given the resulting loss of power that occurs, this was not done.

Table 4.3: CASP-12 questionnaire items, adapted from SHARE (2006)

We would like to know how often, if at all, you experienced the following feelings and thoughts over the past four weeks: often, sometimes, rarely, or never.
1) How often do you think your age prevents you from doing the things you would like to do?
2) How often do you feel that what happens to you is out of your control?
3) How often do you feel left out of things?
4) How often do you think that you can do the things that you want to do?
5) How often do you think that family responsibilities prevent you from doing what you want to do?
6) How often do you think that shortage of money stops you from doing the things you want to do?
7) How often do you look forward to each day?
8) How often do you feel that your life has meaning?
9) How often, on balance, do you look back on your life with a sense of happiness?
10) How often do you feel full of energy these days?
11) How often do you feel that life is full of opportunities?
12) How often do you feel that the future looks good for you?

The overall mean for the sample (N=18,324) was 37.5 (SD=6.0) and 748 individuals were missing data for one or more of the CASP-12 questionnaire items. The highest percentage of missingness (1.9%) was found for the final question in the scale (item 12). Crohnbach's alpha (a measure of internal consistency of a set of questionnaire items used to derive a measurement scale) for the pooled sample was 0.80, ranging from 0.71 in the Netherlands to 0.84 in Poland, where 0.70 represents satisfactory internal consistency for comparing groups (Bland & Altman, 1997).

4.3.1.2 Life satisfaction

Life satisfaction was used to reflect a global measure of quality of life, which reflects the cognitive evaluation of one's life. In SHARE, a standard question relating to general satisfaction with life was included in the activities module just before the CASP-12 items. Participants were asked: *"On a scale from 0 to 10 where 0 means completely dissatisfied and 10 means completely satisfied, how satisfied are you with your life?"*. Although strictly an ordinal variable, previous research often treats life satisfaction as a continuous variable (Deindl, 2013; Eichhorn, 2012; Flavin et al., 2011; Pacek & Radcliff, 2008; Pittau

et al., 2010). Studies have demonstrated that results using life satisfaction as a continuous variable in linear regression are not substantially different to operationalising the variable as ordinal and carrying out ordered logistic regression, particularly when using multilevel models (described in the next chapter) (Eichhorn, 2012; Pittau et al., 2010). Thus, for this reason and to ease the interpretation of results, life satisfaction was treated as a continuous measure in this thesis. The overall mean life satisfaction for the sample was 7.6 (SD=1.7) and 189 (1.0%) individuals were missing answers for this question. The correlation between CASP-12 and life satisfaction was 0.60, which demonstrates that the two measures are related, but they are not likely to be capturing the same underlying construct.

4.3.2 Measures of socioeconomic position

SHARE contains a variety of measures of socioeconomic position from across the life course making it a rich source of data for investigating socioeconomic influences on quality of life. The measures of socioeconomic position were divided into those corresponding to two stages of the life course: childhood and adulthood. However, it is recognised that some measures are more relevant to early adulthood (education level), working life (occupational position), and later life (current wealth). Before outlining how each measure of socioeconomic position was operationalised, relevant background regarding the recording of occupational information in SHARE is provided. This relates to measures of childhood socioeconomic position (i.e. the occupation of the main breadwinner when the respondent was aged 10 years) and the occupational histories of respondents.

4.3.2.1 Treatment of occupational information

As discussed in chapter 1 an individual's occupation is considered to be a key dimension of socioeconomic position and an important means of social stratification. All occupational information in SHARE was recorded using the 1988 version of the International Standard Classification of Occupations (ISCO-88) published in 1990 by the International Labour Organization (ILO) (International Labour Organization, 1990), which is now the most widely used occupational classification system (Bergman & Joye, 2005). ISCO was developed to provide an internationally comparable classification system for

the coding of occupational information (usually job titles) into specific groups based on the tasks and duties relating to different jobs (Hoffmann & United Nations Statistics Division, 1999). The ILO define a job as a set of tasks and duties designed (by an employer) to be performed by an individual (the employee) (Elias, 1997). Previous versions of ISCO (ISCO-58 and ISCO-68) grouped occupations by their skill specialisation, which refers to the field(s) of knowledge needed, tools and machinery used, material worked on, and type of goods and services produced (Elias, 1997). In ISCO-88, jobs are classified both according to the skill specialisation and skill level. The skill level corresponds to the degree of complexity, range of tasks, and responsibilities involved in a particular job, and is related to the amount of formal education, formal and informal training, and work experience required for the satisfactory performance of a job. Thus, the skill level required to perform a particular job does not necessarily relate to the educational qualifications or skills of an individual employed to do that job, but rather the skill level needed to perform the tasks and duties of the job (Wolf, 1997). A key assumption of ISCO-88 is that the tasks and duties associated with a specific occupation are similar over time and across countries (Bergman & Joye, 2005).

ISCO-88 (Table 4.4) has a hierarchical structure containing four levels; each increase in level provides a greater degree of detail in the job titles (Wolf, 1997). At the least detailed level (major group) there are 10 categories differentiated by the industry of the job and the skill level needed for adequate performance of the job. Groups 1 to 5 roughly correspond to non-manual 'white collar' occupations and groups 6 to 10 to manual 'blue collar' occupations (Elias, 1997). The 10 major groups are divided into sub-major, minor, and unit groups, with 390 different categories at the unit group level. For example, *elementary occupations* (major group 9) contains *sales and services elementary occupations* (sub-major group 91), which includes *street vendors and related workers* (minor group 911), which contains *door-to-door and telephone salespersons* (unit group 9113). ISCO-88 does not differentiate between employers and employees, or between supervisors and the supervised. Thus, these groups are coded according to the type of job they perform according to its tasks and duties.

Table 4.4: ISCO-88 major groups with number of subgroups and skill levels, adapted from ILO (1990).

ISCO-88 Major Group	Sub-major Groups	Minor Groups	Unit Groups	Skill Level
1. Legislators, senior officials and managers	-	8	33	-
2. Professionals	4	18	55	4th
3. Technicians and associate professionals	4	54	73	3rd
4. Clerk	2	7	23	2nd
5. Service workers and shop and market sales workers	2	9	23	2nd
6. Skilled agricultural and fishery workers	2	6	17	2nd
7. Craft and related workers	4	16	70	2nd
8. Plant and machine operators and assemblers	2	20	70	2nd
9. Elementary occupations	3	10	25	1st
10. Armed forces	1	1	1	-
Totals	**28**	**116**	**390**	**-**

There were some differences in the coding of occupations in SHARE during Wave 1 compared to other waves. During Wave 1, occupations were coded to the most detailed unit grouping of ISCO-88. This coding process is a lengthy and expensive task (Elias, 1997). Adding the extra detail adds a huge burden on the coding process in any survey (Ganzeboom, 2010), which is especially onerous in cross-national surveys which require translation into English. Indeed, some of the occupational information collected in Wave 2 during 2006/07 has still not been coded to a level that would be suitable for public release. Recoding occupational titles to more detailed groupings is also subject to a greater degree of measurement error and misclassification bias (Lambert et al., 2008). It has been shown that when using more detailed 'minor group' classifications of occupations, agreement rates between coders of above 75% are difficult to achieve. Rates in some studies were as low as 56% (Elias, 1997). Coder agreement using less detailed groupings (such as the major group) is higher, generally above 80%. Researchers involved in the SHARE project were aware that the detailed occupational groupings collected during Wave 1 were not being used very often (Wahrendorf, 2011) and,

therefore, the justification for collecting such detailed information was questionable. Thus, it was not surprising that in the following survey waves (including the occupational histories collected in SHARELIFE) occupational information was only collected using the least detailed major group level.

Although there are several advantages of collecting less detailed occupational information, operationalisation into measures of occupational position is made more difficult as a result of the loss in detail. As outlined above (Table 4.4), the ILO classifies the major groups of ISCO-88 into four quasi-hierarchical skill levels. ISCO-88 is similar to the 1980 version of the Registrar General's Classification of Occupations for use in the United Kingdom, which is based on the skill level of occupations (Brewer, 1986). The ILO provides an indication of the educational qualifications associated with each skill level (Table 4.5), but caution that this does not have to be gained via formal education qualifications, as mentioned above.

Table 4.5: ISCO-88 skill levels and education/qualifications (adapted from ILO, 1990).

Skill Level	*Corresponding Education /Qualifications*
1	Primary education (begun at ages 5-7 and lasting approximately 5 years)
2	Secondary education (begun at ages 11-12 and lasting 5-7 years)
3	Tertiary education (begun at ages 17-18 and lasting 3-4 years, but not giving equivalent of University degree)
4	Tertiary education (begun at ages 17-18 and lasting 3-6 years and leading to University degree or equivalent)

The lowest skill level (1) includes elementary occupations, such as domestic cleaners or building caretakers, whereas the highest skill level (4) includes professional occupations, such as medical or teaching professionals. No specific skill level is provided by the ILO for the major groups 1 and 10, which correspond to legislators, senior officials, and managers, and the armed forces respectively. This was because the ILO considered the variety of tasks that comprise managerial and armed forces roles too diverse to correspond to a specific skill level, and the information needed to classify armed forces occupations, in particular, is often not provided (Elias, 1997). For the purpose of this thesis, and to prevent discarding individuals in these groups, legislators, senior officials,

and managers were assigned to the highest skill level (4), joining the professional occupations. This decision was based on the premise that the occupational skill level can be considered as an indicator of socioeconomic status. Legislators, senior officials, and managers are considered to be occupations of high prestige (Ganzeboom & Treiman, 1996), therefore categorising them in the same group as professional occupations is considered appropriate.

The armed forces occupational group is less straightforward. There is no good theoretical reason to exclude this group, although within public health research it has often been standard practice to do this (Galobardes et al., 2006b). Discarding individuals who reported any length of armed forces service during the recall of their occupational histories would result in the loss of 464 individuals. An additional 288 individuals who reported the main breadwinner when they were 10 years old was in the armed forces would also have to be dropped. However, as there is no information on the role or rank of the individual in the armed forces it is not entirely clear how this group should be treated. A similar approach to Walker (2010) was taken to classify this group. In his thesis, which examined environmental influences over the life course and cardio-respiratory health, he argued that armed forces occupations were most likely to resemble manual, lower status occupations, characterised by low job control and exposure to hazardous occupational exposures. Armed force service was therefore considered to be a disadvantaged state, equivalent to a manual occupation. In terms of the skill level, Ganzeboom and Treiman (1996) treat ordinary soldiers as belonging to the ISCO-88 major group 5 (service workers and shop and market sales workers), which corresponds to the second skill level. Therefore, this approach was taken in this study.

In addition to deriving the skill level of the occupation from ISCO-88 codes, several other classification systems have been produced to provide internationally comparable and theoretically informed measures of occupational position, including the Erikson and Goldthorpe social class scheme (EGP), the International Socio-Economic Index of Occupational Status (ISEI), and the Standard International Occupational Prestige Scale (SIOPS) (Ganzeboom & Treiman, 1996). The EGP class scheme aims to "differentiate positions within *labour markets* and *productions units* or, more specifically, one could say, to differentiate such positions in terms of the *employment relations* that they entail" (Erikson & Goldthorpe, 1992. p37, emphasis in original). Thus, they view employment

relations to be the key to class divisions and differentiate between employers (who purchase labour and exert control and authority over workers), self-employed workers without employees (who do not purchase or sell their own labour), and employees (who sell their own labour and are somewhat controlled by employers) (Erikson & Goldthorpe, 1992). Several versions of the EGP class scheme have been developed and it can be operationalised from ISCO-88 codes with additional information relating to the individual's employment and supervisory status (Ganzeboom & Treiman, 1996). As will be discussed in the methodology, it was important to have hierarchical measures of socioeconomic position. The EGP scheme does not have an inherent hierarchical rank (Galobardes et al., 2006b) and unfortunately supervisory status was not collected in the job history interviews. Therefore this scheme was not considered further in this thesis.

Two measures of socioeconomic status can be derived from ISCO-88 codes: the International Socio-Economic Index of Occupational Status (ISEI) and the Standard International Occupational Prestige Scale (SIOPS). These two measures differ from EGP in that they are intended to be continuous scales rather than class categories. ISEI is a socioeconomic status scale which seeks to measure "*the attributes of occupations that convert a person's main resource (education) into a person's main reward (income)*" (Ganzeboom et al., 1992. p9). Its theoretical basis and interpretation is less well established, although it is highly correlated with SIOPS. ISEI is perhaps more similar to the skill level of occupations compared to SIOPS, thus the latter is used in this thesis.

Occupational prestige refers to the "*metric of 'moral worth,' and the moral worth of positions reflects their control over socially valued resources and rewards, that is, their power and privilege*" (Treiman, 1976. p289). Thus, high prestige is associated with occupations that hold most power (control over limited and desirable resources, such as knowledge, skills, or economic resources) which creates disparities in privilege (Bergman & Joye, 2005). Although there had been previous studies which assessed the subjective prestige of occupations, in his seminal work, Treiman developed a Theory of Occupational Prestige after analysing the prestige of occupations in 60 countries (Treiman, 1977). Treiman argued that the prestige rating of an occupation places an individual within the social structure and provides an indication of the individual's attitudes, experiences, and life style (Bergman & Joye, 2005; Treiman, 1977). His analysis demonstrated the general consistency of subjective prestige ratings of occupations between societies and over time.

His work resulted in the generation of a universal standard prestige scale which could be used worldwide. Ganzeboom and Treiman (1996) have since updated this scale to be used with the ISCO-88 classification of occupations (Treiman's 1977 analysis used ISCO-68 codes) and provided prestige ratings for each ISCO-88 occupation. Ideally SIOPS would be operationalised from the most detailed ISCO-88 codes. However, as discussed above, these were not available for most of the occupational information in SHARE. Ganzeboom and Treiman (1996) provide prestige ratings for each ISCO-88 level including the 10 major groups used in this study (Table 4.6). These were calculated from the "*weighted average of the scores for the lower-level titles contained in the category, where the weights are proportional to the number of men in each category*" (Ganzeboom & Treiman, 1996. p211). As for the skill level classification, members of the armed forces were treated as service workers. The prestige rank for this group was 32, which also approximates the mean of the SIOPS rankings for the other manual occupations (ISCO-88 groups 6 to 9).

Table 4.6: Major ISCO-88 groups and the corresponding SIOPS ranking

Major ISCO-88 Group	SIOPS ranking
1. Legislators, senior officials and managers	51
2. Professionals	62
3. Technicians and associate professionals	48
4. Clerk	37
5. Service workers and shop and market sales workers	32
6. Skilled agricultural and fishery workers	37
7. Craft and related workers	38
8. Plant and machine operators and assemblers	34
9. Elementary occupations	21
10. Armed forces	32

To summarise, occupational information in SHARE was recoded using the major groups of ISCO-88. These were operationalised into three measures: manual versus non-manual, skill level, and occupational prestige (SIOPS). Two other issues arose in the classification of occupations and these are discussed in section 4.4.3: the classification of women and

the treatment of periods out of the labour force. First, the specific measures of childhood and adulthood socioeconomic position used in this study are described below.

4.3.2.2 Childhood socioeconomic position

Dimensions of childhood socioeconomic position were captured using questions relating to the participants' socioeconomic circumstances as children. In SHARELIFE, participants were asked to recall their socioeconomic conditions at aged 10 years old. The choice of measures of childhood socioeconomic position was restricted by the questions asked in the survey. However, the measures included can be considered to represent different dimensions of childhood socioeconomic position and have been used in previous studies examining early life socioeconomic influences on health (Galobardes et al., 2006a). Four measures of childhood socioeconomic position were included:

1. Occupational position of the main breadwinner
2. Number of books in the household
3. Number of rooms per capita in the accommodation
4. Number of amenities in the accommodation (e.g. central heating).

Table 4.7 summarises the survey questions used to derive the measures of childhood socioeconomic position and the theoretical underpinning of each measure. The operationalisation of each indicator is then described.

Table 4.7: Measures of childhood socioeconomic position used in this study

Measure of socioeconomic position	Theoretical underpinning	Survey question(s)
Occupational position of main breadwinner	• General household standard of living • Access to material resources • Social prestige	What best describes the occupation of the household's main breadwinner when you were 10? 1. Legislator, senior official or manager 2. Professional 3. Technician or associate professional 4. Clerk 5. Service, shop or market sales worker 6. Skilled agricultural or fishery worker 7. Craft or related trades worker 8. Plant/machine operator or assembler 9. Elementary occupation 10. Armed forces
Number of books in household	• Access to material resources • General household standard of living • Parental education level • Cultural capital	Approximately how many books were there in the place you lived in when you were 10? (Do not count magazines, newspapers, or your school books). 1. None or very few (0-10 books) 2. Enough to fill one shelf (11-25 books) 3. Enough to fill one bookcase (26-100 books) 4. Enough to fill two bookcases (101-200 books) 5. Enough to fill two or more bookcases (more than 200 books)
Number of rooms per capita	• General household standard of living • Access to material resources	1. How many rooms did your household occupy in this accommodation, including bedrooms but excluding kitchen, bathrooms, and hallways? (Do not count boxroom, cellar, attic etc.). 2. Including yourself, how many people lived in your household at this accommodation when you were 10?
Number of amenities in accommodation	• General household standard of living • Access to material resources	Did this accommodation have any of the features on this card when you were aged 10? 1. Fixed bath 2. Cold running water supply 3. Hot running water supply 4. Inside toilet 5. Central heating 6. None of these

Occupational position of the main breadwinner

The occupational position of the main breadwinner is considered to reflect the respondent's general family living standards, access to material resources and the family's social prestige during childhood (Lawlor et al., 2005b). As described above, the occupation of the main breadwinner was recorded using the major group ISCO-88 codes. There was also an additional category used if the respondent spontaneously reported there was no main breadwinner in the family (N=281) and in those cases the values were coded as missing. Subsequently, missing values (N=698) for this variable were updated with data from Wave 1, in which participants were asked: "*What is or was the last job [your] [mother/father] had?*" (SHARE, 2005). Missing values were imputed with the father's occupation in 357 cases and the mother's in 19 cases, leaving at total of 322 (1.8%) individuals still missing values for this variable. For those with complete data (N=9,488) for the occupation of the main breadwinner aged 10 years and the father's last occupation, the correlation between the ISCO-88 major group codes was 0.49. As described previously the ISCO-88 codes for the occupation of the main breadwinner were converted to manual versus non-manual, skill level, and SIOPS classifications. Table 4.8 displays descriptive statistics for the childhood occupational variable.

Table 4.8: Descriptive statistics for the occupation of the main breadwinner

Occupation (ISCO-88 categories)	***N***	***%***
1. Legislators, senior officials and managers	792	4.3
2. Professionals	648	3.5
3. Technicians and associate professionals	843	4.6
4. Clerk	1,083	5.9
5. Service workers and shop and market sales workers	1,369	7.5
6. Skilled agricultural and fishery workers	4,915	26.8
7. Craft and related workers	3,946	21.5
8. Plant and machine operators and assemblers	933	5.1
9. Elementary occupations	3,185	17.4
10. Armed forces	288	1.6
Missing	322	1.8
Total	**18,324**	**100.0**

N=number of individuals

Number of books in the household

The number of books in the respondent's household was considered to reflect similar dimensions of socioeconomic position as with the occupational variable above. However, it may also be a better reflection of parental education level and can be considered as a measure of early 'cultural capital', in its objectified state (Bourdieu, 1986). This variable was kept in its original ordinal format (Table 4.9).

Table 4.9: Descriptive statistics for the number of books in the household

Number of books in the household	***N***	***%***
None or very few (0-10 books)	7,700	42.0
Enough to fill one shelf (11-25 books)	4,118	22.5
Enough to fill one bookcase (26-100 books)	3,967	21.7
Enough to fill two bookcases (101-200 books)	1,192	6.5
Enough to fill two or more bookcases (more than 200 books)	1,154	6.3
Missing	193	1.1
Total	**18,324**	**100.0**

N=number of individuals

Number of rooms per capita in the accommodation

To generate the number of rooms per capita in the respondent's accommodation two questionnaire items were used (Table 4.7). The number of bedrooms in the accommodation was divided by the number of individuals in the household to produce a continuous indicator. This derived variable ranged from 0 to 10, and had a mean of 0.7 (SD=0.4). A value of 0 was possible if the individual lived in accommodation without a bedroom, for example a boxroom or an attic. Information required to calculate the rooms per capita was missing among 220 (1.2%) individuals. As well as reflecting the general living standards and material resources of the respondent as a child, it could also be considered to measure overcrowding in the accommodation which may negatively influence health and wellbeing via the spread of infectious diseases (Galobardes et al., 2006a).

Number of amenities in the accommodation

This variable was derived from the sum of the number of amenities (fixed bath, cold running water supply, hot running water supply, inside toilet, or central heating) in the respondent's accommodation aged 10 years. It has a similar meaning as the above measure, mainly representing access to material resources and is a useful indicator of the childhood socioeconomic conditions of older people in developed societies (Galobardes et al., 2006a). A lack of amenities in the household, particularly a running water supply, may also impact on health and wellbeing through the increased risk of infection. The number of amenities ranged from 0 to 5, the mean was 2.1 (SD=1.8) and 110 (0.6%) individuals were missing information for this variable.

4.3.2.3 Adulthood socioeconomic position

The socioeconomic position of respondents as adults was captured by four measures which spanned different stages of the life course, from early adulthood to early old age.

1. Education level
2. Occupational position
3. Current household income
4. Current household wealth

Table 4.10 outlines the measures used and their underlying theoretical dimensions. Each measure is briefly described in turn.

Table 4.10: Measures of adulthood socioeconomic position used in this study

Measure of socioeconomic position	Theoretical underpinning	Survey question(s)
Education Level	• Social prestige • Cultural capital	What is the highest school leaving certificate or school degree that you have obtained? What other school leaving certificate or school degree have you obtained? Which degrees of higher education or vocational training do you have? Which other degree of higher education or vocational training do you have?
Occupational Position	• Social prestige • Access to material resources	What best describes your job as (job title)? 1. Legislator, senior official or manager 2. Professional 3. Technician or associate professional 4. Clerk 5. Service, shop or market sales worker 6. Skilled agricultural or fishery worker 7. Craft or related trades worker 8. Plant/machine operator or assembler 9. Elementary occupation 10. Armed forces
Current Wealth (household)	• Access to material resources • Social prestige • General household standard of living • Accumulated assets	Series of questions relating to financial and real assets and liabilities, see SHARE Wave 2 questionnaire (SHARE, 2006) Example: *"About how much do you currently have in government or corporate bonds?"*
Current Income (household)	• Access to material resources • Current flow of resources • General household standard of living • Social prestige	Series of questions relating to income from employment and pensions, see SHARE Wave 2 questionnaire (SHARE, 2006) Example: *"After any taxes and contributions, what was your approximate income from employment in the previous year"*

Highest education level

Respondents in SHARE were asked to report their highest school, further education, or vocational training qualification in Wave 1 and in Wave 2 (for the refreshment sample

and baseline countries). Response categories for education level were originally recorded using national classification schemes (devised by a local expert in each SHARE country team), and were subsequently recoded into the 1997 version of the International Standard Classification of Education (ISCED-97)(UNESCO, 2012) by the SHARE team (Table 4.11). Not all countries used the same ISCED categories (refer to the SHARE release guide for full details). Therefore, the categories were recoded into three levels: low (pre-primary, primary and lower secondary education), intermediate (upper and post-secondary education), or high (tertiary education), as has been conducted in several studies using SHARE education data (Dragano et al., 2010; Knesebeck et al., 2007; Siegrist et al., 2007). In the sample, 189 individuals (1.0%) were missing their education level, four individuals reported they were still studying and 81 respondents were classified by the SHARE team as 'other' (e.g. foreign qualifications) that could not be grouped into ISCED categories. These groups were excluded from the analysis. Education level is used as a marker of socioeconomic position in early adulthood, which captures prestige and cultural capital aspects of socioeconomic position and enables higher occupational attainment.

Table 4.11: Descriptive statistics for the highest education level

Highest educational qualification (ISCED-97 category)	Highest education level	N	%
0 (pre-primary)	Low	530	2.9
1 (primary)	Low	4,439	24.2
2 (lower secondary)	Low	3,311	18.1
3 (upper secondary)	Intermediate	5,629	30.7
4 (post-secondary non-tertiary)	Intermediate	587	3.2
5 (tertiary, first stage)	High	3,474	19.0
6 (tertiary, second stage)	High	80	0.4
Still studying	-	4	0.0
Other	-	81	0.4
Missing	-	189	1.0
Total	**-**	**18,324**	**100.0**

N=number of individuals

Occupational position

The work history interviews in SHARELIFE collected detailed information on each paid job of the respondent's career lasting at least six months. Details of how these data were prepared are outlined in section 4.4.3 and the operationalisation of this information will be outlined in the next chapter as this differed depending on the specific objective. It has been common within public health research to classify women according the occupation of her husband (Galobardes et al., 2006a). However, as detailed work histories of women were gathered and given the relative paucity of literature in this area, it would be inappropriate to completely discard this data. Further, in the sample 8,627 women (87.4%) reported being in paid employment for six months or more at some point in their life course. However, it would also be unsuitable to exclude the 12.6% of women who never worked. In these cases information about their partner's occupation was used, if available. In addition, women who worked part-time were given the occupation of their partner. The treatment of periods out of the labour force is described in section 4.4.3.

Annual household income

Equivalised income (in Euros) was derived from the total annual household income of each respondent and adjusted for household size using the Organisation for Economic Co-operation and Development equivalence scale (OECD, 2006), which has been utilised by other researchers using SHARE data (Siegrist et al., 2007; Wahrendorf et al., 2006). Income was also adjusted for differences in the purchasing power across countries to enable cross-national comparability (Mannheim Research Institute for the Economics of Aging, 2011). The variable was generated from the sum of annual income gained from employment, old age pensions, and other sources, such as insurance policies, rent, or interest from bank accounts. The SHARE release guide contains full details of the methodology for creating this derived variable (Mannheim Research Institute for the Economics of Aging, 2011).

Household income provides additional information relating to the overall standard of living in the household, but also the contemporary flow of resources in early old age and is the most direct measure of material resources (Galobardes et al., 2006a). Unfortunately, as noted in chapter 1, missing data are a problem for studies collecting information on income. In the sample 10,403 individuals (56.8%) were missing some information required to calculate the annual household income variable. Therefore,

using data only from individuals with complete information would result in a considerable decrease in sample size and would likely result in the sample being less representative. The treatment of this missing data is discussed in the next chapter. The median income in the sample was €24,171.30 and the interquartile range was €25,598.97.

Current household wealth

Household net wealth (in Euros) was derived from the sum of all household financial (such as money in bank accounts, stocks, and government bonds) and real assets (such as the value of own residence or vehicle), minus liabilities (such as mortgage or credit card debt), and adjusted for household size and differences in the purchasing power across countries, as for household income above. Full details of the derivation of this variable are outlined in the SHARE release guide (Mannheim Research Institute for the Economics of Aging, 2011). It was noted in the SHARE methodology manual that Swedish wealth data was top-coded at 15 million Euros to comply with the Swedish Secrecy Act (Börsch-Supan & Jürges, 2005). All countries were therefore top-coded to match this. However, only three respondents outside of Sweden had values above this amount.

Although wealth is a measure of current socioeconomic position, assets are accumulated across the life span and may be inherited. Wealth could therefore be considered to reflect a measure of life course socioeconomic position. Compared to income, wealth is thought to be more relevant for the socioeconomic position of older adults, who may have retired from the labour force (Galobardes et al., 2006b). As with income, missing data are also an issue with collecting information on assets. 10,705 individuals (58.4%) were missing information required to derive the wealth variable. Again, the treatment of missing data is outlined in the following chapter. The median wealth in the sample was €194,859.20 and the interquartile range was €297,297.50.

4.3.3 Potential cofounding, moderating, and mediating variables

This section details variables which were considered to potentially confound the relationship between life course socioeconomic position and quality of life. It also details variables of interest which were considered potential mediators lying on the causal pathway, or moderators (effect modifiers) of the relationship.

4.3.3.1 Potential confounding variables

Confounding variables are considered here to be factors which are causal predictors of the outcome and are associated with the exposure, but are not considered to lie on the causal pathway between exposure and outcome (Bauman et al., 2002). The key confounding variable here was age.

Age

As discussed earlier, the population of interest for this study was individuals in early old age (defined here as 50 to 75 years). A continuous age variable was derived using participants' year of birth, month of birth, interview year, and interview month. In Wave 2 one individual was missing the year of birth and 33 were missing the month of birth. Year and month of birth data from Waves 1 and 3 were checked and used to update respondents with missing data for these variables, if available. The one respondent missing the year of birth (who was also missing the month of birth) was dropped at this stage and the 11 respondents still missing the month of birth were imputed as July. The mean age for the sample was 61.6 (SD=7.1). Previous research has demonstrated a curvilinear relationship between age and quality of life, which peaks around the age of 70 years and begins to decrease after approximately aged 75 years (Netuveli et al., 2006). All regression models (apart from 'null' multilevel models described in the next chapter) were controlled for age and age squared, to capture the curvilinear effect of age on quality of life.

4.3.3.2 Potential moderating variables

Moderating variables (or effect modifiers) are factors which are thought to modify the strength of a relationship between an exposure and outcome, which is usually tested for by examining whether the association between an exposure and outcome varies according to levels of the potential moderating variable (Bauman et al., 2002). The specific methods used to investigate potential effect modification are considered in the next chapter. The variables considered to modify the influence of life course socioeconomic position on quality of life are outlined below.

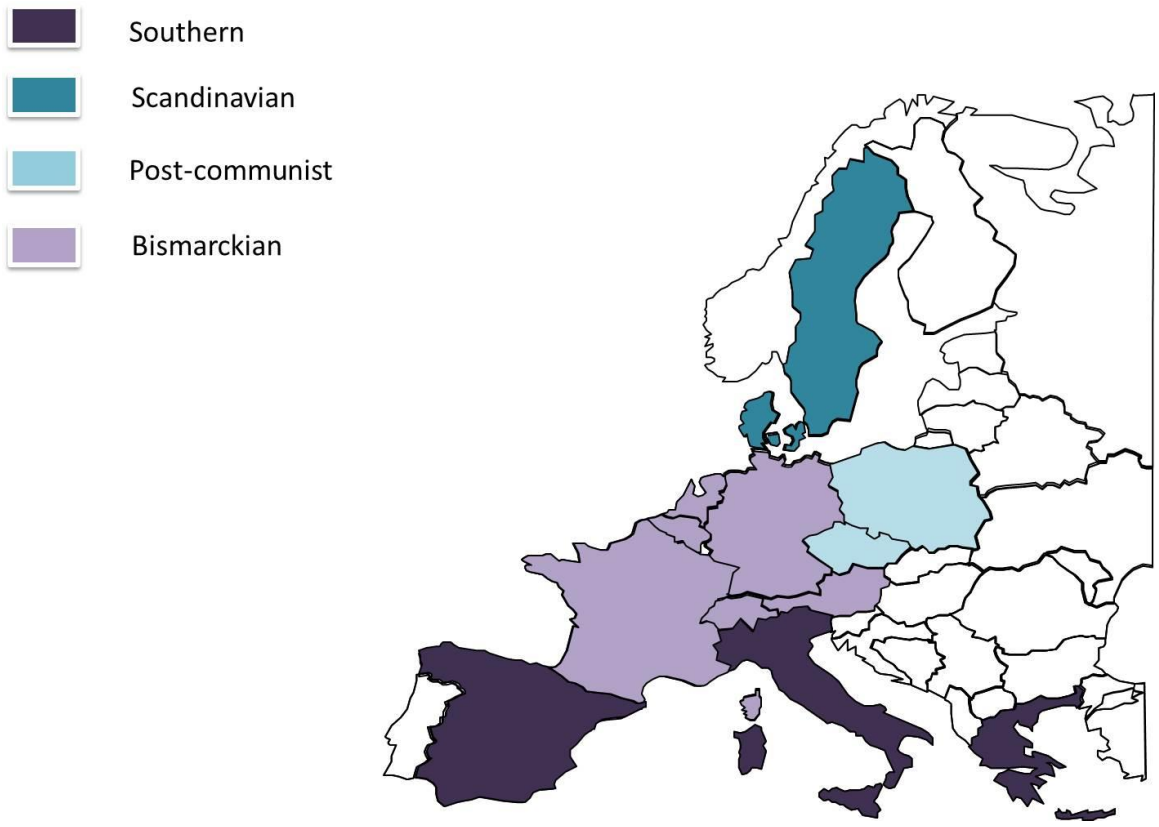
Gender

The systematic review demonstrated the relationship between life course socioeconomic position and quality of life may vary by gender and this has been demonstrated for other health outcomes (Cullati et al., 2014). Therefore, gender was considered as a potential effect modifier. In SHARE, interviewers recorded the gender of participants, but if this was not clear, participants were asked by the interviewer to confirm. This was recorded as a binary variable (male or female) and there were no missing values. In the overall sample of 18,324 respondents, 54.5% were female. The next chapter outlines the method used to deal with potential effect modification by gender, although it should be highlighted the influence of gender was not a key objective of this thesis.

The welfare regime

The welfare regime was considered to potentially moderate the association between life course socioeconomic position and quality of life. As mentioned previously, public health research often classifies countries into distinct welfare regimes based on their institutional arrangements, rules, and understandings that direct social policies (Esping-Andersen, 1990; Hurrelmann et al., 2011). This thesis uses a modified version of Ferrera's classification of welfare regimes (Bambra, 2007; Ferrera, 1996), discussed in chapter 1. Ferrera's classification scheme has been described as the most empirically accurate (Bambra et al., 2010) and research using SHARE data has often grouped countries following this typology (Dragano et al., 2010; Motel-Klingebiel et al., 2009). Therefore, adopting this scheme for this thesis was also considered appropriate to enable the results to be compared with other studies. This classification scheme identifies three distinct welfare regimes within continental Europe: Bismarckian (including Austria, Belgium, France, Germany, Netherlands, and Switzerland), Scandinavian (Denmark and Sweden), and Southern (Greece, Italy, and Spain). In order to incorporate the Eastern European countries of the Czech Republic and Poland, a separate Post-Communist welfare regime was added, as has been conducted in more recent research using SHARE (Hank & Korbmacher, 2012). Figure 4.2 summarises the countries included in SHARE and their classification into welfare regime types. The limitations of this approach are reflected upon in the discussion (chapter 12).

Figure 4.2: Map of SHARE countries grouped into four welfare regime types



4.3.3.3 Potential mediating variables

Mediating variables are those which are considered to be on the causal pathway between an exposure and outcome. As well as looking at the extent to which adulthood measures of socioeconomic position mediated the relationship between childhood socioeconomic position and quality of life, it was of interest to examine the degree to which the relationships could be accounted for by financial distress, current health status, mood, employment status, and marital status. The indicators used for these factors are described below.

Financial distress

The perception of being in a poor financial situation has been shown to be associated with lower quality of life (Blane et al., 2012; Calasanti, 1996; Netuveli et al., 2006). Here, financial distress was considered to be an important potential mediator in the relationship between socioeconomic position and quality of life, especially in terms of the relationship between income and quality of life. Therefore, it was captured by the

following question: "*Thinking of your household's total monthly income, would you say that your household is able to make ends meet...?*" The response categories are displayed in Table 4.12 along with descriptive statistics.

Table 4.12: Descriptive statistics for the financial distress variable

Ability to make ends meet	N	%
With great difficulty	2,150	11.7
With some difficulty	5,002	27.3
Fairly easily	5,879	32.1
Easily	4,847	26.5
Missing	446	2.4
Total	**18,324**	**100.0**

N=number of individuals

Current health status

Previous research has demonstrated that the current experience of a limiting long-term illness is associated with poorer quality of life (Blane et al., 2008; Netuveli et al., 2006; Wikman et al., 2011) and that the impact of functional limitation due to a long term condition on reducing quality of life was more than four times greater than experiencing a long term illness by itself (Netuveli et al., 2005). A measure of limiting illness was therefore included as a potential mediating variable. SHARE uses the Global Activity Limitation Index (GALI) (Jagger et al., 2010), in which participants were asked: "*for the past six months at least, to what extent have you been limited because of a health problem in activities people usually do?*" Answers were coded as severely limited, limited but not severely, or not limited. The first two categories were combined to produce a binary variable distinguishing those who were limited from those who were not limited by a health problem (Table 4.13). This is the approach taken by the SHARE team as the number of individuals in the severely limited category is low when the data is broken down by country and gender (Mannheim Research Institute for the Economics of Aging, 2011).

Table 4.13: Descriptive statistics for GALI

GALI	N	%
Limited	11,334	61.9
Not limited	6,964	38.0
Missing	26	0.1
Total	**18,324**	**100.0**

GALI= Global Activity Limitation Index; N=number of individuals

Current mood

Previous research has demonstrated that poor psychological health has a large effect on quality of life (Blane et al., 2008; Netuveli et al., 2006). Current mood could therefore be a key mediating variable through which life course socioeconomic position influences quality of life and also be a mechanism through which limitations in daily activities influence quality of life. Current mood was recorded using the question: *"In the last month, have you been sad or depressed?"* Participants answered either yes or no. Descriptive statistics for this variable are shown in Table 4.14.

Table 4.14: Descriptive statistics for current mood

Sad or depressed mood	N	%
No	11,765	64.2
Yes	6,446	35.2
Missing	113	0.6
Total	**18,324**	**100.0**

N=number of individuals

Current employment status

During Wave 2, participants were asked *"In general, which of the following best describes your current employment situation?"* This was coded using the following categories: retired, employed or self-employed (including working for family business), unemployed and looking for work, permanently sick or disabled, homemaker, or other (rentier, living off own property, student, doing voluntary work). The work histories also collected information about when the respondent retired, so if the employment status was missing and the respondent mentioned retiring before the Wave 2 interview year and had not worked since, they were coded as being retired. Similarly, if they reported they were still working and that job started before or during the Wave 2 interview year they were coded

as being employed. Table 4.15 displays the descriptive statistics for the employment status variable.

Table 4.15: Descriptive statistics for employment status at Wave 2

Employment status	N	%
Retired	9,164	50.0
Employed or self-employed	5,734	31.3
Other	1,247	6.8
Homemaker	2,164	11.8
Missing	15	0.1
Total	**18,324**	**100.0**

N=number of individuals

Marital status

Marital status was defined as either living with a spouse or partner (N=14,572, 79.5%), or living as a single person (N=3,752, 20.5%). This variable was derived from wave 1 and wave 2 questionnaire items which asked *"What is your marital status?"* and *"Are you...living with a spouse, living with a partner, or living as a single"*. There were no missing values for this variable after wave 1 answers were merged with those for wave 2, if the respondent mentioned their marital status had not changed between waves.

4.4 Data preparation and cleaning

Most survey data require some data cleaning and preparation before analysis can be undertaken. All data cleaning and preparation was conducted using Stata/MP 12.1 (StataCorp, 2011). The process of data cleaning and preparation is described below.

4.4.1 Coding missing values

The SHARE team created a Stata ado program called 'sharetom', which can be downloaded along with the SHARE datasets. It recodes missing responses to Stata's extended missing values (.a for don't know and .b for refusal to answer) so they are not included in any models calculated using Stata (Mannheim Research Institute for the

Economics of Aging, 2011). As recommended, this was run before conducting any other recoding or merging of datasets.

4.4.2 Merging the datasets

Due to the number of questionnaire items in SHARE, data releases are provided in separate modules, with for example, separate datasets for information relating to employment and the measurements of health status. Thus, the second step in preparing the data for analysis involved merging the relevant modules together into one combined dataset for each Wave. Wave 2 and Wave 3 datasets were then merged into one dataset. Selected variables from Wave 1 were also merged into this dataset, such as those that were not recorded in Wave 2 if they had not changed since Wave 1, such as marital status. Individuals who did not take part in Wave 2 (when the outcome data were collected) but were present in Wave 3 were retained in the dataset until the final stages of analysis. This was to enable any data from these participants to be used to fill in gaps in their partner's work history, if the partner was present in both waves.

4.4.3 Work history data

In the work history module participants were asked to recall a number of details relating to each job during their career lasting at least six months (or if they had a series of similar short-term jobs for one employer these were considered as a single job). Questions were asked about each job title (recoded via major group ISCO-88 codes) and the years they started and finished each job. The maximum number of jobs recorded was 20 and the average was 2.7 (SD=2.1). These data were provided in wide format by the SHARE team, so that information for each job was provided in separate variables (Table 4.16).

Table 4.16: Example in wide format of the first three jobs of the careers of three fictitious participants

	Job 1			Job 2			Job 3		
ID	Year started job	Year finished job	Job title	Year started job	Year finished job	Job title	Year started job	Year finished job	Job title
1	1950	1952	elementary occupation	1952	1953	professional	1955	1988	craft or related trades worker
2	1967	1968	clerk	1968	1974	armed forces	1974	1980	service, shop or market sales worker
3	1960	1962	craft or related trades worker	1962	1968	professional	1968	2006	plant/machine operator or assembler

As SHARELIFE was conducted after Wave 2, the first step in the preparation of the work history data was to identify jobs which had begun after the Wave 2 interview year and code these to missing. Individuals reporting they were still working in a particular job were given the Wave 2 interview year as the year they finished the job and respondents missing either the year they started or finished the job, or the job title were coded to missing. The wide format of the data meant that it was difficult to work out what age participants were in specific jobs and given the interest in particular periods of the life course there was a need to convert the data into long format. A long format dataset was therefore created showing each job of the respondent's career aged from 16 to 65 years.

The occupational histories of the respondents were divided into the following stages of the life course: occupation at aged 16 to 34 years (early working life), 35 to 49 years (mid working life), and 50 to 65 years (late working life). In addition, the main job of the respondent's career was derived from the longest held occupation to provide a measure of their life course occupational position. If there was more than one job with equal time spent in each, the lowest ISCO-88 code was taken (corresponding to roughly the highest status occupation). The mean time spend in the main job was 25.9 years (SD=12.4). Full details of the derived occupational variables are contained in Appendix 4.1.

Participants were also asked about the activities they did in any gaps in their employment histories. The response categories for this variable are shown in Table 4.17. For women, in the first instance information from the partner's employment history was used to fill in any gaps, if this was available. As it is not standard practice to undertake the same process for men, this was not carried out (Walker, 2010). The detailed information about

activities completed during any employment gaps was then used to fill in any other gaps in the work histories of both men and women. As some of the activities could be considered disadvantaged states (categories 2-5, 11, 14-17 in Table 4.17) these were counted as the least advantaged ISCO-88 code (an elementary occupation) and operationalised into the different measures of occupational position accordingly, as described in section 4.3.2.1. The other categories were used to fill in gaps in the work histories, but were not operationalised measures of occupational position.

Table 4.17: Questionnaire item collecting information about activities during employment gaps

Which of these best describes the situation you changed to?
1. Employee or self-employed
2. Unemployed and searching for a job
3. Unemployed but not searching for a job
4. Short term job (less than 6 months)
5. Sick or disabled
6. Looking after home or family
7. Leisure, travelling or doing nothing
8. Retired from work
9. Training
10. Further full time education
11. Military services, war prisoner or equivalent
12. Managing your assets
13. Voluntary or community work
14. Forced labour or in jail
15. Exiled or banished
16. Labour camp
17. Concentration camp
97. Other

4.5 Details of the final dataset

The final dataset (including those with missing data on the variables of interest) consisted of 18,324 individuals (Table 4.18). This sample excluded 1,177 respondents who reported being born outside of their current country of residence. The decision to exclude this group of people was made due to their likely different life course experiences and the inappropriateness of controlling for country of birth or migrant status. Due to the low numbers of migrants in the SHARE sample and the high number of countries migrants were born in (over 100), statistically controlling for country of birth would not be possible

and lacks theoretical meaning. Controlling for migrant status was also considered too crude to provide useful information (Senior & Bhopal, 1994).

Table 4.18: Details of the final sample by gender for each country and welfare regime

Welfare regime	Country	Men		Women		Both genders	
		N	%	N	%	N	%
Bismarckian	Austria	223	2.7	320	3.2	543	3.0
	Germany	581	7.0	642	6.4	1,223	6.7
	Netherlands	698	8.4	826	8.3	1,524	8.3
	France	636	7.6	787	7.9	1,423	7.8
	Switzerland	358	4.3	450	4.5	808	4.4
	Belgium	883	10.6	1,006	10.1	1,889	10.3
Total		**3,379**	**40.5**	**4,031**	**40.4**	**7,410**	**40.4**
Post-communist	Czech Republic	649	7.8	870	8.7	1519	8.3
	Poland	620	7.4	783	7.8	1403	7.7
Total		**1,269**	**15.2**	**1,653**	**16.6**	**2,922**	**15.9**
Scandinavian	Sweden	542	6.5	644	6.4	1186	6.5
	Denmark	759	9.1	822	8.2	1581	8.6
Total		**1,301**	**15.6**	**1,466**	**14.7**	**2,767**	**15.1**
Southern	Spain	575	6.9	688	6.9	1263	6.9
	Italy	892	10.7	1052	10.5	1944	10.6
	Greece	923	11.1	1095	11.0	2018	11.0
Total		**2,390**	**28.7**	**2,835**	**28.4**	**5,225**	**28.5**
ALL		**8,339**	**100.0**	**9,985**	**100.0**	**18,324**	**100.0**

N=number of individuals

The net amount of missing data on the covariates of interest was 16.1% (N=2,956). This included values which could not otherwise be classified, such as foreign educational qualifications or unclassified periods out of the labour market as described above. Strategies used to deal with missing data for specific variables are outlined in the next chapter. A further 579 individuals were dropped from the CASP-12 analysis as they were missing data for this variable. For life satisfaction, 126 individuals were missing data for this outcome and therefore excluded from the analysis for this outcome. Therefore, the total sample for the CASP-12 analysis was 14,789 individuals and the life satisfaction analysis comprised of 15,242 individuals. These samples are used consistently throughout the thesis, unless otherwise specified in sensitivity analysis.

4.6 Chapter conclusion

This chapter described the data source used in the study and the selection and operationalisation of the variables used to investigate the objectives. It also considered the extent of missing data. The next chapter focuses on describing the specific methods used to answer the research objectives.

5. Methodology

5.1 Chapter introduction

This chapter describes the methods used to conduct the empirical analyses of the thesis, including the statistical software used, handling of missing data, and statistical techniques implemented. Following this, the specific details of the analyses contained in each results chapter are outlined. The systematic review methodology was detailed in chapter 3.

5.2 Statistical software

All data cleaning, recoding, and regression models were carried out using Stata MP/12.1 (StataCorp, 2011). Path analysis was conducted using MPlus version 7.11 (Muthén & Muthén, 2013).

5.3 Missing data

This section details how missing data were dealt with in the study and briefly considers mechanisms behind missing data. It is worth considering here what is meant by the term 'missing data'. In this thesis, the term is used to refer to data that were not available for a particular questionnaire item. This could be for various reasons including the refusal to answer a question or not knowing the answer to a particular question. It should be noted that individuals who were only present in one survey wave (either wave 2 or wave 3) were excluded from the analysis. Methods to deal with attrition and wave non-response are described in section 5.4.

The previous chapter detailed the extent of missingness for each variable used in the study and outlined how some variables containing missing values (e.g. age and the occupation of the main breadwinner) were able to be replaced with values from the baseline wave of SHARE or from SHARELIFE (wave 3). However, as mentioned previously some variables had a substantial proportion of missing data. Carrying out complete case analysis (also known as list-wise deletion) would result in a considerable loss in sample size and therefore a large reduction in statistical power. It could also result in biased

parameter estimates (Graham, 2009b), if the data were missing not at random (MNAR). In terms of missing data mechanisms, MNAR means that the bias arising from missing data is not related to observed data and is of greatest concern because of the potential for biased estimates. If the missing data are related to observed variables (for example, in SHARE older people may be less likely to disclose their income) the mechanism is said to be missing at random (MAR). In certain cases, missing data are of little concern if the observed variables which relate to the missingness are taken into account in the statistical models. Data can also be described as missing completely at random (MCAR), which is a special case of MAR where the missing data are not conditional on either observed or unobserved variables, in this instance complete case analysis results in unbiased estimates (although with a loss of precision due to the decreased sample size) and can therefore be considered sufficient (Graham, 2009b).

As specified in the previous chapter, the variables of most concern were current income and wealth as they contained over 50% missingness. Excluding these cases from the analysis was not an option due to the large reduction in sample size and the considerable potential for biased estimates. These variables were considered to be MAR; their missingness was conditional on observed variables (Christelis, 2011; Mannheim Research Institute for the Economics of Aging, 2011). One common approach to deal with missing data is multiple imputation. Simple imputation is *"the practice of 'filling in' missing data with plausible values"* (Schafer, 1999. p3). Multiple imputation is a technique whereby missing values are substituted for a number of simulated versions (typically 3 to 10), which are derived from statistical models that take into account variables that predict the missingness (McKnight et al., 2007).

The SHARE team provide a dataset combining the results of five rounds of imputation. Further details of the multiple imputation procedure are detailed elsewhere (Christelis, 2011; Mannheim Research Institute for the Economics of Aging, 2011). In brief, the procedure included a subset of 75 demographic and economic variables. As well as imputing the income and wealth variables, the imputed datasets also contained imputed values for education level, limitations with daily activities, and mood variables. Thus, these variables containing imputed values were used throughout this study. Unfortunately, imputations were not produced for other independent variables or the outcome variables. Advice was obtained from members of the SHARE team who

implemented the imputations to see if these variables could be easily incorporated into their imputation models (Christelis, 2013; personal communication). Following their advice, this was not considered feasible due to the complexity of the models and the risk of error involved. Therefore, no further imputation was conducted.

5.4 Weighting procedures

The SHARE team provides a range of weights as part of their data releases (De Luca & Rossetti, 2011). The decision was taken only to use the weights in the descriptive statistics, for example, in the estimates of mean quality of life, and to use unweighted statistical models. The individual calibrated longitudinal weights used in the descriptive statistics were designed to compensate for unit nonresponse and sample attrition in the CAPI interview between Waves 2 and 3, therefore matching the size of national populations of each country born in 1956 or earlier that survived up to 2008 (De Luca & Rossetti, 2011). The decision to not use weights in the statistical models was made following consultation with users of the SHARE data and to maintain consistency with the approaches taken by those who have published using the data, most of which use unweighted data (Brandt et al., 2012) or use weights in the descriptive statistics only (Reinhardt et al., 2013).

SHARE only provides weights for the individual and household level, therefore calculating multilevel models (described in section 5.5.1) without higher level weights could introduce bias, especially when the number higher level units is small (Carle, 2009). Carle (2009) recommends running multilevel models without weights if they cannot be included properly in the estimation. Given the potential for error in this process, the lack of available guidelines for incorporating weights into multilevel models, and the fact that the Stata command used to run the multilevel modes has only recently begun to incorporate the option for weights, the statistical models used unweighted data and this should be kept in mind when interpreting the results. However, SHARE is considered to be a reasonably representative survey and as non-responders and those lost to attrition were likely to be from more disadvantaged socioeconomic groups (Kapteyn et al., 2006; Schröder, 2008), any bias resulting from differential non-response or attrition is likely to underestimate socioeconomic inequalities in quality of life.

5.5 Statistical techniques

This section describes the two main statistical techniques that were used to analyse the data in order to address the research objectives: multilevel modelling (namely random intercept models) and path analysis.

5.5.1 Multilevel modelling

Multilevel modelling was used in the analyses contained in each empirical results chapter. Multilevel models extend single level regression models (which assume that observations are uncorrelated) and are used for analysing data with complex patterns of variability as observed in nested, or hierarchically structured, data (Snijders & Bosker, 2012). Multilevel models take into account the potential non-independence of observations within groups. In the context of this project, multilevel models account for the fact that individuals selected randomly from within one country were more likely to have similar quality of life compared to individuals that were selected randomly from across all 13 countries. They also enable the investigation of between group variability and the factors associated with this variability (Diez Roux, 2002). Without taking into account these sources of variability, the efficacy of the estimates is decreased and the standard errors may be underestimated (Maas & Hox, 2004). It should be noted that, in multilevel models, the groups in the sample are considered to be a random sample from a (real or hypothetical) population of groups and therefore inference can be made to that population of groups (Snijders & Bosker, 2012). Thus, in this study the 13 countries were theoretically viewed as a sample of countries within continental Europe.

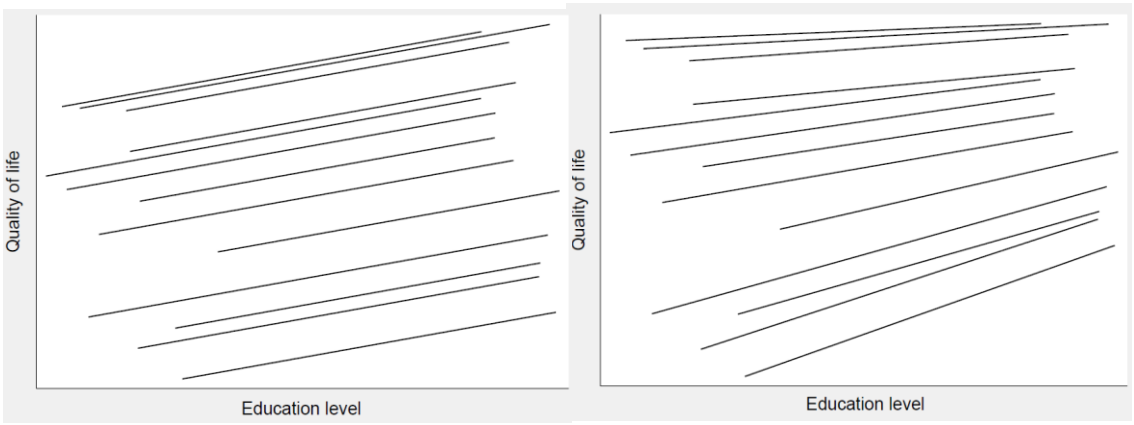
5.5.1.1 Multilevel structure of the data

The data were considered to consist of a two-level hierarchy containing individuals (micro 'level 1' units) nested within countries (macro 'level 2' units). Therefore, variability was considered to be present both between individuals and between countries.

5.5.1.2 Fixed and random effects

Multilevel models contain both fixed and random effects and are therefore often referred to as mixed effects models (Snijders & Bosker, 2012). Fixed effects refer to regression coefficients (intercepts or covariate effects) that are not allowed to vary randomly across higher level units (Diez Roux, 2002). On the other hand, random effects are regression coefficients (intercepts or covariate effects) that are allowed to vary randomly across higher level units. For example, in this study where individuals were nested within countries in a random intercept multilevel model, country effects can be thought to vary randomly around an overall mean within a normal distribution of potential country effects. Thus, in a random intercept model, the mean quality of life in each country is allowed to vary, but if other covariates are included (for example education level) their association with quality of life is assumed to be the same (fixed) in each country. A random slope model allows the effect of the covariates to vary across groups. Figure 5.1 illustrates the difference between random intercept and random slope models.

Figure 5.1: Demonstration of random intercept (left) and random slope (right) multilevel models showing the hypothetical effect of education level on quality of life in different countries (represented by the lines)



5.5.1.3 Number of level two units

A limitation of using multilevel models here was the low number of countries, or level two units. However, the 13 countries included were considered enough to allow the use of multilevel modelling. It is recommended that if the number of higher level groups is less than 10, a single level model with country fixed effects should probably be used (Snijders & Bosker, 2012). However, there is no agreed number of higher level units that is

considered sufficient (Maas & Hox, 2004). Models containing less than 50 level two units have been shown to produce reliable estimates of the regression coefficients, their standard errors, and the variance components. However, biased estimates of the between country variance may result (Maas & Hox, 2005). As the key results of this project were the regression coefficients and not the level two statistics, the benefits of using multilevel modelling were considered to outweigh this risk. However, when results relating to the level two variances are reported, these should be interpreted with caution. Advice was also sought from two statisticians with expertise in multilevel modelling to confirm the appropriateness of this strategy and sensitivity analysis was also conducted using single level regression models.

A number of papers are also published using SHARE data which use multilevel modelling, with as few as 11 countries (Brandt et al., 2012; Hank, 2010; Reinhardt et al., 2013). Often, multilevel models are estimated using maximum likelihood, which is the default estimation method in Stata. Maximum likelihood estimation seeks parameter values that, given the data and the choice of model, produce predicted values which are most comparable to the observed values (Baayen et al., 2008). Snijders & Bosker (2012) recommend the use of restricted maximum likelihood estimation (REML), a variation of maximum likelihood estimation that is more precise and produces less biased standard errors for mixed effects models that contain a low number of higher level groups. Therefore, all multilevel models were estimated using REML.

The low number of countries prevented the optimal use of random slope models (Brandt et al., 2012). However, as this thesis was focused on the overall association between life course socioeconomic position and quality of life and second, differences between welfare regimes, random slope models were not required. The analysis strategy for investigating the influence of the welfare regime is described further in section 5.6.

5.5.1.4 The intraclass correlation

An advantage of using multilevel models is that the total variance in an outcome at the individual level can be partitioned into the variance occurring within, as well as between groups (Diez Roux, 2002). Therefore, in this project the total variance in the mean quality of life across individuals was decomposed into the variance observed within and between

countries. The intraclass correlation is a measure of the internal homogeneity of the level-two units (in this case the country level) according to the outcome variable (Snijders & Bosker, 2012). Here, it can be understood as the proportion of the total variance in quality of life that was accounted for by the country level, or the correlation between the quality of life of two randomly selected individuals from the same randomly chosen country. To calculate the intraclass correlation the population variance between the country units is divided by the total variance, which is composed of the population between-country variance plus the population within-country variance (Snijders & Bosker, 2012).

The intraclass correlation usually varies from 0 to 1, where a value of 0 represents no more variation in quality of life between countries than would be expected by chance. A value of 1 means that all of the variance is due to the grouping variable, thus all individuals within a country would share the same quality of life once the country level variance has been accounted for (Merlo et al., 2005). Hence, an intraclass correlation of 0.1 means that 10% of the variance in quality of life is at the country level. The first step in generating the intraclass correlation is to calculate an empty 'null' model containing only a random intercept for each country and no explanatory variables. In the empty model only the intercepts are allowed to vary across groups, therefore the outcome variable (quality of life) is the sum of the general mean quality of life, a random effect at the group (country) level, and a random effect at the individual level (Diez Roux, 2002; Snijders & Bosker, 2012). Likelihood ratio tests (also known as deviance tests) can also be used to compare the model fit using a multilevel regression model compared to a single level regression model (Baayen et al., 2008).

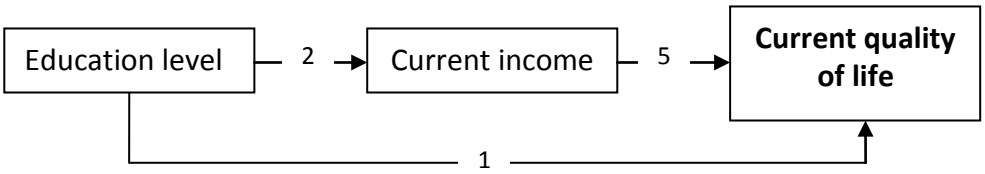
5.5.2 Path analysis

Path analysis is a technique which is part of the structural equation modelling (SEM) family of statistical procedures, which also includes factor analysis. Factor analysis is a method of data reduction, which seeks to group together observed variables, which are correlated, into hypothetical constructs or latent (unobserved) variables (Kline, 2011). Modelling socioeconomic position as a latent variable would be one option for the analysis of the pathway life course model. However, for this analysis, the substantive interest was in the pathways from specific measures of childhood socioeconomic position

to quality of life, which latent variable modelling loses when combining several measures of socioeconomic position into a single variable. Therefore, factor analysis is not considered further.

Path analysis involves the depiction (via a path diagram) of a mathematical model that is hypothesised to explain the correlations amongst observed variables (Olobatuyi, 2006). Path diagrams are used to visually represent the hypothesised relationships between the observed variables. Figure 5.2 displays a simple path diagram whereby an individual's education level is thought to *indirectly* influence their quality of life via their current income (interpretation of the coefficients is explained in section 5.5.2.1 below). In addition, education level and current income are considered to *directly* affect current quality of life. Single headed arrows therefore depict hypothesised causal relationships. Double headed arrows can also be used to indicate covariance between variables, if causality is thought to operate in both directions or the variables are correlated. For example, current income influences current wealth, but current wealth can also generate income. Path analysis has the advantage of being able to test the direct, indirect, and total effects of one variable on another and allows the comparison of the relative contribution of alternative paths of influence (Kline, 2011; Olobatuyi, 2006).

Figure 5.2: A hypothetical example of a path diagram showing associated path coefficients for the influence of different measures of socioeconomic position on quality of life



5.5.2.1 Interpretation of path coefficients

Path coefficients are interpreted in a similar way to regression coefficients. In Figure 5.2 above, hypothetical unstandardised path coefficients are shown on the arrows. The example shows that the path coefficient from education level to current income is two; this means that a one-unit increase in education level is associated with a two-unit increase in current income. Similarly, if the path coefficient from current income to current quality of life is five; a one-unit increase in current income is associated with a

five-unit increase in quality of life. To calculate indirect effects, one multiplies each path coefficient for the direct effect from and to the variables of interest in the pathway. In the above example, the indirect effect from education level through current income is equal to 10 (two multiplied by five). This can be interpreted as the expected increase in quality of life for every one-unit increase in education level via its prior effect on current income. The total effect is simply interpreted as the sum of the direct and indirect effects, which in the example above would be 11 for the effect of education level on quality of life.

5.5.2.2 Estimation

All path models were estimated using maximum likelihood estimation. The decision was made to use single level path analysis, using dummy variables to control for country fixed effects in the pooled analysis across the 13 countries and stratification by welfare regime in the analysis looking at welfare state differences. Although the option for multilevel path analysis was available, it is recommended that this technique is avoided when the number of higher level units is below 100 (Hox & Maas, 2001). This is because inaccurate estimates may arise if the number of higher level groups is small (around 50 is specified) and the intraclass correlation is low. In addition, the residual variances and standard errors may be underestimated. For these reasons, multilevel path analysis was not adopted.

5.5.2.3 Assessment of model fit

In the structural equation modelling literature there are a range of fit statistics that can be used to assess how well hypothesised models fit the data (Hu & Bentler, 1999). MPlus provides several of these in the output generated after running a model. It should be noted that the use of model fit statistics is controversial. Some have argued that the use, particularly the cut-off criteria used to accept or reject models, risks the loss of substantive theory at the expense of meeting arbitrary statistical criteria (Barrett, 2007). Thus, the approach taken in this study was to test the hypothesised path model and report the model fit statistics. Paths were added or removed on the basis of theory, using the fit statistics to inform, but not dictate the final models. Therefore, a brief description of the key model fit statistics is required.

The chi-squared goodness of fit measure assesses the degree of discrepancy between the sample and fitted covariance matrices (Hu & Bentler, 1999). If the difference between the model implied covariances and the observed sample covariances is larger than the expected distribution value by a probability, usually at a 0.05 threshold, the model is considered not to fit the data (Barrett, 2007). However, a weakness of this test is that it is almost always found to be statistically significant (i.e. poor fitting), when using large sample sizes. Other incremental fit tests, such as the comparative fit index and the Tucker Lewis Index, are therefore used as measures of the implied model's fit relative to the null model (von Stumm et al., 2010). These indicate the size of the residual correlations relative to the size of the original correlations (Weiner et al., 2012). Values of above 0.90 and 0.95 have been suggested to indicate good model fit (Hu & Bentler, 1999; McDonald & Ho, 2002). The root mean square error of approximation (RMSEA) is also used as an absolute close-fit index (which indicates the overall extent of the residual correlations); adequate model fit is thought to be indicated by values below 0.06 (Hu & Bentler, 1999; Weiner et al., 2012). In addition, Akaike Information Criteria (AIC) can be used to compare the fit of different nested models when appropriate, for example a path model with and without a particular direct effect. AIC is a measure of the goodness of fit of a statistical model given the data used; the model with the lowest value is considered to indicate better model fit (Hook & Regal, 1997). This can also be used to assess the fit of multilevel models.

5.5.3 A note on statistical significance

Throughout this thesis the conventional levels of statistical significance are used, where P=0.05 (5% significance) indicates there is some evidence against the null hypothesis (for example, socioeconomic position is not associated with quality of life). However, it is recognised that a p-value of 0.05 does not provide strong evidence against the null hypothesis (Sterne et al., 2001) and that just because a p-value is below 0.05, or indeed 0.001, does not necessarily mean that the result is of public health importance. Furthermore, it is appreciated that dichotomising p-values into categories of ‘significant’ and ‘non-significant’ can be problematic, as it may encourage the reader to neglect the continuous nature of probability (Rothman et al., 2008). Thus, the key results in this thesis are supplemented by 95% confidence intervals. The 95% confidence interval for a sample provides an indication of the range of values which are likely to contain the true

population value. Technically, if an infinite series of identical studies were conducted on different independent samples from the same population, 95% of the estimated confidence intervals would include the true population value (Gardner & Altman, 1986). To provide an indication of the relevance for public health policy or practice, the estimated mean differences in quality of life (for example, between the least and most advantaged) are compared with the mean difference in quality of life between those who did and did not report being limited by a health problem. These differences are reported at the start of the results chapters for each respective outcome measure. This is consistent with methods used in previous studies to assess the effect sizes of quality of life measures (Blane et al., 2007a).

5.6 Statistical analyses

This section outlines the analyses conducted as part of this thesis and describes the other techniques implemented. The systematic review demonstrated that the relationship between life course socioeconomic position and quality of life may differ by gender and interactions between gender and some exposure variables were statistically significant (Appendix 5.1). Therefore, all analyses conducted were stratified by gender, but it should be noted that exploring gender differences was not a key objective of this thesis. The distributions of the socioeconomic variables by country, gender, and cohort were also examined.

Differing socioeconomic distributions may be an issue because of the different meanings that specific measures, such as education and occupational position, might hold for different groups of people, or the same groups of people, over time, and in different contexts. It is likely that people compare themselves to those within their group, for example, of the same gender or other people within their own country. Taking education as an example, in this sample 42.8% were classified as highly educated in Denmark, whereas this was the case for 7.6% in Italy (Appendix 5.2 contains the full distributions). Similarly, 18.1% among those born before or during 1945 were in the highest educated category, compared to 24.6% born after 1945. In addition, fewer women (19.3%) were classified in the highest education category compared to men (23.5%).

5.6.1 Slope index of inequality

Slope and relative indices of inequality are one way to address the issue of the different socioeconomic distributions between groups. The slope index of inequality (SII) represents the linear regression coefficient which demonstrates the association between the level of health and wellbeing, or the frequency of a health problem, in each socioeconomic category and the hierarchical ranking of each category in the socioeconomic distribution (Regidor, 2004). Socioeconomic variables can be ranked according to the groups that exhibit different distributions, such as by country, cohort, and gender. As the SII is an absolute measure of health inequality it is sensitive to the mean level of the outcome within the population, or to changes in the frequency of a health problem. Thus, if the population mean quality of life doubled between two time points, the SII would also double. This means that absolute inequalities in quality of life would have increased; but relative inequalities in quality of life remained stable (Munoz-Arroyo & Sutton, 2007). However, as this thesis focused on quality of life at one time point, this is not an issue here. If interested in relative inequalities in a health outcome, the RII can be calculated by dividing the SII by the mean of the outcome, or by dividing the predicted value of the regression at the highest point by the predicted value of the regression at the lowest point (Regidor, 2004). Slope and relative indices of inequality are often used within public health research to provide a summary measure of the level of socioeconomic inequality within a population and to compare between populations, usually using outcomes such as mortality (Kunst & Mackenbach, 1994) or the incidence of particular diseases, such as coronary heart disease (Lawlor et al., 2005b). The method can also be used for continuous measures such as height (Singh-Manoux et al., 2010) or quality of life, as in this project.

5.6.1.1 Calculating the slope index of inequality

The steps involved in the calculation of the slope indices of inequality were as follows:

1. The population of interest was sorted from the least advantaged to the most advantaged for the socioeconomic variable of interest (Table 5.1 displays an example using education level).
2. The number of people in the least advantaged education level category was counted (equal to 3 in the Table 5.1 example).

3. A rank was allocated to those in the least advantaged category, equal to the midpoint of the number of people in lowest group (i.e. equal to 2 in the example).
4. The number of people in the middle category was counted (i.e. 15 for Table 5.1).
5. The rank for this category was calculated from the median for that category (therefore 8 in Table 5.1). This was then added to the cumulative number of people already given a rank (therefore 8+3=11).
6. The above steps were repeated for the most advantaged category.
7. A value of 0.5 was subtracted from the rank as the midpoint was needed.
8. The ranks were then divided by total number of individuals in the population of interest to generate a standardised socioeconomic rank (Figure 5.3) ranging from 0 (the least advantaged) to 1 (the most advantaged).
9. The SII was obtained by regressing the outcome on the standardised socioeconomic rank.

Figure 5.3: Hypothetical example illustrating the derivation of the education level rank scores

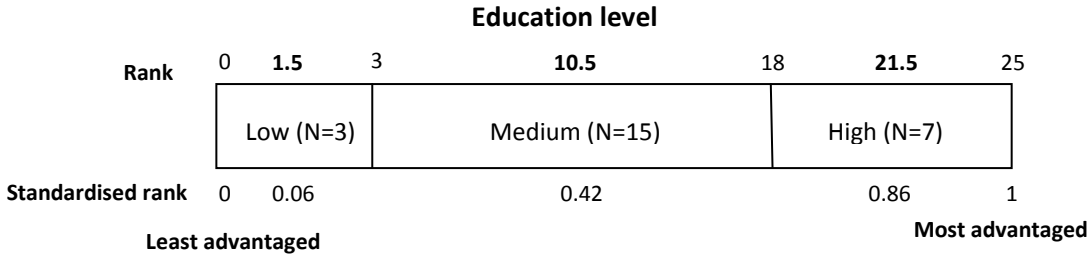


Table 5.1: Illustrative example of the derivation of the socioeconomic rank required to calculate the slope index of inequality

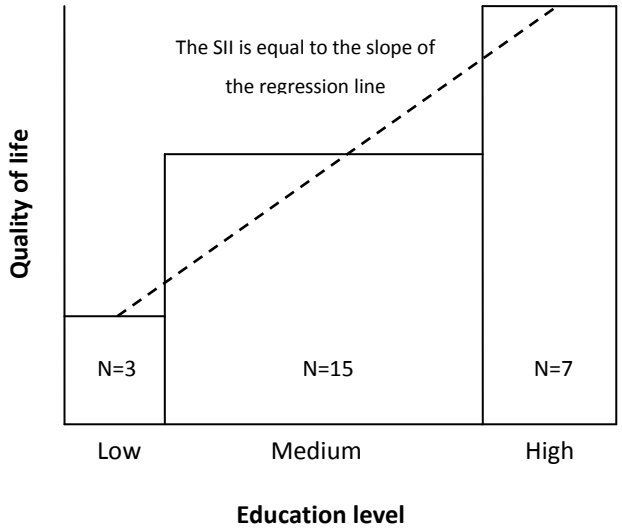
ID	Education level	Education rank	Education rank – 0.5	Education rank (standardised)
1	Low	2	1.5	0.06
2	Low	2	1.5	0.06
3	Low	2	1.5	0.06
4	medium	11	10.5	0.42
5	medium	11	10.5	0.42
6	medium	11	10.5	0.42
7	medium	11	10.5	0.42
8	medium	11	10.5	0.42
9	medium	11	10.5	0.42
10	medium	11	10.5	0.42
11	medium	11	10.5	0.42
12	medium	11	10.5	0.42
13	medium	11	10.5	0.42
14	medium	11	10.5	0.42
15	medium	11	10.5	0.42
16	medium	11	10.5	0.42
17	medium	11	10.5	0.42
18	medium	11	10.5	0.42
19	High	22	21.5	0.86
20	High	22	21.5	0.86
21	High	22	21.5	0.86
22	High	22	21.5	0.86
23	High	22	21.5	0.86
24	High	22	21.5	0.86
25	High	22	21.5	0.86

5.6.1.2 Interpretation

The SII can be interpreted as the difference in mean quality of life between the hypothetically most and least advantaged according to the socioeconomic rank scores, which take into account the whole socioeconomic distribution and size of the categories. Figure 5.4 provides a hypothetical illustration of the SII for education level. The regression line, drawn through the midpoints of the categories of education, has a positive slope which indicates that the SII is positive; inequalities in quality of life by education level are apparent. If the regression line was horizontal and therefore the SII would equal zero, this would indicate that no inequality in quality of life by education level was present. It

should be noted that the continuous socioeconomic variables (number of rooms per capita in childhood, current income and wealth) were ranked in a similar manner to the categorical variables. For example, in step 2 above, the number of people who had the lowest value were counted and given the midpoint based on the number of people with this value, and so on. These variables were not reduced to categorical variables as this would have resulted in a loss of information and less precise SII estimates.

Figure 5.4: Demonstration of the slope index of inequality (SII)



In this project the socioeconomic variables were ranked separately by country, gender, and birth cohort (grouped into those born before or during 1945 and those born after 1945) to take into account their differing socioeconomic distributions. It should be noted that there are several documented ways to calculate the SII. For example, depending on the outcome, some studies rank the socioeconomic variable from the most advantaged to the least advantaged (Regidor, 2004). However, to help the interpretation of the SIIs here, the socioeconomic variables were ranked from the least advantaged to the most advantaged so that if the least advantaged have lower quality of life compared to the most advantaged, the SIIs would be positive.

5.6.1.3 Advantages and disadvantages

A key advantage of the SII is that it takes into account the whole socioeconomic distribution and is not just a comparison of those at the extreme ends of the distribution

(Lawlor et al., 2005a; Singh-Manoux et al., 2010). SIIs easily allow the association between different measures of socioeconomic position and health outcomes to be compared between different groups, as they are all put onto the same scale.

There are a few disadvantages relating to the use of SIIs. First, the socioeconomic variables must be ordered hierarchically (Regidor, 2004). Therefore, measures of social class not considered hierarchical would be unsuitable; for example the more detailed versions of the National Statistics Socio-economic Classification (NS-SEC) for use within the United Kingdom (Chandola & Jenkinson, 2000) and the equivalent European Socio-economic Classification (E-SEC) (Rose et al., 2001). Second, the exposure and outcome should be reasonably linearly related, otherwise the estimates may become invalid (Regidor, 2004).

5.6.2 Summary of empirical results chapters

As detailed in the previous chapter, the two outcomes examined were CASP-12 and life satisfaction. Results are presented for CASP-12 in the first three empirical results chapters and those for life satisfaction are reported in the final three. The analysis plan outlined below therefore corresponds to both outcomes. Each results chapter is structured into two main sections: results from the overall associations and results looking at the influence of the welfare regime. Table 5.2 summarises the contents of each empirical results chapter.

Table 5.2: Contents of the empirical results chapters

Chapter	Outcome	Results chapter contents	Key sections
6	CASP-12	Independent associations between different measures of socioeconomic position from across the life course and CASP-12	Overall results; Influence of the welfare regime
7	CASP-12	Pathway and latent effects	Overall results; Influence of the welfare regime
8	CASP-12	Cumulative and social mobility effects; Mediating factors	Overall results; Influence of the welfare regime
9	Life satisfaction	Independent associations between different measures of socioeconomic position from across the life course and life satisfaction	Overall results; Influence of the welfare regime
10	Life satisfaction	Pathway and latent effects	Overall results; Influence of the welfare regime
11	Life satisfaction	Cumulative and social mobility effects; Mediating factors	Overall results; Influence of the welfare regime

5.6.3 The independent associations between different measures of socioeconomic position from across the life course and quality of life in early old age (chapters 6 and 9)

5.6.3.1 Objectives

The objectives of these chapters were to:

- Investigate the independent influence of different measures of socioeconomic position from across the life course on quality of life in early old age.

- Examine the role of the welfare regime in moderating the relationship between different measures of socioeconomic position and quality of life in early old age.

5.6.3.2 Overall results

First, mean quality of life scores were examined by each measure of socioeconomic position from childhood and adulthood. The occupational measures of socioeconomic position were examined using the three classification schemes outlined in the previous chapter: manual versus non-manual, skill level, and occupational prestige. Additionally, occupations from four stages of the life course were looked at: childhood (using the occupation of the main breadwinner when the respondent was aged 10 years), 16 to 34 years, 35 to 49 years, and 50 to 65 years. The main occupation (longest held job) was also included to investigate whether looking at the different time points was informative. Pearson's correlation coefficients were used to investigate the correlation between the continuous measures of socioeconomic position and quality of life. This analysis was conducted to examine whether socioeconomic gradients in quality of life were apparent across each measure of socioeconomic position and investigate any major deviations from linearity that would preclude the calculation of the slope indices of inequality. Random intercept multilevel models were then run to calculate the slope index of inequality for each measure of socioeconomic position, adjusted for age and age-squared.

5.6.3.3 The influence of the welfare regime

The above descriptive analyses were repeated stratifying by welfare regime. The decision was made to concentrate analysis on the skill level of the childhood and main occupational variables as the above analysis looking at different stages of the working life indicated that the main occupational skill level adequately captured the association between life course occupational position and quality of life.

Following the descriptive analysis, random intercept multilevel models controlling for age and age-squared, and including interaction terms between the welfare regime (using dummy variables) and the socioeconomic variables (using the standardised socioeconomic ranks), were calculated. The Scandinavian regime was used as the reference category in all multilevel models, as it could be considered to be the most egalitarian. To aid interpretation of the interactions, Stata's 'margins' command was used to predict mean quality of life scores by the standardised socioeconomic rank for each welfare regime (Williams, 2011). The predicted means were derived from the

average of the predicted values for each individual using the estimates from the multilevel models, holding the covariates constant. Mean quality of life scores were predicted for the socioeconomic rank values ranging from 0 (least advantaged) to 1 (most advantaged), in intervals of 0.1. These were then graphed using the 'marginsplot' command in Stata. In addition, to help compare the slope indices of inequality between welfare regimes, stratified analysis of single level age-adjusted regression models were calculated separately for each welfare regime and including country fixed effects (dummy variables using Sweden as the reference category).

A number of sensitivity analyses were carried out. Women who reported looking after the home or family during their working life[2] and for which occupational information could not be obtained from their partner were included in a sensitivity analysis using the non-occupational measures of socioeconomic position. This was performed to investigate whether the exclusion of previous homemakers was unduly biasing the substantive results for women. In addition, to examine whether any one country was excessively influencing the results, the models were run excluding each country in turn.

5.6.4 Latent and pathway effects from childhood socioeconomic position to quality of life in early old age (chapters 7 and 10)

5.6.4.1 Objectives

The objectives of these chapters were to:

- Explore potential latent and pathway effects from childhood socioeconomic position to quality of life in early old age.

- Investigate the relationships by welfare regime.

[2] Note that individuals who reported they were currently looking after the home or family were included in the overall analysis if their own (or their partner's) previous occupational information was available.

5.6.4.2 Overall results

First, the overall Pearson's correlation coefficients between the measures of socioeconomic position were examined (converted to standardised socioeconomic ranks as described above). This was done to check whether any correlation coefficients were considered too high, which could indicate collinearity issues. The statistical models calculated in this chapter were at risk of multicollinearity, as they contained multiple measures of socioeconomic position. Therefore, this issue is explored in further detail.

Multicollinearity is "*an interdependency condition that can exist quite apart from the nature, or even the existence, of dependence between X and y"* (Farrar & Glauber, 1967: p93). In other words, multicollinearity is a problem arising from statistical models which contain independent variables that are highly correlated. Although independent variables in a model are often weakly correlated, problems may arise if the correlation between variables exceeds around 0.8 (Farrar & Glauber, 1967). If severe, multicollinearity can result in estimates that have increased variance, which leads to the greater likelihood of accepting the null hypothesis (Rockwell, 1975).

In this study, multicollinearity could be present in models containing multiple measures of socioeconomic position. Thus, it was important to investigate whether this was going to be an issue in the statistical models. Several practices are recommended to assess the degree of multicollinearity. As well as examining the correlations between the explanatory variables, the variance inflation factor (VIF) can be calculated. The VIF provides a practical measure of the effects of multicollinearity on the variance of the specific regression coefficients (O'Brien, 2007). A VIF of around 10 is often used as a criterion indicating that multicollinearity may be an issue. However, this is arbitrary and O'Brien (2007) has argued that VIFs of even 40 or over do not discount the results of regression analyses and does not imply that independent variables should be removed from the model or be combined into a single index.

Examination of the correlation coefficients between the standardised socioeconomic ranks relating to each measure of socioeconomic position demonstrated that none of the correlations were above 0.5, the strongest being found between the skill level of the main occupation and education level (full results are discussed in chapter 7). The Stata

command 'collin' provides estimates for the VIF. Examining all of the measures of socioeconomic position together, demonstrated that the VIFs were below 10, the recommended value that may indicate multicollinearity requires further investigation (Table 5.3). Therefore, multicollinearity was not considered to be an issue in the statistical models.

Table 5.3: Multicollinearity assessment for the measures of socioeconomic position (using their standardised socioeconomic ranks)

Variable	VIF
Childhood	
Number of books	1.43
Rooms per capita	1.16
Amenities in household	1.31
Occupation of main breadwinner (skill level)	1.19
Adulthood	
Education level	1.45
Main occupation (skill level)	1.37
Current income	1.22
Current wealth	1.17
Mean VIF	**1.29**

VIF=variance inflation factor

Next, models were calculated to see whether associations between the measures of childhood socioeconomic position and quality of life remained after including adulthood socioeconomic position variables. This was achieved by assessing the association between each measure of childhood socioeconomic position and quality of life, and comparing these models with further models that added adulthood measures of socioeconomic position in a stepwise fashion. If the association between childhood socioeconomic position and quality of life is attenuated and no longer statistically associated after including adulthood socioeconomic position, it is suggestive of a pathway effect. Whereas, if the association remains statistically significant it suggests there may be a latent effect. However, the two processes can operate together (as discussed in chapter 1). Next, all measures of socioeconomic position from across the life course were included in a model to examine which measures of socioeconomic position were most strongly associated with quality of life.

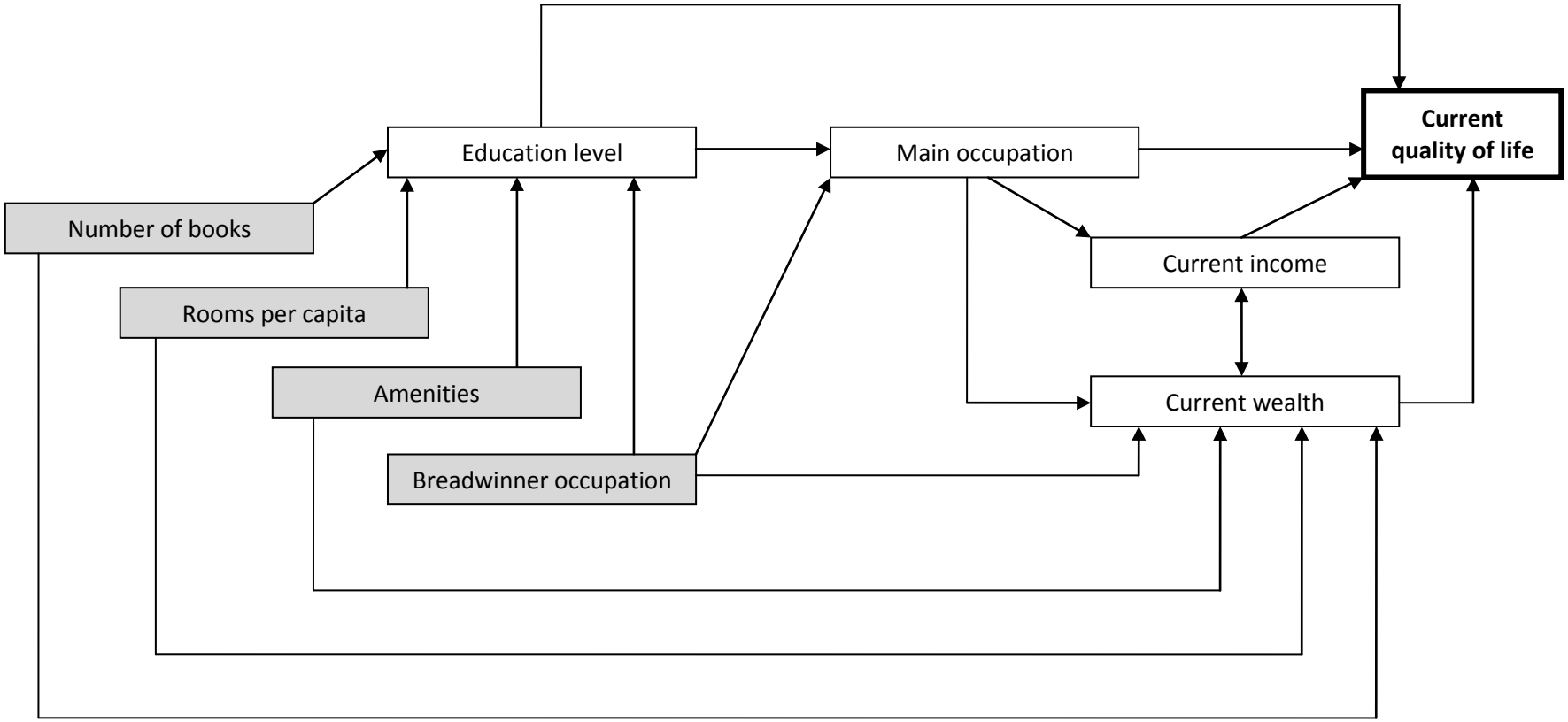
Following this, a path analysis approach was used to test a base model of the hypothesised relationships between the socioeconomic variables, as well as their

influence of quality of life. The first step in a path analysis involves drawing a path diagram, which is a visual representation of the hypothesised relationships between the observed variables (Figure 5.5). The path diagram shows that the measures of childhood socioeconomic position were hypothesised to influence quality of life in early old age indirectly via the respondent's education level, main occupation, current income, and wealth. The education level, main occupation, current income, and wealth variables were hypothesised to have direct effects on quality of life. In addition, the model allows the occupation of the main breadwinner in childhood to have a direct effect on the respondent's main occupation. The childhood measures of socioeconomic position were also allowed to influence current wealth, because wealth may have been inherited inter-generationally. In addition, the childhood socioeconomic variables were allowed to correlate with one another. The respondent's education level was considered to influence their main occupation, which then influenced their current income and current wealth. Income was also allowed to influence wealth and vice versa. This theoretically driven model facilitated investigation of the pathway from childhood socioeconomic position and quality of life. The addition of direct effects from the childhood socioeconomic position variables to current quality of life then allowed the examination of latent (direct) effects from childhood. The model fit can also be compared to the base model in order to see which model fitted the data best. To calculate the direct, indirect, and total effects from childhood socioeconomic position to quality of life, the model which included any statistically significant direct paths from childhood socioeconomic position to quality of life was used, removing direct effects from childhood which were not statistically significant. All path models were controlled for age and country (fixed) effects.

5.6.4.3 The influence of the welfare regime

To investigate differences in pathway and latent effects by welfare regime, the above analyses were repeated separately for each welfare regime.

Figure 5.5: Path diagram showing the hypothesised relationships between the observed variables



Grey boxes indicate measures of childhood socioeconomic position; model also allows the measures of childhood socioeconomic position to be correlated but these are not shown in the diagram

5.6.5 Cumulative and social mobility effects over the life course and quality of life in early old age (chapters 8 and 11)

5.6.5.1 Objectives

The objectives of these chapters were to:

- Explore potential cumulative and social mobility effects of socioeconomic position over the life course on quality of life in early old age.

- Examine potential factors which may explain a relationship between life course socioeconomic position and quality of life in early old age.

- Investigate the relationships by welfare regime.

5.6.5.2 Generation of childhood, adulthood, and cumulative socioeconomic advantage scores

The creation of socioeconomic advantage scores for childhood and adulthood allowed exploration of the change in socioeconomic circumstances across the life course. Additionally, the cumulative score was used to test whether increased cumulative socioeconomic advantage over the life course is related to higher quality of life in early old age. Two different methods were used to create the scores; these are described in turn.

Binary method

The first method was used only in the descriptive statistics and to check the construct validity of the standardised rank method, described below. The binary method involved converting the eight measures of socioeconomic position used in the previous chapter into binary variables, where 0 related to socioeconomic disadvantage and 1 related to socioeconomic advantage. The conversion of the measures of socioeconomic position into binary variables is detailed in Appendix 5.3. For example, if the respondent's main occupation was manual they were given a score of 0 and if it was non-manual they were given a score of 1. The binary variables were then summed to generate a socioeconomic

advantage score, ranging from 0 to 4 for the childhood and adulthood scores and from 0 to 8 for the cumulative (life course) socioeconomic advantage score. Each exposure to socioeconomic advantage was hypothesised to contribute to higher quality of life in a similar manner; therefore no weights were used to calculate the socioeconomic advantage scores. Throughout this thesis, the socioeconomic advantage scores generated by the binary variables are referred to as the 'binary method'.

Standardised rank method

The second method used to generate the socioeconomic advantage scores involved summing together the standardised socioeconomic ranks (the derivation of which was described in section 5.6.1.1). These socioeconomic ranks take into account the different socioeconomic distributions by country, gender, and cohort. As above, the socioeconomic ranks were calculated for the four childhood socioeconomic variables and the four adulthood socioeconomic variables, and these were summed to generate a cumulative (life course) socioeconomic advantage score. The method used to generate the socioeconomic advantage scores is illustrated with an example below.

Figure 5.6 demonstrates the derivation of the education level rank score from the example in 5.6.1.1. In this scenario, the least advantaged category has three individuals and thus the mid-point (i.e. the median number of people in that category) is 1.5. With a total sample size of 25 people, standardisation to a scale from 0 to 1 (1.5÷25) gives a rank of 0.06 for the education component of the socioeconomic advantage score.

Figure 5.6: Demonstration of the derivation of the education level standardised rank score

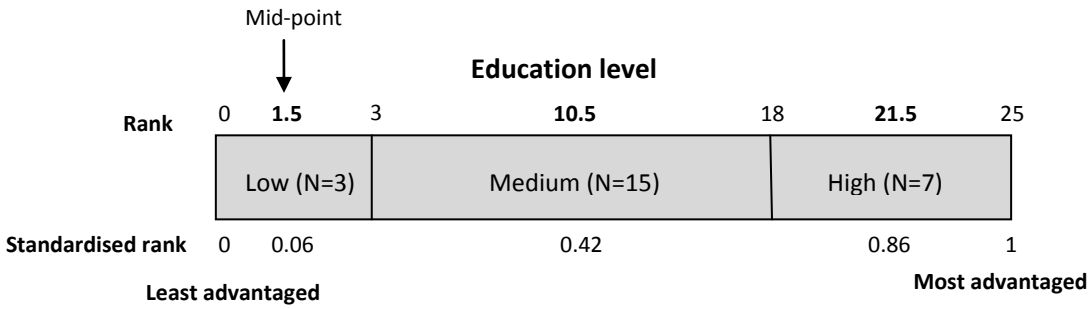
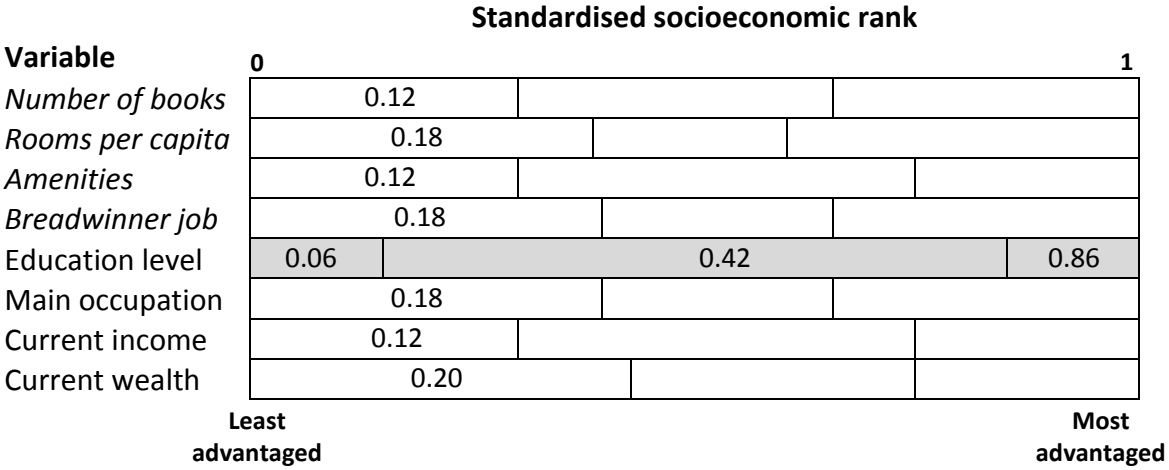


Figure 5.7 demonstrates how the socioeconomic advantage scores were derived from the sum of the relevant individual component socioeconomic rank scores. Each socioeconomic variable is portrayed as containing three levels (e.g. low, medium, and high education) and in this example, an individual is assumed to be in the least advantaged category for each socioeconomic variable. Their value on the childhood socioeconomic advantage score (ranging from 0 to 4) would be 0.60, which reflects the sum of the standardised ranks for the childhood socioeconomic variables. Similarly, their score on the adulthood socioeconomic advantage score (ranging from 0 to 4) would be 0.56, equal to the sum of the standardised ranks for the adulthood socioeconomic variables. Their score on the cumulative score (ranging from 0 to 8) would therefore be 1.16, equal to the sum of the standardised ranks for all eight socioeconomic variables from across the life course. Throughout the thesis, this method to generate the socioeconomic scores is referred to as the 'standardised rank method'.

Figure 5.7: Illustration of the standardised rank method used to generate the childhood, adulthood and cumulative socioeconomic advantage scores

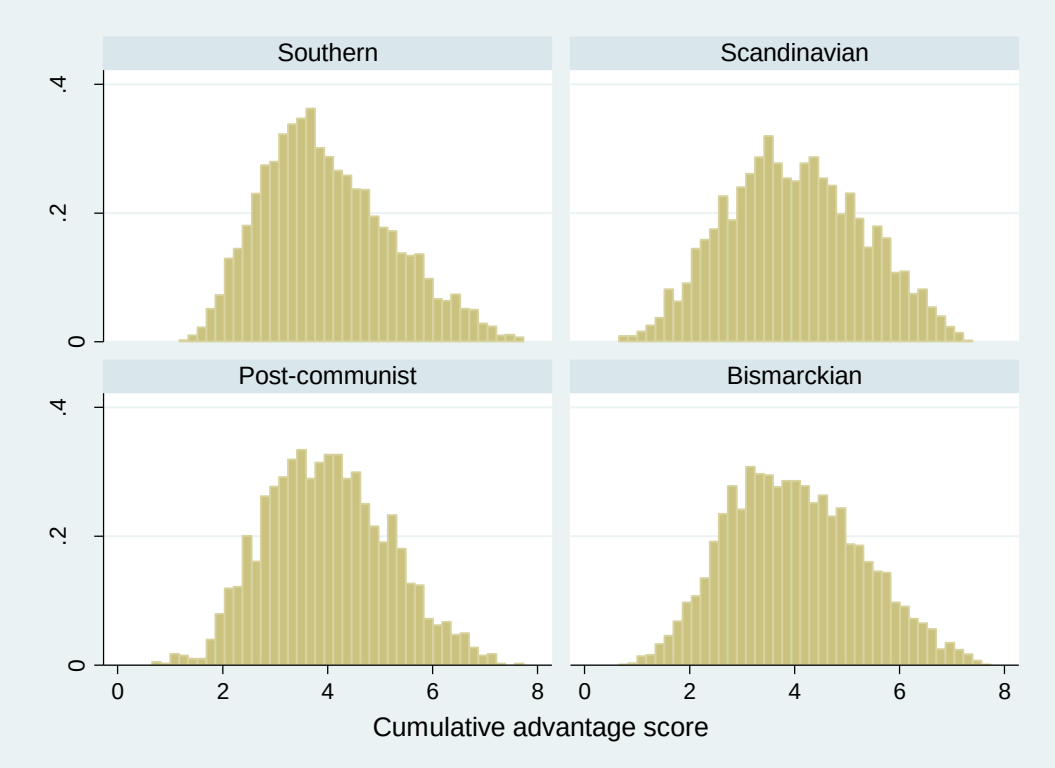


Variables in italics indicate those corresponding to childhood
Childhood socioeconomic advantage score = 0.12 + 0.18 + 0.12 + 0.18 = 0.60
Adulthood socioeconomic advantage score = 0.06 + 0.18 + 0.12 + 0.20 = 0.56
Cumulative socioeconomic advantage score = 0.12 + 0.18 + 0.12 + 0.18 + 0.06 + 0.18 + 0.12 + 0.20 = 1.16

The cumulative advantage score generated via the standardised rank method was highly correlated (r= 0.83) with the equivalent score generated using the binary method, demonstrating construct validity. It also correlated with the childhood (r=0.84) and adulthood (r=0.85) socioeconomic advantage scores generated using the standardised rank method. Additionally, the cumulative advantage score was normally distributed

(Figure 5.8) and displayed the expected relationship with the current ability to make ends meet variable. Those who reported that the household had great difficulty making ends meet had a mean cumulative advantage score of 3.4 (SD=1.1) and those reporting they were easily able to make ends meet had a mean score of 4.6 (SD=1.3).

Figure 5.8: Distribution of the cumulative (life course) socioeconomic scores by welfare regime



Measuring social mobility

Inter- and intra-generational mobility

Inter-generational mobility was defined as a change in the occupational position between childhood (occupation of main breadwinner) and adulthood (the respondent's main occupation). Intra-generational mobility was considered as a movement in the occupational position between the occupation at aged 16 to 34 years and aged 35 to 49 years. Intra-generational mobility was also examined using occupations at aged 35 to 49 years to aged 50 to 65 years, but the prevalence of mobility between these points in the life course was low. Therefore, it was decided to concentrate analyses on mobility between the ages of 16 to 34 years and 35 to 49 years. The occupational variables were used in their manual versus non-manual classification for clarity in grouping into upward

and downward mobility categories because there is a clear distinction between the advantaged (non-manual) and disadvantaged (manual).

Social mobility using the socioeconomic advantage scores

The other method used to measure social mobility involved first categorising individuals into advantaged or disadvantaged groups. For both the childhood and adulthood socioeconomic advantage scores (derived using the standardised rank method), individuals scoring less than or equal to two (the median value) were classified as socioeconomically disadvantaged and those scoring more than two were classified as socioeconomically advantaged. Individuals were then grouped into the following socioeconomic trajectories: disadvantaged-disadvantaged; advantaged-disadvantaged; disadvantaged-advantaged; advantaged-advantaged.

5.6.5.3 Overall results

Cumulative advantage over the life course and quality of life in early old age

First, mean quality of life scores were examined according to the childhood, adulthood, and cumulative socioeconomic advantage scores derived using the binary method. In addition, Pearson's correlation coefficients were calculated for the association between the socioeconomic advantage scores (derived using the standardised rank method) and quality of life. This was carried out in order to investigate whether there was evidence for a linear relationship between increased socioeconomic advantage and increased quality of life.

Age-adjusted multilevel models were then calculated for the association between the socioeconomic advantage scores (derived using the standardised rank method) and quality of life. The predicted mean quality of life scores were then calculated (as above) and the results for these were then graphed to aid interpretation.

Descriptive statistics were then calculated for each potential explanatory factor: employment status, ability to make ends meet, limitations with daily activities, mood, and marital status. Age-adjusted multilevel models were calculated looking at how each factor independently influenced the association between the cumulative socioeconomic advantage score and quality of life. Then fully adjusted models were calculated.

Social mobility over the life course and quality of life in early old age

Inter- and intra-generational mobility

First, the rates of inter- and intra-generational social mobility were examined and then mean quality of life scores by social mobility status were investigated. In age-adjusted multilevel models, the inter- and intra-generational mobility hypotheses were tested by including interaction terms between the occupational variables. The analysis was run using both binary manual versus non-manual occupational variables and then using their standardised socioeconomic ranks.

Social mobility using the socioeconomic advantage scores

Mean quality of life scores were calculated according to socioeconomic advantage and disadvantage during childhood, adulthood, and across the life course. Descriptive statistics for the socioeconomic trajectories were calculated. Following this, age-adjusted multilevel models were calculated to investigate the association between the socioeconomic trajectories and quality of life. In addition, age-adjusted multilevel models including interaction terms between childhood and adulthood socioeconomic advantage and disadvantage were calculated.

5.6.5.4 The influence of the welfare regime

Cumulative advantage over the life course and quality of life in early old age

The above descriptive analyses were repeated, stratifying by welfare regime. For the multivariate analyses, interaction terms between the socioeconomic advantage scores (childhood, adulthood, and cumulative) and the welfare regime type were included to see if the type of welfare regime modified associations between the experience of socioeconomic advantage and quality of life. Stratified single level regression models by welfare regime were performed to investigate the role of the potential mediating variables in the relationship between the cumulative advantage over the life course and quality of life.

Social mobility over the life course and quality of life in early old age

To test the social mobility theory, models containing interaction terms between advantage and disadvantage at the two time points were run stratifying by welfare regime (including age and country effects). Due to the low number of individuals who experienced intra-generational mobility, stratifying this analysis by welfare regime and gender was problematic. Therefore, it was decided to concentrate on the experience of inter-generational mobility in different welfare regimes and the experience of different socioeconomic trajectories derived using the socioeconomic advantage scores. In addition, as noted in the systematic review, studies investigating inter-generational mobility were particularly lacking.

5.7 Chapter summary

This chapter has documented the methods used to answer the specific objectives of the thesis. The next chapter presents the results for the first set of empirical analyses, which examined the independent associations between different measures of socioeconomic position from across the life course and CASP-12 in early old age. It also investigates the influence of the welfare state regime on these associations.

6. The independent associations between different measures of socioeconomic position from across the life course and CASP-12

6.1 Chapter introduction

This chapter presents results from the first stage of analysis, which involved examining the age-adjusted independent associations between different measures of socioeconomic position from across the life course and CASP-12 in early old age. It also investigated the influence of the welfare regime on these relationships. Chapter 5 (section 5.6.3) outlined the analysis contained in this chapter.

The objectives of this chapter were to:

- Investigate the independent influence of different measures of socioeconomic position from across the life course on CASP-12 in early old age.

- Examine the role of the welfare regime in moderating the relationship between different measures of socioeconomic position and CASP-12 in early old age.

6.1.1 Interpreting effect sizes

Measures of quality of life have been criticised because it is difficult to gauge the size of the effect of an exposure on quality of life outcomes (Howel, 2012). For CASP, researchers have compared the effect size of an exposure to the difference in mean values between people who do and do not report have a limiting long-term illness (Blane et al., 2007a; Blane et al., 2012). Therefore, this approach is taken in this thesis. Among men, the difference in mean CASP-12 scores between those who did and did not report being limited by a health condition was 3.46, and among women 3.78. The Post-communist regime had the largest differences and the Scandinavian regime the narrowest (Table 6.1). These differences should be kept in mind when interpreting the results throughout the chapters focusing on CASP-12.

Table 6.1: Difference in mean CASP-12 between those who did and did not report being limited by a health condition, by welfare regime and gender

All	Southern	Scandinavian	Post-communist	Bismarckian
Men				
3.46	4.17	2.61	4.44	2.98
Women				
3.78	4.38	2.88	4.58	3.15

6.2 Overall results

The total sample for this analysis comprised 14,789 individuals, of which 52.0% (N=7,690) was female.

6.2.1 Descriptive statistics

6.2.1.1 Mean CASP-12 by welfare regime

The overall mean CASP-12 score for the sample was 37.5 (SD=5.9). Men had higher scores compared to women ($t=7.3$, $p<0.01$). Highest CASP-12 scores were found in the Scandinavian regime and the lowest in the Southern regime (Table 6.2).

Table 6.2: Descriptive statistics for CASP-12 by welfare regime

	Men			Women		
Welfare regime	**N**	**Mean CASP**	**SD**	**N**	**Mean CASP**	**SD**
Southern	**2,078**	**36.1**	**5.6**	**1,997**	**34.8**	**6.1**
Spain	495	37.9	5.4	498	36.3	6.0
Italy	784	35.1	5.5	793	33.8	6.1
Greece	799	35.9	5.3	706	34.4	5.4
Scandinavian	**1,185**	**40.5**	**4.2**	**1,298**	**40.3**	**4.5**
Sweden	492	40.0	4.2	581	39.7	4.4
Denmark	693	41.2	4.1	717	41.4	4.5
Post-communist	**999**	**36.5**	**5.8**	**1,341**	**35.1**	**6.1**
Czech Republic	565	35.9	5.4	766	34.9	5.5
Poland	434	36.7	5.9	575	35.2	6.4
Bismarckian	**2,837**	**39.4**	**5.3**	**3,054**	**38.8**	**5.4**
Austria	203	39.3	5.4	236	38.4	5.9
Germany	508	39.7	5.2	540	39.4	4.7
Netherlands	600	40.8	4.6	625	41.1	4.3
France	488	38.4	5.7	568	37.1	6.2
Switzerland	329	41.1	4.5	374	40.8	4.3
Belgium	709	38.9	5.5	711	37.8	5.9
Total	**7,099**	**38.0**	**5.7**	**7,690**	**37.1**	**6.1**

N=number of individuals; SD=standard deviation

6.2.1.2 Mean CASP-12 by socioeconomic position (non-occupational measures)

Mean CASP-12 scores among both genders mostly increased with increased socioeconomic advantage (Table 6.3). Among women, the highest mean CASP-12 scores by the number of books in childhood were not found in the most advantaged category; individuals reporting having 101 to 200 books in childhood exhibited the greatest scores. But, this difference was considered very minor. All tests for linear trends were statistically significant ($p<0.05$) for the ordinal measures of socioeconomic position. The number of rooms per capita in the respondent's accommodation during childhood displayed a positive correlation with CASP-12 and was slightly stronger among women. This was also observed for the current household income and wealth variables.

Table 6.3: Descriptive statistics for CASP-12 by childhood and adulthood socioeconomic position (non-occupational measures)

	Men				Women			
	N	%	Mean CASP	SD	N	%	Mean CASP	SD
Childhood								
Number of books (p<0.001 for linear trend among both men and women)								
0-10	2,985	42.1	**36.9**	6.0	2,929	38.1	**35.4**	6.5
11-25	1,633	23.0	**38.4**	5.4	1,812	23.6	**37.5**	5.7
26-100	1,562	22.0	**39.0**	5.3	1,862	24.2	**38.6**	5.3
101-200	457	6.4	**39.4**	5.0	569	7.4	**39.3**	5.0
+ 200	462	6.5	**39.8**	4.8	518	6.7	**39.1**	4.9
Rooms per capita [a]	-	-	**0.15**	<0.001	-	-	**0.18**	<0.001
Amenities (p<0.001 for linear trend among both men and women)								
0	1,785	25.1	**36.5**	6.0	1,845	24.0	**35.0**	6.4
1	1,401	19.7	**37.8**	5.6	1,458	19.0	**37.0**	5.9
2	1,164	16.4	**38.2**	5.8	1,215	15.8	**37.1**	5.9
3	917	12.9	**39.0**	5.4	1,051	13.7	**38.2**	5.8
4	725	10.2	**39.0**	4.9	891	11.6	**38.6**	5.4
5	1,107	15.6	**39.1**	5.3	1,230	16.0	**38.9**	5.4
Adulthood								
Education level (p<0.001 for linear trend among both men and women)								
low	2,864	40.3	**36.6**	6.0	3,526	45.9	**35.3**	6.5
medium	2,567	36.2	**38.5**	5.4	2,684	34.9	**38.0**	5.4
high	1,668	23.5	**39.4**	5.1	1,480	19.3	**39.5**	4.8
Household income [a]	-	-	**0.15**	<0.001	-	-	**0.17**	<0.001
Household wealth [a]	-	-	**0.11**	<0.001	-	-	**0.12**	<0.001

N=number of individuals; SD=standard deviation; [a] Continuous variable showing associated correlation coefficient and p-value

6.2.1.3 Mean CASP-12 by socioeconomic position (occupational measures)

Manual versus non-manual classification

At each life course stage, individuals with a manual occupation had lower mean CASP-12 scores compared to those in a non-manual position (Table 6.4). The difference in mean CASP-12 scores between manual and non-manual occupations generally increased with increased age at which the occupation corresponded to. This was mainly related to lower CASP-12 scores among those in manual positions, with the non-manual group showing little variation. Larger differences in CASP-12 scores were observed between those in manual and non-manual occupations among women compared to men. The main job

also appeared to adequately capture the difference in mean CASP-12 scores between manual and non-manual occupations and was likely due to the low extent of intra-generational mobility in the sample (this is returned to in chapter 8).

Table 6.4: Descriptive statistics for CASP-12 by manual or non-manual occupation across the life course

	Men				Women			
	N	%	Mean CASP	SD	N	%	Mean CASP	SD
Childhood (occupation of main breadwinner)								
Manual	5,202	73.3	**37.7**	5.8	5,547	72.1	**36.7**	6.2
Non-manual	1,897	26.7	**38.9**	5.3	2,143	27.9	**38.0**	5.6
16 to 34 years								
Manual	3,876	54.6	**37.3**	5.9	3,137	40.8	**35.5**	6.3
Non-manual	3,223	45.4	**38.9**	5.3	4,553	59.2	**38.3**	5.6
35 to 49 years								
Manual	3,422	48.2	**37.1**	6.0	2,891	37.6	**35.3**	6.4
Non-manual	3,677	51.8	**38.9**	5.3	4,799	62.4	**38.2**	5.6
50 to 65 years								
Manual	3,334	47.0	**37.0**	6.0	2,844	37.0	**35.3**	6.3
Non-manual	3,765	53.0	**38.9**	5.3	4,846	63.0	**38.2**	5.6
Main job								
Manual	3,439	48.4	**37.1**	5.9	2,918	38.0	**35.3**	6.4
Non-manual	3,660	51.6	**38.8**	5.3	4,772	62.1	**38.2**	5.6

N=number of individuals; SD=standard deviation

Occupational skill level

There was a positive socioeconomic gradient in CASP-12 by occupational skill level at most of the life course stages investigated (Table 6.5). Among women, occupation at aged 16 to 34 years was the only time point where a socioeconomic gradient in CASP-12 was less apparent; those in the third skill level (corresponding to technicians and associate professionals) had higher mean CASP-12 scores compared to the highest skill level (corresponding to professionals, legislators, senior officials, and managers). As with the manual versus non-manual classification, a general widening of mean CASP-12 scores between the lowest and highest skill levels was found with increased age at occupation. However, this widening was not considered to be large. Differences in CASP-12 between the highest and lowest skilled were also more apparent among women. Results from the main job suggest this measure adequately captured differences in CASP-12 by skill level from across the working life.

Table 6.5: Descriptive statistics for CASP-12 by occupational skill level across the life course

	Men				Women			
	N	**%**	**Mean**	**SD**	**N**	**%**	**Mean**	**SD**
Childhood (p<0.001 for linear trend among both men and women)								
1 (low)	1,211	17.1	**36.7**	5.8	1,316	17.1	**35.3**	6.7
2	4,963	69.9	**38.0**	5.7	5,335	69.4	**37.3**	5.9
3	339	4.8	**39.6**	5.1	391	5.1	**38.4**	5.4
4 (high)	586	8.3	**39.9**	5.0	648	8.4	**38.8**	5.2
16 to 34 years (p<0.001 for linear trend among both men and women)								
1 (low)	1,036	14.6	**36.0**	6.1	1,374	17.9	**34.7**	6.5
2	4,099	57.7	**38.0**	5.6	4,709	61.2	**37.2**	6.0
3	959	13.5	**38.9**	5.2	719	9.4	**39.1**	5.4
4 (high)	1,005	14.2	**39.4**	5.2	888	11.6	**38.9**	5.0
35 to 49 years (p<0.001 for linear trend among both men and women)								
1 (low)	876	12.3	**35.9**	6.2	1,244	16.2	**34.5**	6.6
2	3,967	55.9	**37.9**	5.6	4,624	60.1	**37.2**	6.0
3	979	13.8	**38.8**	5.4	732	9.5	**38.6**	5.2
4 (high)	1,277	18.0	**39.5**	5.1	1,090	14.2	**39.0**	5.1
50 to 65 years (p<0.001 for linear trend among both men and women)								
1 (low)	892	12.6	**35.8**	6.2	1,265	16.5	**34.5**	6.6
2	3,882	54.7	**37.8**	5.6	4,623	60.1	**37.3**	5.9
3	943	13.3	**38.7**	5.4	666	8.7	**38.3**	5.4
4 (high)	1,382	19.5	**39.7**	5.0	1,136	14.8	**38.9**	5.2
Main job (p<0.001 for linear trend among both men and women)								
1 (low)	882	12.4	**35.9**	6.3	1,434	18.7	**34.6**	6.5
2	3,928	55.3	**37.8**	5.6	4,637	60.3	**37.3**	5.9
3	977	13.8	**38.8**	5.5	616	8.0	**38.6**	5.6
4 (high)	1,312	18.5	**39.7**	5.0	1,003	13.0	**39.0**	5.1

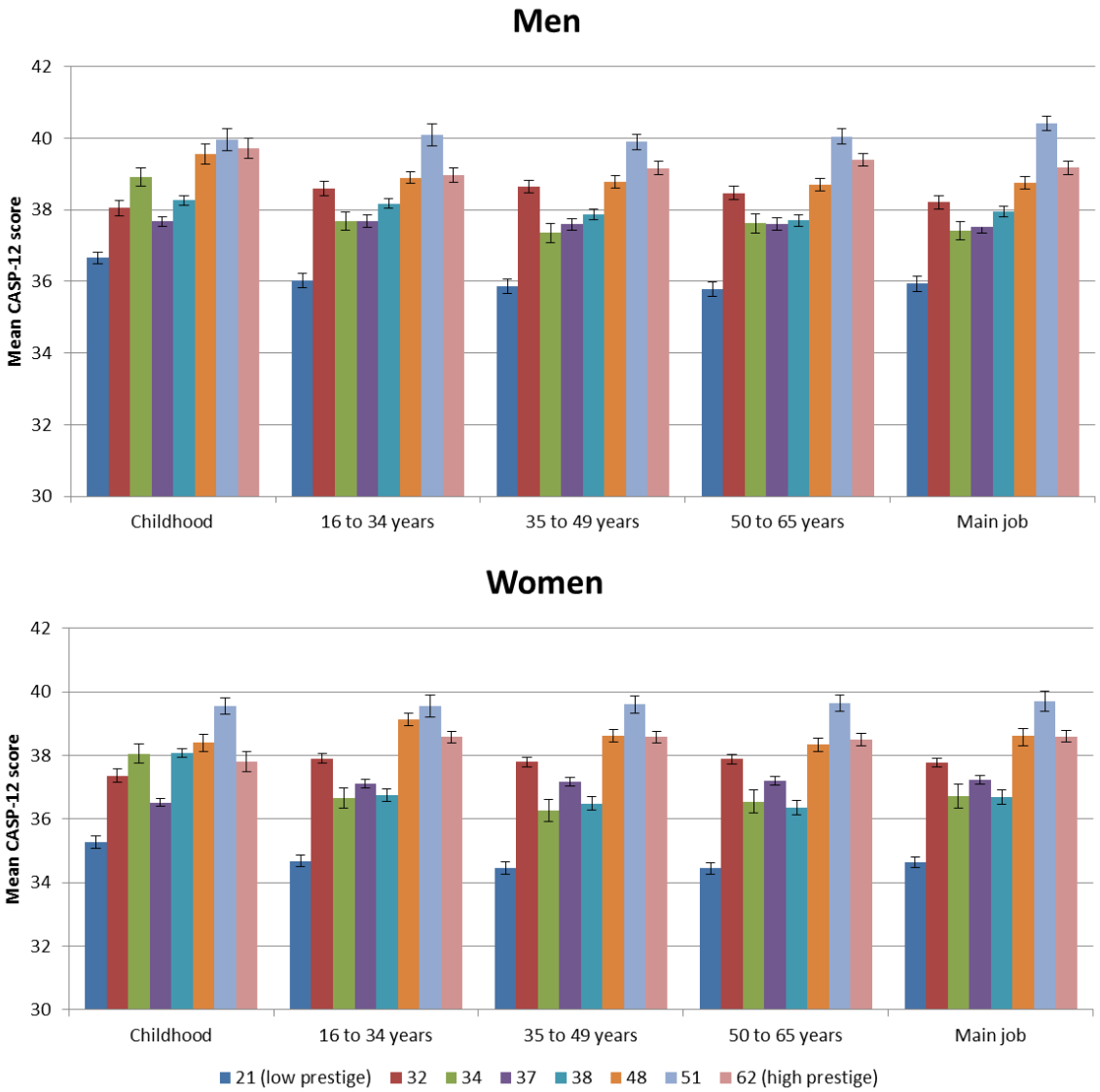
N=number of individuals; SD=standard deviation

Occupational prestige

A socioeconomic gradient in CASP-12 was less apparent when using occupational prestige (Figure 6.1). Full descriptive results are found in (Appendix 6.1). Among both genders those with occupational prestige scores of 32 (service, shop, and market sales workers) and 51 (legislators, senior officials, and managers) stood out as having higher CASP-12 scores than would be expected if there was a linear relationship between occupational prestige and CASP-12. This may be due to how the occupational groups were classified on the prestige scale. For instance, legislators, senior officials, and managers (ISCO-88 group 1) were given a ranking of 51, below that of the professionals. However, the prestige of occupations for group 1 of ISCO-88 ranges from 38 to 73, according to Ganzeboom and Treiman (1996). Thus, if most of the occupations in ISCO-88 group 1

were those with higher prestige, for example if they were members of parliament or chief executives of large enterprises (classified as having prestige levels of 64 and 63, respectively), their prestige was likely to be underestimated. Hence, this may have produced the patterns in CASP-12 observed. In the previous chapter it was discussed that calculation of slope indices of inequality relies on the assumption of an underlying linear relationship between the measure of socioeconomic position and outcome. As this was less apparent for occupational prestige and the two other classification schemes were adequate, this classification scheme was not considered further for the analysis of CASP-12.

Figure 6.1: Mean CASP-12 scores (with standard error bars) by occupational prestige at different stages of the life course



6.2.2 Multivariate analysis

Age-adjusted multilevel linear models, using each of the above socioeconomic position variables (apart from occupational prestige), were next used to predict CASP-12 slope indices of inequality. The intraclass correlation for the null 'empty' model among men was 0.15 and 0.20 among women. This tells us that 15% and 20% of the total variance in CASP-12 scores was at the country level among men and women, respectively.

6.2.2.1 Slope indices of inequality (SIIs) for CASP-12 (non-occupational measures of socioeconomic position)

Each of the non-occupational measures of socioeconomic position was positively associated with CASP-12 scores in men (Table 6.6) and women (Table 6.7). In addition, the SIIs were stronger among women compared to men. However, the size of the associations for the childhood measures of socioeconomic position was considered quite small. Those for the adulthood measures were larger; some were roughly equivalent the size of the effect of experiencing limitations in daily activities due to an illness (as described in section 6.1.1).

Out of the childhood measures, the number of books displayed the strongest relationship with CASP-12 among both genders. The slope index of inequality (the hypothetical difference in mean CASP-12 scores between those ranked as having the least number of books and the most number of books) for men was 1.64 (95% CI: 1.18 to 2.09) and for women 2.07 (95% CI: 1.63 to 2.52). The number of books relates to when the respondents were children, some 50 years ago, and the difference in CASP-12 scores between women with the most and least number of books was roughly equivalent to 45.2% of the effect size for currently experiencing limitations with daily activities. This could therefore be considered quite a substantial effect size. The reasons why this might be are explored throughout this thesis, for example – was the measure just capturing the effects of education level on CASP-12? Among men, the measure of childhood socioeconomic position with the weakest association was the number of amenities in the household (SII=0.85, 95% CI: 0.40 to 1.29), and among women it was the number of rooms per capita (SII=1.17, 95% CI: 0.75 to 1.58).

Of the adulthood non-occupational measures of socioeconomic position, education level displayed the weakest association with CASP-12, although it could be considered a more distal measure of adulthood position. The SII for education level among men was 2.09 (95% CI: 1.62 to 2.56) and among women 2.84 (95% CI: 2.37 to 3.32). Current wealth showed the strongest association; the SII for wealth among men was 3.51 (95% CI: 3.10 to 3.92) and 3.75 (95% CI: 3.34 to 4.15) among women. This means that the difference in mean CASP-12 scores between the hypothetically least and most wealthy was roughly similar to the effect of experiencing limitations in the activities of daily living due to a health condition: a large association. The model with current wealth also explained the greatest individual level variance in CASP-12 scores among both genders. Current income was also more strongly associated with CASP-12 compared to education level, perhaps suggesting that current financial resources are key factors for quality of life in early old age.

Each measure of adulthood socioeconomic position also displayed a stronger association with CASP-12 compared to the measures of childhood socioeconomic position. This provides some evidence that more proximal measures of socioeconomic position have the greatest association with quality of life in early old age. However, it is of note that the confidence intervals for the number of books in childhood and education level overlap in both genders. This suggests that the number of books in childhood may be just as important as education level for quality of life in early old age. This is explored further in the following chapter.

Table 6.6: Multilevel linear models estimating CASP-12 SIIs (using non-occupational measures of socioeconomic) position for men

	[1] Null model	[2] Age-adjusted	[3] Number of books	[4] Rooms per capita	[5] Amenities	[6] Education	[7] Income	[8] Wealth
	Coeff. [95% CI]	Coeff. [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]
Age (centered at 61)	-	0.38* [0.06,0.71]	0.35* [0.03,0.68]	0.37* [0.05,0.69]	0.38* [0.05,0.70]	0.32 [-0.00,0.64]	0.29 [-0.03,0.61]	0.18 [-0.14,0.49]
Age squared	-	-0.00** [-0.01,-0.00]	-0.00* [-0.01,-0.00]	-0.00* [-0.01,-0.00]	-0.00* [-0.01,-0.00]	-0.00* [-0.01,-0.00]	-0.00* [-0.01,-0.00]	-0.00 [-0.00,0.00]
Childhood	-	-	**1.64*** [1.18,2.09]**	-	-	-	-	-
Childhood	-	-	-	**1.04*** [0.62,1.46]**	-	-	-	-
Childhood	-	-	-	-	**0.85*** [0.40,1.29]**	-	-	-
Adulthood	-	-	-	-	-	**2.09*** [1.62,2.56]**	-	-
Adulthood	-	-	-	-	-	-	**2.78*** [2.37,3.20]**	-
Adulthood	-	-	-	-	-	-	-	**3.51*** [3.10,3.92]**
Variance (country)	4.88*** [2.17,10.94]	4.83*** [2.15,10.83]	4.83*** [2.15,10.84]	4.83*** [2.15,10.83]	4.83*** [2.15,10.83]	4.83*** [2.15,10.84]	4.84*** [2.16,10.85]	4.84*** [2.16,10.86]
Variance (individual)	26.80*** [25.93,27.69]	26.65*** [25.78,27.54]	26.46*** [25.61,27.35]	26.56*** [25.70,27.45]	26.60*** [25.74,27.49]	26.37*** [25.51,27.25]	26.01*** [25.16,26.88]	25.63*** [24.80,26.49]

CI=confidence interval; Coeff.=coefficient; SII=slope index of inequality; Coefficients in bold indicate the SIIs; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6.7: Multilevel linear models estimating CASP-12 SIIs (using non-occupational measures of socioeconomic position) for women

	[1] Null model	[2] Age-adjusted	[3] Number of books	[4] Rooms per capita	[5] Amenities	[6] Education	[7] Income	[8] Wealth
	Coeff. [95% CI]	**Coeff. [95% CI]**	**SII [95% CI]**	**SII [95% CI]**	**SII [95% CI]**	**SII [95% CI]**	**SII [95% CI]**	**SII [95% CI]**
Age (centered at 61)	-	0.56*** [0.24,0.88]	0.52** [0.21,0.84]	0.58*** [0.26,0.89]	0.58*** [0.26,0.89]	0.55*** [0.24,0.86]	0.43** [0.12,0.75]	0.36* [0.05,0.67]
Age squared	-	-0.01*** [-0.01,-0.00]	-0.00*** [-0.01,-0.00]	-0.01*** [-0.01,-0.00]	-0.01*** [-0.01,-0.00]	-0.01*** [-0.01,-0.00]	-0.00** [-0.01,-0.00]	-0.00** [-0.01,-0.00]
Childhood	-	-	**2.07*** [1.63,2.52]**	-	-	-	-	-
Childhood	-	-	-	**1.17*** [0.75,1.58]**	-	-	-	-
Childhood	-	-	-	-	**1.31*** [0.87,1.75]**	-	-	-
Adulthood	-	-	-	-	-	**2.84*** [2.37,3.32]**	-	-
Adulthood	-	-	-	-	-	-	**3.21*** [2.80,3.62]**	-
Adulthood	-	-	-	-	-	-		**3.75*** [3.34,4.15]**
Variance (country)	7.20*** [3.22,16.12]	7.20*** [3.22,16.11]	7.20*** [3.22,16.11]	7.20*** [3.22,16.10]	7.20*** [3.22,16.10]	7.20*** [3.22,16.10]	7.20*** [3.22,16.11]	7.21*** [3.22,16.12]
Variance (individual)	28.93*** [28.03,29.86]	28.59*** [27.70,29.51]	28.29*** [27.41,29.20]	28.48*** [27.60,29.40]	28.47*** [27.58,29.39]	28.09*** [27.21,28.99]	27.74*** [26.88,28.63]	27.43*** [26.58,28.32]

CI=confidence interval; Coeff.=coefficient; SII=slope index of inequality; Coefficients in bold indicate the SIIs; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6.2.2.2 Slope indices of inequality (SIIs) for CASP-12 (occupational measures of socioeconomic position)

Each occupational measure of socioeconomic position was positively associated with CASP-12 (Table 6.8), but the effect sizes were considered reasonably small in comparison to those found for current wealth. The SIIs for women were also consistently larger than those found among men, similar to the non-occupational measures above. A general trend was observed across occupational classifications whereby the SIIs increased as the age at occupation increased, when examining occupations from childhood (using the occupation of the main breadwinner) up to aged 35 to 49 years. Among women, the SIIs were slightly smaller when examining the occupation at aged 50 to 65 years compared to aged 35 to 49 years. This was also observed among men, but only using the manual versus non-manual classification. However, it should be noted that the confidence intervals overlap for most of the time points investigated, which suggests that the differences between the life course phases were not large.

Table 6.8: Multilevel linear models estimating CASP-12 SIIs (using occupational measures of socioeconomic position)

	MEN		WOMEN	
	Manual versus non-manual	**Skill level**	**Manual versus non-manual**	**Skill level**
	SII [95% CI]	**SII [95% CI]**	**SII [95% CI]**	**SII [95% CI]**
Childhood	0.86** [0.30,1.41]	1.29*** [0.76,1.81]	0.87** [0.33,1.41]	1.60*** [1.08,2.12]
16 to 34 years	1.58*** [1.08,2.07]	1.51*** [1.04,1.99]	1.95*** [1.43,2.47]	2.19*** [1.71,2.67]
35 to 49 years	1.67*** [1.17,2.16]	1.86*** [1.39,2.33]	2.40*** [1.87,2.92]	2.51*** [2.04,2.99]
50 to 65 years	1.57*** [1.07,2.07]	2.08*** [1.61,2.54]	2.41*** [1.88,2.94]	2.41*** [1.93,2.89]
Main job	1.59*** [1.09,2.09]	2.03*** [1.56,2.49]	2.14*** [1.61,2.66]	2.34*** [1.87,2.82]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; CI=confidence interval; SII=slope index of inequality

Compared to the adulthood non-occupational measures of socioeconomic position, the occupational measures displayed weaker associations with CASP-12. The SIIs for the occupation of the main breadwinner in childhood were also not as large as those calculated for the number of books in childhood among both genders.

6.3 The influence of the welfare regime

The above results illustrate that quality of life was socially patterned at the individual level using a number of different measures of socioeconomic position from across the life course. This section examines the interaction between the measures of socioeconomic position from across the life course and the welfare regime, to investigate whether there was evidence that welfare regime moderated the influence of socioeconomic position on CASP-12. First, descriptive statistics for CASP-12 by socioeconomic position for the different welfare regimes are presented and are followed by the results from the multivariate analysis. Only the main occupational skill level variable is examined here out of the adulthood occupational measures, as it was considered to adequately capture the influence adulthood occupational position on CASP-12.

6.3.1 Descriptive statistics

6.3.1.1 Mean CASP-12 by childhood socioeconomic position in each welfare regime

Descriptive statistics for CASP-12 by the childhood measures of socioeconomic position in each welfare regime are presented in Figure 6.2 for men and in Figure 6.3 for women (full descriptive statistics are located in Appendix 6.2 and Appendix 6.3). Among men, mean CASP-12 scores were not always highest in the most advantaged groups. For example, this was the case in the Post-communist regimes when examining the number of amenities in the household during childhood. Among women, lower CASP-12 scores were found in the least advantaged compared to the most advantaged groups. However, these descriptive statistics do not take into account the different socioeconomic distributions by cohort and country or the size of the different categories. Therefore, the slight deviations from a clear socioeconomic gradient were not considered to prevent the calculation of the SIIs.

Figure 6.2: Mean CASP-12 scores (with 95% confidence intervals) among men by childhood socioeconomic position for each welfare regime

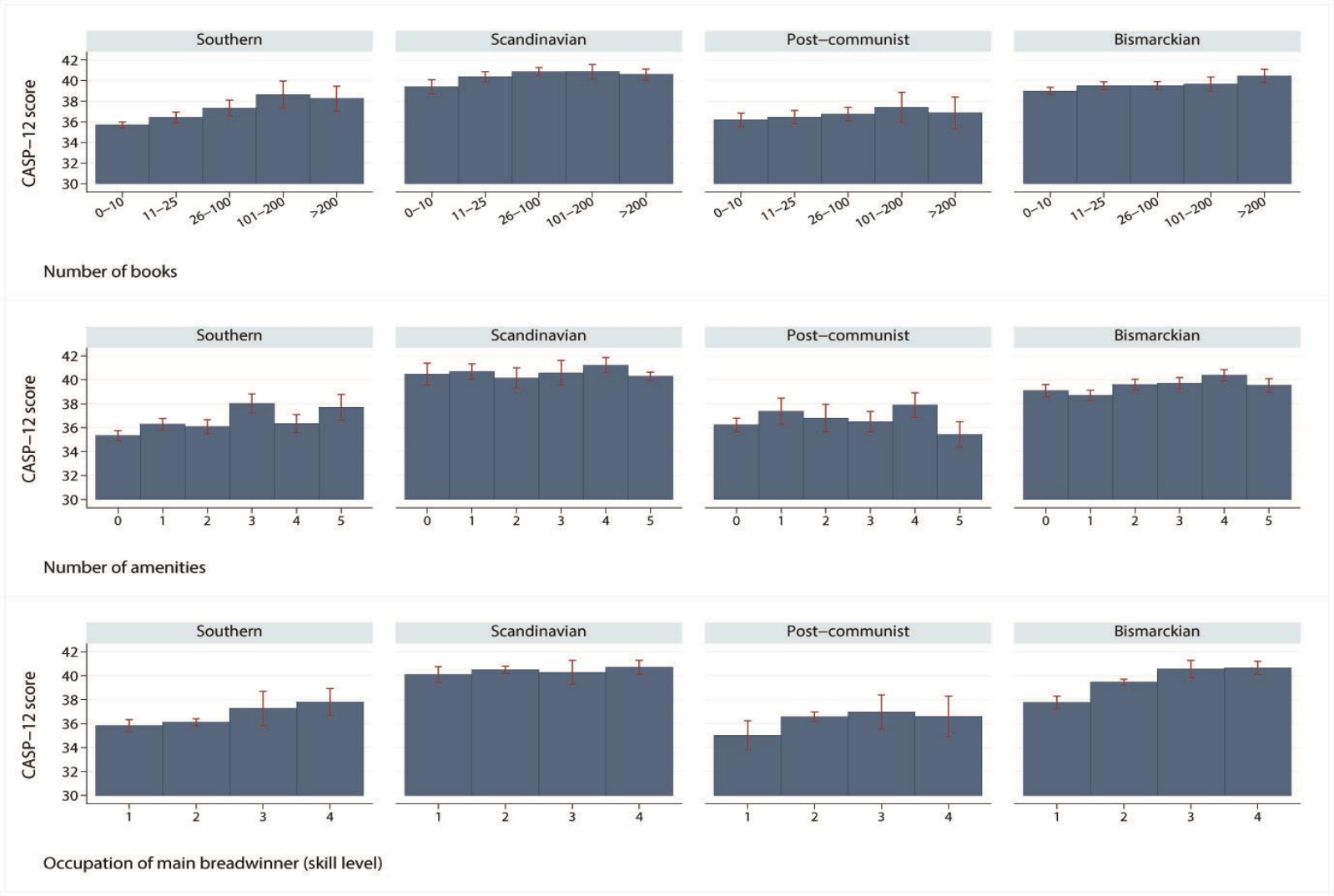
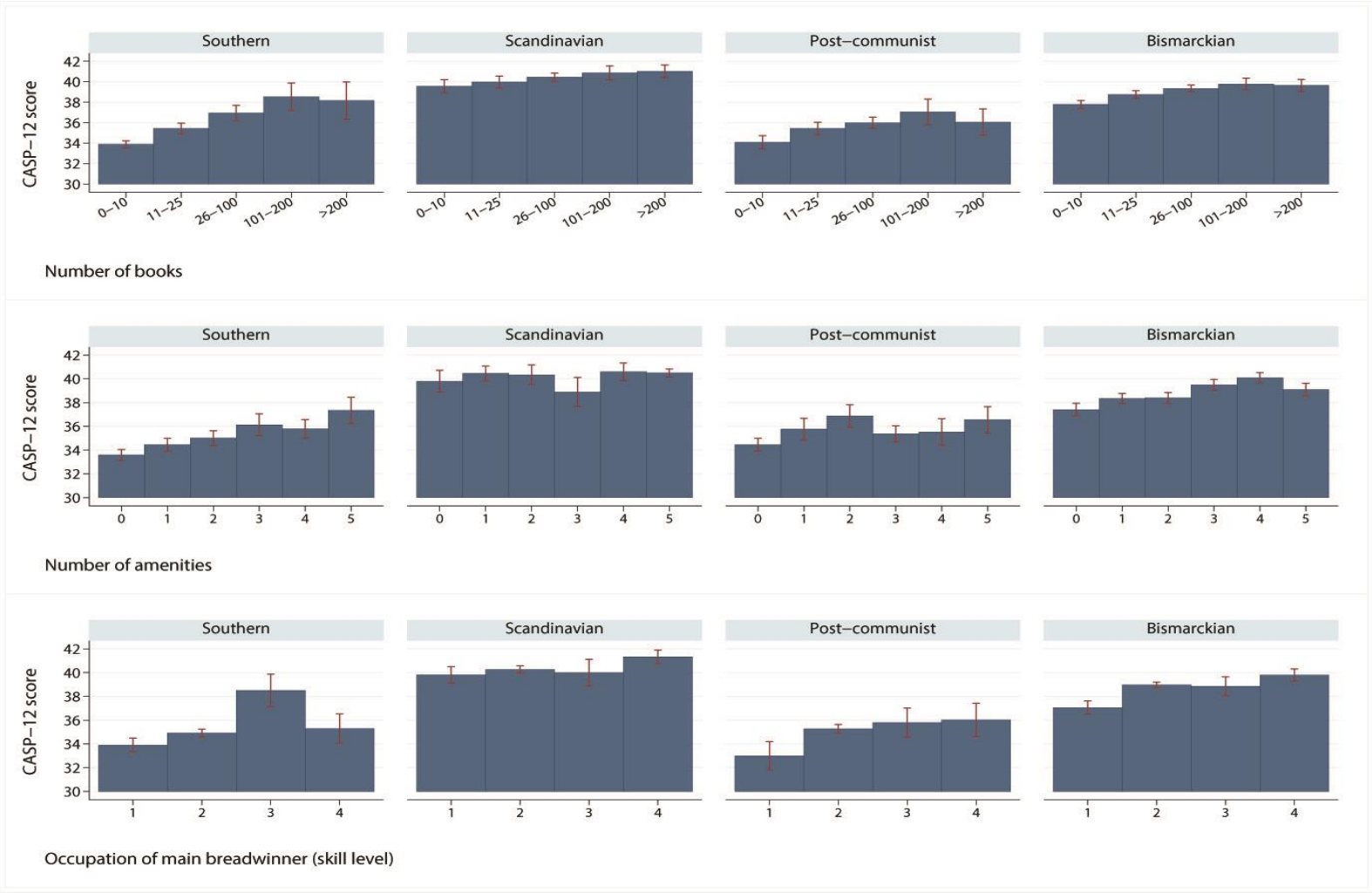


Figure 6.3: Mean CASP-12 scores (with 95% confidence intervals) among women by childhood socioeconomic position for each welfare regime



The correlation between the number of rooms per capita and CASP-12 was positive in all welfare regimes among men, but only statistically significant in the Southern and Scandinavian regimes. Among women, the correlation between the number of rooms per capita and CASP-12 was positive in all regimes, but only statistically significant in the Southern and Post-communist regimes.

Table 6.9: Correlation between the number of rooms per capita in childhood and CASP-12 among men and women in different welfare regimes

	Men		Women	
	r	P-value	r	P-value
Southern	0.11	<0.01	0.16	<0.01
Scandinavian	0.13	<0.01	0.04	0.15
Post-communist	0.03	0.36	0.06	0.04
Bismarckian	0.02	0.27	0.03	0.11

r= Pearson's correlation coefficient

6.3.1.2 Mean CASP-12 by adulthood socioeconomic position in each welfare regime

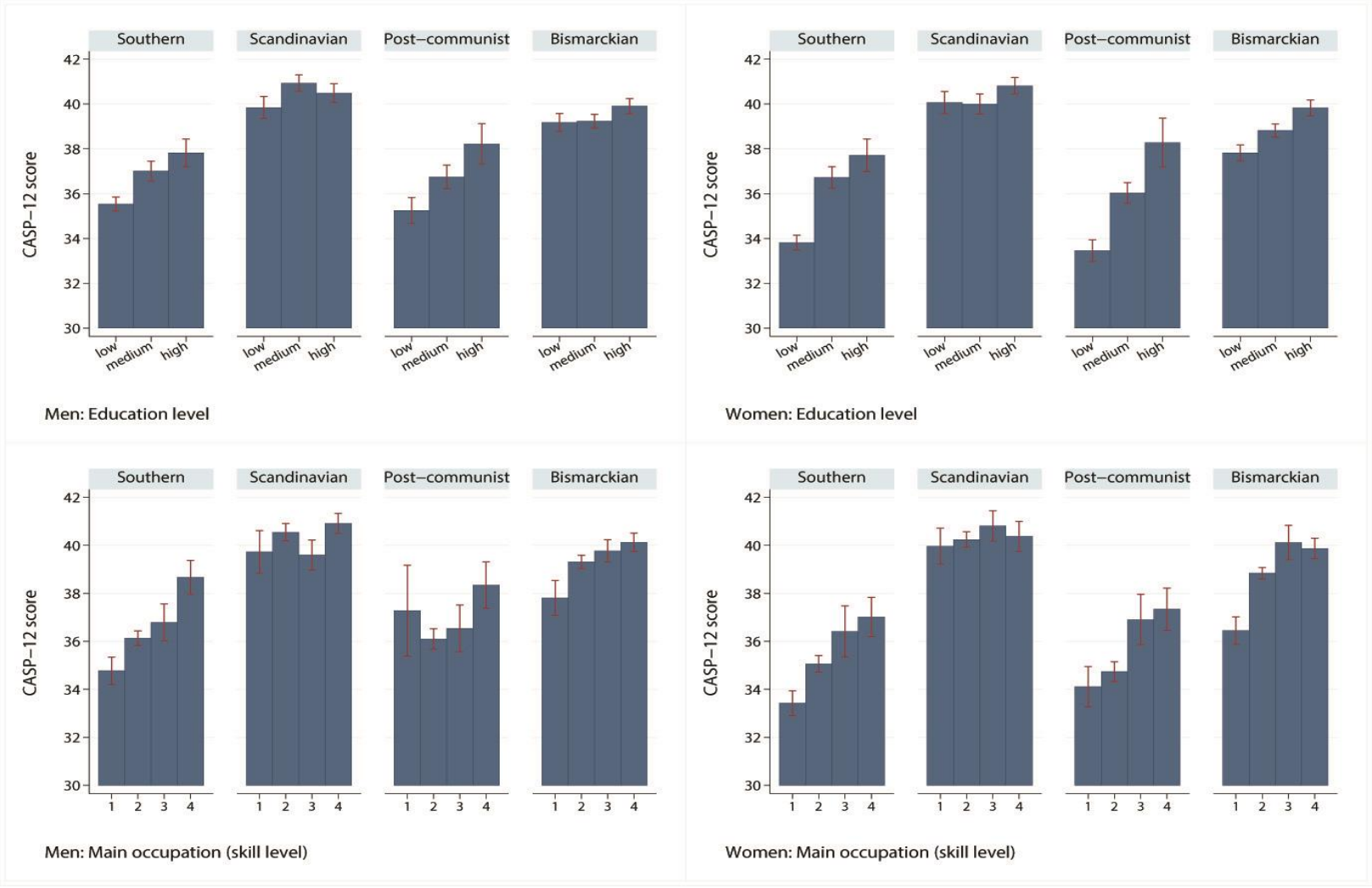
In all welfare regimes, mean CASP-12 scores were higher in the most advantaged groups compared to the least advantaged groups, for each measure of adulthood socioeconomic position (Figure 6.4, full descriptive statistics in Appendix 6.4). In the Post-communist regime, a clear socioeconomic gradient in CASP-12 was observed by education level, which was less apparent in the Scandinavian regime. The correlation between current income, as well as wealth, and CASP-12 was positive and statistically significant in all welfare regimes (Table 6.10).

Table 6.10: Correlation between current income and wealth and CASP-12 in different welfare regimes among men and women

	Southern		Scandinavian		Post-communist		Bismarckian	
	r	p-value	r	p-value	r	p-value	r	p-value
Men								
Current income	0.14	<0.01	0.12	<0.01	0.13	<0.01	0.05	0.01
Current wealth	0.09	<0.01	0.09	<0.01	0.16	<0.01	0.09	<0.01
Women								
Current income	0.16	<0.01	0.12	<0.01	0.14	<0.01	0.11	<0.01
Current wealth	0.17	<0.01	0.12	<0.01	0.07	<0.01	0.10	<0.01

r= Pearson's correlation coefficient

Figure 6.4: Mean CASP-12 scores (with 95% confidence intervals) by adulthood socioeconomic position in different welfare regimes among men and women



6.3.2 Multivariate analysis

6.3.2.1 Interaction between the welfare regime and socioeconomic position

Interaction terms between the welfare regime (using the Scandinavian regime as the reference category) and the measures of socioeconomic position from across the life course were next included in multilevel models for CASP-12 to investigate potential effect modification. Predicted mean CASP-12 scores from the models were also graphed to help visualise the extent of socioeconomic inequality in CASP-12 scores. In addition, to help interpret the SIIs, the results were stratified by welfare regime in single level regression models containing country fixed effects (results for which are found in Appendix 6.5 and Appendix 6.6).

Table 6.11 and Table 6.12 contain the results for the interactions among men and women, respectively. In each age-adjusted model, the Southern and Post-communist welfare regimes exhibited lower mean CASP-12 scores compared to the Scandinavian regime. Mean CASP-12 scores for the Bismarckian regime were not largely different to the Scandinavian regime among men or women. Results for the childhood measures of socioeconomic position are described below, followed by those for the adulthood measures.

Table 6.11: Age-adjusted multilevel linear models for CASP-12 including interaction terms between the welfare regime and socioeconomic position among men

		Childhood				Adulthood			
	[1] Age + welfare regime	[2] Number of books	[3] Rooms per capita	[4] Amenities	[5] Breadwinner occupation	[6] Education	[7] Main occupation	[8] Income	[9] Wealth
	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]
Welfare regime [a]									
Southern	**-4.65*** [-6.61,-2.69]**	**-5.41*** [-7.50,-3.33]**	**-5.15*** [-7.21,-3.09]**	**-5.55*** [-7.62,-3.47]**	**-4.58*** [-6.69,-2.47]**	**-6.61*** [-8.70,-4.52]**	**-5.69*** [-7.78,-3.61]**	**-5.22*** [-7.28,-3.16]**	**-5.40*** [-7.46,-3.35]**
Post-communist	**-4.39*** [-6.54,-2.24]**	**-5.36*** [-7.65,-3.06]**	**-4.41*** [-6.69,-2.12]**	**-5.55*** [-7.87,-3.24]**	**-4.01*** [-6.40,-1.62]**	**-5.74*** [-8.05,-3.43]**	**-4.82*** [-7.15,-2.50]**	**-5.10*** [-7.38,-2.83]**	**-4.74*** [-7.01,-2.46]**
Bismarckian	-0.89 [-2.65,0.87]	-1.06 [-2.93,0.81]	-0.42 [-2.29,1.44]	-1.21 [-3.09,0.66]	-0.75 [-2.65,1.16]	-1.57 [-3.45,0.31]	-0.89 [-2.76,0.99]	-1.22 [-3.08,0.64]	-1.42 [-3.27,0.43]
Interaction terms									
SEP (main effect)[b]	-	0.85 [-0.19,1.90]	**1.11* [0.09,2.14]**	-0.25 [-1.37,0.87]	**1.52* [0.32,2.73]**	0.13 [-0.98,1.25]	**1.36* [0.26,2.45]**	**1.99*** [0.98,2.99]**	**2.55*** [1.55,3.55]**
Southern #SEP	-	**1.51* [0.11,2.92]**	0.99 [-0.29,2.27]	**1.78* [0.40,3.16]**	-0.15 [-1.71,1.41]	**3.90*** [2.45,5.36]**	**2.07** [0.66,3.49]**	1.12 [-0.14,2.38]	**1.48* [0.23,2.73]**
Post-communist #SEP	-	**1.94* [0.34,3.53]**	0.03 [-1.48,1.54]	**2.33** [0.65,4.02]**	-0.76 [-2.81,1.29]	**2.70** [1.03,4.37]**	0.86 [-0.89,2.61]	1.43 [-0.06,2.92]	0.68 [-0.80,2.15]
Bismarckian #SEP	-	0.35 [-0.90,1.60]	-0.93 [-2.14,0.29]	0.65 [-0.66,1.96]	-0.28 [-1.73,1.17]	**1.36* [0.04,2.69]**	0.00 [-1.31,1.31]	0.67 [-0.53,1.87]	1.07 [-0.12,2.26]
Variance (country)	1.16 [0.44,3.04]	1.16 [0.44,3.04]	1.16 [0.44,3.04]	1.16 [0.44,3.04]	1.16 [0.44,3.04]	1.16 [0.44,3.04]	1.16 [0.44,3.04]	1.16 [0.44,3.04]	1.16 [0.44,3.03]
Variance (individual)	26.65*** [25.78,27.54]	26.44*** [25.58,27.33]	26.52*** [25.66,27.41]	26.56*** [25.70,27.45]	26.57*** [25.71,27.46]	26.26*** [25.41,27.14]	26.34*** [25.49,27.22]	26.00*** [25.16,26.87]	25.62*** [24.79,26.48]

All models controlled for age and age^2; CI=confidence interval; Coeff.=coefficient; SEP=socioeconomic position; #=interaction term; [a] Scandinavian regime is the reference category; [b] can be interpreted as the SII for the Scandinavian regime; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 6.12: Age-adjusted multilevel linear models for CASP-12 including interaction terms between the welfare regime and socioeconomic position among women

		Childhood				Adulthood			
	[1] Age + welfare regime	[2] Number of books	[3] Rooms per capita	[4] Amenities	[5] Breadwinner occupation	[6] Education	[7] Main occupation	[8] Income	[9] Wealth
	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]
Welfare regime [a]									
Southern	**-5.86***** **[-8.21,-3.52]**	**-6.77***** **[-9.23,-4.32]**	**-6.57***** **[-9.01,-4.14]**	**-6.69***** **[-9.14,-4.24]**	**-6.12***** **[-8.59,-3.64]**	**-8.10***** **[-10.57,-5.64]**	**-7.01***** **[-9.47,-4.55]**	**-6.75***** **[-9.19,-4.31]**	**-6.74***** **[-9.18,-4.31]**
Post-communist	**-5.60***** **[-8.17,-3.03]**	**-6.40***** **[-9.08,-3.72]**	**-5.87***** **[-8.54,-3.20]**	**-6.26***** **[-8.95,-3.57]**	**-6.03***** **[-8.77,-3.29]**	**-7.63***** **[-10.33,-4.94]**	**-6.79***** **[-9.49,-4.09]**	**-6.22***** **[-8.89,-3.55]**	**-5.77***** **[-8.44,-3.11]**
Bismarckian	-1.39 [-3.49,0.71]	-1.55 [-3.75,0.64]	-1.29 [-3.48,0.90]	-1.51 [-3.71,0.69]	-1.27 [-3.49,0.96]	-1.85 [-4.05,0.36]	-1.42 [-3.63,0.79]	-1.93 [-4.12,0.26]	-1.84 [-4.03,0.34]
Interaction terms									
SEP (main effect)[b]	-	**1.26*** **[0.23,2.30]**	0.78 [-0.23,1.79]	0.55 [-0.55,1.65]	**1.47*** **[0.27,2.66]**	0.79 [-0.29,1.88]	**1.32*** **[0.19,2.45]**	**2.10***** **[1.11,3.10]**	**2.87***** **[1.88,3.86]**
Southern #SEP	-	**1.82*** **[0.41,3.23]**	**1.42*** **[0.12,2.72]**	**1.66*** **[0.27,3.05]**	0.50 [-1.07,2.08]	**4.49***** **[2.99,5.98]**	**2.30**** **[0.84,3.76]**	**1.77**** **[0.49,3.04]**	**1.75**** **[0.48,3.01]**
Post-communist #SEP	-	**1.61*** **[0.13,3.09]**	0.54 [-0.88,1.96]	1.33 [-0.23,2.89]	0.86 [-1.03,2.75]	**4.08***** **[2.52,5.65]**	**2.38**** **[0.75,4.01]**	1.25 [-0.14,2.64]	0.35 [-1.03,1.74]
Bismarckian #SEP	-	0.33 [-0.91,1.57]	-0.20 [-1.41,1.00]	0.24 [-1.05,1.53]	-0.25 [-1.68,1.19]	0.92 [-0.38,2.22]	0.06 [-1.31,1.42]	1.09 [-0.10,2.27]	0.90 [-0.27,2.08]
Variance (country)	1.68 [0.65,4.35]	1.68 [0.65,4.36]	1.68 [0.65,4.36]	1.68 [0.65,4.36]	1.68 [0.65,4.35]	1.68 [0.65,4.36]	1.68 [0.65,4.35]	1.68 [0.65,4.37]	1.68 [0.65,4.36]
Variance (individual)	28.59*** [27.70,29.51]	28.26*** [27.38,29.17]	28.46*** [27.57,29.37]	28.45*** [27.56,29.36]	28.46*** [27.58,29.38]	27.89*** [27.02,28.79]	28.19*** [27.31,29.09]	27.73*** [26.86,28.62]	27.41*** [26.56,28.29]

All models controlled for age and age^2; CI=confidence interval; Coeff.=coefficient; SEP=socioeconomic position; #=interaction term; [a] Scandinavian regime is the reference category; [b] can be interpreted as the SII for the Scandinavian regime; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Childhood socioeconomic position

Figure 6.5 and Figure 6.6 display the age-adjusted predicted mean CASP-12 scores by childhood socioeconomic position for each welfare regime. The graphs show that for each measure of socioeconomic position, the predicted CASP-12 scores for those at the highest (or most advantaged) end of the socioeconomic distribution in the Southern and Post-communist welfare regimes did not tend to reach those predicted for those in the most advantaged positions in the Scandinavian and Bismarckian regimes. The differences in the magnitude of inequalities in CASP-12 by childhood socioeconomic position between the welfare regimes, although in some cases were statistically significant, were not considered to be particularly large.

The difference in CASP-12 scores between the least and most advantaged according to the number of books in childhood was smallest in the Scandinavian regime among both genders (Figure 6.5a and Figure 6.6a) and not statistically significant among men (Table 6.11). However, there was no statistically significant difference in the CASP-12 SIIs for the number of books in childhood between the Bismarckian and Scandinavian regimes (Table 6.11 and Table 6.12). The SIIs for the number of books in childhood were largest in Southern and Post-communist welfare regimes, perhaps suggesting that these regimes moderate the effect of this childhood measure on CASP-12.

In the Scandinavian regime, the SII for the number of rooms per capita among men was statistically significant, but not large (Figure 6.5b and Table 6.11). Compared to the Scandinavian regime, inequalities in CASP-12 among men for this measure were not much different in the other welfare regimes, suggesting no effect modification. Among women in the Scandinavian regime, the SII for the number of rooms per capita was not statistically significant and the SIIs were only larger in the Southern regime (Figure 6.6b and Table 6.12).

Inequalities in CASP-12 by the number of amenities in the household during childhood were smallest (and not statistically significant) in the Scandinavian regime among both genders (Figure 6.5c and Figure 6.6c). This corresponds to the descriptive analysis presented earlier. Compared to the Scandinavian regime, inequalities in CASP-12 for this

measure were statistically larger in the Southern and Post-communist welfare regimes among men (Table 6.11), and only in the Southern regime among women (Table 6.12).

In the Scandinavian regime, the SIIs for the occupation of the main breadwinner during childhood were the largest out of the childhood measures of socioeconomic position (Table 6.11 and Table 6.12). Compared to the Scandinavian regime, inequalities in CASP-12 by this measure were often smaller in the other welfare regimes, but the differences were not statistically significant (Figure 6.5d and Figure 6.6d).

Figure 6.5: Age-adjusted predicted mean CASP-12 scores (with 95% confidence intervals) for men by welfare regime for the measures of childhood socioeconomic position

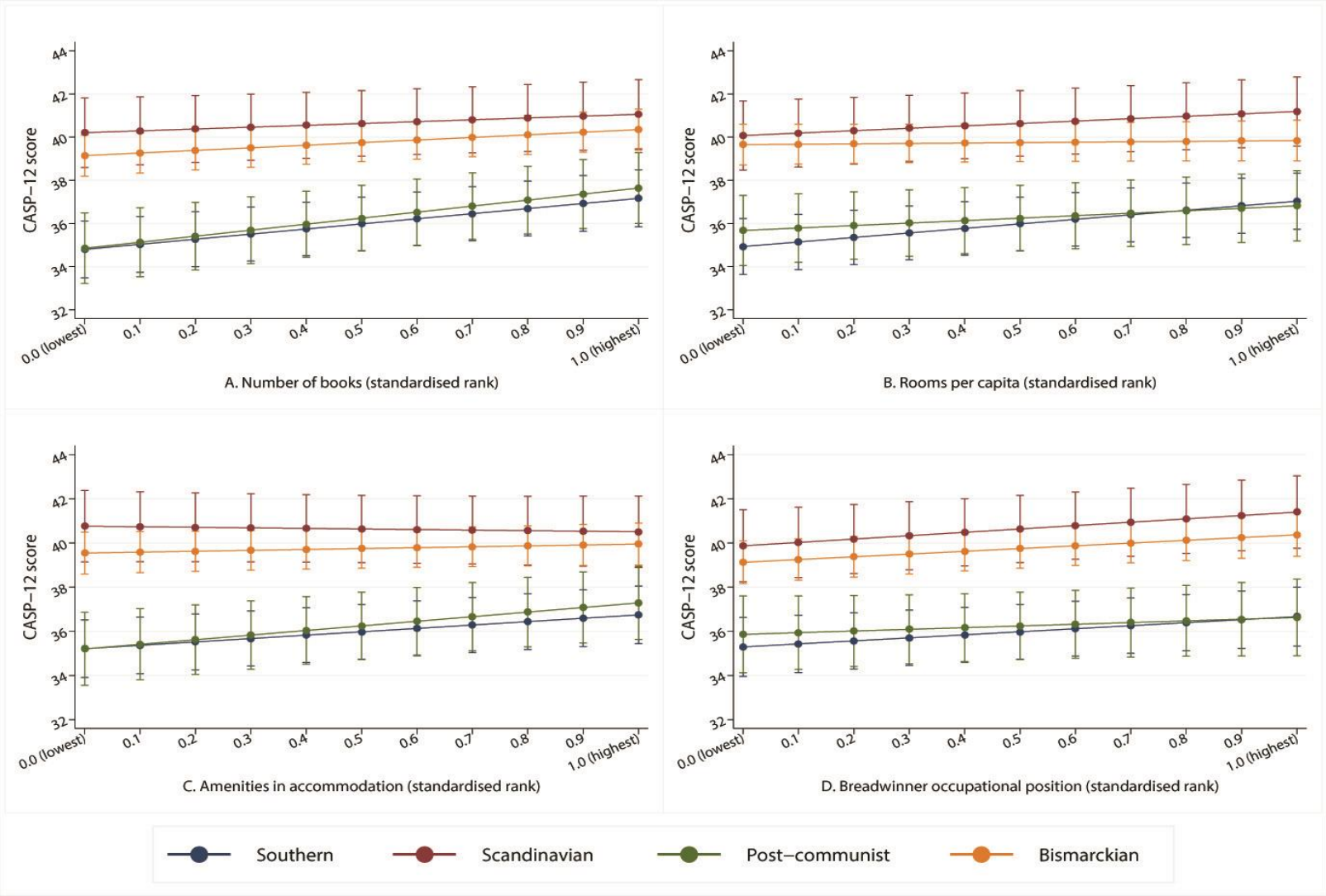
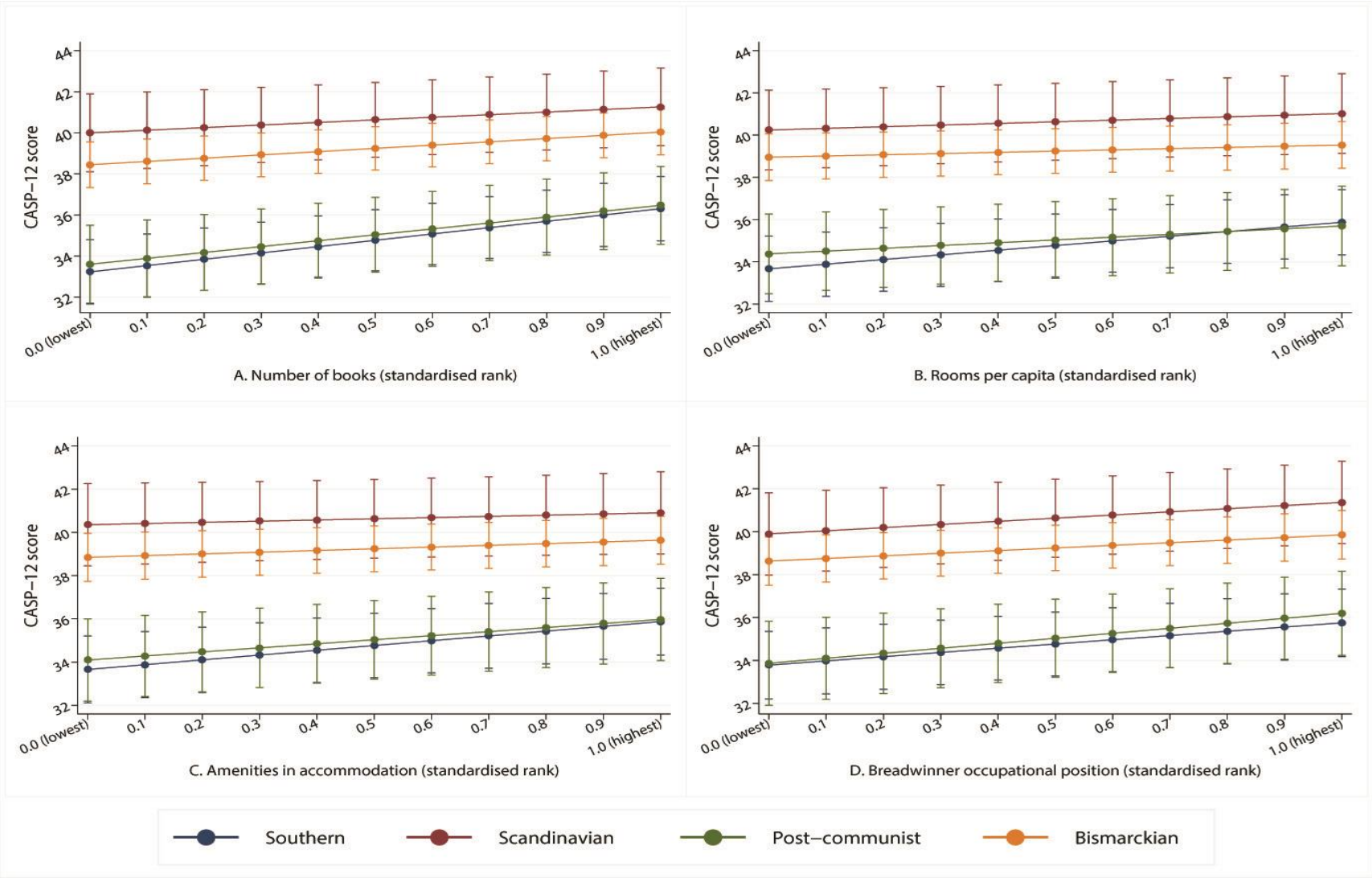


Figure 6.6: Age-adjusted predicted mean CASP-12 scores (with 95% confidence intervals) for women by welfare regime for the measures of childhood socioeconomic position



Adulthood socioeconomic position

Figure 6.7 and Figure 6.8 show the predicted mean CASP-12 scores by adulthood socioeconomic position for each welfare regime. The figures demonstrate the generally larger inequalities in CASP-12 for the measures of adulthood socioeconomic position, compared to the childhood measures. However, there were some exceptions.

In the Scandinavian regime, inequalities in CASP-12 by education level were narrow (and not statistically significant) in both genders, but especially men (Figure 6.7a and Figure 6.8a). The figures demonstrate that there was little difference in predicted mean CASP-12 scores between welfare regimes, for those at the highest end of the education distribution. At the lowest end, the difference in mean CASP-12 scores between the regimes that clustered together with higher CASP-12 scores (Scandinavian and Bismarckian) and those with lower scores (Southern and Post-communist) was much larger. Southern and Post-communist regimes exhibited large educational inequalities in CASP-12, particularly among women. Among women, inequalities in CASP-12 by education level were not much larger in the Bismarckian regime compared to the Scandinavian regime (Table 6.12). The difference in the magnitude of inequality in CASP-12 scores by education level between the Scandinavian and the Southern and Post-communist regimes could be considered quite large. In particular, when stratifying by welfare regime (Appendix 6.5 and Appendix 6.6), the SII estimates for the Southern regime among women were larger than the effect of experiencing limitations with the activities of daily living.

The difference in CASP-12 scores between the least and most advantaged according to the skill level of the respondent's main occupation was largest in the Southern regime among men and among women in the Southern and Post-communist regimes (Figure 6.7b and Figure 6.8b). There was very little difference in CASP-12 scores between the least and most advantaged in the Scandinavian and Bismarckian regimes among either gender (Table 6.11 and Table 6.12).

Income and wealth inequalities in CASP-12 were large across all welfare regimes (Figure 6.7c and d and Figure 6.8c and d). By current income, there was not much difference in

the extent of inequality in CASP-12 between welfare regimes. Only in the Southern regime among women, was the magnitude of inequality in CASP-12 by current income significantly larger than the Scandinavian regime (Table 6.12). This is perhaps surprising given the generosity and egalitarian nature of the Scandinavian regime. Inequalities in CASP-12 by current wealth among both genders were only significantly larger in the Southern regime, compared to the Scandinavian regime.

Figure 6.7: Age-adjusted predicted mean CASP-12 scores (with 95% confidence intervals) for men by welfare regime for the measures of adulthood socioeconomic position

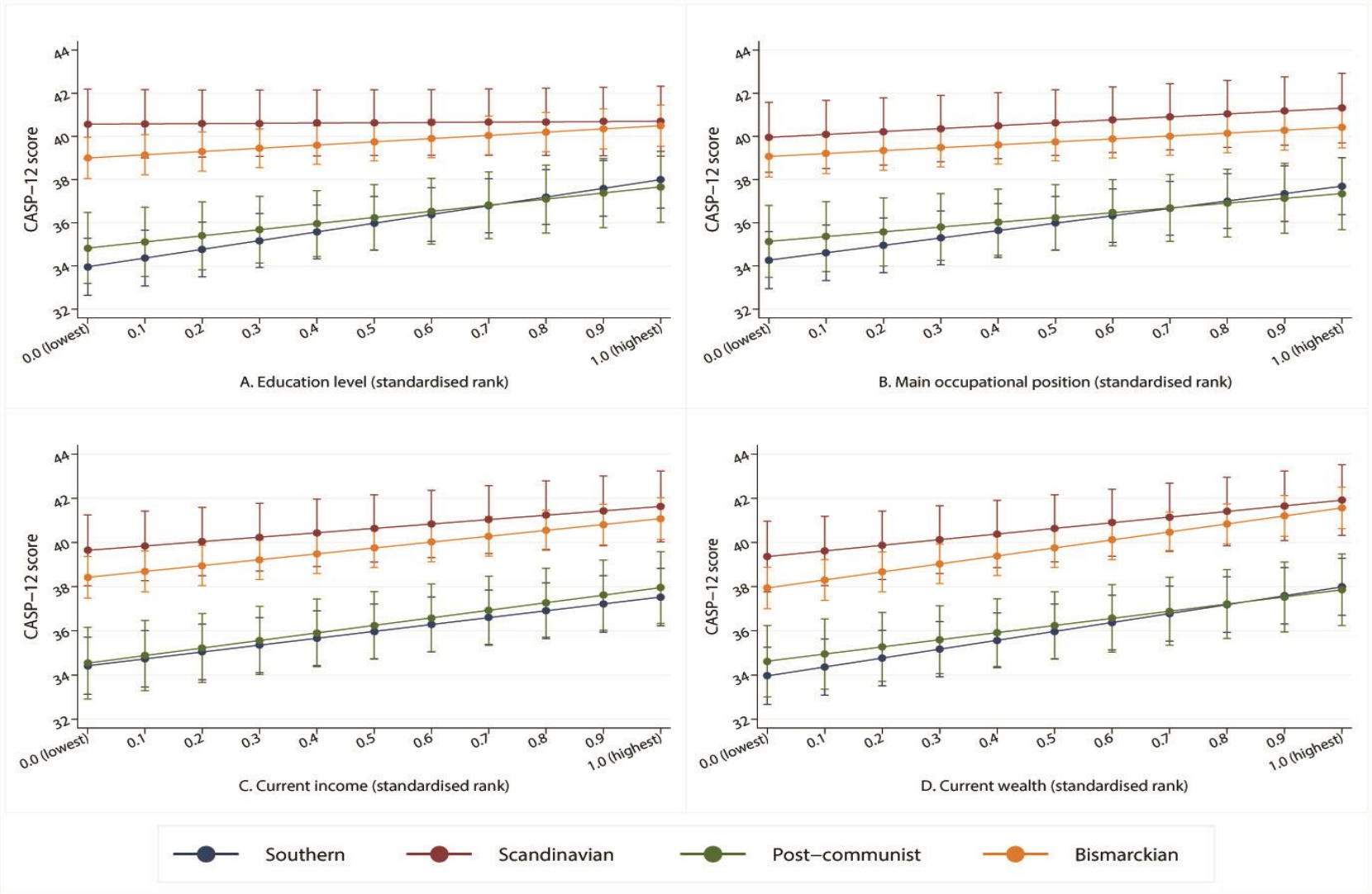
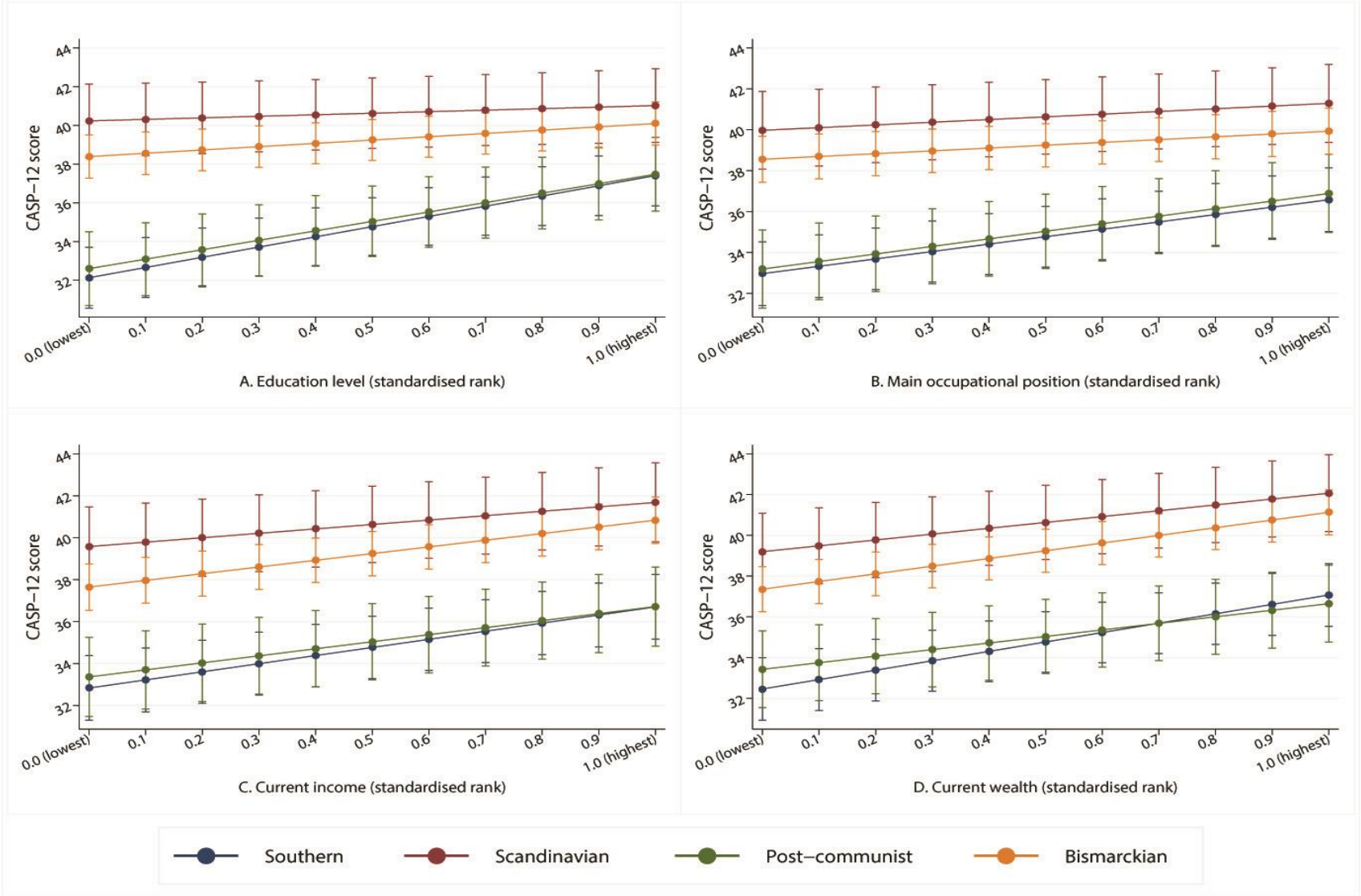


Figure 6.8: Age-adjusted predicted mean CASP-12 scores (with 95% confidence intervals) for women by welfare regime for the measures of adulthood socioeconomic position



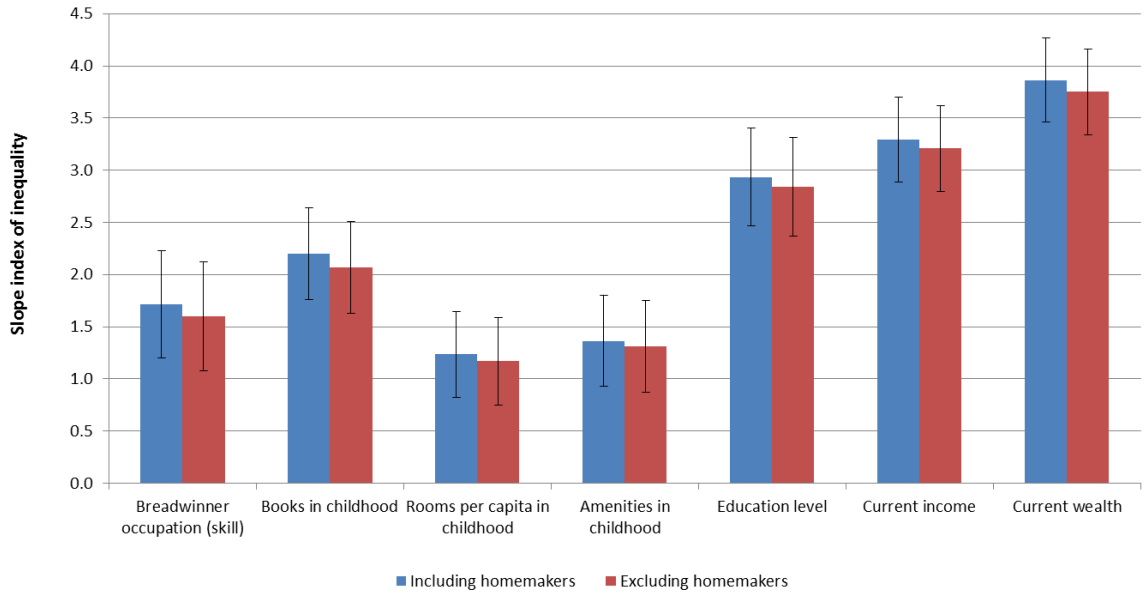
6.3.3 Sensitivity analyses

6.3.3.1 Including female homemakers

The purpose of this chapter was to compare the associations between different measures of socioeconomic position from across the life course and quality of life. However, to compare the occupational and non-occupational measures of socioeconomic position the sample was kept the same. This meant that 1,313 women were excluded from the analysis because they were recorded as looking after the home or family at the working ages examined and information could not be obtained from their partner. However, as non-occupational and childhood occupational measures of socioeconomic position were available for this group sensitivity analyses could be performed including homemakers, to see if including them made a difference to the substantive results.

For each measure of socioeconomic position, including female homemakers in the analysis resulted in an increase in the SII estimates (Figure 6.9). However, the considerable overlap in confidence intervals for each measure suggests that the differences were not statistically significant. The exclusion of homemakers could therefore result in slight underestimation of the SIIs, but is not likely to alter the substantive findings.

Figure 6.9: Slope indices of inequality (with 95% confidence intervals) among women for the measures of socioeconomic position including and excluding homemakers



6.3.3.2 Excluding individual countries

To examine whether any one country excessively influenced the results, the overall analysis was run excluding each country in turn. No substantial differences in the SII estimates were observed and removing most countries resulted in very small changes in the estimates (Appendix 6.7). Exclusion of some countries resulted in greater changes to the estimates, for example excluding Italy lead to a decrease in the overall SII estimates, suggesting there are larger socioeconomic inequalities in CASP-12 within this country. Excluding Belgium and Denmark led to slightly increased SII estimates compared to when removing the other countries. This suggests that there are smaller socioeconomic inequalities in CASP-12 within these countries.

6.4 Chapter discussion

This chapter examined the age-adjusted relationships between different measures of socioeconomic position from different stages of the life course and CASP-12 in early old age and the influence of the welfare regime in shaping the associations. This section summarises and interprets the key results of the chapter and discusses the strengths and limitations of the approach.

6.4.1 Summary and interpretation of results

6.4.1.1 Overall results

As expected, higher socioeconomic position at all stages of the life course was associated with higher CASP-12 in early old age. Overall, the associations were stronger among women compared to men. The results revealed that more proximal measures of socioeconomic position had the strongest association with quality of life. Inequalities in CASP-12 were largest among both men and women when using current wealth. This could suggest that current resources are most important for quality of life in early old age. Compared to income, wealth is more reflective of accumulated assets over the life course, both financial and real. Thus, its stronger association with CASP-12 could be related to its multidimensionality, which takes into account, for example – the value of

any property or cars, which may contribute to feelings of control over life and a more positive outlook to the future.

Childhood measures of socioeconomic position were also associated with quality of life, but to a lesser degree than those corresponding to early adulthood, working life, and early old age. The number of books the respondents' reported having during childhood was the strongest predictor of quality of life out of the childhood measures of socioeconomic position. This could suggest that the cultural environment during childhood had a long-lasting influence on CASP-12 during early old age, perhaps because it influences educational attainment and subsequent occupational attainment. On the other hand, it could suggest that an individual's cultural resources (such as the skills, knowledge, and values) gained during childhood have a long-lasting influence on quality of life in early old age and are particularly important during early old age as people become free to explore their own interests. Those who had higher cultural resources during childhood would therefore be expected to have higher CASP-12 scores in early old age as they may be better equipped to take advantage of opportunities, such as travelling abroad, or visiting museums and art galleries.

6.4.1.2 The influence of the welfare regime

The findings from models examining the interaction between the measures of socioeconomic position and the welfare regime demonstrated that across most measures, Scandinavian and Bismarckian regimes had the narrowest socioeconomic inequalities in CASP-12 scores. However, inequalities in CASP-12 by current income and wealth were large across all welfare regimes, perhaps indicating that in more recent years as welfare states have become less generous they have not been able to reduce income and wealth inequalities. Educational inequalities in CASP-12 were particularly narrow in the Scandinavian welfare regime and large in Post-communist and Southern regimes. This could suggest that Scandinavian countries have been more successful at reducing educational inequalities and education is less of a status-differentiating mechanism in these countries, compared to Post-communist and Southern regimes. For some of the childhood measures of socioeconomic position, such as the occupation of the main breadwinner, inequalities in CASP-12 were not much different between welfare regimes. Thus, although there were some striking differences in the magnitude of socioeconomic

inequalities in CASP-12 scores, there was no consistent pattern whereby the Scandinavian regime had the narrowest inequalities in CASP-12 scores across all measures.

6.4.2 Strengths and limitations of the approach

This chapter mainly served to describe the extent of socioeconomic inequalities in CASP-12 by different measures of socioeconomic position from across the life course and investigate the influence of the welfare regime on the associations. A key strength of the approach was the use of the slope indices of inequality which allowed the different measures of socioeconomic position to be compared. The models examining the interaction between the welfare regime type and the measures of socioeconomic position also enabled the examination of whether socioeconomic inequalities in CASP-12 were statistically larger or smaller in comparison to the Scandinavian regime.

One limitation of this analysis was that it only used one measure of quality of life and further analysis was needed to see if results were generally consistent between outcomes; this is performed in chapter 9. A further limitation of this approach was that without accounting for current socioeconomic circumstances, the influence of childhood socioeconomic position on CASP-12 was difficult to gauge. Therefore, the next chapter focuses on the extent to which the association between childhood socioeconomic position and CASP-12 was accounted for by including adulthood socioeconomic position.

7. Latent and pathway effects from childhood socioeconomic position to CASP-12 in early old age

7.1 Chapter introduction

This chapter builds on the previous chapter by examining whether the relationship between childhood socioeconomic position and CASP-12 was still evident when taking into account measures of adulthood socioeconomic position. If the association between childhood socioeconomic position and quality of life remains after accounting for adulthood socioeconomic position, it suggests that there may be a latent (or direct) effect of childhood socioeconomic position on quality of life in early old age. However, if the associations between childhood socioeconomic position and quality of life are largely attenuated by accounting for adulthood socioeconomic conditions, it suggests there is a pathway effect whereby childhood socioeconomic position influences quality of life via adulthood socioeconomic circumstances. Chapter 5 (section 5.6.4) outlined the analysis for the results presented in this chapter.

The objectives of this chapter were to:

- Explore potential latent and pathway effects from childhood socioeconomic position to CASP-12 in early old age.

- Investigate the relationships by welfare regime.

7.2 Correlations between the measures of socioeconomic position

Table 7.1 displays Pearson's correlation coefficients between the different measures of socioeconomic position. All of the measures of socioeconomic position were positively correlated with each other and statistically significant ($p<0.001$). Among the childhood measures of socioeconomic position, the strongest correlation was found between the

number of household amenities and the number of books; the correlation coefficients for men and women were 0.43 and 0.42, respectively.

Of the adulthood measures of socioeconomic position, the strongest correlation was observed between the main occupational skill level and highest education level; the correlation coefficients among men and women were 0.47 and 0.46, respectively. This is probably because the occupational skill level closely relates to the educational qualifications and training needed to perform the tasks of a job.

The highest correlation observed between a measure of childhood and adulthood socioeconomic position was for the number of books in childhood and education level; the correlation coefficients were 0.36 and 0.39 among men and women, respectively. The correlations observed demonstrate that each indicator could be considered to be capturing something different relating to the individual's position in society. In addition, as they were not too highly correlated, their use in a single model was not considered to be an issue.

Table 7.1: Pearson's correlation matrix for the measures of socioeconomic position

	Childhood				***Adulthood***			
	Number of books	*Rooms per capita*	*Amenities*	*Breadwinner job* [a]	*Education level*	*Main job* [a]	*Current income*	*Current wealth*
Childhood	**Men**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.27	1.00	-	-	-	-	-	-
Amenities	0.43	0.29	1.00	-	-	-	-	-
Breadwinner job [a]	0.33	0.18	0.25	1.00	-	-	-	-
Adulthood								
Education level	0.36	0.18	0.26	0.21	1.00	-	-	-
Main job [a]	0.31	0.18	0.23	0.26	0.47	1.00	-	-
Current income	0.20	0.14	0.17	0.12	0.32	0.27	1.00	-
Current wealth	0.15	0.12	0.10	0.12	0.24	0.22	0.32	1.00
Childhood	**Women**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.28	1.00	-	-	-	-	-	-
Amenities	0.42	0.32	1.00	-	-	-	-	-
Breadwinner job [a]	0.33	0.24	0.26	1.00	-	-	-	-
Adulthood								
Education level	0.39	0.22	0.29	0.25	1.00	-	-	-
Main job [a]	0.31	0.19	0.24	0.27	0.46	1.00	-	-
Current income	0.19	0.13	0.17	0.11	0.27	0.22	1.00	-
Current wealth	0.16	0.15	0.14	0.11	0.20	0.18	0.35	1.00

[a]Skill level

7.3 Overall results

7.3.1 Latent and pathway effects

7.3.1.1 Number of books in childhood

With the addition of each measure of adulthood socioeconomic position, the association between the number of books in childhood and CASP-12 was attenuated in both men and women (Table 7.2). Adding education level decreased the effect size for the number of books in childhood by 36.0% among men and 41.5% among women (Model 2 in Table 7.2).

Including all measures of adulthood socioeconomic position (Model 5 Table 7.2) resulted in a 64.0% decrease in the association between the number of books and CASP-12 in men and a 68.1% decrease among women. In this model, the number of books remained significantly associated with CASP-12 in both men (SII=0.59, 95% CI: 0.10 to 1.07) and women (SII=0.66, 95% CI: 0.18 to 1.14), although the effect size was quite small. Among men, the association between education level and CASP-12 was no longer statistically significant (SII=0.31, 95% CI: -0.25 to 0.86). This perhaps suggests that the number of books in childhood contributes to CASP-12 in a different way to education level.

These results suggest that there may be a small latent (or direct) effect of the number of books in childhood on CASP-12 in early old age, but also supports the pathway model whereby the number of books influenced CASP-12 via other measures of socioeconomic position, particularly education level. Potential explanations for this are returned to in the discussion. However, on the whole, it was current income and wealth that remained most strongly associated with CASP-12, which highlights the importance of current circumstances.

Table 7.2: Age-adjusted slope indices of inequality derived from the multilevel models for the association between the number of books in childhood and CASP-12 adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Number of books	1.64*** [1.18,2.09]	1.05*** [0.57,1.54]	0.87*** [0.37,1.36]	0.67** [0.18,1.16]	0.59* [0.10,1.07]
Education level	-	1.70*** [1.20,2.21]	1.21*** [0.66,1.76]	0.63* [0.07,1.19]	0.31 [-0.25,0.86]
Main job [a]	-	-	1.18*** [0.64,1.72]	0.82** [0.29,1.36]	0.55* [0.01,1.08]
Current income	-	-	-	2.29*** [1.85,2.73]	1.58*** [1.13,2.03]
Current wealth	-	-	-	-	2.75*** [2.32,3.19]
WOMEN					
Number of books	2.07*** [1.63,2.52]	1.21*** [0.73,1.69]	1.06*** [0.57,1.54]	0.83*** [0.34,1.31]	0.66** [0.18,1.14]
Education level	-	2.34*** [1.83,2.85]	1.89*** [1.33,2.45]	1.34*** [0.79,1.90]	1.14*** [0.59,1.70]
Main job [a]	-	-	1.13*** [0.59,1.67]	0.81** [0.27,1.34]	0.59* [0.06,1.12]
Current income	-	-	-	2.61*** [2.19,3.04]	1.77*** [1.33,2.22]
Current wealth	-	-	-	-	2.74*** [2.31,3.18]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; SII=slope index of inequality; [a] skill level

7.3.1.2 Number of rooms per capita in childhood accommodation

The addition of each measure of adulthood socioeconomic position gradually reduced the association between the number of rooms per capita during childhood and CASP-12 in early old age (Table 7.3).

Among men, the association between the number of rooms per capita in childhood and CASP-12 was no longer statistically significant after controlling for all four measures of adulthood socioeconomic position (SII=0.32, 95% CI: -0.10 to 0.74) (Model 5 in Table 7.3). For women, including education level, the skill level of the main job, and current income, reduced the association so it was no longer statistically significant (SII=0.40, 95% CI: -0.02 to 0.82) (Model 4 in Table 7.3).

Including all measures of adulthood socioeconomic position (Model 5 in Table 7.3) resulted in the attenuation of the association by 69.2% among men and 84.6% among women. This suggests a pathway effect whereby the number of rooms per capita in childhood influenced CASP-12 via adulthood socioeconomic position.

Table 7.3: Age-adjusted slope indices of inequality derived from the multilevel models for the association between the number of rooms per capita during childhood and CASP-12 adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Rooms per capita	1.04*** [0.62,1.46]	0.72*** [0.30,1.15]	0.61** [0.19,1.04]	0.46* [0.03,0.88]	0.32 [-0.10,0.74]
Education level	-	1.94*** [1.46,2.42]	1.36*** [0.83,1.90]	0.75** [0.20,1.29]	0.42 [-0.12,0.96]
Main job [a]	-	-	1.26*** [0.73,1.79]	0.89** [0.35,1.42]	0.61* [0.08,1.14]
Current income	-	-	-	2.30*** [1.86,2.74]	1.60*** [1.15,2.04]
Current wealth	-	-	-	-	2.75*** [2.31,3.19]
WOMEN					
Rooms per capita	1.17*** [0.75,1.58]	0.66** [0.24,1.08]	0.56** [0.13,0.98]	0.40 [-0.02,0.82]	0.18 [-0.24,0.60]
Education level	-	2.68*** [2.20,3.16]	2.14*** [1.61,2.68]	1.54*** [1.00,2.08]	1.33*** [0.79,1.86]
Main job [a]	-	-	1.23*** [0.69,1.77]	0.89** [0.35,1.42]	0.67* [0.14,1.20]
Current income	-	-	-	2.65*** [2.22,3.07]	1.80*** [1.36,2.25]
Current wealth	-	-	-	-	2.76*** [2.33,3.20]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; SII=slope index of inequality; [a] skill level

7.3.1.3 Number of amenities in childhood accommodation

Among men, the number of amenities in the respondents' childhood accommodation was weakly associated with CASP-12 (Model 1 Table 7.4). The addition of education level (Model 2 in Table 7.4) reduced the association by 57.6%, so that the SII was no longer statistically significant (SII=0.36, 95% CI: -0.10 to 0.82). This suggests that education level may have a key role in mediating the relationship between the number of amenities in

childhood and CASP-12. But, the later measures of socioeconomic position also have a role in attenuating the association between education level and CASP-12.

The household amenities during childhood had a slightly stronger association with CASP-12 among women, compared to men. Adding the education, main job, and income variables (Model 4 in Table 7.4) attenuated the association by 81.7% so it was no longer statistically significant (SII=0.24, 95% CI: -0.22 to 0.69). These results suggest that the association between the number of amenities in the household during childhood and CASP-12 in early old age can be explained by later socioeconomic circumstances, particularly education level.

Table 7.4: Age-adjusted slope indices of inequality derived from the multilevel models for the association between the number of amenities in childhood and CASP-12 adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Amenities	0.85*** [0.40,1.29]	0.36 [-0.10,0.82]	0.22 [-0.24,0.68]	0.05 [-0.41,0.51]	0.02 [-0.43,0.48]
Education level	-	1.99*** [1.50,2.48]	1.40*** [0.86,1.95]	0.79** [0.24,1.34]	0.45 [-0.09,1.00]
Main job [a]	-	-	1.31*** [0.78,1.85]	0.94*** [0.40,1.47]	0.65* [0.11,1.18]
Current income	-	-	-	2.33*** [1.89,2.77]	1.61*** [1.16,2.06]
Current wealth	-	-	-	-	2.77*** [2.33,3.20]
WOMEN					
Amenities	1.31*** [0.87,1.75]	0.61** [0.15,1.06]	0.47* [0.01,0.93]	0.24 [-0.22,0.69]	0.10 [-0.36,0.55]
Education level	-	2.66*** [2.16,3.15]	2.14*** [1.59,2.68]	1.56*** [1.01,2.10]	1.33*** [0.79,1.87]
Main job [a]	-	-	1.23*** [0.69,1.77]	0.90*** [0.37,1.44]	0.68* [0.15,1.21]
Current income	-	-	-	2.65*** [2.23,3.08]	1.80*** [1.36,2.25]
Current wealth	-	-	-	-	2.77*** [2.34,3.21]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; SII=slope index of inequality; [a] skill level

7.3.1.4 Occupation of the main breadwinner during childhood

Adding education level attenuated the relationship between the occupation of the main breadwinner during childhood and CASP-12 by 35.7% among men and 46.5% among women (Model 2 in Table 7.5). For men, further addition of the main job and income variables (Model 4 in Table 7.5) attenuated the SII so that it was no longer statistically significant (SII=0.52, 95% CI: -0.01 to 1.06). Among women, after adjusting for the four measures of adulthood socioeconomic position (Model 5 Table 7.5), the SII was no longer statistically significant (0.42, 95% CI: -0.12 to 0.95). These results suggest that a pathway effect may be operating, where the occupation of the main breadwinner influenced CASP-12 in early old age, indirectly through adulthood socioeconomic circumstances, particularly via education level.

Table 7.5: Age-adjusted slope indices of inequality derived from the multilevel models for the association between the occupation of the main breadwinner in childhood and CASP-12 adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Breadwinner job [a]	1.29*** [0.76,1.81]	0.83** [0.30,1.37]	0.61* [0.07,1.15]	0.52 [-0.01,1.06]	0.36 [-0.17,0.89]
Education level	-	1.93*** [1.45,2.41]	1.39*** [0.85,1.92]	0.75** [0.21,1.30]	0.42 [-0.12,0.97]
Main job [a]	-	-	1.24*** [0.70,1.78]	0.85** [0.31,1.39]	0.59* [0.05,1.12]
Current income	-	-	-	2.32*** [1.89,2.76]	1.61*** [1.16,2.06]
Current wealth	-	-	-	-	2.75*** [2.32,3.19]
WOMEN					
Breadwinner job [a]	1.60*** [1.08,2.12]	0.87** [0.33,1.40]	0.65* [0.11,1.19]	0.56* [0.03,1.10]	0.42 [-0.12,0.95]
Education level	-	2.64*** [2.15,3.13]	2.15*** [1.61,2.69]	1.53*** [0.99,2.07]	1.30*** [0.76,1.83]
Main job [a]	-	-	1.18*** [0.64,1.73]	0.84** [0.29,1.38]	0.62* [0.08,1.16]
Current income	-	-	-	2.66*** [2.23,3.08]	1.80*** [1.36,2.25]
Current wealth	-	-	-	-	2.76*** [2.33,3.20]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; SII=slope index of inequality; [a] skill level

7.3.1.5 Including all measures of childhood socioeconomic position

It is unlikely that any one measure adequately captures childhood socioeconomic position and each indicator is also subject to measurement error. In models containing all of the indicators of childhood socioeconomic position, the SIIs for each childhood socioeconomic variable were reduced (Model 1 in Table 7.6). Each variable remained statistically significant, apart from the number of amenities in the respondents' accommodation as children.

This result perhaps indicates that the number of household amenities during childhood is not an important predictor of CASP-12 and that the small independent association observed may be due to confounding by the other measures of childhood socioeconomic position.

After adjusting for all the measures of socioeconomic position from across the life course (Model 5 in Table 7.6), the number of books remained associated with CASP-12 among both men (SII=0.58, 95% CI: 0.04 to 1.11) and women (SII=0.65, 95% CI: 0.13 to 1.17). Although it has to be emphasised that the effect sizes observed for this variable were small and could perhaps be the result of chance or unmeasured confounding factors.

Among men, the only other measures of socioeconomic position which remained associated with CASP-12 were current income and wealth. Education level and the skill level of the main occupation also remained associated with CASP-12 among women. However, the effect size for the main occupation was small and similar to that observed for the number of books in childhood. The effect size for wealth remained large among both genders, again highlighting the importance of current socioeconomic position for CASP-12 in early old age.

Table 7.6: Age-adjusted slope indices of inequality derived from the multilevel models for the association between measures of childhood socioeconomic position and CASP-12, adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Number of books	1.26*** [0.74,1.79]	0.85** [0.31,1.39]	0.74** [0.20,1.29]	0.62* [0.08,1.15]	0.58* [0.04,1.11]
Rooms per capita	0.63** [0.19,1.07]	0.54* [0.10,0.98]	0.49* [0.05,0.94]	0.38 [-0.06,0.82]	0.26 [-0.18,0.69]
Amenities	-0.01 [-0.51,0.49]	-0.18 [-0.68,0.33]	-0.21 [-0.72,0.29]	-0.31 [-0.81,0.19]	-0.26 [-0.76,0.23]
Breadwinner job [a]	0.66* [0.10,1.22]	0.51 [-0.06,1.07]	0.36 [-0.21,0.92]	0.35 [-0.21,0.91]	0.21 [-0.35,0.77]
Education level	-	1.62*** [1.10,2.13]	1.18*** [0.63,1.73]	0.62* [0.06,1.18]	0.31 [-0.24,0.87]
Main job [a]	-	-	1.10*** [0.56,1.65]	0.77** [0.22,1.31]	0.52 [-0.02,1.06]
Current income	-	-	-	2.28*** [1.84,2.72]	1.58*** [1.13,2.03]
Current wealth	-	-	-	-	2.73*** [2.30,3.17]
WOMEN					
Number of books	1.57*** [1.06,2.08]	0.97*** [0.44,1.50]	0.89*** [0.36,1.42]	0.74** [0.21,1.26]	0.65* [0.13,1.17]
Rooms per capita	0.52* [0.07,0.97]	0.38 [-0.06,0.83]	0.34 [-0.10,0.79]	0.25 [-0.19,0.70]	0.07 [-0.37,0.51]
Amenities	0.33 [-0.17,0.83]	0.09 [-0.40,0.59]	0.04 [-0.46,0.54]	-0.11 [-0.61,0.38]	-0.16 [-0.65,0.33]
Breadwinner job [a]	0.75** [0.20,1.31]	0.48 [-0.08,1.04]	0.33 [-0.23,0.90]	0.34 [-0.22,0.90]	0.27 [-0.29,0.82]
Education level	-	2.20*** [1.68,2.73]	1.82*** [1.26,2.38]	1.31*** [0.74,1.87]	1.14*** [0.58,1.69]
Main job [a]	-	-	1.04*** [0.49,1.59]	0.74** [0.20,1.29]	0.56* [0.02,1.10]
Current income	-	-	-	2.61*** [2.18,3.03]	1.78*** [1.34,2.22]
Current wealth	-	-	-	-	2.74*** [2.30,3.17]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; SII=slope index of inequality; [a] skill level

7.3.2 Path analysis

The above results suggested that most of the childhood measures of socioeconomic position influenced CASP-12 via the later measures of socioeconomic position, but that the number of books in childhood may have a small direct effect on CASP-12. Path

analysis enables the relationships between the observed variables to be explored further, including the calculation of direct and indirect effects (see chapter 5 section 5.5.2).

The first step in the path analysis was to test the base model first presented in chapter 5. Figure 7.1 and Figure 7.2 display the results for this model among men and women, respectively. The path coefficients can be interpreted in the same way as regression coefficients. Paths leaving from one measure of socioeconomic position to another are interpreted as the increase in the standardised socioeconomic rank of the first variable given an increase from 0 to 1 in the standardised socioeconomic rank of second variable. Paths leaving from a measure of socioeconomic position to CASP-12 are interpreted as the increase in CASP-12 given an increase from 0 to 1 in the standardised socioeconomic rank for that measure of socioeconomic position.

7.3.2.1 Base model

Among both genders, all hypothesised paths were statistically significant except for the direct effect of the number of amenities in the respondent's accommodation during childhood on current wealth. Additionally, among men, the direct effect of education level on CASP-12 was not statistically significant (0.46, 95% CI: -0.08 to 1.00). Whereas, among women, an increase from 0 to 1 in the standardised rank for education level was associated with a 1.34 (95% CI: 0.81 to 1.87) increase in CASP-12, which demonstrates that there are gender differences in the importance of different measures of socioeconomic position for CASP-12. For both genders, the strongest direct effect of one measure of socioeconomic position on another was that of the effect of the education variable on the main occupation, consistent with the correlations calculated in section 7.2.

The base model fit statistics (Table 7.7) suggested that among women the model had reasonable fit with the data, according to most of the standard indices (see methodology section 5.5.2.3 for details on assessing model fit). The chi-square test for model fit was statistically significant in both genders, which in theory suggests poor model fit. However, as discussed in the methodology this was likely due to the large sample size. Among men, the value of 0.86 for the Tucker Lewis Index was slightly less than the recommended standard of 0.9 (McDonald & Ho, 2002). The model fit could potentially be

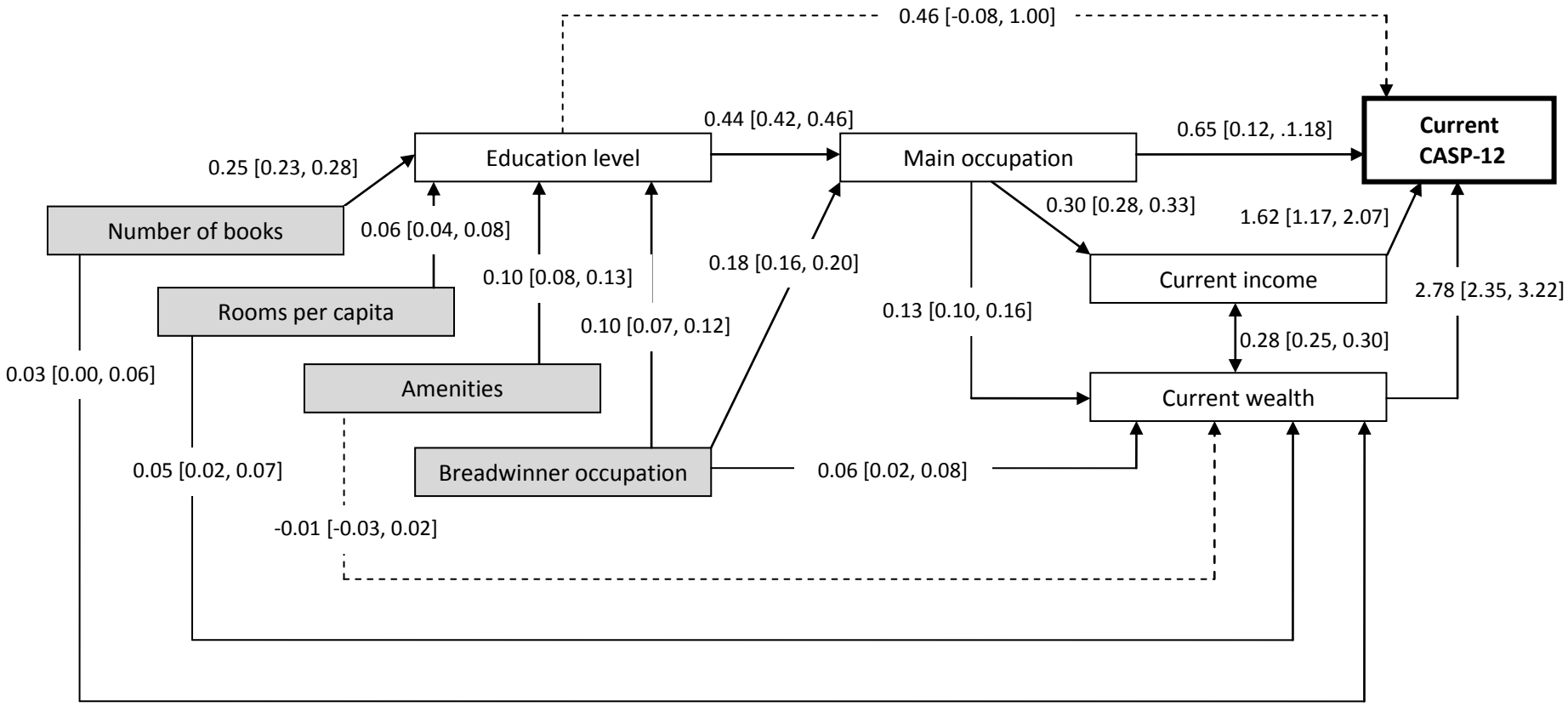
improved by removing the pathways which were not statistically significant. However, as the aim was to test the hypothesised pathways and not to produce a model with the best fit, trying to improve the model fit in this way was deemed inappropriate.

Table 7.7: Model fit statistics for the CASP-12 base path model

Gender	AIC	Chi-square df (p-value)	RMSEA [95% CI]	CFI	TLI
Men	46179.36	729.18 df=65 (p<0.01)	0.04 [0.03,0.04]	0.91	0.86
Women	49857.42	614.12 df=65 (p<0.01)	0.03 [0.03,0.04]	0.93	0.90

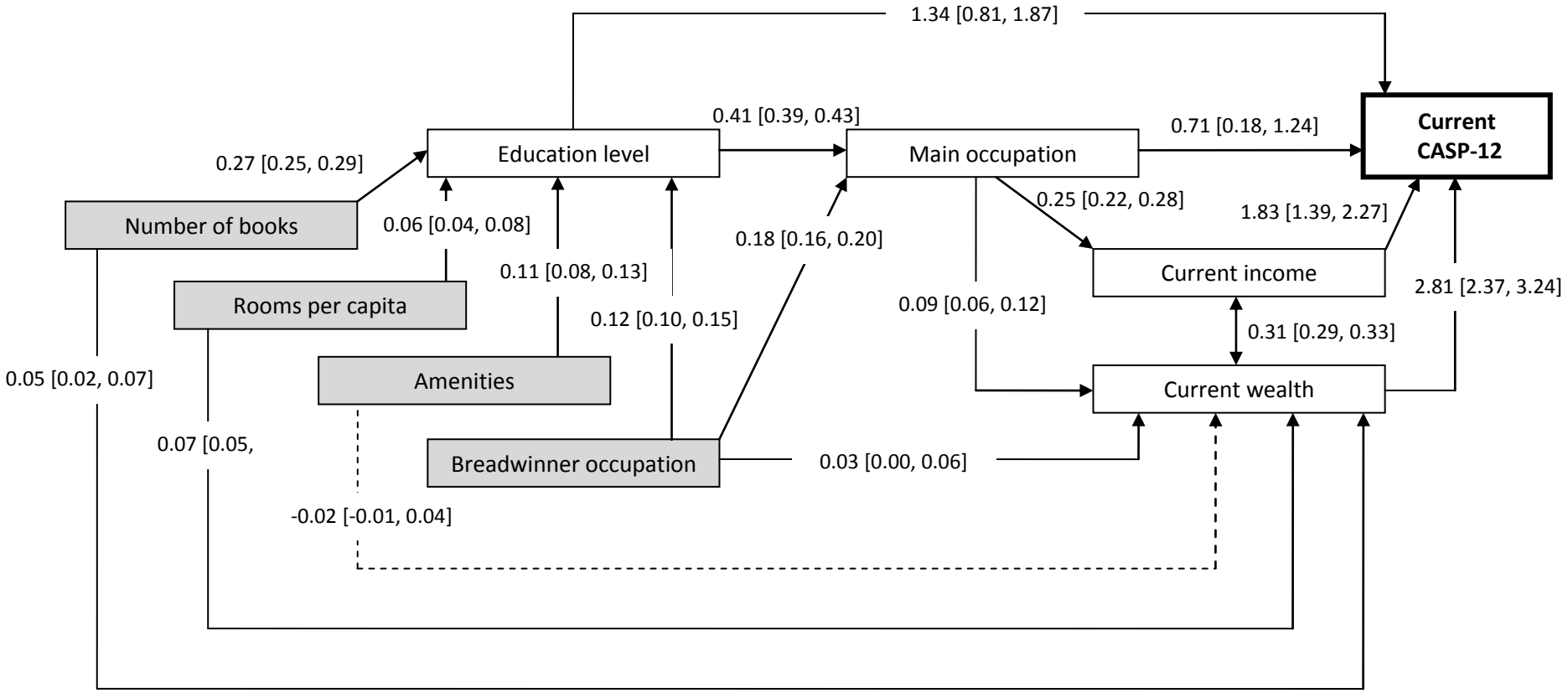
AIC=Akaike information criteria; CFI=comparative fit index; df=degrees of freedom; RMSEA=root mean square error of approximation; SRMR= Standardized Root Mean Square Residual; TLI=Tucker Lewis Index

Figure 7.1: Path diagram (showing unstandardised regression coefficients with 95% confidence intervals) for the CASP-12 base model among men



Grey boxes indicate childhood measure of socioeconomic position; controlled for age and country fixed effects; dashed line shows statistically insignificant path (p>0.05); correlations between the childhood measures of socioeconomic position and residual variances not shown

Figure 7.2: Path diagram (showing unstandardised regression coefficients with 95% confidence intervals) for the CASP-12 base model among women



Grey boxes indicate measures of childhood socioeconomic position; controlled for age and country fixed effects; dashed line shows statistically insignificant path (p>0.05); correlations between the childhood measures of socioeconomic position and residual variances not shown

7.3.2.2 Direct, indirect, and total effects from childhood socioeconomic position to CASP-12

Direct effects

In the multilevel analysis, the number of books was most strongly associated with CASP-12, of the childhood measures. Therefore, a direct effect from this variable to CASP-12 was tested. Among men, a one-unit increase in the number of books variable was associated with an increase of 0.59 (95% CI: 0.10 to 1.07) in CASP-12 (Figure 7.3). For women (Figure 7.4), the same coefficient was 0.67 (95% CI: 0.19 to 1.15), similar to the small effect sizes observed in the multilevel analysis. Compared to the base model (Table 7.7), the model containing the direct effect from the number of books was a slightly better fit with the data according to a lower AIC value (Table 7.8). The other fit statistics did not differ substantially between models.

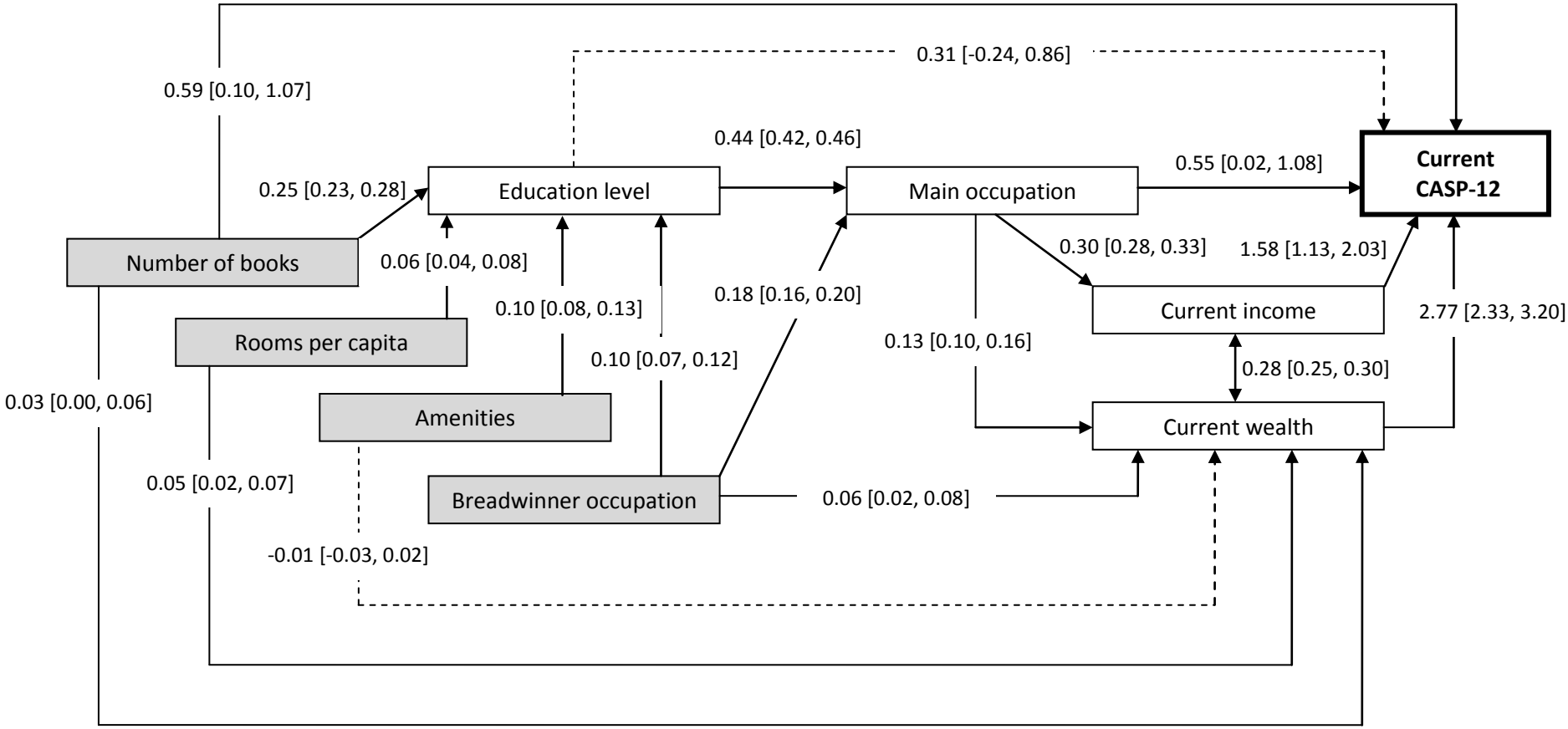
Table 7.8: Model fit statistics for the path model containing a direct effect from the number of books in childhood to CASP-12

Gender	AIC	Chi-square df (p-value)	RMSEA [95% CI]	CFI	TLI
Men	46175.70	723.53 df=64 (p<0.01)	0.04 [0.04,0.04]	0.91	0.86
Women	49851.90	606.59 df=64 (p<0.01)	0.03 [0.03,0.04]	0.93	0.90

AIC=Akaike information criteria; CFI=comparative fit index; df=degrees of freedom; RMSEA=root mean square error of approximation; SRMR= Standardized Root Mean Square Residual; TLI=Tucker Lewis Index

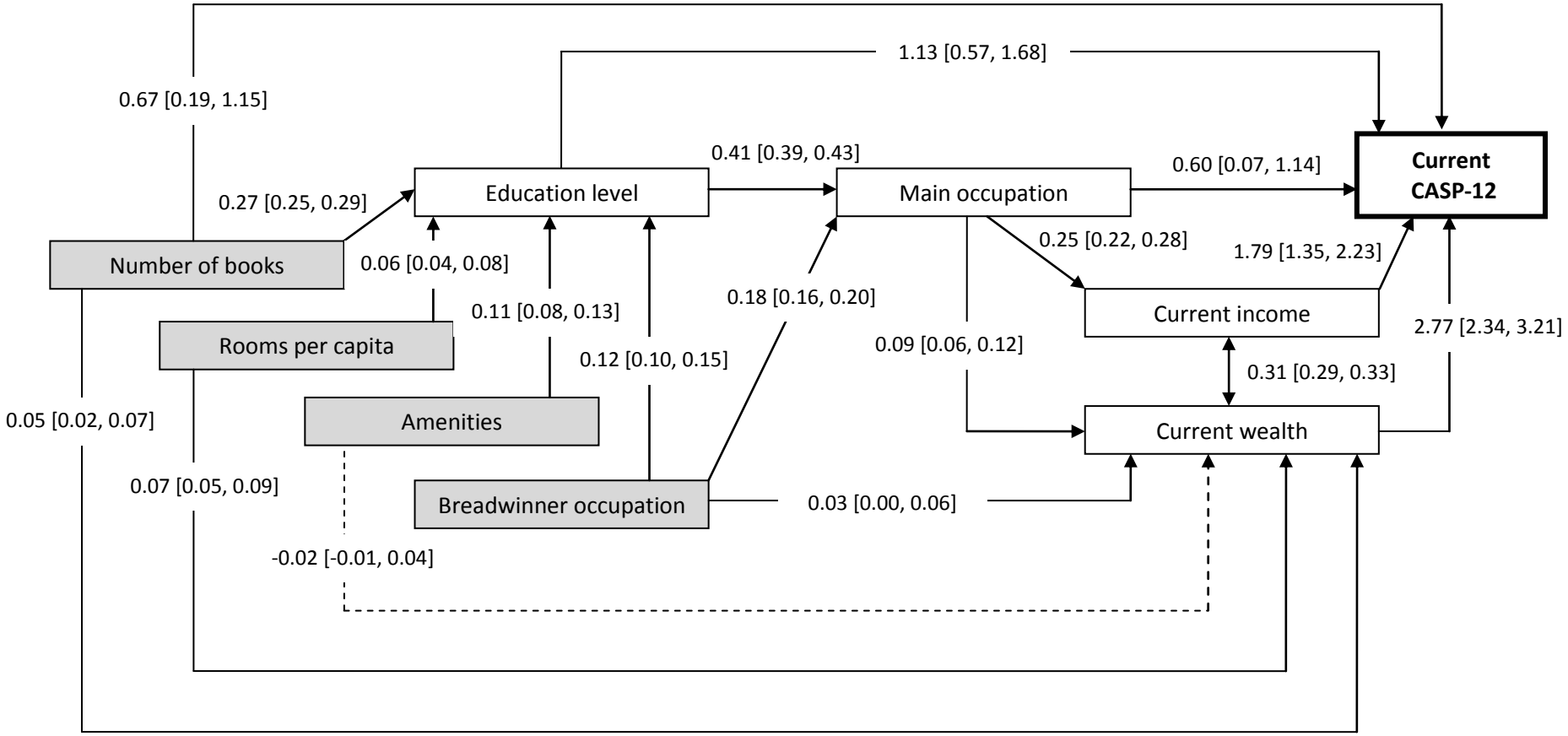
Consistent with the previous multilevel regression models, education level did not have a statistically significant direct effect on CASP-12 among men, but among women a modest direct effect was observed. A small direct effect from the main occupation to CASP-12 was found for both genders. In addition, current income and wealth displayed strong direct effects on CASP-12 among both men and women.

Figure 7.3: Path diagram (showing unstandardised regression coefficients with 95% confidence intervals) with a direct effect from the number of books in childhood to CASP-12 in early old age among men



Grey boxes indicate measures of childhood socioeconomic position; controlled for age and country fixed effects; dashed line shows statistically insignificant path (p>0.05); correlations between the childhood measures of socioeconomic position and residual variances not shown

Figure 7.4: Path diagram (showing unstandardised regression coefficients with 95% confidence intervals) with a direct effect from the number of books in childhood to CASP-12in early old age among women



Grey boxes indicate measures of childhood socioeconomic position; controlled for age and country fixed effects; dashed line shows statistically insignificant path (p>0.05); correlations between the childhood measures of socioeconomic position and residual variances not shown

Table 7.9 displays the direct, indirect (overall and specific), and total effects which were calculated from the above path model. To clarify, the paths under the row heading 'specific indirect effects' indicate the indirect effect from the childhood measures of socioeconomic position corresponding to the column heading. For example "-> education ->" under the number of books column refers to the indirect effect from the number of books in childhood via education level to CASP-12. The overall indirect effect was calculated from the sum of the specific indirect effects from the childhood socioeconomic variable to CASP-12 and the total effect was derived from the sum of the overall direct and indirect effects.

Specific indirect effects can be calculated by multiplying the path coefficients for each variable on the pathway. For example, among men, the indirect effect from the occupation of the main breadwinner during childhood through the respondent's main occupation to CASP-12 was equal to 0.18x0.55=0.10. This can be interpreted as the increase in CASP-12 while holding the occupation of the main breadwinner constant (as well as the other variables controlled for) and increasing the value of the main occupation to the value this variable would take given a one-unit increase in the occupation of the main breadwinner.

Total effect

The total effects for each childhood variable were statistically significant, except for the number of amenities in the accommodation among men. This suggests that, among men, the number of amenities in the respondents' accommodation as a child had little influence on CASP-12 above the other measures of socioeconomic position. Of the childhood socioeconomic variables, the number of books in childhood displayed the largest total effect on CASP-12, among both genders.

Overall indirect effect

Among men, the occupation of the main breadwinner displayed the largest overall indirect effect on CASP-12 scores. Among women, the number of books had the strongest overall indirect association with CASP-12, although the occupation of the main breadwinner displayed a similar effect size. It was interesting to note that among women, the size of the overall direct and indirect effects from the number of books in childhood to CASP-12 were of similar magnitude. Among men, the equivalent overall

indirect effect was less than its overall direct effect, suggesting that the number of books may exert more of its influence directly rather than indirectly for men. The accommodation amenities during childhood exhibited the weakest overall indirect effect on CASP-12 scores, which was not statistically significant among men.

Specific indirect effects

The specific indirect effects from each measure of childhood socioeconomic position, via education level to CASP-12, were not statistically significant among men. This was likely due to the small direct effect of education level on CASP-12 for men. However, among women each indirect pathway from childhood via education to CASP-12 was statistically significant. This perhaps suggests the importance of a higher childhood socioeconomic position for the achievement of a higher education level, which in turn contributes to higher CASP-12 scores. The indirect path from the number of books in childhood via education to CASP-12 was the strongest, which could mean that a more enriched childhood cultural environment helps to gain a higher education, leading to higher CASP-12 scores in early old age. In addition, apart from the pathway via number of amenities, the other childhood variables displayed statistically significant indirect effects on CASP-12 via wealth.

The specific indirect effect from the occupation of the main breadwinner during childhood via the main occupation to CASP-12 was statistically significant among both genders. This suggests that although there is no direct effect from the childhood occupational variable, there may be an indirect effect via the inter-generational reproduction of occupational skill. Among men, the strongest overall indirect effect from a childhood variable to CASP-12 was observed for the occupation of the main breadwinner. However, on the whole, the effect size for the indirect pathways was low.

Table 7.9: Direct, indirect, and total effects of the childhood measures of socioeconomic position on CASP-12 derived from the path analysis

	Number of books	Rooms per capita	Breadwinner occupation	Accommodation amenities	Number of books	Rooms per capita	Breadwinner occupation	Accommodation amenities
	Men				Women			
	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value
Overall direct effects	**0.59 (0.25) p=0.02**	-	-	-	**0.67 (0.25) p=0.01**	-	-	-
Overall indirect effects	**0.35 (0.08) p<0.01**	**0.19 (0.04) p<0.01**	**0.54 (0.07) p<0.01**	0.09 (0.05) p=0.07	**0.60 (0.08) p<0.01**	**0.30 (0.04) p<0.01**	**0.58 (0.08) p<0.01**	**0.24 (0.05) p<0.01**
Total effect	**0.94 (0.24) p<0.01**	**0.19 (0.04) p<0.01**	**0.54 (0.07) p<0.01**	0.09 (0.05) p=0.07	**1.27 (0.23) p<0.01**	**0.30 (0.04) p<0.01**	**0.58 (0.08) p<0.01**	**0.24 (0.05) p<0.01**
Specific indirect effect								
-> education ->	0.08 (0.07) p=0.27	0.02 (0.02) p=0.28	0.03 (0.03) p=0.27	0.03 (0.03) p=0.27	**0.30 (0.08) p<0.01**	**0.07 (0.02) p<0.01**	**0.14 (0.04) p<0.01**	**0.12 (0.03) p<0.01**
-> wealth ->	**0.09 (0.04) p=0.02**	**0.13 (0.04) p<0.01**	**0.15 (0.04) p<0.01**	-0.02 (0.04) p=0.58	**0.13 (0.04) p<0.01**	**0.19 (0.04) p<0.01**	**0.09 (0.04) p=0.04**	0.06 (0.04) p=0.13
-> education -> main job ->	**0.06 (0.03) p<0.05**	0.01 (0.01) p=0.06	0.02 (0.01) p=0.05	**0.03 (0.01) p<0.05**	**0.07 (0.03) p=0.03**	**0.02 (0.01) p=0.04**	**0.03 (0.01) p=0.03**	**0.03 (0.01) p=0.03**

	Number of books	Rooms per capita	Breadwinner occupation	Accommodation amenities	Number of books	Rooms per capita	Breadwinner occupation	Accommodation amenities
	Men				Women			
	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value
-> education -> main job -> income ->	0.05 (0.01) p<0.01	0.01 (0.00) p<0.01	0.02 (0.00) p<0.01	0.02 (0.00) p<0.01	0.05 (0.01) p<0.01	0.01 (0.00) p<0.01	0.02 (0.00) p<0.01	0.02 (0.00) p<0.01
-> education -> main job -> wealth ->	0.04 (0.01) p<0.01	0.01 (0.00) p<0.01	0.02 (0.00) p<0.01	0.02 (0.00) p<0.01	0.03 (0.01) p<0.01	0.01 (0.00) p<0.01	0.01 (0.00) p<0.01	0.01 (0.00) p<0.01
-> education -> main job -> income -> wealth ->	0.03 (0.00) p<0.01	0.01 (0.00) p<0.01	0.01 (0.00) p<0.01	0.01 (0.00) p<0.01	0.02 (0.00) p<0.01	0.01 (0.00) p<0.01	0.01 (0.00) p<0.01	0.01 (0.00) p<0.01
-> main job ->	-	-	0.10 (0.05) p<0.05	-	-	-	0.11 (0.05) p=0.03	-
-> main job -> income	-	-	0.09 (0.01) p<0.01	-	-	-	0.08 (0.01) p<0.01	-
-> main job -> wealth	-	-	0.07 (0.01) p<0.01	-	-	-	0.05 (0.01) p<0.01	-
-> main job -> income -> wealth	-	-	0.04 (0.01) p<0.01	-	-	-	0.04 (0.01) p<0.01	-

Coeff.=coefficient; SE=standard error. Coefficients in bold indicate statistical significance (p<0.05); model controlled for age and country fixed effects

7.4 The influence of the welfare regime

This section describes the results from the stratified analysis looking at latent and pathway effects from childhood socioeconomic position to CASP-12 by welfare regime. As the above analysis revealed that the number of books in childhood had the strongest association with CASP-12 out of the childhood measures of socioeconomic position, the analysis by welfare regime focuses on investigating this relationship by welfare regime. The correlations between the measures of socioeconomic position are examined first and then the results for the single level regression models and path analysis stratified by welfare regime are described.

7.4.1 Correlations between the measures of socioeconomic position

Overall, there was no clear difference between regimes in terms of the correlation between the childhood and adulthood measures of socioeconomic position, apart from weaker correlations between the number of rooms per capita and amenities in childhood and current wealth in the Post-communist regime (Appendix 7.1 to Appendix 7.4 contain the correlation coefficients by welfare regime).

7.4.1.1 Latent and pathway effects

Southern regime

Among both men and women, the association between the number of books in childhood and CASP-12 was no longer statistically significant when including education level in the model (Table 7.10). This suggests there may be a pathway effect operating, whereby education level mediated the association between the number of books in childhood and CASP-12. With each additional socioeconomic variable, the association was attenuated further. In Model 5 (Table 7.10), each of the adulthood socioeconomic variables was significantly associated with CASP-12, with education level and wealth displaying the strongest associations. Adding the additional childhood variables revealed that the number of rooms per capita in childhood was also associated with CASP-12 among men, although this was a weak effect.

Table 7.10: Age-adjusted association (derived from single level regression models) between the number of books in childhood and CASP-12 in the Southern regime, including the other measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]	(6) SII [95% CI]
Men						
Books in childhood	2.31*** [1.32,3.29]	0.97 [-0.09,2.02]	0.56 [-0.51,1.64]	0.35 [-0.72,1.42]	0.32 [-0.74,1.38]	0.11 [-0.05,1.27]
Education level	-	3.50*** [2.44,4.55]	2.75*** [1.63,3.87]	2.15*** [1.00,3.29]	1.65** [0.51,2.79]	1.64** [0.50,2.79]
Main job [a]	-	-	2.05*** [1.01,3.10]	1.83*** [0.79,2.88]	1.48** [0.44,2.52]	1.37* [0.32,2.43]
Current income	-	-	-	1.91*** [1.06,2.76]	1.33** [0.48,2.19]	1.28** [0.42,2.14]
Current wealth	-	-	-	-	2.93*** [2.10,3.76]	2.87*** [2.04,3.70]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.90* [0.04,1.77]
Amenities	-	-	-	-	-	-0.18 [-1.15,0.78]
Breadwinner job [a]	-	-	-	-	-	0.09 [-0.97,1.14]
Women						
Books in childhood	2.96*** [1.93,3.99]	1.08 [-0.06,2.21]	0.77 [-0.37,1.92]	0.49[-0.65,1.63]	0.08 [-1.05,1.21]	-0.23[-1.47,1.02]
Education level	-	4.56*** [3.34,5.77]	3.80*** [2.51,5.09]	2.91*** [1.59,4.23]	2.48*** [1.18,3.79]	2.42*** [1.11,3.73]
Main job [a]	-	-	1.92*** [0.84,3.01]	1.72** [0.64,2.80]	1.49** [0.43,2.56]	1.35* [0.25,2.44]
Current income	-	-	-	2.53*** [1.62,3.44]	1.76*** [0.84,2.69]	1.73*** [0.80,2.65]
Current wealth	-	-	-	-	3.24*** [2.34,4.14]	3.22*** [2.32,4.12]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.40 [-0.54,1.34]
Amenities	-	-	-	-	-	0.23[-0.82,1.29]
Breadwinner job [a]	-	-	-	-	-	0.43 [-0.69,1.56]

All models controlled for age, age^2, and country fixed effects; [a] skill level; CI=confidence interval; SII=slope index of inequality; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Scandinavian regime

Among men in the Scandinavian regime, adding the education and main job variables attenuated the association between the number of books in childhood and CASP-12 so that it was no longer statistically significant (Table 7.11), suggestive of a pathway model. For women, it took the further addition of current income and wealth for the association to diminish significantly. In the full model, only income and wealth displayed significant associations with CASP-12. Among men, the association with education level became increasingly negative with each additional socioeconomic variable. This could perhaps be due to over-adjustment.

Table 7.11: Age-adjusted association (derived from single level regression models) between the number of books in childhood and CASP-12 in the Scandinavian regime, including the other measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]	(6) SII [95% CI]
Men						
Books in childhood	0.93* [0.06,1.79]	1.02* [0.08,1.95]	0.76 [-0.18,1.71]	0.62 [-0.32,1.56]	0.48 [-0.45,1.42]	0.28 [-0.78,1.34]
Education level	-	-0.25 [-1.25,0.74]	-1.01 [-2.12,0.11]	-1.49** [-2.61,-0.37]	-1.59** [-2.71,-0.48]	-1.62** [-2.73,-0.50]
Main job [a]	-	-	1.60** 0.52,2.67]	1.27* [0.20,2.34]	0.90 [-0.18,1.98]	0.81 [-0.27,1.90]
Current income	-	-	-	2.14*** [1.25,3.03]	1.47** [0.54,2.40]	1.45** [0.52,2.37]
Current wealth	-	-	-	-	2.04*** [1.12,2.97]	1.98*** [1.06,2.91]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.63 [-0.25,1.51]
Amenities	-	-	-	-	-	-0.84 [-1.85,0.17]
Breadwinner job [a]	-	-	-	-	-	1.04 [-0.06,2.14]
Women						
Books in childhood	1.38** [0.53,2.23]	1.22** [0.31,2.12]	1.08* [0.16,1.99]	0.96* [0.05,1.87]	0.81[-0.09,1.71]	0.63 [-0.36,1.63]
Education level	-	0.48 [-0.48,1.44]	-0.05 [-1.13,1.04]	-0.34 [-1.43,0.74]	-0.47 [-1.55,0.61]	-0.54 [-1.63,0.55]
Main job [a]	-	-	1.12* [0.01,2.23]	0.69 [-0.42,1.81]	0.48 [-0.63,1.59]	0.42 [-0.70,1.53]
Current income	-	-	-	2.13*** [1.27,2.99]	1.16* [0.21,2.10]	1.20* [0.25,2.14]
Current wealth	-	-	-	-	2.28*** [1.34,3.21]	2.23*** [1.29,3.17]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	-0.00 [-0.89,0.88]
Amenities	-	-	-	-	-	-0.18 [-1.18,0.83]
Breadwinner job [a]	-	-	-	-	-	0.82 [-0.28,1.92]

All models controlled for age, age^2, and country fixed effects; [a] skill level; CI=confidence interval; SII=slope index of inequality; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Post-communist regime

Among men in the Post-communist regime, the number of books in childhood remained associated with CASP-12 even when adjusting for each socioeconomic variable (Table 7.12). Further, the effect size for the number of books was greater than that observed for the education level and main job variables. This could suggest a potential direct effect of the number of books in childhood on CASP-12. Still, current income and wealth had the strongest association with CASP-12.

Among women, the association between the number of books in childhood and CASP-12 was attenuated and no longer statistically significant when including education and the main occupation variables, suggestive of a pathway effect. In the full model, it is notable that education level had the strongest association with CASP-12, above that of current income and wealth. However, this effect size was still less than the difference in mean CASP-12 scores observed between those who did and did not report limitations with their daily activities, which among women in the Post-communist regime was 4.58. Nevertheless, it suggests that education level is an important determinant of CASP-12 among women in this regime.

Table 7.12: Age-adjusted association (derived from single level regression models) between the number of books in childhood and CASP-12 in the Post-communist regime, including the other measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]	(6) SII [95% CI]
Men						
Books in childhood	2.77*** [1.46,4.07]	2.03** [0.62,3.43]	2.00** [0.57,3.43]	1.89** [0.47,3.30]	1.82* [0.41,3.23]	1.73* [0.21,3.25]
Education level	-	2.07** [0.63,3.52]	2.00* [0.33,3.67]	1.40 [-0.27,3.07]	1.28 [-0.38,2.94]	1.22 [-0.45,2.89]
Main job [a]	-	-	0.16 [-1.65,1.98]	-0.29 [-2.10,1.52]	-0.62 [-2.43,1.19]	-0.57 [-2.40,1.26]
Current income	-	-	-	2.86*** [1.62,4.10]	2.40*** [1.15,3.66]	2.36*** [1.10,3.61]
Current wealth	-	-	-	-	2.36*** [1.14,3.58]	2.38*** [1.16,3.60]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.38 [-0.88,1.63]
Amenities	-	-	-	-	-	0.70 [-0.81,2.20]
Breadwinner job [a]	-	-	-	-	-	-0.98 [-2.87,0.92]
Women						
Books in childhood	2.75*** [1.59,3.91]	1.30* [0.07,2.53]	1.12 [-0.13,2.36]	0.91 [-0.33,2.15]	0.87 [-0.37,2.10]	0.85 [-0.48,2.17]
Education level	-	4.28*** [2.97,5.58]	3.68*** [2.23,5.13]	3.26*** [1.80,4.72]	3.09*** [1.63,4.54]	3.08*** [1.61,4.55]
Main job [a]	-	-	1.40 [-0.07,2.87]	1.19 [-0.28,2.66]	1.02 [-0.44,2.49]	1.02 [-0.46,2.50]
Current income	-	-	-	2.11*** [1.01,3.22]	1.73** [0.61,2.84]	1.72** [0.60,2.85]
Current wealth	-	-	-	-	2.02*** [0.92,3.11]	2.01***[0.92,3.11]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.06 [-1.09,1.22]
Amenities	-	-	-	-	-	-0.02 [-1.36,1.33]
Breadwinner job [a]	-	-	-	-	-	0.0 5[-1.62,1.73]

All models controlled for age, age^2, and country fixed effects; [a] skill level; CI=confidence interval; SII=slope index of inequality; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Bismarckian regime

With the addition of education level and the main job variables, the association between the number of books in childhood and CASP-12 was no longer statistically significant among men (Table 7.13). This indicates that the relationship between the number of books during childhood and CASP-12 may operate through adulthood socioeconomic position, suggesting a pathway effect. Only current income and wealth remained associated with CASP-12 in the full model, which could suggest that the association between the education and occupation variables and CASP-12 worked through income and wealth.

Among women, a potential latent effect was observed, as the association between the number of books and CASP-12 remained after including each of the socioeconomic variables from across the life course. However, the overall effect size was small and less than that observed for men in the Post-communist regime. Neither education level nor the main occupation was associated with CASP-12 in the full model, with only income and wealth displaying statistically significant associations with CASP-12.

Table 7.13: Age-adjusted association (derived from single level regression models) between the number of books in childhood and CASP-12 in the Bismarckian regime, including the other measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]	(6) SII [95% CI]
Men						
Books in childhood	1.32*** [0.64,2.01]	0.93* [0.21,1.65]	0.82* [0.09,1.55]	0.61 [-0.12,1.33]	0.53 [-0.19,1.25]	0.71 [-0.08,1.50]
Education level	-	1.26** [0.50,2.01]	0.94* [0.12,1.77]	0.36 [-0.48,1.19]	-0.04 [-0.87,0.79]	0.02 [-0.82,0.85]
Main job [a]	-	-	0.76 [-0.05,1.57]	0.30 [-0.51,1.11]	0.17 [-0.63,0.97]	0.17 [-0.64,0.98]
Current income	-	-	-	2.44*** [1.74,3.13]	1.51*** [0.79,2.22]	1.55*** [0.83,2.27]
Current wealth	-	-	-	-	3.07*** [2.38,3.76]	3.09*** [2.39,3.78]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	-0.52 [-1.20,0.16]
Amenities	-	-	-	-	-	-0.42 [-1.19,0.34]
Breadwinner job [a]	-	-	-	-	-	0.36 –[0.49,1.21]
Women						
Books in childhood	1.66*** [0.99,2.33]	1.18** [0.46,1.91]	1.10**[0.37,1.83]	0.86* [0.13,1.58]	0.74* [0.02,1.45]	0.84* [0.07,1.61]
Education level	-	1.28** [0.51,2.05]	1.07* [0.24,1.89]	0.57 [-0.25,1.39]	0.42 [-0.39,1.23]	0.46 [-0.36,1.27]
Main job [a]	-	-	0.60 –[0.24,1.43]	0.21 [-0.62,1.04]	0.01 [-0.81,0.83]	0.02 [-0.82,0.86]
Current income	-	-	-	3.00*** [2.34,3.65]	1.98*** [1.29,2.66]	2.00*** [1.31,2.68]
Current wealth	-	-	-	-	2.96*** [2.29,3.64]	3.00*** [2.32,3.67]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	-0.29 [-0.96,0.37]
Amenities	-	-	-	-	-	-0.33 [-1.07,0.41]
Breadwinner job [a]	-	-	-	-	-	0.27 [-0.57,1.11]

All models controlled for age, age^2, and country fixed effects; [a] skill level; CI=confidence interval; SII=slope index of inequality; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

7.4.2 Path analysis for the influence of the number of books in childhood

To examine potential welfare regime differences in the direct and indirect effects of childhood socioeconomic position on CASP-12, the base path model (Figure 7.1) was run for each gender and welfare regime. As the number of books in childhood was most consistently associated with CASP-12 in the previous analyses, it was decided to focus on testing the direct and indirect effects from this childhood variable CASP-12. Therefore, the next step involved adding a direct effect from the number of books in childhood to CASP-12, to test the statistical significance of the path and compare the model fit with and without the direct path. The indirect and total effects from the number of books in childhood were then calculated. The key results from this set of analysis are summarised below.

Table 7.14 summarises the results from the path models including or excluding a direct effect from the number of books in childhood to CASP-12. Among men, only in the Post-communist regime was the direct effect from the number of books in childhood to CASP-12 statistically significant. For women, the direct effect was statistically significant in the Bismarckian regime only, consistent with the linear regression models above. This suggests that the direct effect observed in the overall analysis in section 7.3.2.2 was driven by the stronger associations observed among men in the Post-communist regime and among women in the Bismarckian regime. On the other hand, it could reflect the reduced sample size in the stratified analysis, meaning that the small association observed in the overall analysis was not detected in the results by welfare regime.

Table 7.14: Direct effects from the number of books in childhood to CASP-12 included in the path models used for each welfare regime and gender

	Welfare regime			
	Southern	**Scandinavian**	**Post-communist**	**Bismarckian**
	Coeff. SE p-value	**Coeff. SE p-value**	**Coeff. SE p-value**	**Coeff. SE p-value**
	Men			
Direct effect from the number of books to CASP-12	Not included 0.30 (0.54) p=0.58	Not included 0.49 (0.47) p=0.30	**Included** **1.81** **(0.71)** **p=0.01**	Not included 0.53 (0.37) p=0.15
	Women			
Direct effect from the number of books to CASP-12	Not included 0.09 (0.58) p=0.88	Not included 0.82 (0.46) p=0.07	Not included 0.88 (0.63) p=0.16	**Included** **0.74** **(0.37)** **p=0.04**

Coeff.=coefficient; SE=standard error. Coefficients in bold indicate statistical significance p<0.05

Results for the direct effects from the adulthood measures of socioeconomic position to CASP-12 are shown in Table 7.15. These were calculated from the path models including or excluding the direct effect from the number of books in childhood to CASP-12 according to the table above.

Generally, the direct effect from current wealth to CASP-12 was strongest and statistically significant. In all regimes, the direct effect from current income to CASP-12 was also statistically significant. Among both genders, the direct effect from the respondent's main occupation to CASP-12 was strong only in the Southern regime. There were some differences between welfare regimes in the direct effects from education level to CASP-12. Among women in the Southern and Post-communist regimes, the direct effect from education level to CASP-12 was statistically significant and particularly large in the Post-communist regime. Among men, there was a positive direct effect observed from education level to CASP-12 in the Southern regime. For the Scandinavian regime, a negative direct effect was observed, as seen in section 7.4.1.1.

It was interesting to note the absence of statistically significant direct effects from education level to CASP-12 in the two groups in which a significant direct effect from the number of books in childhood to CASP-12 was observed; men in the Post-communist regime and women in the Bismarckian regime. This could perhaps suggest that the

number of books in childhood is simply a better measure of education level among these regimes.

Table 7.15: Direct effects from adulthood socioeconomic position to CASP-12 by welfare regime and gender from the path analysis

	Welfare regime			
	Southern	**Scandinavian**	**Post-communist**	**Bismarckian**
Direct effect from adulthood SEP to CASP-12	**Coeff. SE p-value**	**Coeff. SE p-value**	**Coeff. SE p-value**	**Coeff. SE p-value**
	Men			
Education level	**1.77 (0.56) p<0.01**	**-1.46 (0.55) p=0.01**	1.28 (0.84) p=0.13	0.09 (0.41) p=0.83
Main occupation (skill level)	**1.56 (0.52) p<0.01**	0.99 (0.54) p=0.07	-0.60 (0.92) p=0.52	0.25 (0.40) p=0.54
Current income	**1.38 (0.43) p<0.01**	**1.50 (0.47) p<0.01**	**2.39 (0.64) p<0.01**	**1.55 (0.36) p<0.01**
Current wealth	**2.94 (0.42) p<0.01**	**2.08 (0.47) p<0.01**	**2.36 (0.62) p<0.01**	**3.08 (0.35) p<0.01**
	Women			
Education level	**2.46 (0.63) p<0.01**	-0.26 (0.54) p=0.63	**3.29 (0.72) p<0.01**	0.42 (0.41) p=0.31
Main occupation (skill level)	**1.51 (0.54) p=0.01**	0.62 (0.56) p=0.27	1.16 (0.74) p=0.12	0.01 (0.42) p=0.98
Current income	**1.79 (0.47) p<0.01**	**1.21 (0.48) p=0.01**	**1.89 (0.57) p<0.01**	**1.98 (0.35) p<0.01**
Current wealth	**3.26 (0.45) p<0.01**	**2.38 (0.47) p<0.01**	**2.15 (0.56) p<0.01**	**2.97 (0.34) p<0.01**

Coeff.=coefficient; SE=standard error; SEP=socioeconomic position. Coefficients in bold indicate statistical significance p<0.05

Table 7.16 summarises results for the direct, indirect, and total effects from the number of books in childhood to CASP-12 for each welfare regime among men. The overall indirect effects from the number of books were statistically significant in the Southern and Post-communist regimes, but not in the Scandinavian and Bismarckian regimes. In the Post-communist regime, the total effect was the largest, because of the strong direct effect on top of the indirect effects. Although the overall indirect effects were not

statistically significant in the Scandinavian and Bismarckian regimes, specific indirect effects, including paths which passed through the main job to current income or wealth displayed small, but statistically significant associations in all welfare regimes.

In the Southern regime, the strongest indirect effect was from the number of books in childhood via education level to CASP-12 and all other indirect paths including education level were statistically significant. It was noteworthy that the path through current wealth was weak in comparison to the path via education level, which perhaps suggests that the number of books is capturing something other than household wealth during childhood in this regime. The overall indirect effect for the number of books to CASP-12 was larger in the Southern regime compared to the Post-communist regime. However, in the Post-communist regime the total effect was the largest due to the strong direct effect. It was also notable that the path from the number of books via education level to CASP-12 was not statistically significant, suggesting that a higher number of books had little influence on education level among men in this regime. This requires further exploration, but it could perhaps be due to the communist education system during the time period under study which did not reward higher educational qualifications.

Table 7.16: Direct, indirect, and total effects from the number of books in childhood to CASP-12 among men in different welfare regimes derived from the path analysis

	Southern	Scandinavian	Post-communist	Bismarckian
	Coeff. (SE) p-value	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**
Overall direct effect	-	-	**1.81 (0.71) p=0.01**	-
Overall indirect effect	**0.97 (0.18) p<0.01**	-0.01 (0.15) p=0.95	**0.55 (0.24) p=0.02**	0.16 (0.10) p=0.12
Total effect	**0.97 (0.18) p<0.01**	-0.01 (0.15) p=0.95	**2.36 (0.68) p<0.01**	0.16 (0.10) p=0.12
Specific indirect effects	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**
Books -> education -> CASP-12	**0.51 (0.17) p<0.01**	**-0.41 (0.16) p=0.01**	0.37 (0.25) p=0.14	0.02 (0.09) p=0.83
Books -> wealth -> CASP-12	0.15 (0.09) p=0.11	0.11 (0.07) p=0.12	0.09 (0.09) p=0.36	0.02 (0.07) p=0.73
Books -> education -> main job -> CASP-12	**0.18 (0.06) p<0.01**	0.14 (0.08) p=0.07	-0.08 (0.13) p=0.52	0.02 (0.04) p=0.54
Books -> education -> main job ->income-> CASP-12	**0.05 (0.02) p<0.01**	**0.06 (0.02) p<0.01**	**0.10 (0.03) p<0.01**	**0.05 (0.01) p<0.01**
Books -> education -> main job ->wealth-> CASP-12	**0.06 (0.01) p<0.01**	**0.06 (0.02) p<0.01**	**0.05 (0.02) p=0.01**	**0.02 (0.01) p<0.01**
Books -> education -> main job ->income->wealth-> CASP-12	**0.02 (0.01) p<0.01**	**0.03 (0.01) p<0.01**	**0.02 (0.01) p<0.01**	**0.03 (0.01) p<0.01**

SE=standard error; Coeff.=coefficient; Coefficients in bold indicate statistical significance p<0.05; model controlled for age and country fixed effects

Table 7.17 displays the same results for women. As for men, the overall indirect effects from the number of books in childhood to CASP-12 were not statistically significant in the Scandinavian regime. The overall indirect effects were statistically significant among the Southern and Post-communist regimes, despite there being no direct effect. For women in the Bismarckian regime, the overall indirect effects were small, but larger compared to men, and statistically significant. In the Southern regime, all indirect effects were

statistically significant and in particular, specific indirect effects via education level and via wealth to CASP-12 were apparent. Further, in the Post-communist regime there was a modest indirect effect from the number of books in childhood, via education level, to CASP-12, which was in contrast to men.

Table 7.17: Direct, indirect, and total effects from the number of books in childhood to CASP-12 among women in different welfare regimes derived from the path analysis

	Southern	Scandinavian	Post-communist	Bismarckian
	Coeff. (SE) p-value	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**
Overall direct effects	-	-	-	**0.74 (0.37) p=0.04**
Overall indirect effects	**1.68 (0.23) p<0.01**	0.15 (0.12) p=0.21	**1.10 (0.20) p<0.01**	**0.25 (0.12) p=0.04**
Total effect	**1.68 (0.23) p<0.01**	0.15 (0.12) p=0.21	**1.10 (0.20) p<0.01**	**0.99 (0.35) p<0.01**
Specific indirect effects	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**	**Coeff. (SE) p-value**
Books -> education -> CASP-12	**0.79 (0.21) p<0.01**	-0.05 (0.11) p=0.63	**0.83 (0.20) p<0.01**	0.11 (0.11) p=0.31
Books -> wealth -> CASP-12	**0.54 (0.12) p<0.01**	0.05 (0.07) p=0.51	0.05 (0.07) p=0.47	0.04 (0.06) p=0.46
Books -> education -> main job -> CASP-12	**0.21 (0.08) p=0.01**	0.06 (0.06) p=0.28	0.13 (0.09) p=0.12	0.00 (0.04) p=0.98
Books -> education -> main job ->income-> CASP-12	**0.06 (0.02) p<0.01**	**0.04 (0.02) p=0.02**	**0.05 (0.02) p<0.01**	**0.05 (0.01) p<0.01**
Books -> education -> main job ->wealth-> CASP-12	**0.04 (0.01) p<0.01**	**0.02 (0.01) p=0.01**	**0.03 (0.01) p=0.02**	**0.02 (0.01) p<0.01**
Books -> education -> main job ->income->wealth-> CASP-12	**0.03 (0.01) p<0.01**	**0.03 (0.01) p<0.01**	**0.01 (0.00) p<0.01**	**0.02 (0.00) p<0.01**

SE=standard error; Coeff.=coefficient; Coefficients in bold indicate statistical significance p<0.05; model controlled for age and country fixed effects

7.5 Chapter discussion

7.5.1 Summary and interpretation of results

7.5.1.1 Overall results

This chapter has explored potential pathway and latent effects from childhood socioeconomic position to CASP-12 in early old age. The associations between a number of different measures of childhood socioeconomic position and CASP-12 were largely reduced by including measures of adulthood socioeconomic position, particularly education level. This supports the theory that childhood socioeconomic position influences CASP-12 via adulthood socioeconomic position: a pathway effect. The results from the hypothesised path model also demonstrated that most measures of childhood socioeconomic position displayed significant indirect effects on CASP-12. However, there was also evidence to suggest a small potential latent effect from the number of books in the household during childhood to CASP-12. The association between the number of books in childhood and CASP-12 remained even after including measures of current socioeconomic position. This could indicate that higher cultural resources within the family during childhood have a long-lasting direct effect on an individual's experience of early old age. On the other hand, it could be due to confounding resulting from unmeasured factors that were not included in the models. These potential explanations are explored further in the main discussion section in chapter 12.

It should be highlighted, however, that the size of the residual association between the number of books in childhood and CASP-12 was small. Out of the measures of socioeconomic position, current wealth was consistently the strongest predictor of CASP-12. In the models examining the association between the number of books in childhood and CASP-12, when including the measures of adulthood socioeconomic position, the effect size for current wealth was over four times that for the number of books. Thus, although there may be a direct effect from the number of books to CASP-12 it was small in comparison to the more current measures of material resources, like income and wealth. But, given the number of books variable related to circumstances during childhood, over 50 years ago for most participants, this is a potentially important finding which is considered further in chapter 12.

7.5.1.2 The influence of the welfare regime

After including the adulthood measures, the number of books exhibited a small association with CASP-12 only among men in the Post-communist regime and among women in the Bismarckian regime. This suggests that the overall association above was mainly due to these two findings. Although no direct effects were observed in the Southern regime among men, there were significant indirect effects, particularly via education level to CASP-12. This was also the case among women in the Post-communist and Southern regimes, with paths via education level also making the most contribution. Among women in the Southern regime, the indirect pathway from the number of books in childhood via current wealth also contributed to higher CASP-12 scores.

7.5.2 Strengths and limitations of the approach

A key strength of this analysis was the use of multiple measures of socioeconomic position which reflected different dimensions of socioeconomic circumstances across the life course. The two methodological approaches also allowed exploration of whether the results were consistent between methods. The use of path analysis enabled the inter-relationships between the socioeconomic variables to be investigated and for the indirect effects from the childhood socioeconomic position to be explored.

However, the strengths of the analysis need to be considered alongside the limitations. The aim of the path analysis was to test two hypothesised path models: models with and without direct effects from particular childhood socioeconomic variables. It is recognised that this is a simplified approach and there are numerous other potential path models which could be tested. Although the use of multiple measures of socioeconomic position was a strength of the analysis, in the mutually adjusted models there was a risk of over-adjustment that may lead to biased estimates and unexpected results (as was demonstrated in the results for Scandinavian regime men). However, the use of the standardised ranks derived from the measures of socioeconomic position helped to reduce this risk, as the correlation between the variables was lower compared to using simple binary variables. Further analysis could be performed operationalising socioeconomic position as a latent variable, in which correlated indicators are considered components of the same latent variable (Laaksonen et al., 2007; Singh-Manoux et al.,

2005). However, this approach does not help to elucidate whether particular dimensions of socioeconomic position have direct and indirect effect on the outcome, which was the focus here.

The results of this chapter only provide insight into potential latent and pathway effects on CASP-12, one measure of quality of life. A later chapter explores the same life course theories for life satisfaction. Further, the analysis contained in this chapter does not help to uncover whether cumulative exposure to a higher socioeconomic position was associated with higher CASP-12 scores or whether moving from one position to another contributed to higher or lower quality of life. This is the focus of the next chapter.

8. Cumulative and social mobility effects across the life course and CASP-12 in early old age

8.1 Chapter introduction

This chapter focuses on two theories relating to the association between life course socioeconomic position and CASP-12 in early old age: cumulative effects and social mobility. The theories were tested in a number of ways (see chapter 5 section 5.6.5). Socioeconomic advantage scores relating to childhood, adulthood, and the whole life course (the cumulative socioeconomic advantage score) were generated. Social mobility was tested in three ways. First, inter-generational mobility was tested by looking at the interaction between the occupation of the main breadwinner during childhood and the respondents' main occupation. Second, intra-generational mobility was tested by examining the interaction between the longest held occupation at aged 16 to 34 years and that aged 35 to 49 years. Third, social mobility was tested using the childhood and adulthood socioeconomic advantage scores. The chapter also presents results from the analyses examining the factors which might explain a relationship between life course socioeconomic position and CASP-12.

The objectives of this chapter were to:

- Explore potential cumulative and social mobility effects of socioeconomic position over the life course on CASP-12 in early old age.

- Examine potential factors which may help to explain a relationship between life course socioeconomic position and CASP-12 in early old age.

- Investigate the relationships by welfare regime.

8.2 Overall results

8.2.1 Increased socioeconomic advantage and CASP-12

8.2.1.1 Descriptive statistics and correlations

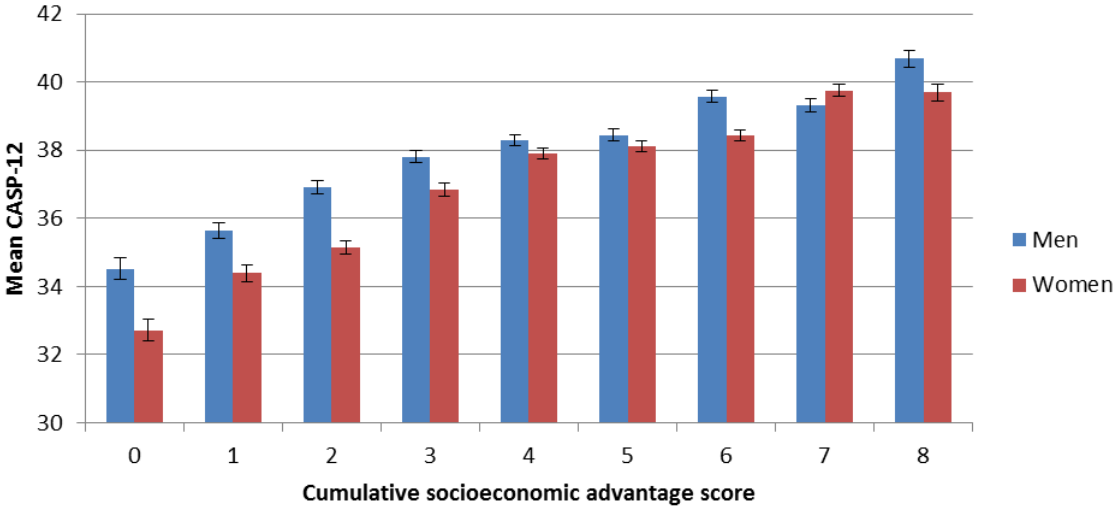
Increased socioeconomic advantage during both childhood and adulthood was related to higher mean CASP-12 scores, using the socioeconomic advantage scores derived from the binary method (Table 8.1). All tests for linear trends were statistically significant ($p<0.001$). In general, higher cumulative socioeconomic advantage was related to higher CASP-12 scores (Figure 8.1). This provides some evidence that cumulative socioeconomic advantage over the life course was related to higher CASP-12 scores in early old age.

Table 8.1: Descriptive statistics for CASP-12 according to the socioeconomic advantage scores (derived using the binary method)

	Men				Women			
Score	**N**	**%**	**Mean CASP**	**SD**	**N**	**%**	**Mean CASP**	**SD**
Childhood								
0	1,381	19.5	**36.2**	6.2	1,395	18.1	**34.7**	6.5
1	1,624	22.9	**37.5**	5.7	1,655	21.5	**36.2**	6.3
2	1,742	24.5	**38.4**	5.2	1,895	24.6	**37.8**	5.6
3	1,506	21.2	**38.8**	5.4	1,789	23.3	**38.4**	5.4
4	846	11.9	**39.6**	5.2	956	12.4	**38.5**	5.5
Adulthood								
0	922	13.0	**35.2**	6.1	1,027	13.4	**33.6**	6.7
1	1,436	20.2	**36.9**	5.9	1,540	20.0	**35.7**	6.2
2	1,761	24.8	**37.8**	5.6	1,986	25.8	**37.0**	5.7
3	1,600	22.5	**39.0**	5.1	1,744	22.7	**38.7**	5.3
4	1,380	19.4	**39.9**	5.0	1,393	18.1	**39.6**	5.0
Cumulative								
0	389	5.5	**34.5**	6.1	453	5.9	**32.7**	6.8
1	711	10.0	**35.6**	6.4	751	9.8	**34.4**	6.5
2	922	13.0	**36.9**	5.8	916	11.9	**35.1**	6.1
3	965	13.6	**37.8**	5.2	1,029	13.4	**36.8**	6.0
4	1,117	15.7	**38.3**	5.3	1,175	15.3	**37.9**	5.3
5	1,040	14.7	**38.5**	5.5	1,136	14.8	**38.1**	5.7
6	890	12.5	**39.6**	5.1	1,089	14.2	**38.4**	5.2
7	690	9.7	**39.3**	5.0	760	9.9	**39.8**	5.0
8	375	5.3	**40.7**	4.8	381	5.0	**39.7**	4.9

N=number; SD=standard deviation

Figure 8.1: Mean CASP-12 scores (with standard error bars) by cumulative socioeconomic advantage score (derived using the binary method)



Positive correlations between the socioeconomic advantage scores and CASP-12 were found; using the scores derived using the standardised rank method (Table 8.2). Among both men and women, the correlation between the socioeconomic advantage score and CASP-12 was strongest when using the adulthood score and weakest using the childhood score. The strength of the correlation between the cumulative socioeconomic advantage score and CASP-12 was in between that found for the childhood and adulthood scores.

Table 8.2: Pearson's correlation coefficients for the association between the socioeconomic advantage scores (derived using the standardised rank method) and CASP-12

	Men		Women	
	Pearson's r	**P-value**	**Pearson's r**	**P-value**
Childhood	0.11	<0.001	0.14	<0.001
Adulthood	0.20	<0.001	0.24	<0.001
Cumulative	0.19	<0.001	0.22	<0.001

8.2.1.2 Multilevel linear models

The association between the socioeconomic advantage scores and CASP-12 was examined using age-adjusted multilevel linear models. Predicted mean CASP-12 scores were also calculated for the models to aid the interpretation. Figure 8.2 displays the predicted mean CASP-12 scores according to the different socioeconomic advantage scores among men and women. A stronger association between the adulthood

socioeconomic advantage score and CASP-12 was observed compared with the childhood score, as evidenced by the steeper slopes for the adulthood score. In addition, the steeper slopes observed for women demonstrate the overall stronger associations between the socioeconomic advantage scores and CASP-12, compared with men.

Figure 8.2: Age-adjusted predicted mean CASP-12 scores according to the childhood, adulthood, and cumulative socioeconomic advantage scores (with 95% confidence intervals)

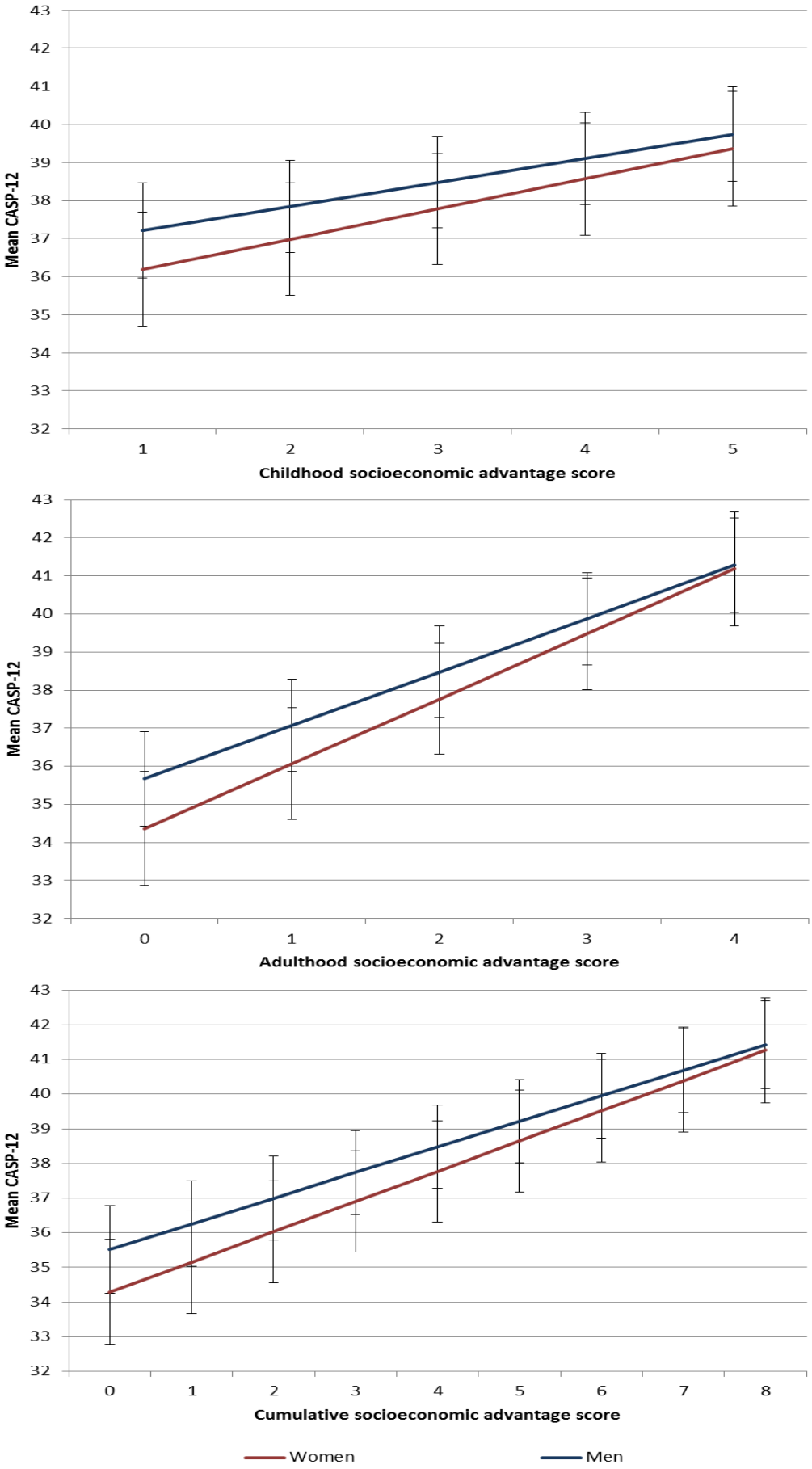


Table 8.3 displays the linear regression coefficients for these models, as well as model fit information. Among men, an increase of one unit on the childhood socioeconomic advantage score was associated with 0.63 (95% CI: 0.47 to 0.80) higher CASP-12 scores, the equivalent result for women was 0.79 (95 % CI: 0.63 to 0.96). The adulthood socioeconomic advantage score was more strongly associated with CASP-12, among men a one unit increase in the score was associated with 1.40 (95% CI: 1.25 to 1.56) higher CASP-12 scores, among women the coefficient was 1.70 (95% CI: 1.54 to 1.86). Using the cumulative socioeconomic advantage score, a one unit increase among men was associated with 0.74 (95% CI: 0.64 to 0.84), and among women 0.87 (95% CI: 0.78 to 0.97), higher CASP-12. There was not much difference in terms of the individual level variance explained by the different scores; the adulthood score displayed slightly less individual level residual variance.

Table 8.3: Age-adjusted multilevel models for the association between the childhood, adulthood and cumulative socioeconomic advantage scores and CASP-12

	Childhood	Adulthood	Cumulative
	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]
	Men		
Effect	0.63*** [0.47,0.80]	1.40*** [1.25,1.56]	0.74*** [0.64,0.84]
Variance (country)	4.83*** [2.15,10.84]	4.84*** [2.16,10.87]	4.84*** [2.16,10.86]
Variance (individual)	26.44*** [25.59,27.33]	25.54*** [24.72,26.40]	25.82*** [24.99,26.69]
AIC	43483.50	43238.78	43317.22
	Women		
Effect	0.79*** [0.63,0.96]	1.70*** [1.54,1.86]	0.87*** [0.78,0.97]
Variance (country)	7.20*** [3.22,16.10]	7.21*** [3.22,16.12]	7.20*** [3.22,16.11]
Variance (individual)	28.26*** [27.38,29.17]	27.06*** [26.22,27.93]	27.44*** [26.59,28.32]
AIC	47613.04	47280.21	47388.37

AIC=akaike information criteria; CI=confidence interval; Coeff.=coefficient; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8.2.1.1 Mutually adjusting for childhood and adulthood socioeconomic advantage

When the childhood and adulthood socioeconomic advantage scores were both included together in age-adjusted multilevel models (Table 8.4), only the adulthood score

remained associated with CASP-12, suggesting that childhood advantage makes little contribution to CASP-12 in early old age once adulthood circumstances are accounted for. This lends further support for a pathway process whereby childhood conditions influenced CASP-12 via adulthood circumstances, as examined in the previous chapter.

Table 8.4: Age-adjusted multilevel models for the association between the childhood and adulthood socioeconomic advantage scores (mutually adjusted) and CASP-12

	Men	Women
	Coeff. [95% CI]	**Coeff. [95% CI]**
Childhood socioeconomic advantage	0.06 [-0.12,0.24]	0.08 [-0.10,0.26]
Adulthood socioeconomic advantage	1.38*** [1.21,1.55]	1.67*** [1.49,1.85]

CI=confidence interval; Coeff.=coefficient; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8.2.1.2 Factors which help to explain the relationship between the cumulative socioeconomic advantage score and CASP-12

The factors examined were: current employment status, financial distress, health status, mood, and marital status (descriptive statistics for these variables are found in Appendix 8.1). The financial distress variable had the greatest mediating effect on the relationship between the cumulative advantage score and CASP-12 (Table 8.5 and Table 8.6). Although some of the other factors investigated had large effects on CASP-12 scores, particularly the health and mood variables, they had little role in influencing the association between the cumulative advantage and CASP-12. In the models containing each potential mediating variable, the association between the cumulative advantage score and CASP-12 was attenuated by more than half, but it remained statistically significant.

Table 8.5: Age adjusted multilevel models for the association between the cumulative advantage score and CASP-12 adjusting for potential mediating variables among men

	(1) Coeff. [95% CI]	(2) Coeff. [95% CI]	(3) Coeff. [95% CI]	(4) Coeff. [95% CI]	(5) Coeff. [95% CI]	(6) Coeff. [95% CI]	(7) Coeff. [95% CI]
	Men						
Cumulative advantage score	0.74*** [0.64,0.84]	0.68*** [0.58,0.78]	0.34*** [0.24,0.43]	0.62*** [0.53,0.71]	0.72*** [0.63,0.81]	0.72*** [0.63,0.82]	0.26*** [0.17,0.36]
***Current employment status [a]:* employed**	-	0.13 [-0.25,0.51]	-	-	-	-	-0.15 [-0.49,0.20]
***Current employment status [a]:* other**	-	-3.17*** [-3.78,-2.56]	-	-	-	-	-1.44*** [-2.00,-0.88]
***Ability to make ends meet* [b]**	-	-	1.93*** [1.79,2.08]	-	-	-	1.62*** [1.49,1.76]
***Limited in daily activities* [c]**	-	-	-	-3.12*** [-3.37,-2.87]	-	-	-2.41*** [-2.65,-2.17]
***Sad or depressed mood* [c]**	-	-	-	-	-3.37*** [-3.64,-3.10]	-	-2.57*** [-2.83,-2.32]
***Marital status: living as single* [d]**	-	-	-	-	-	-0.57** [-0.93,-0.21]	-0.41* [-0.74,-0.09]
Variance (country)	4.84*** [2.16,10.86]	4.79*** [2.14,10.75]	1.80 [0.79,4.11]	4.77*** [2.13,10.69]	4.82*** [2.15,10.79]	4.86*** [2.17,10.90]	2.30* [1.02,5.19]
Variance (individual)	25.82*** [24.99,26.69]	25.38*** [24.56,26.23]	23.60*** [22.84,24.39]	23.83*** [23.06,24.63]	23.78*** [23.01,24.57]	25.79*** [24.96,26.66]	20.64*** [19.97,21.33]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 8.6: Age adjusted multilevel models for the association between the cumulative advantage score and CASP-12 adjusting for potential mediating variables among women

	(1) Coeff. [95% CI]	(2) Coeff. [95% CI]	(3) Coeff. [95% CI]	(4) Coeff. [95% CI]	(5) Coeff. [95% CI]	(6) Coeff. [95% CI]	(7) Coeff. [95% CI]
	Women						
Cumulative advantage score	0.87*** [0.78,0.97]	0.83*** [0.73,0.92]	0.46*** [0.36,0.55]	0.73*** [0.63,0.82]	0.80*** [0.71,0.90]	0.85*** [0.76,0.95]	0.36*** [0.27,0.44]
***Current employment status [a]:* employed**	-	0.04 [-0.34,0.42]	-	-	-	-	-0.42* [-0.76,-0.08]
***Current employment status [a]:* other**	-	-2.40*** [-2.97,-1.83]	-	-	-	-	-1.05*** [-1.56,-0.54]
***Current employment status [a]:* homemaker**	-	-0.07 [-0.45,0.30]	-	-	-	-	-0.12 [-0.46,0.22]
Ability to make ends meet [b]	-	-	2.01*** [1.87,2.15]	-	-	-	1.67*** [1.53,1.80]
Limited in daily activities [c]	-	-	-	-3.28*** [-3.52,-3.04]	-	-	-2.50*** [-2.72,-2.27]
Sad or depressed mood [c]	-	-	-	-	-3.31*** [-3.54,-3.08]	-	-2.55*** [-2.77,-2.33]
Marital status: living as single [d]	-	-	-	-	-	-0.84*** [-1.14,-0.54]	-0.21 [-0.48,0.07]
Variance (country)	7.20*** [3.22,16.11]	7.22*** [3.23,16.15]	3.03** [1.34,6.84]	6.94*** [3.10,15.52]	6.61*** [2.95,14.78]	7.27*** [3.25,16.26]	3.40** [1.51,7.66]
Variance (individual)	27.44*** [26.59,28.32]	27.16*** [26.31,28.03]	24.97*** [24.19,25.77]	25.07*** [24.29,25.88]	24.92*** [24.14,25.72]	27.34*** [26.49,28.22]	21.52*** [20.85,22.21]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

8.2.2 Social mobility and CASP-12

This section first investigates the association between inter- and intra-generational mobility and CASP-12 in early old age using the manual versus non-manual classification of occupations. The above analysis did not take into account that perhaps the interaction between childhood and adulthood advantage is important for CASP-12 scores in early old age. Therefore, this section secondly examines the association between social mobility and CASP-12 using the generated childhood and adulthood socioeconomic advantage scores as described above.

8.2.2.1 Inter-generational mobility

Among both genders, downward mobility from non-manual to a manual position was uncommon (Table 8.7). Upward mobility from manual to non-manual positions was more frequent, reflecting the change in occupational structure over time.

Table 8.7: Inter-generational social mobility table showing origin (occupation of main breadwinner during childhood) and destination (main occupation) positions

	Destination (main occupation)				Destination (main occupation)		
Men				**Women**			
Origin (childhood)	**Manual**	**Non-manual**	**Total**	**Origin (childhood)**	**Manual**	**Non-manual**	**Total**
Manual N (%)	3,035 (58.3)	2,167 (41.7)	**5,202**	**Manual N (%)**	2,594 (46.8)	2,953 (53.2)	**5,547**
Non-manual N (%)	404 (21.3)	1,493 (78.7)	**1,897**	**Non-manual N (%)**	324 (15.1)	1,819 (84.9)	**2,143**
Total N	**3,439**	**3,660**	**7,099**	**Total N**	**2,918**	**4,772**	**7,690**

N=number of individuals

The mean CASP-12 scores for those who moved upwards from a manual to a non-manual position were higher compared to those who remained in a manual position, but not as high as those who remained in a non-manual position at both time points (Table 8.8). Similarly, those who moved downwards had lower mean CASP-12 scores compared to those who remained in a non-manual position, but they had higher CASP-12 scores than non-movers in a manual position.

Table 8.8: Descriptive statistics for CASP-12 by origin (occupation of main breadwinner during childhood) and destination (main occupation)

	Destination (main occupation)							
	Men				Women			
	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD
Origin (childhood)	Manual		Non-manual		Manual		Non-manual	
Manual	**37.1**	6.0	**38.5**	5.3	**35.2**	6.5	**38.1**	5.6
Non-manual	**37.5**	5.4	**39.2**	5.2	**36.6**	5.8	**38.3**	5.5

SD=standard deviation

Table 8.9 displays the results from the multilevel models which tested the interaction between the occupation of the main breadwinner during childhood and the respondent's main occupation, using the manual versus non-manual classification as binary variables and as their standardised ranks. Among men, no statistically significant interaction was found using either the binary variables or the standardised ranks. A statistically significant interaction was found among women when using the binary variables. The coefficient for the interaction was negative (-0.75, 95% CI: -1.44 to -0.06, p=0.035), suggesting that for women who started in a non-manual position during childhood, a non-manual main occupation had little effect on CASP-12. But for individuals who started in a manual position, having a non-manual main occupation was associated with higher CASP-12 scores compared to a manual main occupation. This lends some support to the social mobility theory among women.

However, results differed between the methods used; no statistically significant interaction was found among women when using the variables converted into their standardised ranks. Considering this method takes into account the differences in the socioeconomic distributions by cohort and country, it is possible that the above association was related to the absolute experience of a manual or non-manual position. It could also reflect a type I error as a result of the multiple testing conducted.

Table 8.9: Age-adjusted multilevel models testing the interaction between the occupation of the main breadwinner during childhood and the main occupation (manual versus non-manual) for CASP-12

	Men	Women
	Coeff. [95% CI]	**Coeff. [95% CI]**
Binary (manual versus non-manual)		
Breadwinner job (main effect): non-manual [a]	0.04 [-0.50,0.58]	0.74* [0.12,1.36]
Main job (main effect): non-manual [a]	0.74*** [0.45,1.03]	1.24*** [0.94,1.54]
Interaction between breadwinner & main jobs [a]	0.18 [-0.45,0.82]	-0.75* [-1.44,-0.06]
Standardised rank (manual versus non-manual)		
Breadwinner job (main effect)	-0.67 [-2.27,0.92]	1.28 [-0.39,2.95]
Main job (main effect)	0.67 [-0.64,1.97]	2.82*** [1.44,4.20]
Interaction between breadwinner & main jobs	1.75 [-0.78,4.28]	-1.66 [-4.41,1.10]

[a] reference category is manual occupation. CI=confidence interval; Coeff.=coefficient; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

8.2.2.2 Intra-generational mobility

Table 8.10 demonstrates the low level of intra-generational mobility in the sample, especially downward mobility. CASP-12 scores followed a similar pattern to those shown above for inter-generational mobility, with the exception of men who started in a non-manual position and moved to a manual position (Table 8.11). This group displayed lower mean CASP-12 scores compared to men who remained in a manual position at both time points, but this difference was very small.

Table 8.10: Intra-generational social mobility table showing origin (occupation aged 16 to 34 years) and destination (occupation aged 35 to 49 years) positions

	Destination (35 to 49 years)				Destination (35 to 49 years)		
	Men				Women		
Origin (16 to 34 years)	**Manual**	**Non-manual**	**Total**	**Origin (16 to 34 years)**	**Manual**	**Non-manual**	**Total**
Manual N (%)	3,317 (85.6)	559 (14.4)	3,876	**Manual N (%)**	2,558 (81.5)	579 (18.5)	3,137
Non-manual N (%)	105 (3.3)	3,118 (96.7)	3,223	**Non-manual N (%)**	333 (7.3)	4,220 (92.7)	4,553
Total (N)	3,422	3,677	7,099	**Total (N)**	2,891	4,799	7,690

N=number of individuals

Table 8.11: Descriptive statistics for CASP-12 by origin (occupation aged 16 to 34 years) and destination (occupation aged 35 to 49 years) classes

	Destination (35 to 49 years)							
	Men				Women			
	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD
Origin (16 to 34 years)	**Manual**		**Non-manual**		**Manual**		**Non-manual**	
Manual	**37.1**	6.0	**38.3**	5.2	**35.1**	6.4	**37.2**	5.8
Non-manual	**36.8**	5.4	**39.0**	5.3	**36.9**	6.0	**38.4**	5.5

SD=standard deviation

No statistically significant interactions were found between the two adulthood occupational variables in age-adjusted multilevel models (Table 8.12). This suggests that intra-generational mobility had little influence on CASP-12 and the most recent occupational position had the greatest effect.

Table 8.12: Age-adjusted multilevel models testing the interaction between origin (occupation aged 16 to 34 years) and destination (occupation aged 35 to 49 years) for CASP-12

	Men	Women
	Coeff. [95% CI]	**Coeff. [95% CI]**
Binary (manual versus non-manual)		
Occupation aged 16 to 34 years: non-manual [a]	0.95 [-0.05,1.95]	0.40 [-0.21,1.02]
Occupation aged 35 to 49 years: non-manual [a]	0.69** [0.22,1.16]	1.11*** [0.62,1.59]
Interaction between occupation aged 16 to 34 years and 35 to 49 years [a]	-0.71 [-1.82,0.39]	-0.16 [-0.93,0.61]
Standardised rank (manual versus non-manual)		
Occupation aged 16 to 34 years (SII)	-0.69 [-2.95,1.57]	-0.78 [-2.29,0.73]
Occupation aged 35 to 49 years (SII)	0.32 [-1.16,1.80]	0.95 [-0.38,2.29]
Interaction between occupation aged 16 to 34 years and 35 to 49 years	2.14 [-1.14,5.41]	2.51 [-0.05,5.07]

[a] reference category is manual occupation. CI=confidence interval; Coeff.=coefficient; SII=slope index of inequality; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8.2.2.3 Social mobility using the childhood and adulthood socioeconomic advantage scores

When interaction terms between the childhood and adulthood socioeconomic advantage scores were included in multilevel models, the interaction was negative, but not statistically significant (Table 8.13). In these models, only the adulthood socioeconomic advantage score remained associated with CASP-12 among men. Among women, the childhood socioeconomic advantage score also remained weakly associated. Therefore, there was a lack of evidence that social mobility influenced CASP-12; socioeconomic advantage during adulthood had the strongest influence on CASP-12.

Table 8.13: Age-adjusted multilevel models for CASP-12 containing interaction terms between the childhood and adulthood socioeconomic advantage scores

	Men	Women
	Coefficient [95% CI]	**Coefficient [95% CI]**
Childhood socioeconomic advantage score (main effect)	0.46 [-0.02,0.94]	0.49* [0.02,0.97]
Adulthood socioeconomic advantage score (main effect)	1.77*** [1.31,2.23]	2.08*** [1.61,2.55]
Interaction between childhood and adulthood socioeconomic advantage score	-0.19 [-0.40,0.02]	-0.20 [-0.41,0.01]

CI=confidence interval. * p < 0.05, ** p < 0.01, *** p < 0.001

To try to uncover potential socioeconomic trajectories that might be important for CASP-12, the childhood and adulthood scores were both categorised into advantaged and disadvantaged based on their median values. The prevalence of socioeconomic advantage and disadvantage is shown in Table 8.14. As expected, mean CASP-12 scores in early old age were consistently higher among the socioeconomically advantaged in both childhood and adulthood, but larger differences in CASP-12 were found between the advantaged and disadvantaged in adulthood.

Table 8.14: Descriptive statistics for CASP-12 by childhood and adulthood socioeconomic advantage and disadvantage

	Men				Women			
	N	%	Mean CASP	SD	N	%	Mean CASP	SD
Childhood								
Disadvantaged	3,775	53.2	**37.5**	5.8	4,017	52.2	**36.4**	6.3
Advantaged	3,324	46.8	**38.6**	5.4	3,673	47.8	**37.8**	5.7
Adulthood								
Disadvantaged	3,728	52.5	**37.1**	5.9	3,982	51.8	**35.8**	6.3
Advantaged	3,371	47.5	**39.0**	5.2	3,708	48.2	**38.5**	5.5

N=number; SD=standard deviation

The most frequent socioeconomic trajectory was the experience of disadvantage during both childhood and adulthood (Table 8.15). Like the analysis using the manual versus non-manual classification, the least common trajectory was that of downward mobility; experiencing advantage in childhood followed by disadvantage in adulthood. The lowest mean CASP-12 scores were found among those experiencing disadvantage during both childhood and adulthood, in both genders. Similarly, individuals who experienced advantage at the two periods of the life course had the highest mean CASP-12 scores. The downwardly mobile had lower CASP-12 scores than the upwardly mobile, but higher than those who remained in a disadvantaged position at the two time points.

Table 8.15: Descriptive statistics for CASP-12 by socioeconomic trajectory

	Men				Women			
Trajectory	N	%	Mean CASP	SD	N	%	Mean CASP	SD
Disadvantaged-Disadvantaged	2,478	34.9	**36.8**	6.0	2,648	34.4	**35.5**	6.4
Advantaged-Disadvantaged	1,250	17.6	**37.7**	5.7	1,334	17.4	**36.6**	6.0
Disadvantaged-Advantaged	1,297	18.3	**38.9**	5.3	1,369	17.8	**38.3**	5.6
Advantaged-Advantaged	2,074	29.2	**39.1**	5.2	2,339	30.4	**38.5**	5.4

N=number; SD=standard deviation

Age-adjusted multilevel linear models were used to investigate whether the different socioeconomic trajectories were associated with CASP-12 (Table 8.16). Compared to men

in a disadvantaged position during both childhood and adulthood, upwardly mobile men had higher CASP-12 scores. Men remaining in an advantaged position at the two periods of the life course also had higher CASP-12 scores compared to those remaining in a disadvantaged state. The results were similar for women, except the coefficients were slightly larger, resulting in higher CASP-12 among downwardly mobile women compared to women who remained in a disadvantaged position at the two periods of the life course. It should be noted that among both genders the coefficients for the upwardly mobile and those remaining in an advantaged position at the two points in the life course had overlapping confidence intervals. This suggests that it was the recent experience of socioeconomic advantage or disadvantage that was the most important determinant of CASP-12 in early old age.

Table 8.16: Age-adjusted multilevel linear models of the relationship between socioeconomic trajectories and CASP-12

	Men	Women
Trajectory	**Coefficient [95% CI]**	**Coefficient [95% CI]**
Disadvantaged-Disadvantaged [a]	-	-
Advantaged-Disadvantaged	0.19 [-0.16,0.53]	0.51** [0.17,0.86]
Disadvantaged-Advantaged	1.70*** [1.36,2.04]	2.13*** [1.78,2.47]
Advantaged-Advantaged	1.91*** [1.61,2.20]	2.42*** [2.12,2.71]

CI=confidence interval; N=number; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; [a] reference category.

8.3 The influence of the welfare regime

The next section explores the association between the socioeconomic advantage scores and CASP-12 and the interaction with the welfare regime. In addition, it examines the influence of social mobility on CASP-12 stratified by welfare regime.

8.3.1 Increased socioeconomic advantage and CASP-12

In each of the welfare regimes, and among both genders, the correlations between the socioeconomic advantage scores and CASP-12 were positive (Table 8.17). The strongest

correlation between the cumulative (life course) socioeconomic advantage score and CASP-12 was found in the Southern regime and the weakest was in the Scandinavian regime.

Table 8.17: Pearson's correlation coefficients for the association between the childhood, adulthood, and cumulative socioeconomic advantage scores and CASP-12

	Southern		*Scandinavian*		*Post-communist*		*Bismarckian*	
	r	**P-value**	**r**	**P-value**	**r**	**P-value**	**r**	**P-value**
Men								
Childhood	0.12	<0.01	0.09	<0.01	0.07	0.04	0.12	<0.01
Adulthood	0.24	<0.01	0.15	<0.01	0.22	<0.01	0.20	<0.01
Cumulative	0.21	<0.01	0.14	<0.01	0.18	<0.01	0.19	<0.01
Women								
Childhood	0.21	<0.01	0.11	<0.01	0.15	<0.01	0.11	<0.01
Adulthood	0.32	<0.01	0.18	<0.01	0.26	<0.01	0.24	<0.01
Cumulative	0.30	<0.01	0.17	<0.01	0.25	<0.01	0.21	<0.01

r=Pearson's correlation coefficient

8.3.1.1 Childhood socioeconomic advantage

Results for the multilevel linear models containing interaction terms between the welfare regime type and the socioeconomic advantage scores are presented in Table 8.18. Among men, the childhood socioeconomic advantage score was weakly associated with CASP-12 in the Scandinavian regime and was most strongly associated in the Southern regime (Figure 8.3a). Among women in the Scandinavian regime, the association between the childhood socioeconomic advantage score and CASP-12 was slightly stronger compared to men, and it was larger among both the Southern and Post-communist regimes (Figure 8.3c). For both genders, there was no difference in the size of the association between the Scandinavian and Bismarckian regimes.

8.3.1.2 Adulthood socioeconomic advantage

In the Scandinavian regime, the association between the adulthood socioeconomic advantage score and CASP-12 was greater than that found for the childhood score. However, the relationship between adulthood socioeconomic advantage and CASP-12

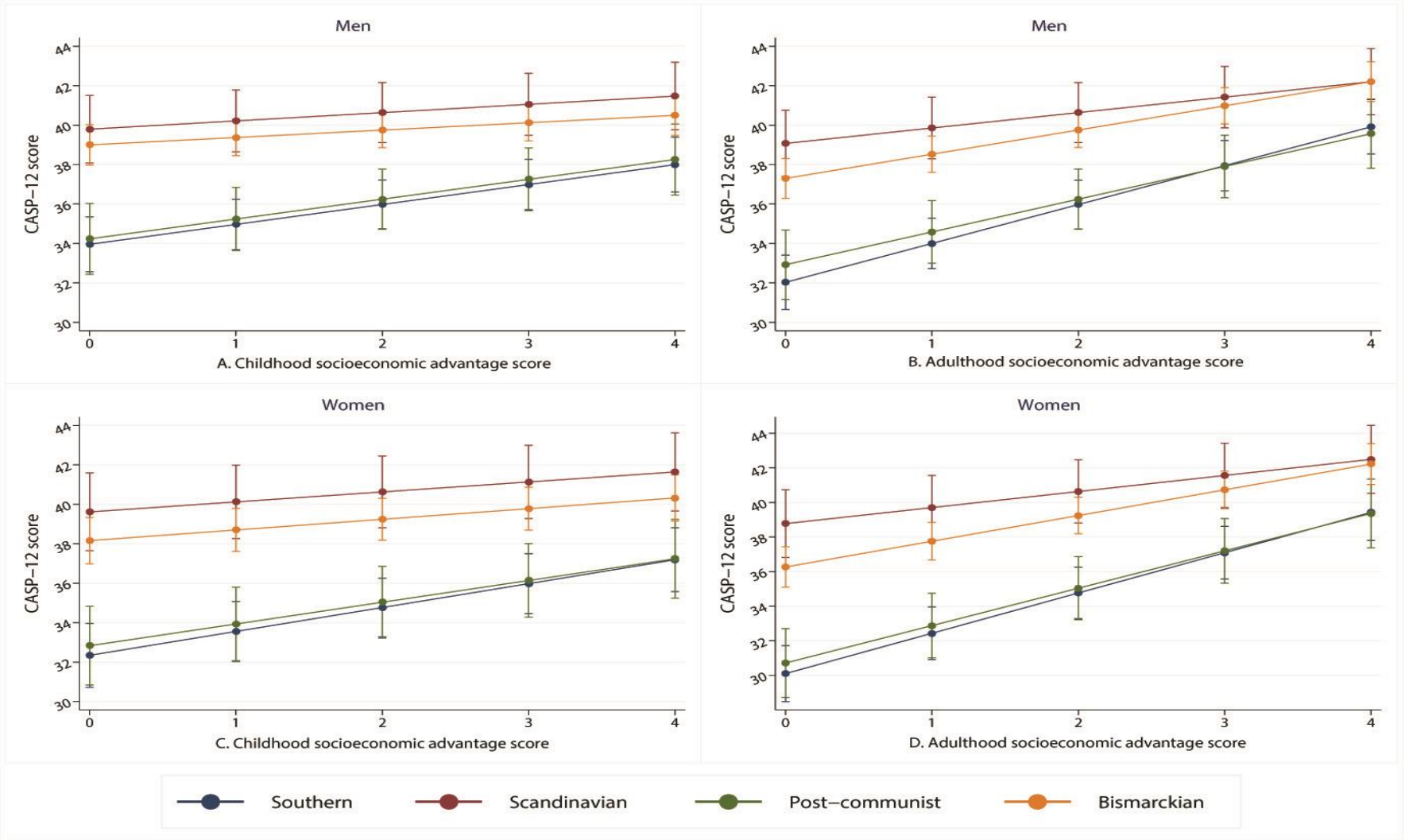
was weakest overall in the Scandinavian regime and strongest in the Southern and Post-communist regimes for both genders (Figure 8.3b and Figure 8.3d). The association between the adulthood socioeconomic advantage score and CASP-12 was also larger in the Bismarckian regime compared to the Scandinavian regime, but not to the same extent as that found for the Southern and Post-communist regimes. Thus, the type of welfare regime appeared to modify the effect of adulthood socioeconomic advantage on CASP-12.

Table 8.18: Age-adjusted multilevel models for CASP-12 containing interaction terms between the welfare regime and the childhood, adulthood, and cumulative socioeconomic advantage scores

	Men			Women		
	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]
Welfare regime [1]	**Childhood** [a]	**Adulthood** [b]	**Cumulative** [c]	**Childhood** [a]	**Adulthood** [b]	**Cumulative** [c]
Southern	-5.84*** [-8.04,-3.63]	-7.04*** [-9.22,-4.87]	-7.21*** [-9.48,-4.93]	-7.27*** [-9.83,-4.72]	-8.67*** [-11.21,-6.13]	-8.67*** [-11.29,-6.05]
Post-communist	-5.56*** [-8.04,-3.08]	-6.15*** [-8.58,-3.72]	-6.66*** [-9.24,-4.09]	-6.79*** [-9.59,-3.98]	-8.06*** [-10.85,-5.27]	-8.27*** [-11.16,-5.38]
Bismarckian	-0.80 [-2.79,1.20]	-1.77 [-3.74,0.19]	-1.48 [-3.53,0.58]	-1.46 [-3.75,0.84]	-2.51* [-4.79,-0.22]	-2.12 [-4.49,0.24]
Interactions [1]						
Score (main effect)	0.42* [0.03,0.81]	0.78*** [0.42,1.15]	0.43*** [0.21,0.66]	0.51** [0.12,0.89]	0.93*** [0.57,1.29]	0.51*** [0.29,0.73]
Score# Southern	0.59* [0.09,1.10]	1.19*** [0.72,1.66]	0.64*** [0.35,0.93]	0.71** [0.21,1.21]	1.40*** [0.92,1.88]	0.70*** [0.41,0.99]
Score# Post-communist	0.59 [-0.03,1.20]	0.88** [0.31,1.44]	0.57** [0.21,0.92]	0.60* [0.04,1.16]	1.23*** [0.70,1.77]	0.67*** [0.34,1.00]
Score# Bismarckian	-0.04 [-0.51,0.42]	0.44* [0.01,0.88]	0.15 [-0.12,0.42]	0.03 [-0.42,0.49]	0.56* [0.12,1.00]	0.18 [-0.08,0.45]

[1] Reference category is Scandinavian regime; CI=confidence interval; [a] model contains age, age^2, welfare regime dummy variables and interactions with childhood socioeconomic advantage score ; [b] model contains age, age^2, welfare regime dummy variables and interactions with adulthood socioeconomic advantage score; [c] model contains age, age^2, welfare regime dummy variables and interactions with cumulative socioeconomic advantage score; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

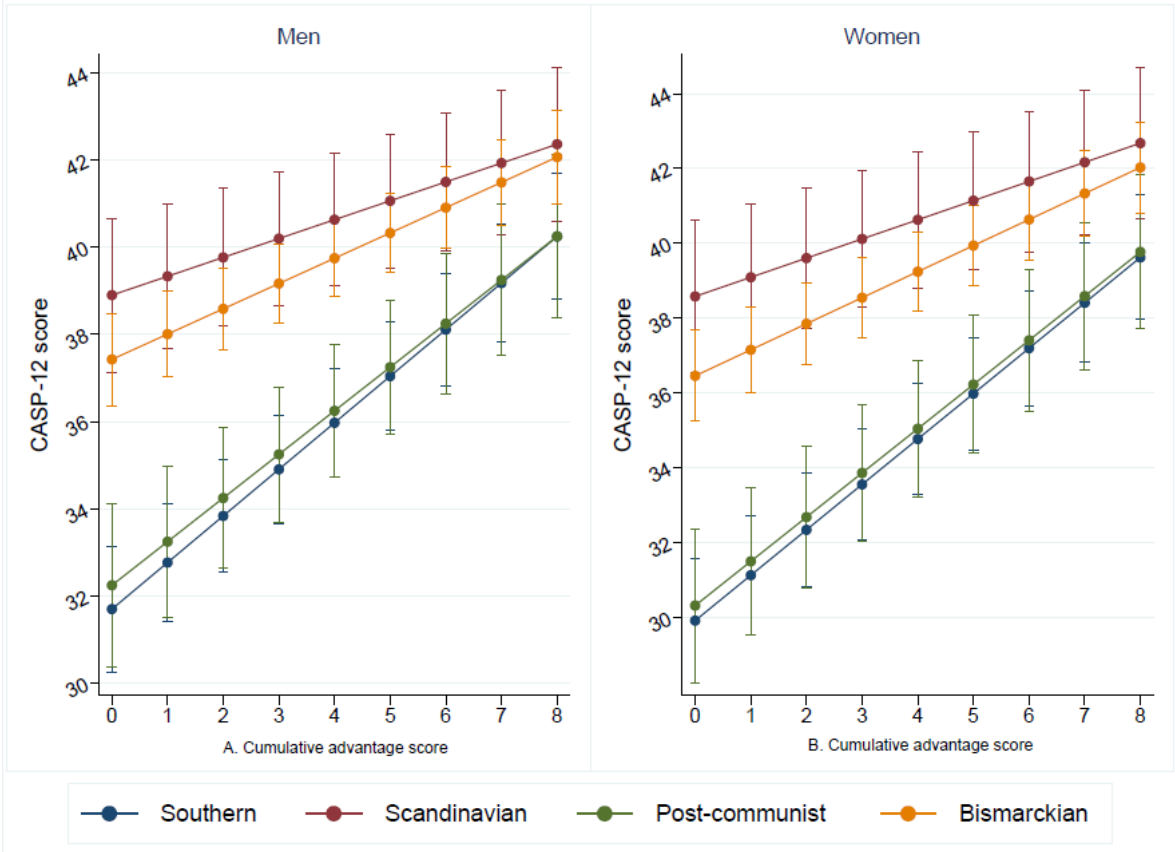
Figure 8.3: Age-adjusted predicted mean CASP-12 (with 95% confidence intervals) for men and women in different welfare regimes by childhood and adulthood socioeconomic advantage score derived from the multilevel models



8.3.1.3 Cumulative socioeconomic advantage

A statistically significant interaction was found between the cumulative socioeconomic advantage score and the welfare regime, except among the Bismarckian regime. Therefore, the association between the cumulative score and CASP-12 was weakest in the Scandinavian regime and strongest in the Southern and Post-communist regimes, with little difference between the Scandinavian and Bismarckian regimes (Figure 8.4a and Figure 8.4b). Results were consistent between genders. The figures demonstrate the clustering of the Scandinavian and Bismarckian regimes, which exhibited high CASP-12 scores and narrower differences between the most and least advantaged according to the cumulative advantage score. The Post-communist and Southern regimes also clustered together with lower CASP-12 scores and larger inequalities in CASP-12 according to the cumulative advantage score. However, the difference in CASP-12 scores between the two clusters of regimes narrowed at the most advantaged end of the cumulative advantage score, so that there was less apparent difference in predicted CASP-12 scores between all four regimes.

Figure 8.4: Age-adjusted mean CASP-12 for men and women in different welfare regimes by cumulative socioeconomic advantage score (with 95% confidence intervals) derived from the multilevel models



8.3.1.4 Mutually adjusting for childhood and adulthood socioeconomic advantage

To further test whether childhood socioeconomic advantage contributed CASP-12 when adulthood circumstances were taken into account, the scores were included together in age-adjusted multilevel models (Table 8.19). In all welfare regimes, once the adulthood socioeconomic advantage score was included, the association between childhood socioeconomic advantage and CASP-12 was no longer statistically significant. This suggests that adulthood conditions are most important for CASP-12 and that they mediate the association between childhood socioeconomic advantage and CASP-12 (a pathway effect).

Table 8.19: Age-adjusted multilevel models for the association between the childhood and adulthood socioeconomic advantage scores (mutually adjusted) and CASP-12 by welfare regime

	Southern	Scandinavian	Post-communist	Bismarckian
	Coeff. [95% CI]	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**
	Men			
Childhood socioeconomic advantage	0.18 [-0.18,0.53]	0.14 [-0.22,0.49]	0.41 [-0.14,0.95]	-0.12 [-0.39,0.15]
Adulthood socioeconomic advantage	1.83*** [1.49,2.18]	0.75*** [0.42,1.09]	1.52*** [1.01,2.02]	1.31*** [1.05,1.57]
	Women			
Childhood socioeconomic advantage	0.17 [-0.21,0.54]	0.19 [-0.15,0.53]	0.28 [-0.19,0.76]	-0.10 [-0.37,0.17]
Adulthood socioeconomic advantage	2.20*** [1.82,2.57]	0.93*** [0.59,1.26]	1.98*** [1.52,2.45]	1.58*** [1.30,1.86]

CI=confidence interval; Coeff.=coefficient; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8.3.1.5 Factors which help to explain the relationship between the cumulative socioeconomic advantage score and CASP-12

Generally similar results were found to the overall analysis, when the potential mediating variables were included in single level regression models stratified by welfare regime. Descriptive statistics for the variables examined are contained in Appendix 8.2 and the full results for the stratified models are found in Appendix 8.3 to Appendix 8.6. The

variables investigated did not altogether explain the association between the cumulative advantage score and CASP-12, with financial distress attenuating the relationships to the greatest extent. In addition, the health, mood, and financial distress variables consistently had the largest associations with CASP-12 across all welfare regimes.

8.3.2 Social mobility and CASP-12 by welfare regime

The social mobility theory for each welfare regime was tested by examining inter-generational mobility as well as looking at mobility using the childhood and adulthood socioeconomic advantage scores. Intra-generational mobility was not examined here due to the small number of socially mobile individuals across the working life in each welfare regime.

8.3.2.1 Inter-generational mobility

Table 8.20 displays mean CASP-12 scores by origin (childhood) and destination (main occupation) by welfare regime (Appendix 8.7 contains the numbers of individuals in each group). Among men, mean CASP-12 scores were similar according to the different origins and destinations. However, in the Post-communist regime there was more of a difference in mean CASP-12 scores between the origin categories under a manual destination. But, the difference was considered relatively small. Among women, there was more variation in CASP-12 scores between origin and destination positions. Under a manual destination, differences in mean CASP-12 scores between the origin categories were more apparent in the Scandinavian and Bismarckian regimes.

Table 8.21 contains the results for the CASP-12 single level linear models containing interaction terms between the childhood and adulthood positions, stratified by welfare regime. This tested whether movement between the origin and destination positions resulted in higher or lower CASP-12 scores in the different regimes. A statistically significant interaction was found only among women in the Post-communist regime when using the binary manual versus non-manual variables. The direction of the interaction was negative, as was found in the overall analysis in section 8.2.2.1. This suggests that the previous finding was mainly driven by the Post-communist countries; the respondent's

main occupation had no additional influence on quality of life for those who started in a non-manual position. Figure 8.5 displays the age-adjusted predicted mean CASP-12 scores for women in the Post-communist regime by origin and destination classes. For those starting in a non-manual position, there was no difference in CASP-12 scores between manual and non-manual destination occupations. But, for individuals who began in a manual position those who moved to a non-manual position had higher CASP-12 scores compared to individuals who remained in a manual position during both time points.

Figure 8.5: Age-adjusted predicted mean CASP-12 scores (with 95% confidence intervals) for women in the Post-communist regime by socioeconomic trajectory from the single level regression model

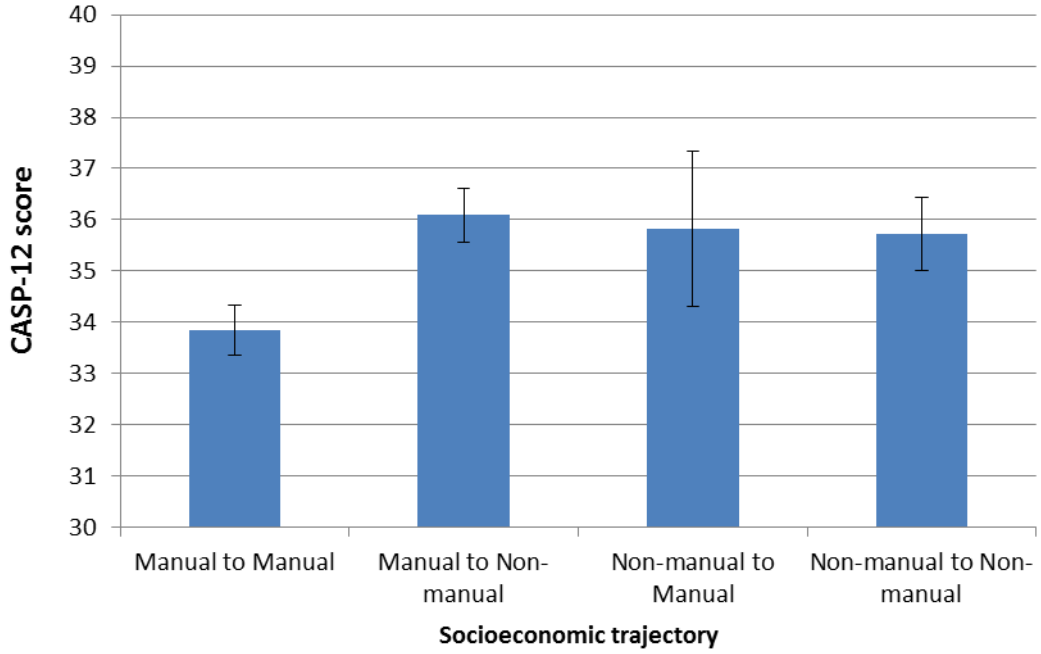


Table 8.20: Descriptive statistics for CASP-12 by origin (occupation of main breadwinner during childhood) and destination (main occupation) classes

	Destination (main occupation)															
	Southern				Scandinavian				Post-communist				Bismarckian			
	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD	Mean CASP	SD
Origin (childhood)	Manual		Non-manual		Manual		Non-manual		Manual		Non-manual		Manual		Non-manual	
	Men															
Manual	**35.5**	5.8	**36.9**	5.5	**40.4**	4.5	**40.4**	4.2	**36.3**	5.8	**37.0**	5.5	**39.0**	5.8	**39.4**	5.1
Non-manual	**35.2**	5.3	**37.2**	4.9	**40.6**	4.2	**40.5**	4.0	**35.4**	5.8	**37.1**	6.0	**39.0**	4.8	**40.2**	5.1
	Women															
Manual	**33.9**	6.3	**35.8**	5.8	**39.9**	4.5	**40.2**	4.6	**33.8**	6.4	**36.6**	5.8	**37.5**	6.1	**39.1**	5.2
Non-manual	**33.9**	5.4	**36.3**	5.6	**41.6**	3.3	**40.6**	4.5	**35.7**	4.8	**35.6**	5.6	**39.0**	5.1	**39.2**	5.2

SD=standard deviation

Table 8.21: Age-adjusted single level regression models stratified by welfare regime for CASP-12 including interaction terms between the occupation of the main breadwinner in childhood and main occupation variables using the binary variables and standardised ranks

	Southern				Scandinavian			
	Men		Women		Men		Women	
	Binary (manual versus non-manual)							
	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI
Breadwinner (main effect): non-manual [a]	0.63	[-0.46,1.72]	0.31	[-0.78,1.41]	0.06	[-0.96,1.07]	0.97	[-0.61,2.54]
Main job (main effect): non-manual [a]	1.41***	[0.85,1.96]	1.60***	[1.00,2.19]	0.35	[-0.23,0.94]	0.57	[-0.13,1.27]
Interaction between breadwinner & main jobs [a]	-0.73	[-2.05,0.59]	-0.04	[-1.39,1.32]	0.12	[-1.08,1.32]	-0.52	[-2.18,1.14]
	Standardised rank (manual versus non-manual)							
Breadwinner job (main effect)	2.08	[-1.44,5.60]	0.48	[-3.08,4.03]	-0.12	[-3.01,2.76]	2.64	[-1.11,6.38]
Main job (main effect)	3.92**	[1.16,6.67]	3.02*	[0.14,5.91]	0.43	[-2.00,2.86]	2.23	[-0.89,5.36]
Interaction between breadwinner & main jobs	-2.81	[-8.08,2.45]	0.14	[-5.30,5.59]	0.76	[-4.05,5.57]	-2.96	[-9.67,3.75]
	Post-communist				Bismarckian			
	Men		Women		Men		Women	
	Binary (manual versus non-manual)							
	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI
Breadwinner (main effect): non-manual [a]	-0.71	[-2.18,0.76]	1.97*	[0.37,3.57]	-0.19	[-1.06,0.67]	0.33	[-0.68,1.34]
Main job (main effect): non-manual [a]	1.13*	[0.23,2.04]	2.24***	[1.52,2.96]	0.19	[-0.27,0.65]	0.48*	[0.01,0.96]
Interaction between breadwinner & main jobs [a]	0.65	[-1.23,2.53]	-2.33*	[-4.15,-0.52]	0.73	[-0.26,1.72]	-0.43	[-1.53,0.67]
	Standardised rank (manual versus non-manual)							
Breadwinner job (main effect)	-3.34	[-8.41,1.72]	4.45	[-0.07,8.97]	-0.78	[-3.20,1.64]	1.61	[-0.97,4.19]
Main job (main effect)	0.09	[-4.15,4.33]	6.66***	[3.08,10.24]	-0.46	[-2.44,1.51]	2.11*	[0.00,4.22]
Interaction between breadwinner & main jobs	4.57	[-3.20,12.34]	-6.77	[-13.93,0.38]	2.58	[-1.39,6.55]	-2.95	[-7.30,1.40]

[a] reference category is manual occupation. CI=confidence interval; Coeff.=coefficient; SII=slope index of inequality. Models contain age, age squared and country fixed effects; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

8.3.2.2 Social mobility using the childhood and adulthood socioeconomic advantage scores

The interaction between the childhood and adulthood socioeconomic advantage scores was then examined for each welfare regime in single-level linear regression models (Table 8.22). This interaction was statistically significant only in the Scandinavian regime among men and in the Bismarckian regime among women. The predicted mean CASP-12 scores for these regimes are therefore displayed in Figure 8.6 to help interpret the results.

The results for Scandinavian men and Bismarckian women suggest that among those with the highest adulthood socioeconomic scores, increased childhood advantage had little influence on CASP-12 scores, and may even contribute to lower CASP-12 scores. However, among those with the lowest adulthood socioeconomic advantage scores, increased childhood advantage was related to higher CASP-12 scores.

Table 8.22: Age-adjusted single-levels models for CASP-12 containing interaction terms between the childhood and adulthood socioeconomic advantage scores in different welfare regimes

	Southern	Scandinavian	Post-communist	Bismarckian
	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]
	Men			
Childhood socioeconomic advantage score (main effect)	1.06* [0.06,2.06]	1.11* [0.21,2.01]	0.61 [-0.90,2.12]	0.07 [-0.64,0.79]
Adulthood socioeconomic advantage score (main effect)	2.68*** [1.72,3.63]	1.68*** [0.82,2.54]	1.73* [0.21,3.25]	1.49*** [0.80,2.19]
Interaction between childhood and adulthood socioeconomic advantage score	-0.41 [-0.84,0.02]	-0.47* [-0.86,-0.07]	-0.10 [-0.79,0.59]	-0.09 [-0.41,0.23]
	Women			
Childhood socioeconomic advantage score (main effect)	0.58 [-0.45,1.61]	0.96* [0.08,1.85]	0.04 [-1.26,1.34]	0.61 [-0.12,1.34]
Adulthood socioeconomic advantage score (main effect)	2.60*** [1.59,3.61]	1.71*** [0.82,2.59]	1.74** [0.45,3.04]	2.30*** [1.56,3.03]
Interaction between childhood and adulthood socioeconomic advantage score	-0.19 [-0.64,0.25]	-0.38 [-0.79,0.02]	0.12 [-0.47,0.71]	-0.34* [-0.67,-0.02]

CI=confidence interval; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 8.6: Age-adjusted predicted mean CASP-12 scores (with 95% confidence intervals) derived from the single level regression models containing interaction terms between the childhood and adulthood socioeconomic advantage scores among men and women in Scandinavian and Bismarckian welfare regimes

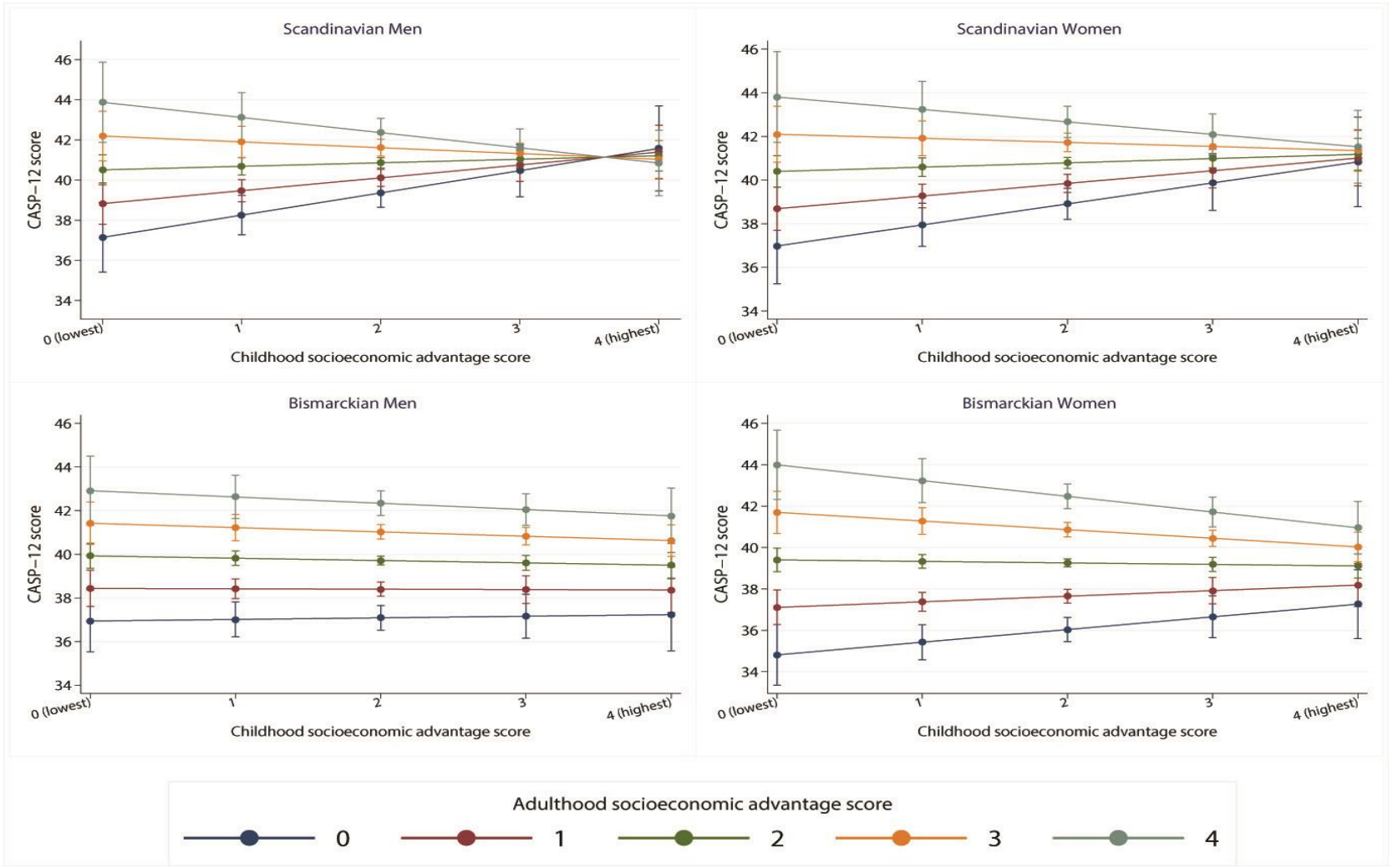


Table 8.23 compares mean CASP-12 scores for the four socioeconomic trajectories in each welfare regime, when the childhood and adulthood socioeconomic advantage scores were categorised into advantaged and disadvantaged based on their median values (Appendix 8.8 contains descriptive statistics for CASP-12 according to childhood and adulthood socioeconomic advantage).

Mean CASP-12 score were generally highest in those experiencing socioeconomic advantage during both childhood and adulthood. The only exception was among women in the Bismarckian regime, where the highest mean CASP-12 was found among the upwardly mobile. However, the difference in CASP-12 between the upwardly mobile and the consistently advantaged groups was very little. CASP-12 scores were lowest in those experiencing consistent socioeconomic disadvantage in all welfare regimes.

Single-level regression models stratified by welfare regime generally supported these findings (Table 8.24). In all welfare regimes those in a consistently advantaged position, or who were upwardly mobile, had significantly higher CASP-12 scores compared to the consistently disadvantaged. It was interesting to note that for women in the Scandinavian regime, the downwardly mobile also had significantly higher CASP-12 scores compared to the consistently disadvantaged. Although the effect size was not large, the result was not observed in any of the other welfare regimes. It could suggest that, for women in Scandinavia, consistent relative disadvantage is particularly detrimental to quality of life. This could perhaps be related to higher expectations for upward mobility in this regime.

Table 8.23: Descriptive statistics by socioeconomic trajectory for men and women in different welfare regimes

	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD
	Southern				Scandinavian				Post-communist				Bismarckian			
Trajectory	Men															
Disadvantaged-Disadvantaged	754	36.3	**34.9**	5.8	405	34.2	**40.1**	4.5	338	33.8	**35.3**	6.2	981	34.6	**38.2**	5.7
Advantaged-Disadvantaged	350	16.8	**35.5**	5.6	205	17.3	**40.3**	4.2	190	19.0	**35.5**	5.7	505	17.8	**39.2**	5.2
Disadvantaged-Advantaged	392	18.9	**37.2**	5.5	205	17.3	**40.7**	4.2	182	18.2	**37.5**	5.2	518	18.3	**40.4**	4.7
Advantaged-Advantaged	582	28.0	**37.3**	5.0	370	31.2	**40.8**	3.9	289	28.9	**37.7**	5.4	833	29.4	**40.5**	5.0
Trajectory	Women															
Disadvantaged-Disadvantaged	732	36.7	**33.0**	6.5	430	33.1	**39.3**	5.0	449	33.5	**33.5**	6.2	1,037	34.0	**37.3**	5.8
Advantaged-Disadvantaged	331	16.6	**33.9**	5.9	221	17.0	**40.4**	4.2	250	18.6	**34.2**	5.9	532	17.4	**38.2**	5.4
Disadvantaged-Advantaged	347	17.4	**35.6**	5.5	221	17.0	**41.0**	4.0	251	18.7	**35.9**	6.1	550	18.0	**40.3**	4.6
Advantaged-Advantaged	587	29.4	**36.8**	5.3	426	32.8	**41.1**	4.2	391	29.2	**37.0**	5.6	935	30.6	**39.9**	4.9

N=number of individuals; SD=standard deviation

Table 8.24: Age-adjusted single-linear models for the relationship between different socioeconomic trajectories and CASP-12 stratified by welfare regime

	Southern	Scandinavian	Post-communist	Bismarckian
	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]
	Men			
Disadvantaged-Disadvantaged [a]	-	-	-	-
Advantaged-Disadvantaged	0.36 [-0.32,1.03]	0.20 [-0.51,0.91]	0.23 [-0.75,1.22]	0.12 [-0.43,0.66]
Disadvantaged-Advantaged	2.08*** [1.43,2.73]	0.81* [0.10,1.52]	1.71*** [0.71,2.71]	1.77*** [1.23,2.30]
Advantaged-Advantaged	2.46*** [1.88,3.04]	0.84** [0.24,1.44]	2.51*** [1.64,3.38]	1.76*** [1.29,2.22]
	Women			
Disadvantaged-Disadvantaged [a]	-	-	-	-
Advantaged-Disadvantaged	0.42 [-0.31,1.14]	0.90* [0.20,1.60]	0.48 [-0.40,1.37]	0.42 [-0.12,0.95]
Disadvantaged-Advantaged	2.34*** [1.63,3.06]	1.56*** [0.86,2.26]	2.07*** [1.19,2.96]	2.22*** [1.69,2.75]
Advantaged-Advantaged	3.17*** [2.56,3.77]	1.70*** [1.12,2.28]	2.93*** [2.14,3.71]	2.05*** [1.60,2.51]

CI=confidence interval; N=number; [a] reference category. Models contain age, age^2, and country fixed effects; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

8.4 Chapter discussion

This chapter explored the relationship between cumulative social mobility effects across the life course and CASP-12 in early old age. This section summarises and interprets the key findings from this chapter and considers the strengths and limitations of the methodological approach taken.

8.4.1 Summary and interpretation of results

8.4.1.1 Overall results

Overall, there was evidence to suggest that cumulative advantage over the life course was related to higher CASP-12 scores in early old age. Increased socioeconomic advantage during childhood was also associated with higher CASP-12 scores, but to a

lesser extent than that experienced during adulthood. The feeling of increased ability to make ends meet attenuated the relationship between the cumulative advantage score and CASP-12 to the greatest extent out of the variables examined. This suggests that it had a key role in mediating the relationship between life course socioeconomic position and CASP-12.

There was no supportive evidence for an effect of inter-generational mobility on men's CASP-12 scores. Among women, there was a statistically significant interaction between the occupational variables during childhood and adulthood, which suggested that for women who started in a non-manual position, a non-manual main occupation had little additional effect on CASP-12. But for individuals who started in a manual position, having a non-manual main occupation was associated with higher CASP-12 scores, compared to a manual main occupation. Thus, a women's main occupation appeared to modify the effect of the occupation of the main breadwinner during childhood. This lends some support to the social mobility theory among women. No support for intra-generational mobility was found for either gender and there were generally few individuals who moved between manual and non-manual occupations during working life.

Regarding the relationship between particular socioeconomic trajectories and CASP-12, the results indicated that trajectories that ended up in an advantaged position were associated with higher CASP-12 compared to consistent socioeconomic disadvantage. Among women, there was also evidence that downwardly mobile individuals who moved from advantage in childhood to disadvantage in adulthood had higher CASP-12 scores compared to those remaining in socioeconomic disadvantage at both stages of the life course, although the effect was not large. This suggests that perhaps 'residual' socioeconomic advantage experienced during childhood is beneficial for quality of life even when women move to socioeconomic disadvantage later on. In other words, any socioeconomic advantage is better than consistent disadvantage. The highest CASP-12 scores were observed among those who experienced socioeconomic advantage in adulthood. Those who moved from socioeconomic disadvantage in childhood to advantage had levels of quality of life that were higher than those who were downwardly mobile. However, there was little difference in CASP-12 scores when comparing the upwardly mobile with the consistently advantaged.

8.4.1.2 The influence of the welfare regime

The results suggested that the association between cumulative advantage and CASP-12 was larger in the Southern and Post-communist welfare regimes, compared to the Scandinavian and Bismarckian regimes. The relationship between adulthood socioeconomic advantage was weakest in the Scandinavian regime and stronger in the other three welfare regimes among both genders. Results were generally similar for the childhood socioeconomic advantage score, except there was no difference in the association with CASP-12 between the Scandinavian and Bismarckian regimes.

Similar to the overall associations, no evidence was found for an effect of inter-generational mobility among men. Intra-generational mobility was not examined due to low extent of mobility during working life. There was evidence to suggest an effect of inter-generational mobility among women in the Post-communist regime. For women who started in a non-manual position, there was no difference in CASP-12 scores between manual and non-manual destination occupations. However, women who began in a manual position and moved to a non-manual position had higher CASP-12 scores compared to individuals who remained in a manual position during both time points. This result was only statistically significant when using the binary manual versus non-manual classification of occupations and not when using the variable converted into its standardised rank.

This result was not found when examining social mobility using the socioeconomic advantage scores. There was no statistical interaction between childhood and adulthood socioeconomic advantage among women in the Post-communist regime. However, there was evidence of effect modification among men in the Scandinavian regime and among women in the Bismarckian regime. For these two groups, the results suggest that among the least advantaged during adulthood, increased childhood advantage was associated with increased CASP-12 scores. But, among the most advantaged during adulthood, increased socioeconomic advantage during childhood may be related to lower CASP-12 scores. In addition, among women in the Scandinavian regime, CASP-12 scores were higher among those who experienced downward mobility from childhood advantage to

adulthood disadvantage, compared to those who remained in socioeconomic disadvantage during both life course phases.

8.4.2 Strengths and limitations of the approach

A key strength of the analysis contained in this chapter was the use of a multidimensional socioeconomic advantage score comprised of several measures of socioeconomic position from across the life course. Previous studies of the cumulative effects of socioeconomic advantage or disadvantage on health and wellbeing outcomes have often only relied on a few measures, as found in the systematic review. No previous studies were found to have examined cumulative effects which take into account potential country effects and thereby allow comparison between welfare regimes. Social mobility was examined using a number of different approaches, which enabled the consistency of results to be investigated.

The limitations of the analysis should also be noted. The cumulative advantage score was limited by the measures of socioeconomic position available in the survey and therefore is not a true representation of all experiences of socioeconomic advantage across the life course. Nor do the socioeconomic scores take into account the duration spent in advantage or disadvantage over the life course. In addition, although it is an interesting result that there was a low degree of intra-generation mobility in the sample, this precluded the examination of intra-generational effects on CASP-12 scores for the different welfare regimes.

The next section of the thesis examines the influence of life course socioeconomic position and life satisfaction in early old age to see if the results are consistent with those for CASP-12.

9. The independent associations between different measures of socioeconomic position from across the life course and life satisfaction

9.1 Chapter introduction

This chapter presents results from the analysis examining the independent associations between different measures of socioeconomic position from across the life course and life satisfaction in early old age. Life satisfaction is a global measure of quality of life, which represents the cognitive evaluation of life. On the other hand, CASP-12 reflects a needs-satisfaction based measure, designed to specifically capture quality of life in early old age. Therefore, some differences in the associations may be expected.

The overall relationships were first investigated descriptively and then using multilevel models to calculate slope indices of inequality (SIIs), see chapter 5 section 5.6.3 for full details. As the results were generally consistent with those for CASP-12 reported in chapter 6, only the results from the multilevel models are presented here (descriptive statistics are located in the appendix where indicated).

The objectives of this chapter were to:

- Investigate the independent influence of different measures of socioeconomic position from across the life course on life satisfaction in early old age.

- Examine the role of the welfare regime in moderating the relationship between different measures of socioeconomic position and life satisfaction in early old age.

9.1.1 Interpreting effect sizes

As for CASP-12, the effect sizes for life satisfaction can be interpreted by examining the difference in mean scores between those who did and did not report being limited by a health condition. Among men, this difference was 0.80, and among women it was 0.86.

The Post-communist regime had the largest differences and the Scandinavian and Bismarckian regimes the narrowest (Table 9.1). These differences should be kept in mind when interpreting the results throughout the chapters focusing on life satisfaction.

Table 9.1: Difference in mean life satisfaction scores between those who did and did not report being limited by a health condition, by welfare regime and gender

All	Southern	Scandinavian	Post-communist	Bismarckian
Men				
0.80	0.83	0.52	1.10	0.65
Women				
0.86	0.97	0.59	1.13	0.59

9.2 Overall results

The total sample for this analysis comprised of 15,242 individuals, of whom 7,942 (52.1%) were female.

9.2.1 Multivariate analysis

The intraclass correlation for the null 'empty' model was 0.10 among men and 0.13 among women. Therefore, 10% and 13% of the total variance in life satisfaction was at the country level among men and women, respectively. This was slightly less than that found for CASP-12, indicating that more of the variance in life satisfaction was due to individual level factors compared with CASP-12. Appendix 9.1 contains mean life satisfaction scores by country and welfare regime.

9.2.1.1 Slope indices of inequality (SIIs) for life satisfaction (non-occupational measures of socioeconomic position)

All non-occupational measures of socioeconomic position were positively associated with life satisfaction among men (Table 9.2) and women (Table 9.3) in the age-adjusted multilevel models. Descriptive results are contained in Appendix 9.2. Of the childhood measures of socioeconomic position, the number of books displayed the strongest

association with life satisfaction among both men (SII=0.40, 95% CI: 0.28 to 0.53) and women (SII=0.60, 95% CI: 0.47 to 0.73), similar to CASP-12. Among men, therefore, the difference in life satisfaction between the people with the least and most number of books was roughly half that of the difference in life satisfaction between those reporting being limited by a health problem and those who did not.

Current wealth exhibited the largest SII among men (0.77, 95% CI: 0.66 to 0.89), whereas in women the largest SII was for current income (0.98, 95% CI: 0.86 to 1.10). Among women, the SII for current income was larger than the influence of experiencing a limiting illness. The size of the SIIs for education level in both genders were larger than those found for most of the childhood measures of socioeconomic position, but were weaker than more proximal measures, such as income and wealth. However, among both genders, the SIIs for education level were of similar magnitude to those found for the number of books during childhood. This suggests that, like CASP-12, the most proximal measures of socioeconomic position were more strongly associated with life satisfaction, compared to distal childhood measures. But, it also suggests that the number of books in childhood was just as important for quality of life in early old age as education level, a result also found for CASP-12. Again, this is explored further in the next chapter.

Table 9.2: Multilevel linear models estimating life satisfaction SIIs (using non-occupational measures of socioeconomic position) for men

	[1] Null model	[2] Age-adjusted	[3] Number of books	[4] Rooms per capita	[5] Amenities	[6] Education	[7] Income	[8] Wealth
	Coeff. [95% CI]	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**
Age (centered at 61)	-	0.05 [-0.04,0.14]	0.04 [-0.05,0.13]	0.05 [-0.04,0.14]	0.05 [-0.04,0.14]	0.03 [-0.06,0.12]	0.03 [-0.06,0.11]	0.00 [-0.08,0.09]
Age squared	-	-0.00 [-0.00,0.00]	-0.00 [-0.00,0.00]	-0.00 [-0.00,0.00]	-0.00 [-0.00,0.00]	-0.00 [-0.00,0.00]	-0.00 [-0.00,0.00]	-0.00 [-0.00,0.00]
Childhood	-	-	**0.40*** [0.28,0.53]**	-	-	-	-	-
Childhood	-	-	-	**0.18** [0.06,0.29]**	-	-	-	-
Childhood	-	-	-	-	**0.22*** [0.10,0.35]**	-	-	-
Adulthood	-	-	-	-	-	**0.51*** [0.38,0.64]**	-	-
Adulthood	-	-	-	-	-	-	**0.72*** [0.60,0.83]**	-
Adulthood	-	-	-	-	-	-	-	**0.77*** [0.66,0.89]**
Variance (country)	0.24*** [0.11,0.54]	0.24*** [0.11,0.54]	0.24*** [0.11,0.54]	0.24*** [0.11,0.54]	0.24*** [0.11,0.54]	0.24*** [0.11,0.54]	0.24*** [0.11,0.54]	0.24*** [0.11,0.54]
Variance (individual)	2.11*** [2.05,2.18]	2.11*** [2.05,2.18]	2.10*** [2.03,2.17]	2.11*** [2.04,2.18]	2.11*** [2.04,2.18]	2.10*** [2.03,2.17]	2.07*** [2.00,2.14]	2.06*** [2.00,2.13]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$;CI=confidence interval; Coeff.=coefficient; SII=slope index of inequality; coefficients in bold relate to the SIIs

Table 9.3: Multilevel linear models estimating life satisfaction SIIs (using non-occupational measures of socioeconomic position) for women

	[1] Null model	[2] Age-adjusted	[3] Number of books	[4] Rooms per capita	[5] Amenities	[6] Education	[7] Income	[8] Wealth
	Coeff. [95% CI]	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**
Age (centered at 61)	-	0.11* [0.02,0.21]	0.10* [0.01,0.19]	0.12* [0.02,0.21]	0.12* [0.03,0.21]	0.11* [0.02,0.20]	0.07 [-0.02,0.16]	0.06 [-0.03,0.15]
Age squared	-	-0.00** [-0.00,-0.00]	-0.00* [-0.00,-0.00]	-0.00** [-0.00,-0.00]	-0.00** [-0.00,-0.00]	-0.00* [-0.00,-0.00]	-0.00 [-0.00,0.00]	-0.00 [-0.00,0.00]
Childhood	-	-	**0.60*** [0.47,0.73]**	-	-	-	-	-
Childhood	-	-	-	**0.36*** [0.23,0.48]**	-	-	-	-
Childhood	-	-	-	-	**0.44*** [0.31,0.57]**	-	-	-
Adulthood	-	-	-	-	-	**0.61*** [0.47,0.75]**	-	-
Adulthood	-	-	-	-	-	-	**0.98*** [0.86,1.10]**	-
Adulthood	-	-	-	-	-	-	-	**0.93*** [0.81,1.05]**
Variance (country)	0.38* [0.17,0.85]	0.38* [0.17,0.86]	0.38* [0.17,0.86]	0.38* [0.17,0.86]	0.38* [0.17,0.86]	0.38* [0.17,0.86]	0.38* [0.17,0.86]	0.38* [0.17,0.86]
Variance (individual)	2.56*** [2.48,2.64]	2.55*** [2.48,2.63]	2.53*** [2.45,2.61]	2.54*** [2.47,2.62]	2.54*** [2.46,2.62]	2.53*** [2.45,2.61]	2.47*** [2.40,2.55]	2.48*** [2.41,2.56]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; CI=confidence interval; Coeff.=coefficient; SII=slope index of inequality; coefficients in bold relate to the SIIs

9.2.1.2 Slope indices of inequality (SIIs) for life satisfaction (occupational measures of socioeconomic position)

In the multilevel models, the occupational measures of socioeconomic position at each life course stage were positively associated with life satisfaction (Table 9.4). Little difference was observed between the SII estimates when using the manual versus non-manual and skill level classifications. The SIIs for the childhood occupational variables were of similar magnitude to those for the number of amenities in the respondent's accommodation during childhood reported above. Descriptive results for the occupational measures are contained in Appendix 9.3 and Appendix 9.4.

Table 9.4: Multilevel linear models estimating life satisfaction SIIs (using occupational measures of socioeconomic position)

	MEN		WOMEN	
	Manual versus non-manual	**Skill level**	**Manual versus non-manual**	**Skill level**
	SII [95% CI]	**SII [95% CI]**	**SII [95% CI]**	**SII [95% CI]**
Childhood	0.23** [0.08,0.38]	0.24** [0.09,0.38]	0.30*** [0.14,0.46]	0.42*** [0.26,0.57]
16 to 34 years	0.40*** [0.26,0.54]	0.41*** [0.27,0.54]	0.57*** [0.42,0.73]	0.59*** [0.45,0.74]
35 to 49 years	0.43*** [0.29,0.57]	0.42*** [0.29,0.55]	0.68*** [0.52,0.83]	0.64*** [0.50,0.78]
50 to 65 years	0.45*** [0.31,0.59]	0.51*** [0.38,0.64]	0.74*** [0.58,0.90]	0.62*** [0.48,0.76]
Main job	0.44*** [0.30,0.58]	0.48*** [0.35,0.61]	0.58*** [0.42,0.73]	0.53*** [0.39,0.67]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; CI=confidence interval; SII=slope index of inequality

9.3 The influence of the welfare regime

The above results illustrated that life satisfaction was socially patterned at the individual level using a number of different measures of socioeconomic position from across the life course. The following section uses multilevel models to investigate the interaction between the welfare regime and socioeconomic position for life satisfaction in early old age.

9.3.1 Multivariate analysis

9.3.1.1 Interaction between the welfare regime and socioeconomic position

Table 9.5 and Table 9.6 contain the results for the interactions between the welfare regime and the socioeconomic variables for life satisfaction among men and women, respectively (results stratified by welfare regime are found in Appendix 9.5 and Appendix 9.6). Compared to the Scandinavian regime, mean life satisfaction was lower in each of the other regime types. Results for the childhood and adulthood measures of socioeconomic position are described separately below, using graphs of the predicted means to help visualise the findings.

Table 9.5: Age-adjusted multilevel linear models for life satisfaction including interaction terms between the welfare regime and socioeconomic position among men

		Childhood				Adulthood			
	Null model	**Number of books**	**Rooms per capita**	**Amenities**	**Breadwinner occupation**	**Education**	**Main occupation**	**Income**	**Wealth**
	Coeff. [95% CI]	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**
Welfare regime [a]									
Southern	**-1.02*** [-1.44,-0.60]**	**-1.22*** [-1.68,-0.75]**	**-1.18*** [-1.64,-0.72]**	**-1.09*** [-1.56,-0.63]**	**-0.96*** [-1.44,-0.49]**	**-1.25*** [-1.72,-0.78]**	**-1.10*** [-1.56,-0.63]**	**-1.05*** [-1.51,-0.59]**	**-1.28*** [-1.73,-0.82]**
Post-communist	**-1.41*** [-1.87,-0.94]**	**-1.88*** [-2.39,-1.36]**	**-1.33*** [-1.84,-0.82]**	**-1.77*** [-2.29,-1.25]**	**-1.56*** [-2.10,-1.01]**	**-1.75*** [-2.27,-1.23]**	**-1.62*** [-2.15,-1.10]**	**-1.62*** [-2.13,-1.11]**	**-1.71*** [-2.21,-1.20]**
Bismarckian	**-0.57** [-0.95,-0.19]**	**-0.70** [-1.12,-0.28]**	**-0.47* [-0.88,-0.05]**	**-0.61** [-1.03,-0.19]**	**-0.51* [-0.94,-0.08]**	**-0.62** [-1.04,-0.20]**	**-0.53* [-0.95,-0.11]**	**-0.57** [-0.99,-0.16]**	**-0.61** [-1.03,-0.20]**
Interaction terms									
SEP (main effect)[b]	-	0.07 [-0.22,0.36]	0.19 [-0.09,0.48]	0.06 [-0.25,0.38]	0.30 [-0.04,0.64]	0.25 [-0.06,0.56]	**0.43** [0.12,0.74]**	**0.64*** [0.36,0.92]**	**0.51*** [0.23,0.79]**
Southern #SEP	-	0.39 [-0.00,0.78]	0.32 [-0.04,0.68]	0.14 [-0.24,0.53]	-0.11 [-0.55,0.33]	**0.46* [0.06,0.87]**	0.15 [-0.25,0.55]	0.05 [-0.30,0.41]	**0.51** [0.16,0.86]**
Post-communist #SEP	-	**0.94*** [0.50,1.39]**	-0.15 [-0.57,0.28]	**0.72** [0.25,1.19]**	0.30 [-0.28,0.88]	**0.68** [0.22,1.15]**	0.43 [-0.06,0.92]	**0.43* [0.01,0.85]**	**0.59** [0.18,1.01]**
Bismarckian #SEP	-	0.25 [-0.10,0.60]	-0.21 [-0.55,0.13]	0.07 [-0.29,0.43]	-0.13 [-0.53,0.27]	0.10 [-0.27,0.47]	-0.09 [-0.45,0.28]	0.00 [-0.33,0.34]	0.08 [-0.25,0.41]
Variance (country)	0.05*** [0.02,0.14]	0.05*** [0.02,0.14]	0.05*** [0.02,0.14]	0.05*** [0.02,0.14]	0.05*** [0.02,0.14]	0.05*** [0.02,0.14]	0.05*** [0.02,0.14]	0.05*** [0.02,0.14]	0.05*** [0.02,0.14]
Variance (individual)	2.11*** [2.05,2.18]	2.10*** [2.03,2.17]	2.11*** [2.04,2.18]	2.11*** [2.04,2.18]	2.11*** [2.04,2.18]	2.09*** [2.03,2.16]	2.10*** [2.03,2.17]	2.07*** [2.00,2.14]	2.06*** [1.99,2.13]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; Coeff.=coefficient; SEP=socioeconomic position;#=interaction; [a] Scandinavian regime is the reference category; [b] can be interpreted as the SII for the Scandinavian regime

Table 9.6: Age-adjusted multilevel linear models for life satisfaction including interaction terms between the welfare regime and socioeconomic position among women

		Childhood				Adulthood			
	Null model	**Number of books**	**Rooms per capita**	**Amenities**	**Breadwinner occupation**	**Education**	**Main occupation**	**Income**	**Wealth**
	Coeff. [95% CI]	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**	**Coeff. [95% CI]**
Welfare regime [a]									
Southern	**-1.37*** [-1.88,-0.87]**	**-1.84*** [-2.39,-1.29]**	**-1.61*** [-2.15,-1.06]**	**-1.62*** [-2.17,-1.08]**	**-1.58*** [-2.13,-1.02]**	**-1.91*** [-2.46,-1.35]**	**-1.78*** [-2.33,-1.23]**	**-1.57*** [-2.11,-1.03]**	**-1.62*** [-2.16,-1.08]**
Post-communist	**-1.76*** [-2.32,-1.21]**	**-2.28*** [-2.88,-1.69]**	**-2.06*** [-2.66,-1.47]**	**-2.19*** [-2.79,-1.58]**	**-2.37*** [-2.99,-1.75]**	**-2.47*** [-3.07,-1.87]**	**-2.16*** [-2.77,-1.56]**	**-2.20*** [-2.79,-1.61]**	**-2.14*** [-2.73,-1.55]**
Bismarckian	**-0.75** [-1.21,-0.30]**	**-0.92*** [-1.41,-0.43]**	**-0.87*** [-1.36,-0.38]**	**-0.82** [-1.31,-0.33]**	**-0.87*** [-1.38,-0.37]**	**-0.89*** [-1.38,-0.39]**	**-0.84*** [-1.34,-0.34]**	**-0.87*** [-1.36,-0.38]**	**-0.90*** [-1.38,-0.41]**
Interaction terms									
SEP (main effect)[b]	-	0.08 [-0.23,0.38]	0.04 [-0.26,0.34]	0.11 [-0.21,0.44]	0.06 [-0.29,0.41]	0.02 [-0.30,0.34]	0.12 [-0.21,0.46]	**0.63*** [0.33,0.92]**	**0.55*** [0.26,0.85]**
Southern #SEP	-	**0.94*** [0.52,1.35]**	**0.47*** [0.09,0.85]**	**0.50*** [0.09,0.91]**	0.40 [-0.06,0.87]	**1.07*** [0.63,1.51]**	**0.81*** [0.38,1.24]**	**0.40*** [0.02,0.77]**	**0.49*** [0.12,0.87]**
Post-communist #SEP	-	**1.05*** [0.61,1.49]**	**0.61** [0.19,1.03]**	**0.85*** [0.39,1.31]**	**1.22*** [0.66,1.77]**	**1.43*** [0.96,1.89]**	**0.80** [0.32,1.28]**	**0.88*** [0.47,1.29]**	**0.76*** [0.35,1.17]**
Bismarckian #SEP	-	0.33 [-0.03,0.70]	0.23 [-0.12,0.59]	0.13 [-0.25,0.52]	0.24 [-0.18,0.66]	0.27 [-0.12,0.65]	0.17 [-0.23,0.57]	0.24 [-0.11,0.59]	0.29 [-0.06,0.64]
Variance (country)	0.08*** [0.03,0.21]	0.08*** [0.03,0.20]	0.08*** [0.03,0.20]	0.08*** [0.03,0.20]	0.08*** [0.03,0.20]	0.08*** [0.03,0.20]	0.08*** [0.03,0.20]	0.08*** [0.03,0.20]	0.08*** [0.03,0.21]
Variance (individual)	2.55*** [2.48,2.63]	2.52*** [2.44,2.60]	2.54*** [2.46,2.62]	2.53*** [2.46,2.61]	2.54*** [2.46,2.62]	2.51*** [2.44,2.59]	2.53*** [2.45,2.61]	2.47*** [2.39,2.55]	2.48*** [2.40,2.56]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; Coeff.=coefficient; SEP=socioeconomic position;#=interaction; [a] Scandinavian regime is the reference category; [b] can be interpreted as the SII for the Scandinavian regime

Childhood socioeconomic position

Among both genders, inequalities in life satisfaction by childhood socioeconomic position were narrow (and not statistically significant) in the Scandinavian regime (Table 9.5 and Table 9.6). Compared to the Scandinavian regime, the SIIs for the childhood measures were not larger in the Bismarckian regime among either gender. Additionally, among men (for all childhood measures) and women (for the occupation of the main breadwinner only) in the Southern regime, the differences between the least and most advantaged were not much larger compared to the Scandinavian and Bismarckian regimes. Inequalities in life satisfaction by childhood socioeconomic position were particularly apparent in the Post-communist regime among men (Figure 9.1), and especially women (Figure 9.2). However there was one exception; among men in the Post-communist regime there was little difference in life satisfaction between those with the lowest and highest number of rooms per capita (Figure 9.1b). Descriptive statistics for life satisfaction by childhood socioeconomic position for each welfare regime are contained in Appendix 9.7 and Appendix 9.8.

Figure 9.1: Age-adjusted predicted mean life satisfaction (with 95% confidence intervals) for men by welfare regime for childhood socioeconomic position derived from the multilevel models

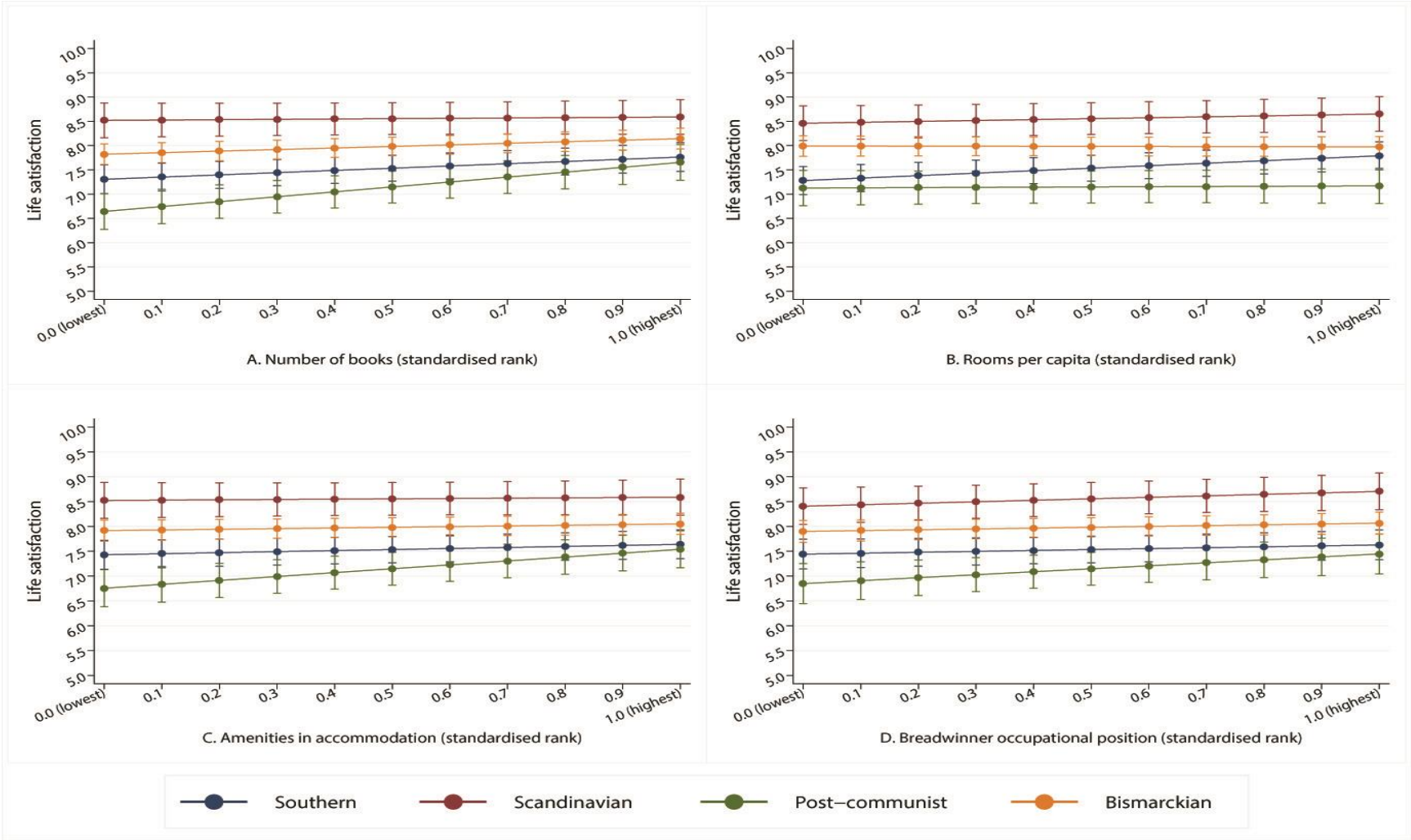
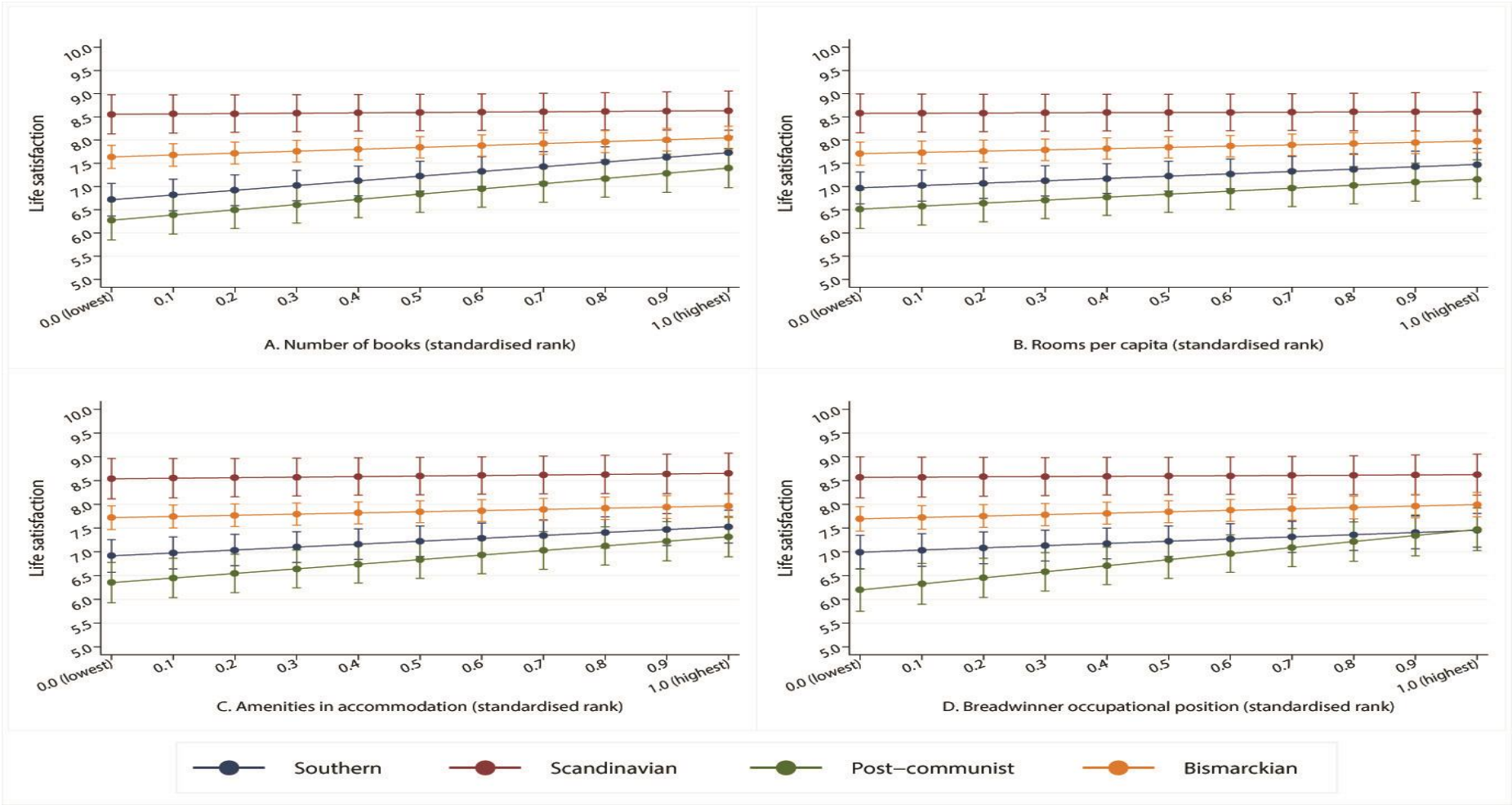


Figure 9.2: Age-adjusted predicted mean life satisfaction (with 95% confidence intervals) for women by welfare regime for childhood socioeconomic position derived from the multilevel models



Adulthood socioeconomic position

The results for life satisfaction by adulthood socioeconomic position generally displayed a similar pattern to those found for CASP-12, reported in chapter 6 section 6.3.2. Educational inequalities in life satisfaction were narrow and not statistically significant in the Scandinavian regime in either gender (Table 9.5 and Table 9.6). Compared to the Scandinavian regime, the SIIs were significantly larger in the Southern and Post-communist welfare regimes, but not in the Bismarckian regime (Figure 9.3a and Figure 9.4a).

The differences in mean life satisfaction between the least and most advantaged according to the skill level of the main occupation were also narrowest in the Scandinavian and Bismarckian regimes. However, the overall level of inequality in life satisfaction by this measure was generally similar across all regimes among men, and no significant differences compared to the Scandinavian regime were found (Figure 9.3b). Among women, the Southern and Post-communist regimes exhibited the largest inequality in life satisfaction by the main occupation variable (Figure 9.4b).

In the Scandinavian regime, income related inequalities in life satisfaction were largest out of the measures of adulthood socioeconomic position. The Post-communist welfare regime exhibited the largest income related inequalities in life satisfaction among men and among the other regimes, there was little difference compared to the Scandinavian regime (Figure 9.3c). Among women, the difference in life satisfaction between those with the highest and lowest incomes was greatest in the Post-communist regime, followed by the Southern regime, but there was not much difference between the Scandinavian and Bismarckian regimes (Figure 9.4c).

Inequalities in life satisfaction by current wealth were apparent across all regimes, but were largest in the Post-communist and Southern welfare regimes among both genders (Figure 9.3d and Figure 9.4d). There was little difference between the Scandinavian and Bismarckian welfare regimes in terms of the SIIs for current wealth. Descriptive statistics for life satisfaction by the adulthood measures of socioeconomic position are contained in Appendix 9.9.

Figure 9.3: Age-adjusted predicted mean life satisfaction (with 95% confidence intervals) for men by welfare regime for adulthood socioeconomic position from the multilevel models

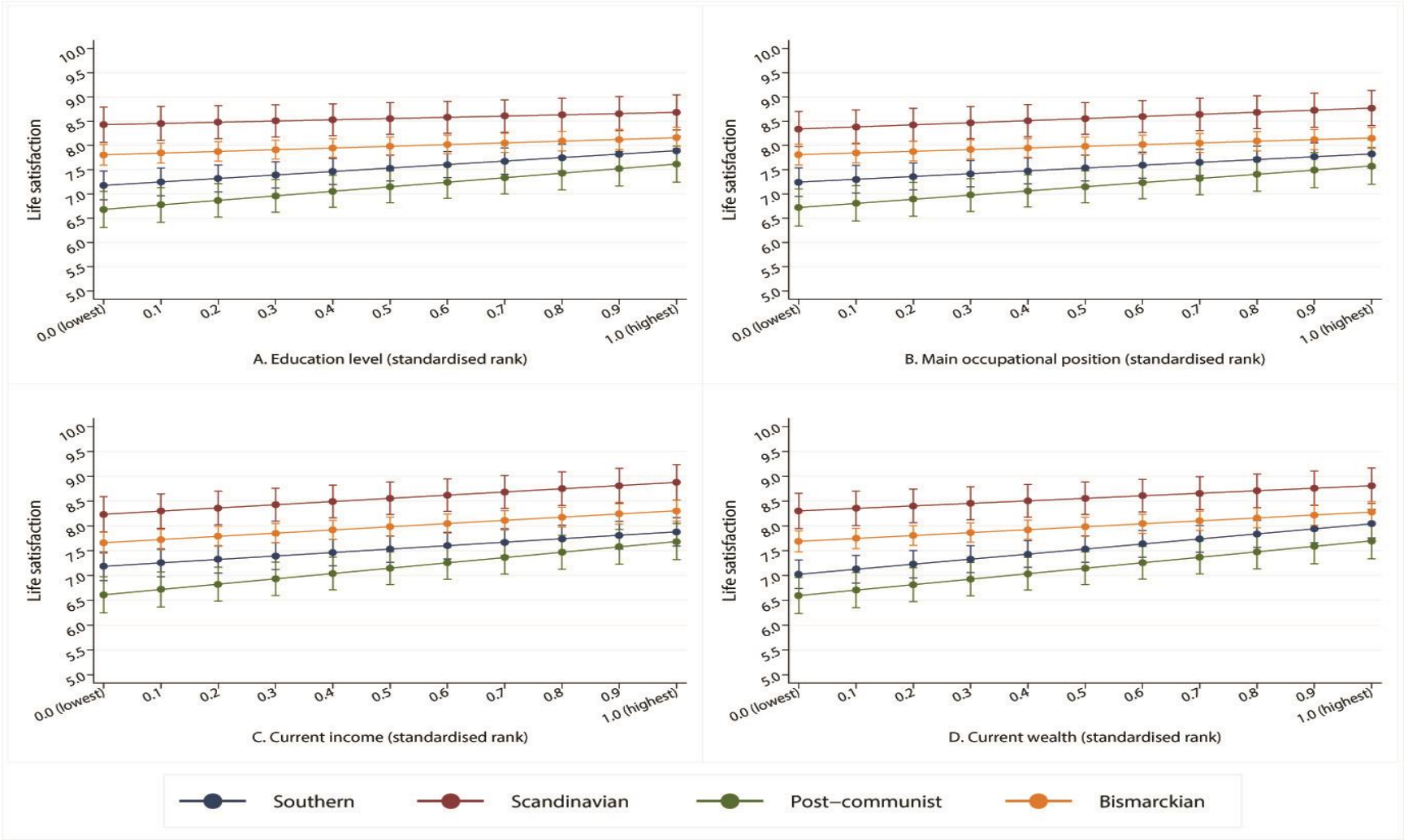
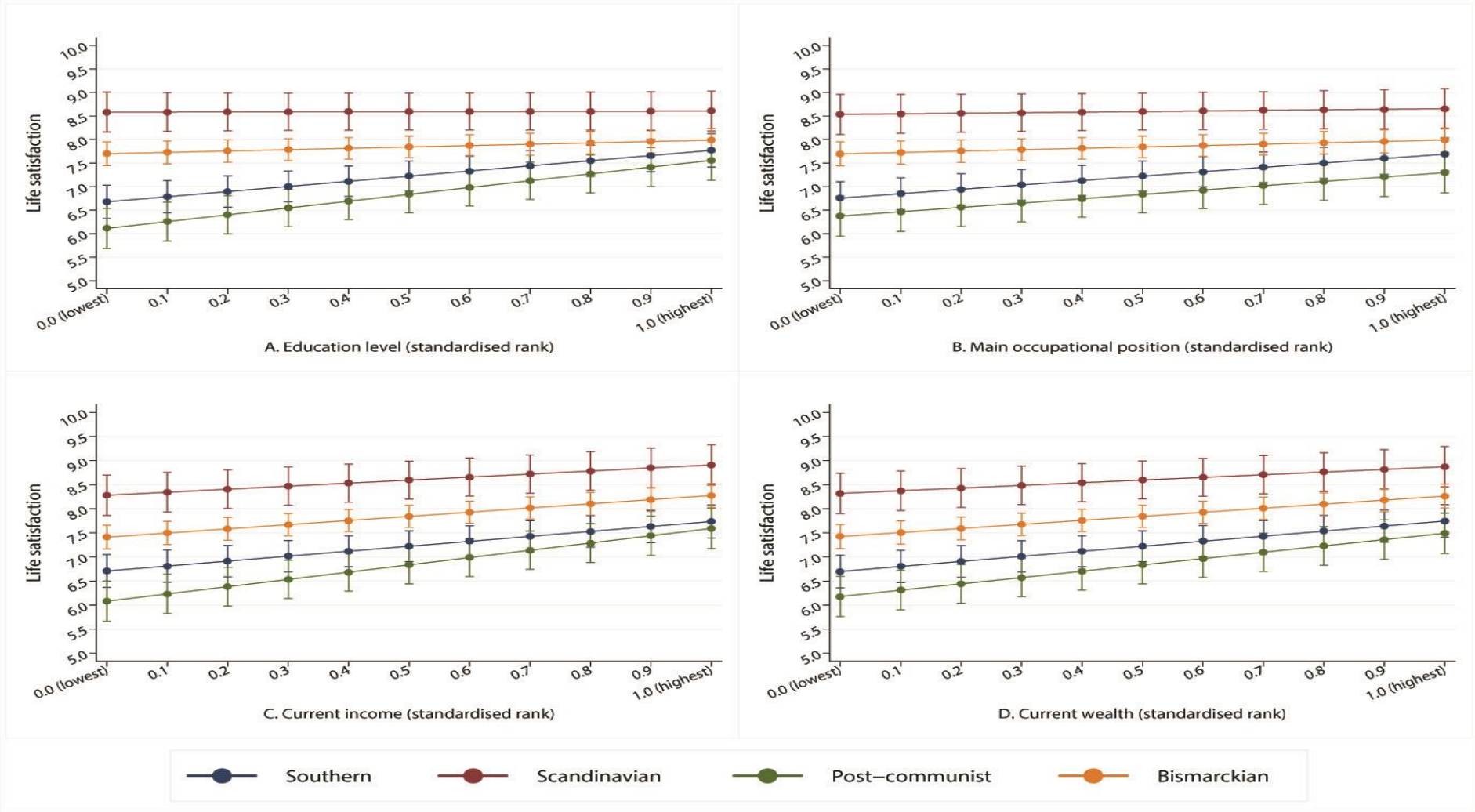


Figure 9.4: Age-adjusted predicted mean life satisfaction (with 95% confidence intervals) for women by welfare regime for adulthood socioeconomic position from the multilevel models

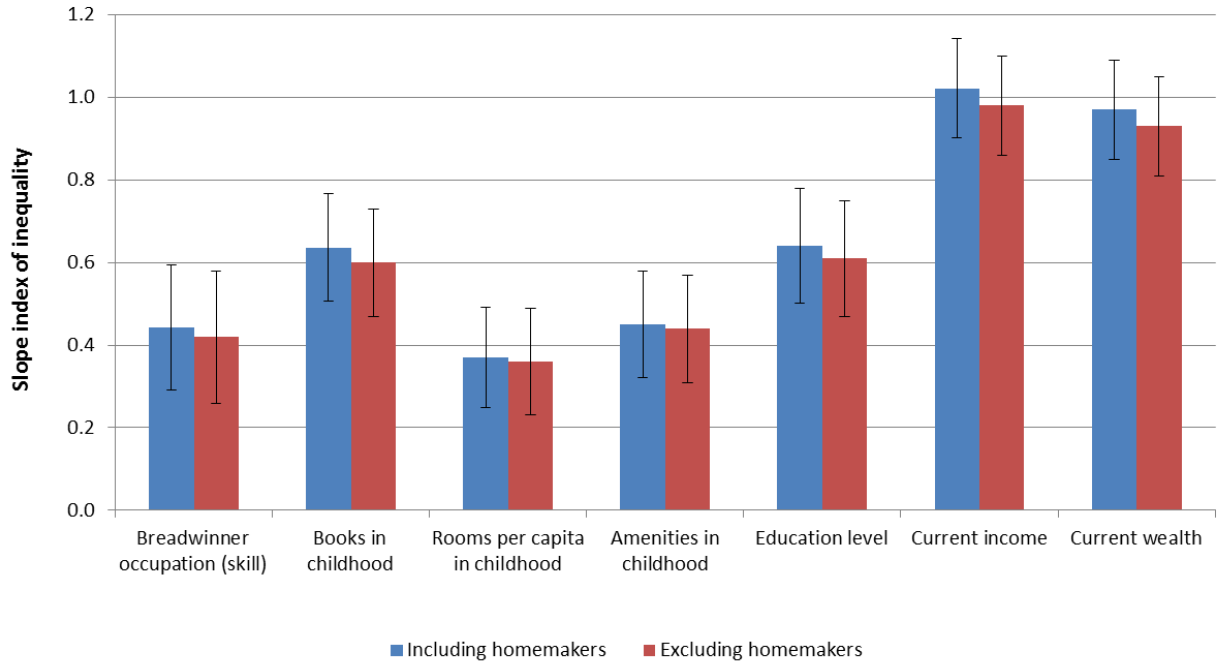


9.3.2 Sensitivity analyses

9.3.2.1 Including female homemakers

In the above analysis 1,354 female homemakers were excluded as they were classified as looking after the home or family at the working ages examined and information could not be obtained from their partner. Comparing the SII estimates for the non-occupational measures of socioeconomic position with and without this group of women revealed some small differences, but the substantive results remained unchanged (Figure 9.5). SIIs were larger when including homemakers, although overall the differences were not large and the confidence intervals overlapped substantially.

Figure 9.5: Slope indices of inequality (with 95% confidence intervals) among women for measures of socioeconomic position including and excluding homemakers



9.3.2.2 Excluding individual countries

The overall analysis was conducted excluding each country in turn (Appendix 9.10). For most indicators, the SII estimates did not change substantively. The only exception was that among men, the SII for the number of rooms per capita during childhood reduced and was not statistically significant when excluding Greece. This suggests that when using this measure, socioeconomic inequalities in life satisfaction are larger within this country.

9.4 Chapter discussion

This chapter examined the independent relationships between different measures of socioeconomic position from across the life course and life satisfaction in early old age and the influence of the welfare regime in shaping these associations. This section summarises the key results of the chapter and compares them with those found for CASP-12 in Chapter 6.

9.4.1 Summary and interpretation of results

9.4.1.1 Overall results

Among men, the key results for life satisfaction were generally consistent with those for CASP-12; higher socioeconomic position was associated with higher life satisfaction using all measures of socioeconomic position from across the life course and proximal measures were more strongly associated. For women, current income was the strongest predictor of life satisfaction, unlike for men, where it was current wealth. This perhaps suggests that the flow of material resources was more important for life satisfaction among women, compared to accumulated assets. However, among women, the difference in the SII estimates for income and wealth were only marginal. As for CASP-12, the overall associations were stronger among women compared to men.

9.4.1.2 The influence of the welfare regime

Among men, compared to the Scandinavian regime, inequalities in life satisfaction by the childhood measures of socioeconomic position were larger in the Post-communist regime for two measures, but were not much larger in the Southern and Bismarckian regimes. For most adulthood measures of socioeconomic position, inequalities in life satisfaction were larger in the Post-communist and Southern regimes, compared to the Scandinavian regime. As for CASP-12, little difference in the magnitude of inequalities in life satisfaction was found between the Scandinavian and Bismarckian regimes, using the adulthood measures of socioeconomic position. The strengths and limitations of the methodological approach taken in this chapter were covered in chapter 6. The next

chapter examines the extent to which the association between childhood socioeconomic position and life satisfaction was explained by later measures of socioeconomic position.

10. Latent and pathway effects from childhood socioeconomic position to life satisfaction in early old age

10.1 Chapter introduction

This chapter builds on the previous chapter by examining whether the relationship between childhood socioeconomic position and life satisfaction was still evident when taking into account later measures of socioeconomic position. Chapter 5 section 5.6.4 contains full details of the analyses contained in this chapter.

The objectives of this chapter were to:

- Explore potential latent and pathway effects from childhood socioeconomic position to life satisfaction in early old age.

- Investigate the relationships by welfare regime.

10.2 Overall results

10.2.1 Latent and pathway effects

10.2.1.1 Number of books in childhood

With the addition of each measure of socioeconomic position the SII for the number of books was attenuated (Table 10.1). Including all adulthood measures of socioeconomic position reduced the SIIs for the number of books by 62.5% among men and 50.0% among women (Model 5 in Table 10.1). The SII for the number of books in childhood remained statistically significant when including the adulthood measures of socioeconomic position. Although, among men, the residual association between the number of books and life satisfaction was weak.

Table 10.1: Age-adjusted slope indices of inequality derived from the multilevel models for the association between the number of books in childhood and life satisfaction adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Number of books	0.40*** [0.28,0.53]	0.26*** [0.13,0.40]	0.22** [0.08,0.36]	0.17* [0.03,0.30]	0.15* [0.01,0.29]
Education level	-	0.41*** [0.27,0.55]	0.30*** [0.14,0.45]	0.14 [-0.01,0.30]	0.07 [-0.08,0.23]
Main job	-	-	0.27*** [0.12,0.42]	0.18* [0.03,0.33]	0.12 [-0.03,0.27]
Current income	-	-	-	0.61*** [0.48,0.73]	0.46*** [0.33,0.59]
Current wealth	-	-	-	-	0.56*** [0.44,0.69]
WOMEN					
Number of books	0.60*** [0.47,0.73]	0.44*** [0.30,0.59]	0.41*** [0.27,0.55]	0.34*** [0.19,0.48]	0.30*** [0.16,0.44]
Education level	-	0.42*** [0.27,0.57]	0.32*** [0.16,0.48]	0.14 [-0.03,0.30]	0.09 [-0.07,0.26]
Main job	-	-	0.25** [0.09,0.41]	0.15 [-0.01,0.31]	0.10 [-0.06,0.26]
Current income	-	-	-	0.86*** [0.74,0.99]	0.67*** [0.54,0.80]
Current wealth	-	-	-	-	0.62*** [0.49,0.74]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; SII=slope index of inequality

10.2.1.2 Number of rooms per capita in childhood accommodation

Among men, the association between the number of rooms per capita in the respondents' accommodation during childhood and life satisfaction was explained by the adulthood measures of socioeconomic position (Table 10.2). For women, a small association remained after including the measures of adult socioeconomic position; the SII reduced from 0.36 (95% CI: 0.23 to 0.48) in the age-adjusted model to 0.13 (95% CI: 0.00 to 0.25) in the model also adjusted for adulthood measures of socioeconomic position (Model 5 in Table 10.2).

Table 10.2: Age-adjusted slope indices of inequality derived from the multilevel models for the association between the number of rooms per capita in childhood accommodation and life satisfaction adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Rooms per capita	0.18** [0.06,0.29]	0.10 [-0.02,0.22]	0.07 [-0.05,0.19]	0.03 [-0.09,0.15]	-0.00 [-0.12,0.12]
Education level	-	0.49*** [0.35,0.62]	0.35*** [0.20,0.50]	0.18* [0.03,0.34]	0.11 [-0.04,0.27]
Main job	-	-	0.30*** [0.16,0.45]	0.21** [0.06,0.35]	0.15* [0.00,0.30]
Current income	-	-	-	0.61*** [0.49,0.74]	0.47*** [0.34,0.59]
Current wealth	-	-	-	-	0.57*** [0.45,0.69]
WOMEN					
Rooms per capita	0.36*** [0.23,0.48]	0.25*** [0.13,0.38]	0.23*** [0.10,0.35]	0.17** [0.05,0.30]	0.13* [0.00,0.25]
Education level	-	0.54*** [0.40,0.69]	0.42*** [0.26,0.57]	0.22** [0.06,0.38]	0.17* [0.01,0.33]
Main job	-	-	0.29*** [0.13,0.45]	0.18* [0.02,0.34]	0.13 [-0.03,0.29]
Current income	-	-	-	0.87*** [0.75,1.00]	0.68*** [0.55,0.81]
Current wealth	-	-	-	-	0.62*** [0.49,0.75]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. . CI=confidence interval; SII=slope index of inequality

10.2.1.3 Number of amenities in childhood accommodation

The association between the number of amenities in the respondents' childhood accommodation and later life satisfaction in men was largely explained by their education level (Model 2 in Table 10.3). Adding the additional adult socioeconomic measures diminished the SIIs. Among women, education level reduced the SII for the number of amenities from 0.44 (95 % CI: 0.31 to 0.57) to 0.30 (95% CI: 0.16 to 0.43). Including the additional socioeconomic variables further attenuated the SII (Model 5 in Table 10.3).

Table 10.3: Age-adjusted slope indices of inequality derived from the multilevel models for the association between the number of amenities in childhood accommodation and life satisfaction adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Amenities	0.22*** [0.10,0.35]	0.11 [-0.02,0.23]	0.07 [-0.05,0.20]	0.03 [-0.10,0.16]	0.03 [-0.10,0.15]
Education level	-	0.48*** [0.34,0.61]	0.34*** [0.19,0.49]	0.18* [0.03,0.33]	0.11 [-0.05,0.26]
Main job	-	-	0.30*** [0.16,0.45]	0.21** [0.06,0.35]	0.15 [-0.00,0.30]
Current income	-	-	-	0.62*** [0.49,0.74]	0.47*** [0.34,0.59]
Current wealth	-	-	-	-	0.57*** [0.45,0.69]
WOMEN					
Amenities	0.44*** [0.31,0.57]	0.30*** [0.16,0.43]	0.27*** [0.13,0.40]	0.19** [0.06,0.32]	0.16* [0.03,0.29]
Education level	-	0.51*** [0.37,0.66]	0.39*** [0.23,0.55]	0.20* [0.04,0.37]	0.15 [-0.01,0.31]
Main job	-	-	0.28*** [0.12,0.44]	0.18* [0.02,0.33]	0.12 [-0.03,0.28]
Current income	-	-	-	0.87*** [0.74,1.00]	0.68*** [0.55,0.81]
Current wealth	-	-	-	-	0.62*** [0.49,0.75]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; SII=slope index of inequality

10.2.1.4 Occupation of the main breadwinner during childhood

Among men, a similar pattern to the above results was observed for the association between the occupation of the main breadwinner during childhood and life satisfaction in early old age, with the SII being halved by the addition of education level (Model 2 in Table 10.4). In women, a 38.1% reduction in the SII for the occupation of the main breadwinner was observed when including education level. The SII was largely explained by the further inclusion of the main occupation and current income variables (Model 4 in Table 10.4), suggesting that this variable influences life satisfaction through the adulthood measures of socioeconomic position.

Table 10.4: Age-adjusted slope indices of inequality derived from the multilevel models for the association between the occupation of the main breadwinner in childhood and life satisfaction adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Breadwinner job	0.24** [0.09,0.38]	0.12 [-0.02,0.27]	0.07 [-0.08,0.22]	0.05 [-0.10,0.20]	0.01 [-0.14,0.16]
Education level	-	0.48*** [0.35,0.62]	0.35*** [0.20,0.50]	0.18* [0.03,0.33]	0.11 [-0.04,0.26]
Main job	-	-	0.30*** [0.15,0.45]	0.20** [0.05,0.35]	0.15 [-0.00,0.30]
Current income	-	-	-	0.62*** [0.49,0.74]	0.47*** [0.34,0.59]
Current wealth	-	-	-	-	0.57*** [0.45,0.69]
WOMEN					
Breadwinner job	0.42*** [0.26,0.57]	0.26** [0.11,0.42]	0.21** [0.05,0.37]	0.18* [0.03,0.34]	0.15 [-0.01,0.31]
Education level	-	0.54*** [0.40,0.69]	0.43*** [0.27,0.58]	0.22** [0.06,0.38]	0.16* [0.01,0.32]
Main job	-	-	0.28*** [0.12,0.44]	0.17* [0.01,0.33]	0.12 [-0.04,0.28]
Current income	-	-	-	0.88*** [0.76,1.01]	0.69*** [0.55,0.82]
Current wealth	-	-	-	-	0.63*** [0.50,0.75]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. . CI=confidence interval; SII=slope index of inequality

10.2.1.5 Including all measures of childhood socioeconomic position

When including all the measures of childhood socioeconomic position (Model 1 in Table 10.5), only the number of books in childhood remained associated with life satisfaction among men (SII=0.34, 95% CI: 0.19 to 0.49). For women, a small association between the rooms per capita, as well as the household amenities variables, and life satisfaction remained, but these associations were largely attenuated by the inclusion of the adulthood variables (Model 4 in Table 10.5). Among both genders, the number of books remained associated with life satisfaction in the full model, but the association was relatively weak, especially among men. The SIIs for current income and wealth were more than double those found for the number of books in the full model (Model 5 in Table 10.5).

Table 10.5: Age-adjusted slope indices of inequality derived from the multilevel models for the association between all measures of childhood socioeconomic position and life satisfaction adjusted for adulthood measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]
MEN					
Number of books	0.34*** [0.19,0.49]	0.24** [0.09,0.39]	0.21** [0.06,0.36]	0.18* [0.03,0.33]	0.17* [0.02,0.32]
Rooms per capita	0.07 [-0.05,0.19]	0.05 [-0.08,0.17]	0.03 [-0.09,0.16]	0.01 [-0.12,0.13]	-0.02 [-0.14,0.10]
Amenities	0.05 [-0.09,0.19]	0.00 [-0.14,0.14]	-0.01 [-0.15,0.13]	-0.03 [-0.17,0.11]	-0.02 [-0.16,0.12]
Breadwinner job	0.08 [-0.08,0.23]	0.04 [-0.11,0.20]	0.01 [-0.15,0.16]	0.00 [-0.15,0.16]	-0.03 [-0.18,0.13]
Education level	-	0.40*** [0.26,0.54]	0.29*** [0.14,0.45]	0.15 [-0.01,0.30]	0.08 [-0.08,0.23]
Main job	-	-	0.27*** [0.12,0.42]	0.18* [0.03,0.33]	0.13 [-0.02,0.28]
Current income	-	-	-	0.61*** [0.48,0.73]	0.46*** [0.34,0.59]
Current wealth	-	-	-	-	0.57*** [0.44,0.69]
WOMEN					
Number of books	0.44*** [0.29,0.59]	0.34*** [0.18,0.49]	0.32*** [0.17,0.48]	0.27*** [0.12,0.43]	0.25** [0.10,0.41]
Rooms per capita	0.16* [0.03,0.30]	0.14* [0.01,0.27]	0.13* [0.00,0.26]	0.10 [-0.03,0.23]	0.06 [-0.07,0.19]
Amenities	0.17* [0.02,0.32]	0.13 [-0.02,0.28]	0.12 [-0.03,0.27]	0.07 [-0.08,0.21]	0.06 [-0.09,0.20]
Breadwinner job	0.15 [-0.01,0.31]	0.10 [-0.06,0.27]	0.07 [-0.09,0.24]	0.08 [-0.09,0.24]	0.06 [-0.10,0.23]
Education level	-	0.37*** [0.21,0.52]	0.28*** [0.12,0.45]	0.11 [-0.05,0.28]	0.08 [-0.09,0.24]
Main job	-	-	0.22** [0.06,0.38]	0.12 [-0.04,0.28]	0.08 [-0.08,0.24]
Current income	-	-	-	0.85*** [0.73,0.98]	0.67*** [0.54,0.80]
Current wealth	-	-	-	-	0.61*** [0.48,0.74]

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. CI=confidence interval; SII=slope index of inequality

10.2.2 Path analysis

The purpose of this analysis was to first test the base model, as outlined in the methodology (chapter 5) and tested for CASP-12 in chapter 7. Second, the addition of a direct effect from the number of books in childhood to life satisfaction was tested, as the

above analysis suggested that this variable was associated with life satisfaction, even when including the other measures of socioeconomic position from across the life course. Third, the direct, indirect, and total effects from the childhood socioeconomic variables to life satisfaction were calculated. Only the results from the path models containing the childhood direct effect are reported here as the results were consistent with CASP-12 whereby the model containing the direct effect from the number of books in childhood was a slightly better fit with the data. The results for the base model are contained in Appendix 10.

10.2.2.1 Direct, indirect, and total effects from childhood socioeconomic position to life satisfaction

Direct effects

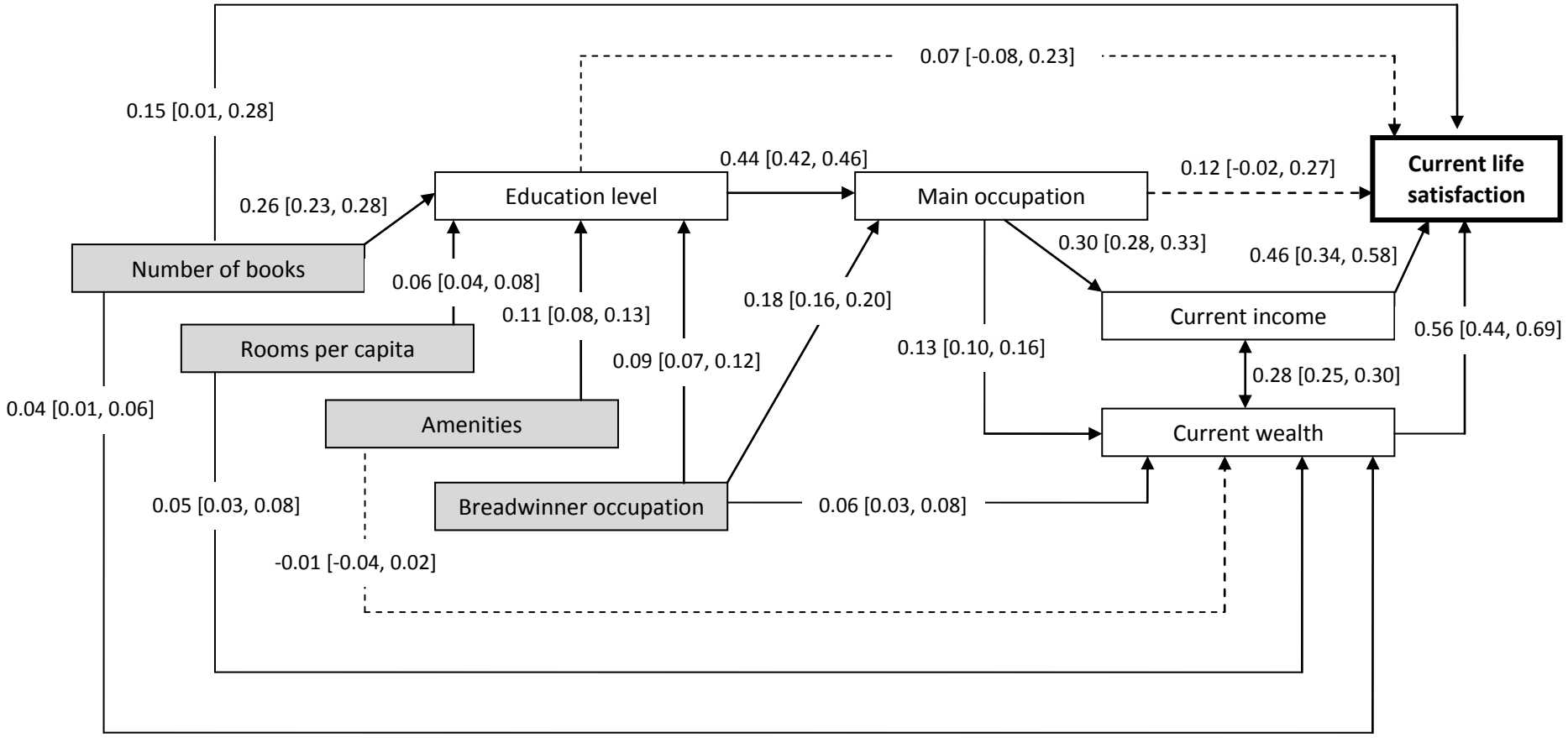
Among men, a one-unit increase in the number of books variable was associated with an increase of 0.15 (95% CI: 0.01 to 0.28) in life satisfaction (Figure 10.1). For women (Figure 10.2), the same coefficient was 0.30 (95% CI: 0.16 to 0.44); around 35% of the effect size associated with experiencing limitations with daily activities. Including the direct effect from the number of books in childhood to life satisfaction reduced the path coefficient between education level and life satisfaction so that is was no longer statistically significant. This perhaps suggests that, among women, the direct influence of education level on life satisfaction could be explained by the cultural environment during childhood. Compared to the base model, the model containing the direct effect from the number of books was a slightly better fit with the data according to a lower AIC value (Table 10.6).

Table 10.6: Model fit statistics for the path model with a direct effect from the number of books in childhood to life satisfaction

Gender	AIC	Chi-square df (p-value)	RMSEA [95% CI]	CFI	TLI	SRMR
Men	29064.09	745.09 df=64 (p<0.001)	0.038 [0.036, 0.041]	0.90	0.85	0.023
Women	32369.11	625.49 df=64 (p<0.001)	0.033 [0.031, 0.036]	0.93	0.89	0.022

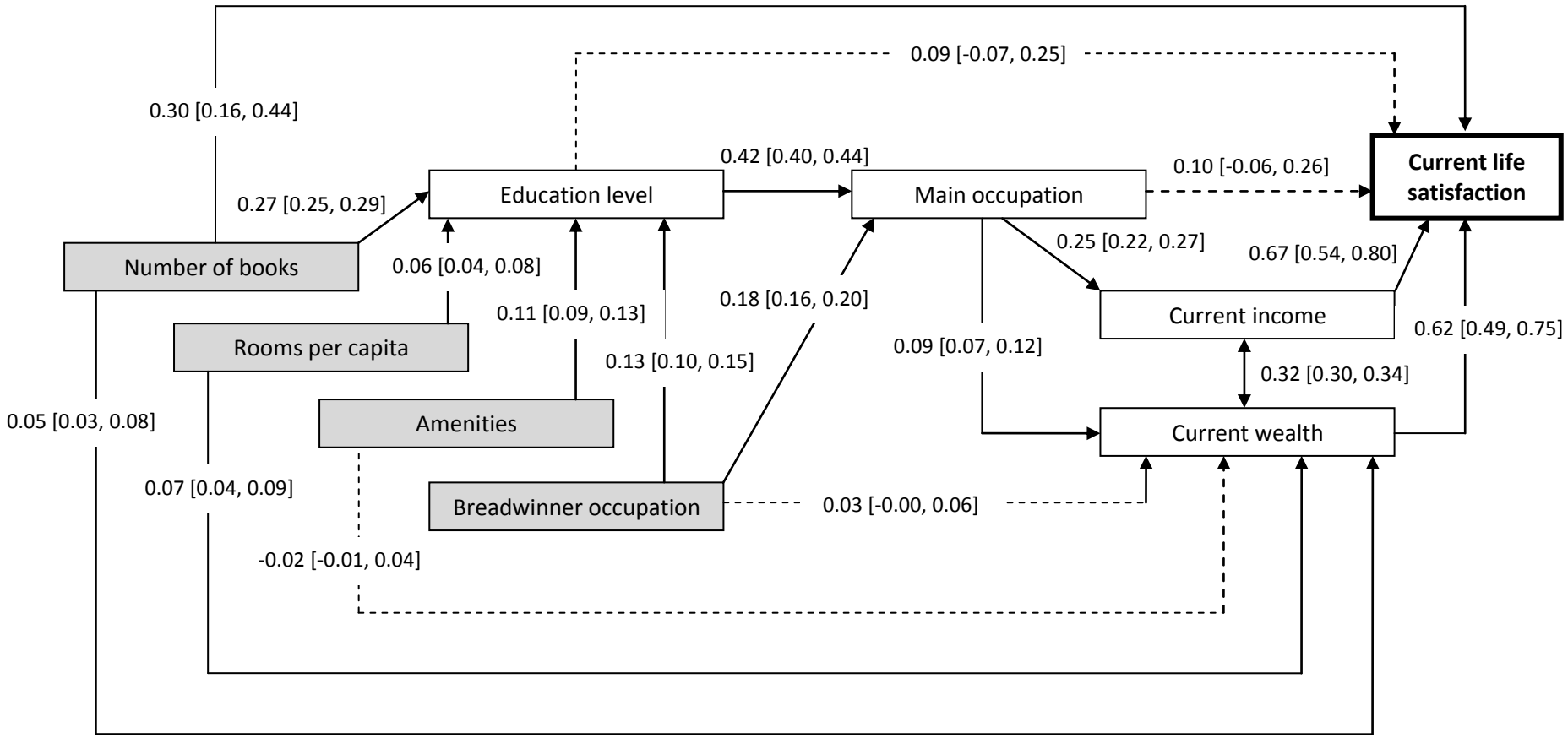
AIC=Akaike information criteria; CFI=comparative fit index; df=degrees of freedom; RMSEA=root mean square error of approximation; SRMR= Standardized Root Mean Square Residual; TLI=Tucker Lewis Index

Figure 10.1: Path analysis (showing unstandardised regression coefficients with 95% confidence intervals) for life satisfaction among men with a direct effect from the number of books in childhood



Grey boxes indicate measures of childhood socioeconomic position; controlled for age and country fixed effects; dashed line shows statistically insignificant path (p>0.05); correlations between the childhood measures of socioeconomic position and residual variances not shown

Figure 10.2: Path analysis (showing unstandardised regression coefficients with 95% confidence intervals) for life satisfaction among women with a direct effect from the number of books in childhood



Grey boxes indicate measures of childhood socioeconomic position; controlled for age and country fixed effects; dashed line shows statistically insignificant path (p>0.05); correlations between the childhood measures of socioeconomic position and residual variances not shown

Total effects

All of the total effects from the childhood socioeconomic variables were statistically significant, apart from the total effect from the number of amenities in the respondents' accommodation during childhood to life satisfaction among men (Table 10.7). This was due to the lack of overall indirect and direct effect on life satisfaction for this variable. The number of books in childhood displayed the largest total effect on life satisfaction, with statistically significant indirect effects, on top of the direct effect.

Overall indirect effects

Among both genders, the occupation of the main breadwinner during childhood displayed the largest overall indirect effects on life satisfaction. Although a small effect, among men, it was three times the size of the overall indirect effect found for the rooms per capita variable. The number of books also displayed small overall indirect effects on life satisfaction.

Specific indirect effects

Among both genders, the specific indirect effects from the measures of childhood socioeconomic position, via education level, to life satisfaction were not statistically significant. This was due to the relatively weak direct effect of education level on life satisfaction, once the other variables were taken into account. This was in contrast to CASP-12, where a modest association with education level was still observed. The pathways from the number of household amenities during childhood, via wealth, to life satisfaction were also not significant in both men and women. This was likely due to the relatively weak association between the number of amenities during childhood and current wealth.

Some small indirect effects to life satisfaction were observed for the other childhood variables. The indirect paths from the childhood variables to life satisfaction, which passed through education, the main job, as well as current income and wealth, also displayed small, but statistically significant associations. This was probably observed because current income and wealth displayed the strongest direct effect on life satisfaction and these are influenced by the main occupation and education variables, which are in turn related to the childhood variables.

Table 10.7: Direct, indirect, and total effects of the measures of socioeconomic position on life satisfaction derived from the path analysis

	Number of books	Rooms per capita	Breadwinner occupation	Accommodation amenities	Number of books	Rooms per capita	Breadwinner occupation	Accommodation amenities
	Men				Women			
	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value	Coeff. (SE) P-value
Overall direct effect	**0.15** **(0.07)** **p=0.03**	-	-	-	**0.30** **(0.07)** **p<0.01**	-	-	-
Overall indirect effect	**0.08** **(0.02)** **p<0.01**	**0.04** **(0.01)** **p<0.01**	**0.12** **(0.02)** **p<0.01**	0.02 (0.01) p=0.07	**0.10** **(0.02)** **p<0.01**	**0.06** **(0.01)** **p<0.01**	**0.12** **(0.02)** **p<0.01**	**0.04** **(0.01)** **p<0.01**
Total effect	**0.23** **(0.07)** **p<0.01**	**0.04** **(0.01)** **p<0.01**	**0.12** **(0.02)** **p<0.01**	0.02 (0.01) p=0.07	**0.40** **(0.07)** **p<0.01**	**0.06** **(0.010)** **p<0.01**	**0.12** **(0.02)** **p<0.01**	**0.04** **(0.01)** **p<0.01**
Specific indirect effect								
-> education ->	0.02 (0.02) p=0.35	0.00 (0.01) p=0.36	0.01 (0.01) p=0.35	0.01 (0.01) p=0.35	0.02 (0.02) p=0.28	0.01 (0.01) p=0.29	0.01 (0.01) p=0.29	0.01 (0.01) p=0.29
-> wealth ->	**0.02** **(0.01)** **p=0.02**	**0.03** **(0.01)** **p<0.01**	**0.03** **(0.01)** **p<0.01**	-0.01 (0.01) p=0.44	**0.03** **(0.01)** **p<0.01**	**0.04** **(0.01)** **p<0.01**	0.02 (0.01) p=0.06	0.01 (0.01) p=0.20

-> education -> main job ->	0.01 (0.01) p=0.10	0.00 (0.00) p=0.12	0.01 (0.00) p=0.11	0.01 (0.00) p=0.11	0.01 (0.01) p=0.21	0.00 (0.00) p=0.21	0.01 (0.00) p=0.21	0.01 (0.00) p=0.21
-> education -> main job -> income ->	**0.02 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.01 (0.00) p<0.01**	**0.01 (0.00) p<0.01**	**0.02 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.01 (0.00) p<0.01**	**0.01 (0.00) p<0.01**
-> education -> main job -> wealth ->	**0.01 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.01 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.00 (0.00) p<0.01**
-> education -> main job -> income -> wealth ->	**0.01 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.01 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.00 (0.00) p<0.01**	**0.00 (0.00) p<0.01**
-> main job ->	-	-	0.02 (0.01) p=0.11	-	-	-	0.02 (0.01) p=0.21	-
-> main job -> income	-	-	**0.03 (0.00) p<0.01**	-	-	-	**0.03 (0.00) p<0.01**	-
-> main job -> wealth	-	-	**0.01 (0.00) p<0.01**	-	-	-	**0.01 (0.00) p<0.01**	-
-> main job -> income -> wealth	-	-	**0.01 (0.00) p<0.01**	-	-	-	**0.01 (0.00) p<0.01**	-

Coeff.=coefficient; SE=standard error. Coefficients in bold indicate statistical significance (p<0.05); model controlled for age and country fixed effects

10.3 The influence of the welfare regime

This section describes the results from the analysis looking at latent and pathway effects from the number of books in childhood to life satisfaction by welfare regime. The results stratified by welfare regime for the single level regression models are outlined first and then the path analysis results are presented.

10.3.1.1 Latent and pathway effects

Southern regime

Among men in the Southern regime, the association between the number of books in childhood and life satisfaction was explained by education level (Table 10.8), suggesting a pathway effect. In the full model, the number of rooms per capita remained weakly associated with life satisfaction perhaps suggesting a small latent effect. Its effect size was greatly attenuated with the inclusion of the other socioeconomic variables, however, indicating that this variable may also work through the adulthood socioeconomic variables.

Among women, the association between the number of books and life satisfaction remained, but was attenuated, after including all socioeconomic variables. This is suggestive of a pathway effect and perhaps a small latent effect. The size of this effect was roughly equivalent to 42% of the effect size of experiencing limitations in the activities of daily living among this group. In the full model, the main job, current income, and wealth variables also exhibited statistically significant associations with life satisfaction among women.

Among both genders, both current income and wealth displayed the strongest associations with life satisfaction (model 6 in Table 10.8), indicating the importance of current circumstances for life satisfaction in this regime.

Table 10.8: Age-adjusted associations (derived from single level regression models) between the number of books in childhood and life satisfaction in the Southern regime, including the other measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]	(6) SII [95% CI]
Men						
Books in childhood	0.45** [0.17,0.72]	0.21 [-0.08,0.51]	0.15 [-0.15,0.45]	0.10 [-0.20,0.40]	0.08 [-0.21,0.38]	0.07 [-0.26,0.40]
Education level	-	0.60*** [0.31,0.90]	0.49** [0.17,0.80]	0.33* [0.01,0.65]	0.19 [-0.13,0.51]	0.20 [-0.12,0.52]
Main job [a]	-	-	0.32* [0.03,0.61]	0.26 [–0.03,0.55]	0.16 [-0.13,0.45]	0.14 [-0.15,0.44]
Current income	-	-	-	0.50*** [0.27,0.74]	0.34** [0.10,0.58]	0.33** [0.09,0.57]
Current wealth	-	-	-	-	0.83*** [0.60,1.07]	0.81*** [0.58,1.04]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.31* [0.06,0.55]
Amenities	-	-	-	-	-	-0.16 [-0.43,0.11]
Breadwinner job [a]	-	-	-	-	-	-0.05 [-0.34,0.25]]
Women						
Books in childhood	0.99*** [0.69,1.29]	0.69*** [0.36,1.03]	0.61*** [0.27,0.94]	0.53** [0.19,0.86]	0.44* [0.10,0.78]	0.41* [0.03,0.78]
Education level	-	0.72*** [0.36,1.08]	0.49* [0.11,0.88]	0.23 [-0.16,0.62]	0.14 [-0.25,0.53]	0.13 [-0.26,0.53]
Main job [a]	-	-	0.56*** [0.24,0.89]	0.50** [0.19,0.82]	0.46** [0.14,0.78]	0.45** [0.12,0.77]
Current income	-	-	-	0.74*** [0.47,1.01]	0.58*** [0.31,0.86]	0.58*** [0.30,0.85]
Current wealth	-	-	-	-	0.67*** [0.40,0.93]	0.67*** [0.40,0.94]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.01 [-0.27,0.28]
Amenities	-	-	-	-	-	0.06 [-0.25,0.38]
Breadwinner job [a]	-	-	-	-	-	0.03 [-0.30,0.37]

[a] skill level; CI-confidence interval; SII=slope index of inequality; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; all models controlled for age, age^2, and country fixed effects

Scandinavian regime

In the Scandinavian regime, the number of books was not significantly associated with life satisfaction (Table 10.9). In the full model containing all socioeconomic variables, current income displayed an association with life satisfaction among both genders and current wealth was also remained associated among women. This result suggests that it was current circumstances that had most influence on life satisfaction in early old age in the Scandinavian regime, namely through current income. It was notable that among men, current wealth was not associated with life satisfaction in the full model. This perhaps indicates that it was the current flow of resources that was important for life satisfaction rather than accumulated assets.

Table 10.9: Age-adjusted associations (derived from single level regression models) between the number of books in childhood and life satisfaction in the Scandinavian regime, including the other measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]	(6) SII [95% CI]
Men						
Books in childhood	0.10 [-0.15,0.35]	0.00 [-0.27,0.27]	-0.07 [-0.34,0.21]	-0.11 [-0.38,0.16]	-0.13 [-0.40,0.14]	-0.22 [-0.53,0.09]
Education level	-	0.26 [-0.02,0.55]	0.06 [-0.26,0.38]	-0.10 [-0.42,0.23]	-0.11 [-0.44,0.22]	-0.12 [-0.44,0.21]
Main job [a]	-	-	0.43** [0.11,0.74]	0.33* [0.02,0.64]	0.28 [-0.03,0.60]	0.25 [-0.06,0.57]
Current income	-	-	-	0.67*** [0.41,0.92]	0.58*** [0.30,0.85]	0.57*** [0.30,0.84]
Current wealth	-	-	-	-	0.28* [0.01,0.54]	0.26 [-0.00,0.53]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.09 [-0.16,0.35]
Amenities	-	-	-	-	-	0.01 [-0.28,0.31]
Breadwinner job [a]	-	-	-	-	-	0.19 [-0.13,0.51]
Women						
Books in childhood	0.10 [-0.14,0.34]	0.09 [-0.17,0.35]	0.07 [-0.19,0.34]	0.04 [-0.22,0.30]	0.01 [-0.25,0.27]	0.00 [-0.28,0.29]
Education level	-	0.02 [-0.26,0.29]	-0.06 [-0.37,0.26]	-0.16 [-0.47,0.16]	-0.18 [-0.49,0.13]	-0.18 [-0.50,0.13]
Main job [a]	-	-	0.16 [-0.16,0.48]	0.01 [-0.31,0.33]	-0.03 [-0.35,0.29]	-0.03 [-0.35,0.29]
Current income	-	-	-	0.73*** [0.48,0.97]	0.57*** [0.30,0.84]	0.56*** [0.29,0.84]
Current wealth	-	-	-	-	0.37** [0.10,0.64]	0.37** [0.10,0.64]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	-0.06 [-0.32,0.19]
Amenities	-	-	-	-	-	0.09 [-0.20,0.38]
Breadwinner job [a]	-	-	-	-	-	-0.01 [-0.33,0.31]

[a] skill level; CI-confidence interval; SII=slope index of inequality; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; all models controlled for age, age^2, and country fixed effects

Post-communist regime

Among men in the Post-communist regime, there was evidence to suggest a direct effect of the number of books in childhood on life satisfaction (Table 10.10), similar to that found for CASP-12. The effect size for this variable in the full model was over half that related to experiencing limitations in the activities of daily living, although the confidence intervals for the association were quite wide. The association between the number of books and life satisfaction was attenuated after the addition of the other socioeconomic variables, which could also indicate a pathway effect was operating. In the full model, only current income and wealth were also associated with life satisfaction. Their effect sizes were both larger than that found for the number of books.

Among women, a pathway effect was suggested whereby the number of books in childhood influenced life satisfaction via education level, the main job, current income, and wealth (Table 10.1). The association between the number of books in childhood and life satisfaction was diminished after mutually adjusting for the other measures of childhood socioeconomic position. Education, income, and wealth remained associated with life satisfaction, again highlighting the importance of current circumstances in this welfare regime.

Table 10.10: Age-adjusted associations (derived from single level regression models) between the number of books in childhood and life satisfaction in the Post-communist regime, including the other measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]	(6) SII [95% CI]
Men						
Books in childhood	1.00*** [0.57,1.42]	0.77** [0.31,1.22]	0.73** [0.26,1.20]	0.70** [0.23,1.16]	0.67** [0.21,1.13]	0.59* [0.10,1.09]
Education level	-	0.64** [0.17,1.11]	0.53 [-0.01,1.08]	0.35 [-0.20,0.90]	0.31 [-0.23,0.85]	0.29 [-0.25,0.84]
Main job [a]	-	-	0.24 [-0.35,0.83]	0.10 [-0.49,0.69]	-0.01 [-0.59,0.58]	0.02 [-0.58,0.61]
Current income	-	-	-	0.86*** [0.45,1.26]	0.69*** [0.28,1.10]	0.68** [0.27,1.09]
Current wealth	-	-	-	-	0.81*** [0.41,1.21]	0.81*** [0.41,1.21]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	-0.31 [-0.72,0.11]
Amenities	-	-	-	-	-	0.41 [-0.08,0.90]
Breadwinner job [a]	-	-	-	-	-	0.02 [-0.61,0.64]
Women						
Books in childhood	1.09*** [0.70,1.47	0.69*** [0.29,1.10]	0.68** [0.27,1.09]	0.56** [0.16,0.97]	0.54** [0.13,0.94]	0.34 [-0.09,0.77]
Education level	-	1.15*** [0.72,1.58]	1.10***[0.62,1.58]	0.87*** [0.40,1.35]	0.80*** [0.33,1.27]	0.72** [0.25,1.20]
Main job [a]	-	-	0.12 [-0.37,0.60]	0.01 [-0.47,0.49]	-0.05 [-0.53,0.42]	-0.11 [-0.59,0.37]
Current income	-	-	-	1.16*** [0.81,1.52]	1.00*** [0.63,1.36]	0.95*** [0.59,1.32]
Current wealth	-	-	-	-	0.85*** [0.50,1.21]	0.84*** [0.49,1.20]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.10 [-0.27,0.48]
Amenities	-	-	-	-	-	0.30 [-0.14,0.73]
Breadwinner job [a]	-	-	-	-	-	0.50 [-0.04,1.05]

[a] skill level; CI-confidence interval; SII=slope index of inequality; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; all models controlled for age, age^2, and country fixed effects

Bismarckian regime

Among men in the Bismarckian regime, the association between the number of books in childhood and life satisfaction was attenuated with the addition of education level, main job, and current income, suggestive of a pathway effect (Table 10.11). In the full model the association between the number of books in childhood and life satisfaction was strengthened, although the effect size was very small. Only current income and wealth were associated with life satisfaction in the full model, in addition to the two childhood variables.

Among women (Table 10.11), the number of books in childhood remained associated with life satisfaction even when including the other socioeconomic variables, suggesting there may be a potential latent effect (as found for CASP-12). However, the association was substantially reduced, which could also indicate a pathway mechanism. The only other variables that remained associated in the full model were income and wealth, which suggests that current economic resources were of key importance for life satisfaction in early old age.

Table 10.11: Age-adjusted associations (derived from single level regression models) between the number of books in childhood and life satisfaction in the Bismarckian regime, including the other measures of socioeconomic position

	(1) SII [95% CI]	(2) SII [95% CI]	(3) SII [95% CI]	(4) SII [95% CI]	(5) SII [95% CI]	(6) SII [95% CI]
Men						
Books in childhood	0.34*** [0.17,0.51]	0.25** [0.07,0.44]	0.23* [0.04,0.41]	0.17 [-0.01,0.36]	0.16 [-0.02,0.35]	0.23* [0.02,0.43]
Education level	-	0.28** [0.09,0.47	0.20 [-0.01,0.41]	0.06 [-0.16,0.27]	0.00 [-0.21,0.21]	0.02 [-0.20,0.23]
Main job [a]	-	-	0.20 [-0.01,0.41]	0.09 [-0.12,0.30]	0.08 [-0.13,0.28]	0.09 [-0.12,0.30]
Current income	-	-	-	0.58*** [0.41,0.76]	0.46*** [0.28,0.65]	0.47*** [0.29,0.66]
Current wealth	-	-	-	-	0.40*** [0.22,0.58]	0.42*** [0.24,0.59]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	-0.19* [-0.36,-0.01]
Amenities	-	-	-	-	-	-0.03 [-0.23,0.17]
Breadwinner job [a]	-	-	-	-	-	-0.05 [-0.27,0.17]
Women						
Books in childhood	0.43*** [0.24,0.61]	0.37*** [0.17,0.57]	0.35*** [0.14,0.55]	0.28** [0.08,0.49]	0.26* [0.06,0.46]	0.24* [0.02,0.46]
Education level	-	0.15 [-0.06,0.37]	0.10 [-0.13,0.33]	-0.05 [-0.28,0.18]	-0.08 [-0.31,0.15]	-0.09 [-0.32,0.14]
Main job [a]	-	-	0.15 [-0.08,0.39]	0.05 [-0.19,0.28]	0.00 [-0.23,0.23]	-0.01 [-0.25,0.22]
Current income	-	-	-	0.85*** [0.66,1.03]	0.64*** [0.45,0.83]	0.64*** [0.45,0.84]
Current wealth	-	-	-	-	0.60*** [0.41,0.79]	0.59*** [0.40,0.78]
Additional childhood variables						
Rooms per capita	-	-	-	-	-	0.08 [-0.11,0.27]
Amenities	-	-	-	-	-	-0.03 [-0.24,0.17]
Breadwinner job [a]	-	-	-	-	-	0.07 [-0.17,0.30]

[a] skill level; CI-confidence interval; SII=slope index of inequality; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; all models controlled for age, age^2, and country fixed effects

10.3.2 Path analysis for the influence of the number of books in childhood

Table 10.2 summarises the results from the path models including a direct effect from the number of books in childhood to life satisfaction. Among men, the direct effect from the number of books in childhood to life satisfaction was statistically significant only in the Post-communist regime, as found for CASP-12. For women, the direct effect was statistically significant in all regimes apart from the Scandinavian type. Compared to CASP-12, the direct effect to life satisfaction among women appeared stronger across all welfare regimes, apart from in Scandinavia where no statistically significant direct effect was found.

Table 10.12: Direct effects from childhood socioeconomic position to life satisfaction included in the path models used for each welfare regime and gender

	Southern	**Scandinavian**	**Post-communist**	**Bismarckian**
	Coeff. (SE) P-value	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**
	Men			
Direct effect from the number of books to life satisfaction	Not included 0.08 (0.15) p=0.59	Not included -0.14 (0.14) p=0.32	**Included 0.67 (0.23) p=0.00**	Not included 0.16 (0.09) p=0.09
	Women			
Direct effect from the number of books to life satisfaction	**Included 0.44 (0.17) p=0.01**	Not included 0.01 (0.13) p=0.92	**Included 0.54 (0.21) p=0.01)**	**Included 0.26 (0.10) p=0.01**

Coeff.=coefficient; SE=standard error

The direct paths from the number of books in childhood that were not statistically significant were then removed from the models and the direct, indirect, and total effects for the remaining socioeconomic variables to life satisfaction were calculated. Table 10.13 summarises the results for the direct effects from the adulthood socioeconomic variables to life satisfaction. Among men, no statistically significant direct effects from education level or the main occupation to life satisfaction were observed. Among women, a direct effect from the main occupation to life satisfaction was observed in the Southern regime, and in the Post-communist regime a direct effect from education level was found. For women, all direct effects from current income and wealth were statistically significant. This was also the case for men, apart from the weak direct effect

from current wealth to life satisfaction observed in the Scandinavian regime. The path coefficient from current income to life satisfaction in the Post-communist regime was particularly strong (1.03, p<0.01). For the groups that had a direct effect from the number of books in childhood to life satisfaction (Table 10.12), the direct effect from education was weak, apart from among women in the Post-communist regime where education level was also relatively strongly associated.

Table 10.13: Direct effects from adulthood socioeconomic position to life satisfaction included in the path models used for each welfare regime and gender

	Southern	Scandinavian	Post-communist	Bismarckian
	Coeff. (SE) P-value	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**
	Men			
Education level	0.22 (0.16) p=0.17	-0.14 (0.16) p=0.38	0.31 (0.28) p=0.26	0.04 (0.11) p=0.71
Main occupation (skill level)	0.18 (0.15) p=0.23	0.26 (0.16) p=0.10	-0.00 (0.30) p=0.99	0.10 (0.10) p=0.33
Current income	**0.35 (0.12) p<0.01**	**0.56 (0.14) p<0.01**	**0.69 (0.21) p<0.01**	**0.48 (0.09) p<0.01**
Current wealth	**0.84 (0.12) p<0.01**	0.26 (0.14) p=0.06	**0.81 (0.20) p<0.01**	**0.40 (0.09) p<0.01**
	Women			
Education level	0.14 (0.20) p=0.47	-0.18 (0.15) p=0.26	**0.79 (0.24) p<0.01**	-0.08 (0.12) p=0.49
Main occupation (skill level)	**0.46 (0.16) p=0.01**	-0.03 (0.16) p=0.87	-0.06 (0.24) p=0.81	0.00 (0.12) p=0.98
Current income	**0.58 (0.14) p<0.01**	**0.56 (0.14) p<0.01**	**1.03 (0.18) p<0.01**	**0.64 (0.10) p<0.01**
Current wealth	**0.67 (0.14) p<0.01**	**0.36 (0.14) p=0.01**	**0.90 (0.18) p<0.01**	**0.60 (0.10) p<0.01**

Coeff.=coefficient; SE=standard error

Among both men (Table 10.14) and women (Table 10.15) the overall indirect effects from the number of books in childhood to life satisfaction were statistically significant in the Southern and Post-communist regimes, but not among the Scandinavian and Bismarckian regimes. For men, the specific indirect effects observed were small and mainly involved the paths going through the education level, main job, income, and wealth variables. For women in the Post-communist regime, there was an indirect effect observed from the number of books in childhood, through education level to life satisfaction. Among women in the Southern regime, most indirect paths were statistically significant suggesting that the number of books in childhood may have important indirect effects on life satisfaction among this group.

Table 10.14: Direct, indirect, and total effects from the number of books in childhood to life satisfaction among men in different welfare regimes derived from the stratified path analysis

	Southern	Scandinavian	Post-communist	Bismarckian
Number of books	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**
Overall direct effect	-	-	**0.67 (0.23) p<0.01**	-
Overall indirect effect	**0.16 (0.05) p<0.01**	0.05 (0.04) p=0.25	**0.18 (0.08) p=0.03**	0.04 (0.02) p=0.06
Total effect	**0.16 (0.05) p<0.01**	0.05 (0.04) p=0.25	**0.85 (0.22) p<0.01**	0.04 (0.02) p=0.06
Specific indirect effects				
Books -> education -> LS	0.06 (0.05) p=0.18	-0.04 (0.05) p=0.38	0.09 (0.08) p=0.27	0.01 (0.02) p=0.71
Books -> wealth -> LS	0.05 (0.03) p=0.09	0.02 (0.01) p=0.19	0.03 (0.03) p=0.35	0.00 (0.01) p=0.65
Books -> education -> main job -> LS	0.02 (0.02) p=0.23	0.04 (0.02) p=0.11	0.00 (0.04) p=0.99	0.01 (0.01) p=0.34
Books -> education -> main job -> income-> LS	**0.01 (0.00) p=0.01**	**0.02 (0.01) p<0.01**	**0.03 (0.01) p<0.01**	**0.01 (0.00) p<0.01**
Books -> education -> main job -> wealth-> LS	**0.02 (0.00) p<0.01**	0.01 (0.00) p=0.08	**0.02 (0.01) p=0.01**	**0.00 (0.00) p=0.01**
Books -> education -> main job ->income->wealth-> LS	**0.01 (0.00) p<0.01**	0.00 (0.00) p=0.07	**0.01 (0.00) p<0.01**	**0.00 (0.00) p<0.01**

Coeff.=coefficient; LS=life satisfaction; SE=standard error

Table 10.15: Direct, indirect, and total effects from the number of books in childhood to life satisfaction among women in different welfare regimes derived from the stratified path analysis

	Southern	Scandinavian	Post-communist	Bismarckian
Number of books	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**	**Coeff. (SE) P-value**
Overall direct effect	**0.44 (0.17) p=0.01**	-	**0.54 (0.21) p=0.01**	**0.26 (0.10) p=0.01**
Overall indirect effect	**0.25 (0.07) p<0.01**	-0.01 (0.03) p=0.84	**0.27 (0.07) p<0.01**	0.02 (0.03) p=0.61
Total effect	**0.69 (0.16) p<0.01**	-0.01 (0.03) p=0.84	**0.81 (0.20) p<0.01**	**0.28 (0.10) p<0.01**
Specific indirect effects				
Books -> education -> LS	0.05 (0.07) p=0.48	-0.04 (0.03) p=0.26	**0.20 (0.06) p<0.01**	-0.02 (0.03) p=0.48
Books -> wealth -> LS	**0.11 (0.03) p<0.01**	0.01 (0.01) p=0.50	0.03 (0.03) p=0.29	0.01 (0.01) p=0.25
Books -> education -> main job -> LS	**0.06 (0.02) p=0.01**	-0.00 (0.02) p=0.87	-0.01 (0.03) p=0.81	0.00 (0.01) p=0.98
Books -> education -> main job ->income-> LS	**0.02 (0.01) p<0.01**	**0.02 (0.01) p<0.01**	**0.03 (0.01) p<0.01**	**0.02 (0.00) p<0.01**
Books -> education -> main job ->wealth-> LS	**0.01 (0.00) p<0.01**	0.00 (0.00) p=0.05	**0.01 (0.00) p=0.01**	**0.00 (0.00) p<0.01**
Books -> education -> main job ->income->wealth-> LS	**0.01 (0.00) p<0.01**	**0.01 (0.00) p=0.02**	**0.01 (0.00) p<0.01**	**0.01 (0.00) p<0.01**

Coeff.=coefficient; LS=life satisfaction; SE=standard error

10.4 Chapter discussion

10.4.1 Summary and interpretation of results

10.4.1.1 Overall results

The analysis contained in this chapter sought to investigate potential latent and pathway effects from different measures of childhood socioeconomic position to life satisfaction in early old age. Among men, consistent results with CASP-12 (chapter 7) were found. Namely, a small unexplained association between the number of books in childhood and life satisfaction was present and overall, current income and wealth displayed the strongest relationships with life satisfaction. Further, the association between the other measures of childhood socioeconomic position and life satisfaction appeared to be mediated by the measures of adulthood socioeconomic position.

Among women, there were both similarities and differences when comparing the results for life satisfaction with those for CASP-12. In terms of the similarities, current income and wealth exhibited the strongest association with life satisfaction and there was a small unexplained association between the number of books in childhood and life satisfaction. However, education level exhibited a small association with CASP-12 even when including the other socioeconomic variables. This was not found for the life satisfaction of women; the association between education level and life satisfaction was diminished after including current income in the models. On the other hand, the path models demonstrated that after including a direct effect from the number of books in childhood to life satisfaction, education level was no longer statistically associated with life satisfaction. This could mean that the relationship between education level and life satisfaction was explained by the number of books in childhood.

10.4.1.2 The influence of the welfare regime

Similar results were found for life satisfaction as were found for CASP-12, in terms of differences in the association between childhood socioeconomic position and life satisfaction between welfare regimes. In the Scandinavian regime, none of the childhood measures of socioeconomic position were associated with life satisfaction in models

adjusting for adulthood socioeconomic position. Even after including each measure of adulthood socioeconomic position and the other potential mediating variables, an association was observed between the number of books in childhood and life satisfaction among men in the Bismarckian and Post-communist regimes and among women in the Southern and Bismarckian regimes.

The path models demonstrated potential indirect effects from the number of books in childhood to life satisfaction among men and women in the Post-communist and Southern regimes. Among women in the Bismarckian regime, it was interesting to note that there were no statistically significant indirect effects, but a small direct effect was observed. A direct effect was also observed for the number of books to life satisfaction among men in the Post-communist regime and among women in the Post-communist and Southern regimes. However, current income and wealth were the strongest predictors of life satisfaction across most regimes. The one exception was that among men in the Scandinavian regime, wealth did not have a direct effect on life satisfaction in the hypothesised path model, similar to the multilevel results.

The strengths and limitations of the methodological approach taken in this chapter were documented in chapter 7. The next chapter explores cumulative and social mobility effects over the life course and current life satisfaction.

11. Cumulative and social mobility effects across the life course and life satisfaction in early old age

11.1 Chapter introduction

This chapter focuses on cumulative and social mobility effects of socioeconomic position across the life course on life satisfaction in early old age. It also presents results from the analyses examining the factors which might explain a relationship between life course socioeconomic position and life satisfaction. The analysis plan for this set of results was outlined in chapter 5 section 5.6.5. As the results were generally consistent with those for CASP-12 reported in chapter 8, this chapter mainly focuses on presenting the results from the regression models, with descriptive results contained in the appendix where indicated.

The objectives of this chapter were to:

- Explore potential cumulative and social mobility effects of socioeconomic position over the life course on life satisfaction in early old age.

- Examine potential factors which may help to explain a relationship between life course socioeconomic position and life satisfaction in early old age.

- Investigate the relationships by welfare regime.

11.2 Overall results

11.2.1 Increased socioeconomic advantage and life satisfaction

11.2.1.1 Multilevel linear models

Table 11.1 displays the linear regression coefficients for the age-adjusted multilevel models looking at the relationship between the socioeconomic advantage scores and life

satisfaction. As for CASP-12, the adulthood socioeconomic advantage score was more strongly associated with life satisfaction compared to the childhood score. The adulthood socioeconomic advantage score also explained slightly more of the individual level variance in life satisfaction, compared to the childhood and cumulative advantage scores. Descriptive statistics and correlations for the socioeconomic advantage scores and life satisfaction are contained in Appendix 11.1 and Appendix 11.2.

Table 11.1: Age-adjusted multilevel models for the association between the childhood, adulthood, and cumulative socioeconomic advantage scores and life satisfaction

	Childhood	Adulthood	Cumulative
	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]
	Men		
Effect	0.14*** [0.09,0.18]	0.33*** [0.29,0.38]	0.17*** [0.14,0.20]
Variance (country)	0.24*** [0.11,0.54]	0.24*** [0.11,0.55]	0.24*** [0.11,0.54]
Variance (individual)	2.10*** [2.04,2.17]	2.05*** [1.98,2.11]	2.07*** [2.00,2.14]
AIC	26243.49	26045.80	26120.89
	Women		
Effect	0.24*** [0.19,0.28]	0.43*** [0.38,0.48]	0.23*** [0.21,0.26]
Variance (country)	0.38* [0.17,0.86]	0.38* [0.17,0.86]	0.38* [0.17,0.86]
Variance (individual)	2.52*** [2.45,2.60]	2.45*** [2.38,2.53]	2.47*** [2.39,2.55]
AIC	29994.99	29770.15	29822.46

AIC=akaike information criteria; CI=confidence interval; Coeff.=coefficient; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

11.2.1.2 Mutually adjusting for childhood and adulthood socioeconomic advantage

When both the childhood and adulthood socioeconomic advantage scores were included together in age-adjusted multilevel models (Table 11.2), the association between the childhood score and life satisfaction was no longer statistically significant among men. For women, a small association remained. This supports the above findings that adulthood socioeconomic advantage was most important for life satisfaction. In addition, childhood advantage was most likely to influence life satisfaction via later socioeconomic

advantage (a pathway effect). But among women, a small latent effect may also be operating.

Table 11.2: Age-adjusted multilevel models for the association between the childhood and adulthood socioeconomic advantage scores (mutually adjusted) and life satisfaction

	Men	Women
	Coeff. [95% CI]	**Coeff. [95% CI]**
Childhood socioeconomic advantage	-0.00 [-0.05,0.05]	0.06* [0.01,0.11]
Adulthood socioeconomic advantage	0.33*** [0.29,0.38]	0.41*** [0.35,0.46]

CI=confidence interval; Coeff.=coefficient; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

11.2.1.3 Factors which help to explain the relationship between the cumulative socioeconomic advantage score and life satisfaction

Generally, when including the potential mediating variables the overall pattern of results for the association between the cumulative advantage scale and life satisfaction was similar to CASP-12. Financial distress had most influence on the relationship between the cumulative advantage scale and life satisfaction, whereas the other variables appeared to have little effect, although they did display reasonably large overall associations with life satisfaction itself (Table 11.3 and Table 11.4). Descriptive statistics for life satisfaction according to the potential mediating variables are found in (Appendix 11.3).

Table 11.3: Age adjusted multilevel models for the association between the cumulative advantage scale and life satisfaction adjusting for potential mediating variables among men

	(1) Coeff. [95% CI]	(2) Coeff. [95% CI]	(3) Coeff. [95% CI]	(4) Coeff. [95% CI]	(5) Coeff. [95% CI]	(6) Coeff. [95% CI]	(7) Coeff. [95% CI]
	Men						
Cumulative advantage scale	0.17*** [0.14,0.20]	0.15*** [0.13,0.18]	0.09*** [0.06,0.12]	0.15*** [0.12,0.17]	0.17*** [0.14,0.19]	0.16*** [0.13,0.18]	0.06*** [0.03,0.09]
***Current employment status [a]:* employed**	-	0.16** [0.06,0.27]	-	-	-	-	0.12* [0.02,0.22]
***Current employment status [a]:* other**	-	-0.70*** [-0.87,-0.53]	-	-	-	-	-0.28*** [-0.44,-0.12]
Ability to make ends meet [b]	-	-	0.40*** [0.36,0.44]	-	-	-	0.33*** [0.29,0.36]
Limited in daily activities [c]	-	-	-	-0.65*** [-0.72,-0.58]	-	-	-0.47*** [-0.54,-0.41]
Sad or depressed mood [c]	-	-	-	-	-0.90*** [-0.97,-0.82]	-	-0.72*** [-0.80,-0.65]
Marital status: living as single [d]	-	-	-	-	-	-0.51*** [-0.61,-0.41]	-0.47*** [-0.57,-0.38]
Variance (country)	0.24*** [0.11,0.54]	0.22*** [0.10,0.50]	0.10*** [0.04,0.23]	0.22*** [0.10,0.49]	0.22*** [0.10,0.49]	0.24*** [0.11,0.55]	0.09*** [0.04,0.21]
Variance (individual)	2.07*** [2.00,2.14]	2.04*** [1.97,2.11]	1.98*** [1.91,2.04]	1.98*** [1.92,2.05]	1.92*** [1.86,1.99]	2.04*** [1.97,2.11]	1.77*** [1.72,1.83]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 11.4: Age adjusted multilevel models for the association between the cumulative advantage scale and life satisfaction adjusting for potential mediating variables among women

	(1) Coeff. [95% CI]	(2) Coeff. [95% CI]	(3) Coeff. [95% CI]	(4) Coeff. [95% CI]	(5) Coeff. [95% CI]	(6) Coeff. [95% CI]	(7) Coeff. [95% CI]
	Women						
Cumulative advantage scale	0.23*** [0.21,0.26]	0.23*** [0.20,0.25]	0.15*** [0.12,0.17]	0.20*** [0.17,0.23]	0.21*** [0.19,0.24]	0.22*** [0.19,0.25]	0.12*** [0.09,0.14]
***Current employment status [a]:* employed**	-	0.01 [-0.11,0.12]	-	-	-	-	-0.07 [-0.17,0.04]
***Current employment status [a]:* other**	-	-0.65*** [-0.81,-0.48]	-	-	-	-	-0.35*** [-0.51,-0.20]
***Current employment status [a]:* homemaker**	-	0.14* [0.03,0.25]	-	-	-	-	0.05 [-0.06,0.15]
***Ability to make ends meet* [b]**	-	-	0.42*** [0.38,0.47]	-	-	-	0.31*** [0.27,0.35]
***Limited in daily activities* [c]**	-	-	-	-0.70*** [-0.78,-0.63]	-	-	-0.50*** [-0.57,-0.43]
***Sad or depressed mood* [c]**	-	-	-	-	-0.92*** [-0.99,-0.85]	-	-0.75*** [-0.81,-0.68]
***Marital status: living as single* [d]**	-	-	-	-	-	-0.61*** [-0.69,-0.52]	-0.45*** [-0.54,-0.37]
Variance (country)	0.38* [0.17,0.86]	0.39* [0.17,0.88]	0.18*** [0.08,0.40]	0.35* [0.16,0.79]	0.33** [0.15,0.73]	0.39* [0.17,0.87]	0.18*** [0.08,0.42]
Variance (individual)	2.47*** [2.40,2.55]	2.45*** [2.37,2.52]	2.36*** [2.29,2.44]	2.36*** [2.29,2.44]	2.27*** [2.20,2.35]	2.42*** [2.34,2.49]	2.10*** [2.04,2.17]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

11.2.2 Social mobility and life satisfaction

This section details the results examining life satisfaction according to inter- and intra-generational mobility (using binary manual versus non-manual variables as well as converted into their standardised ranks as described in chapter 5 section 5.6.1). It also investigates social mobility using the socioeconomic advantage scores.

11.2.2.1 Inter-generational mobility

Among men, there was no evidence of an association between inter-generational mobility and life satisfaction when testing for the interaction between the childhood and adulthood occupational variables in age-adjusted multilevel models (Table 11.5). Only the adulthood (main occupation) variable remained associated with life satisfaction, again suggesting that circumstances during adulthood were most important for life satisfaction, compared with those during childhood.

For women, the interaction between the childhood and adulthood variables was negative and statistically significant, but the effect was small overall (Table 11.5). This suggests that for women who started in a non-manual position during childhood, a non-manual main occupation made little difference to later life satisfaction. But, for women who started in a manual position, having a main occupation which was non-manual was associated with higher life satisfaction compared with a manual position. This result was consistent with that found for CASP-12, and like for CASP-12, the result was only found when using the binary manual versus non-manual variables. Descriptive statistics for life satisfaction according to inter-generational mobility are contained in Appendix 11.4.

Table 11.5: Age-adjusted multilevel models testing the interaction between the occupation of the main breadwinner during childhood and main occupation (manual versus non-manual) for life satisfaction

	Men	Women
	Coeff. [95% CI]	**Coeff. [95% CI]**
Binary (manual versus non-manual)		
Breadwinner job (main effect): non-manual [a]	0.05 [-0.10,0.20]	0.26** [0.08,0.44]
Main job (main effect): non-manual [a]	0.22*** [0.14,0.30]	0.32*** [0.24,0.41]
Interaction between breadwinner & main jobs	-0.00 [-0.18,0.17]	-0.23* [-0.43,-0.02]
Standardised rank (manual versus non-manual)		
Breadwinner job (main effect)	0.03 [-0.41,0.47]	0.29 [-0.20,0.78]
Main job (main effect)	0.36* [0.00,0.73]	0.64** [0.24,1.05]
Interaction between breadwinner & main jobs	0.11 [-0.60,0.81]	-0.23 [-1.04,0.58]

[a] reference category is manual occupation. CI=confidence interval; Coeff.=coefficient; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

11.2.2.2 Intra-generational mobility

No statistically significant interactions were found between the origin and destination positions (Table 11.6), suggesting that intra-generational mobility was not related to life satisfaction in this sample, as found for CASP-12. Among women, the occupation at aged 16 to 34 years had a small association with life satisfaction, on top of the stronger association observed for the occupation at aged 35 to 49 years. Descriptive statistics for this analysis are found in Appendix 11.5.

Table 11.6: Age-adjusted multilevel models testing the interaction between origin (occupation aged 16 to 34 years) and destination (occupation aged 35 to 49 years) for life satisfaction

	Men	Women
	Coeff. [95% CI]	**Coeff. [95% CI]**
Binary (manual versus non-manual)		
Occupation aged 16 to 34 years (main effect): non-manual [a]	0.18 [-0.10,0.45]	0.19* [0.01,0.37]
Occupation aged 35 to 49 years (main effect): non-manual [a]	0.17** [0.04,0.30]	0.33*** [0.19,0.47]
Interaction between occupation aged 16 to 34 years and 35 to 49 years [a]	-0.11 [-0.42,0.20]	-0.13 [-0.36,0.09]
Standardised rank (manual versus non-manual)		
Occupation aged 16 to 34 years (main effect)	-0.22 [-0.84,0.41]	-0.17 [-0.61,0.27]
Occupation aged 35 to 49 years (main effect)	0.09 [-0.32,0.50]	0.24 [-0.15,0.63]
Interaction between occupation aged 16 to 34 years and 35 to 49 years	0.58 [-0.33,1.49]	0.71 [-0.05,1.46]

[a] reference category is manual occupation. CI=confidence interval; Coeff.=coefficient; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

11.2.2.3 Social mobility using the childhood and adulthood socioeconomic advantage scores

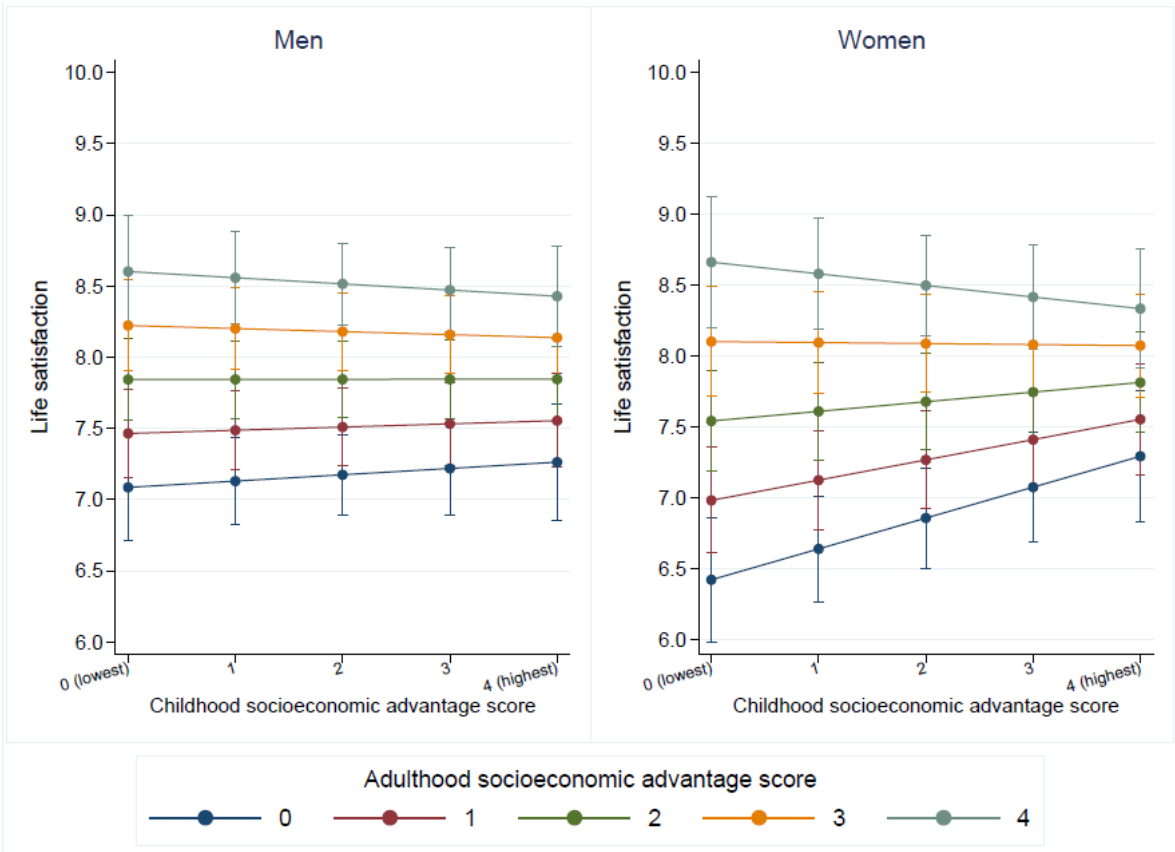
The interaction between the childhood and adulthood socioeconomic advantage scores was statistically significant among women (p=0.02), but not among men (Table 11.7). Figure 11.1 displays the age adjusted predicted mean life satisfaction scores by the childhood and adulthood socioeconomic advantage scores to help with the interpretation of the interactive effects among women. The gradients were steeper for women compared with men, especially for those who were most disadvantaged in adulthood (a score of 0). For women with lower adulthood socioeconomic advantage scores, childhood advantage appeared to matter more for later life satisfaction, compared with women who had higher adulthood advantage scores. But, these were relatively small differences.

Table 11.7: Age-adjusted multilevel models for life satisfaction containing interaction terms between the childhood and adulthood socioeconomic advantage scores

	Men	Women
	Coefficient [95% CI]	**Coefficient [95% CI]**
Childhood socioeconomic advantage score (main effect)	0.04 [-0.09,0.18]	0.22** [0.08,0.36]
Adulthood socioeconomic advantage score (main effect)	0.38*** [0.25,0.51]	0.56*** [0.42,0.70]
Interaction between childhood and adulthood socioeconomic advantage score	-0.02 [-0.08,0.04]	-0.07* [-0.14,-0.01]

CI=95% confidence interval. * p < 0.05, ** p < 0.01, *** p < 0.001

Figure 11.1: Age-adjusted predicted mean life satisfaction (with 95% confidence intervals) by childhood and adulthood socioeconomic advantage score



Socioeconomic trajectories were then derived from the childhood and adulthood scores based on their median values (Appendix 11.6 contains descriptive statistics for the advantaged and disadvantaged groups and Appendix 11.7 contains mean life satisfaction scores by socioeconomic trajectory).

Compared to men in a disadvantaged position during both childhood and adulthood, the upwardly mobile and those who were consistently advantaged had higher life satisfaction (Table 11.8). For women, those who were downwardly mobile also had higher life satisfaction compared to those in a consistently disadvantaged position. This is supportive of the previous result in 11.2.2.3 and for CASP-12; disadvantage during both time points was associated with lower life satisfaction and some advantage experienced during childhood may contribute to higher life satisfaction, even if one moved to disadvantage in adulthood. However, on the whole, these were relatively small effects.

Table 11.8: Age-adjusted multilevel linear models of the relationship between different socioeconomic trajectories and life satisfaction

	Men	Women
Trajectory	**Coefficient [95% CI]**	**Coefficient [95% CI]**
Disadvantaged-Disadvantaged [a]	-	-
Advantaged-Disadvantaged	-0.00 [-0.10,0.10]	0.17*** [0.07,0.28]
Disadvantaged-Advantaged	0.37*** [0.27,0.46]	0.54*** [0.44,0.64]
Advantaged-Advantaged	0.42*** [0.34,0.50]	0.64*** [0.56,0.73]

[a] reference category; CI=confidence interval; N=number; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

11.3 The influence of the welfare regime

The following section explores the influence of the welfare regime on the association between socioeconomic advantage over the life course and life satisfaction. In addition, it examines the influence of social mobility on life satisfaction in the different welfare regimes.

11.3.1 Increased socioeconomic advantage and life satisfaction

11.3.1.1 Childhood socioeconomic advantage

Results of the multilevel linear models for life satisfaction containing interaction terms between the welfare regime and the socioeconomic advantage scores are presented in Table 11.9. Compared to the Scandinavian regime, the childhood socioeconomic

advantage score was more strongly associated with life satisfaction in the Post-communist regime among both genders and among women in the Southern regime.

11.3.1.2 Adulthood socioeconomic advantage

The association between the adulthood socioeconomic advantage score and life satisfaction was weakest in the Scandinavian regime and strongest in the Southern regime for both genders (Table 11.9). There was little difference in the associations between the Scandinavian and Bismarckian regimes among men, consistent with CASP-12.

Table 11.9: Age-adjusted multilevel models for life satisfaction containing interaction terms between the welfare regime and the childhood, adulthood, and cumulative socioeconomic advantage scores

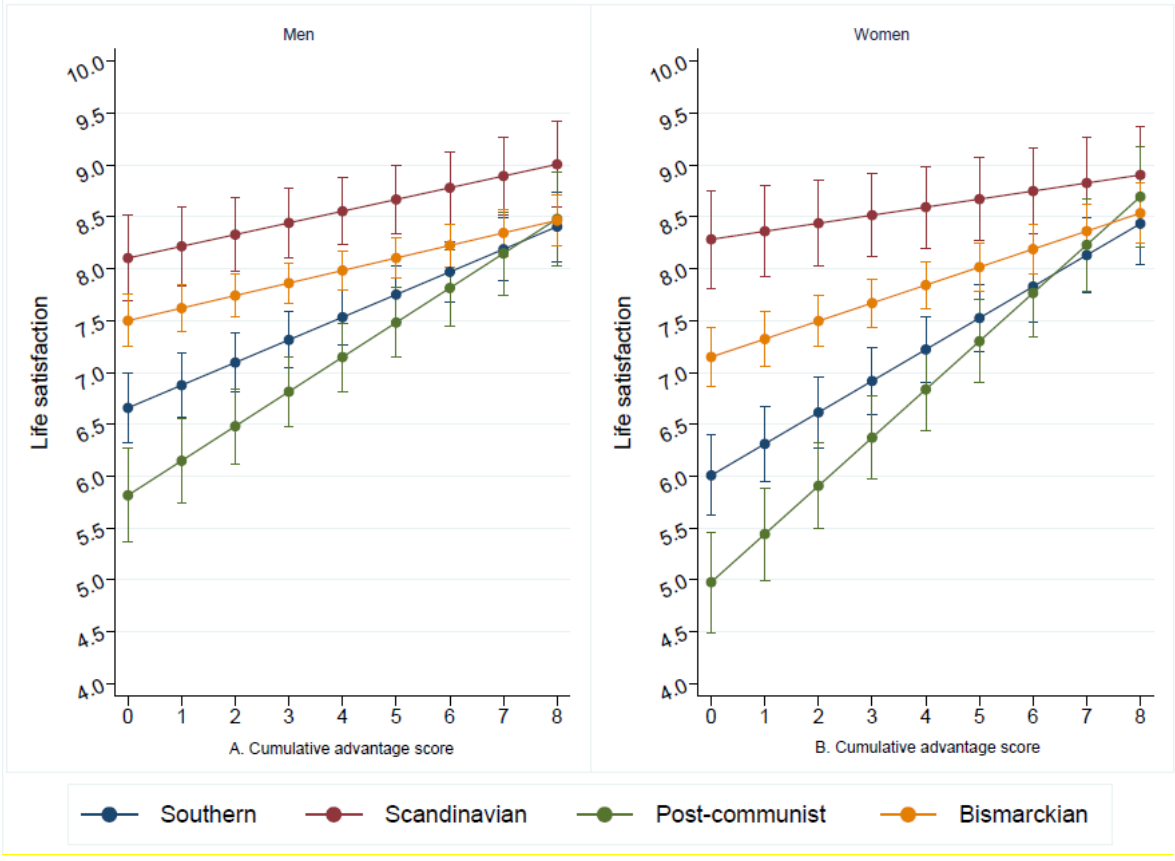
	Men			Women		
	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]
Welfare regime[1]	**Childhood** [a]	**Adulthood** [b]	**Cumulative**[c]	**Childhood** [a]	**Adulthood** [b]	**Cumulative**[c]
Southern	**-1.25***** **[-1.75,-0.74]**	**-1.40***** **[-1.89,-0.90]**	**-1.44***** **[-1.98,-0.91]**	**-1.96***** **[-2.55,-1.37]**	**-2.12***** **[-2.71,-1.54]**	**-2.28***** **[-2.89,-1.67]**
Post-communist	**-1.90***** **[-2.48,-1.33]**	**-2.06***** **[-2.62,-1.50]**	**-2.29***** **[-2.90,-1.68]**	**-2.72***** **[-3.37,-2.07]**	**-2.94***** **[-3.58,-2.30]**	**-3.31***** **[-3.98,-2.63]**
Bismarckian	**-0.57*** **[-1.03,-0.11]**	**-0.62**** **[-1.07,-0.17]**	**-0.60*** **[-1.09,-0.12]**	**-1.00***** **[-1.53,-0.48]**	**-1.08***** **[-1.60,-0.55]**	**-1.13***** **[-1.69,-0.58]**
Interactions[1]						
Score (main effect)	0.08 [-0.03,0.19]	**0.23***** **[0.13,0.33]**	**0.11***** **[0.05,0.18]**	0.04 [-0.08,0.15]	**0.18**** **[0.07,0.29]**	**0.08*** **[0.01,0.14]**
Score# Southern	0.11 [-0.03,0.25]	**0.19**** **[0.05,0.32]**	**0.11*** **[0.02,0.19]**	**0.29***** **[0.15,0.44]**	**0.38***** **[0.23,0.52]**	**0.23***** **[0.14,0.31]**
Score# Post-communist	**0.25**** **[0.08,0.42]**	**0.33***** **[0.17,0.49]**	**0.22***** **[0.12,0.32]**	**0.48***** **[0.31,0.65]**	**0.59***** **[0.43,0.75]**	**0.39***** **[0.29,0.48]**
Score# Bismarckian	-0.00 [-0.13,0.13]	0.03 [-0.10,0.15]	0.01 [-0.07,0.08]	0.13 [-0.01,0.26]	**0.16*** **[0.03,0.29]**	**0.10*** **[0.02,0.17]**

[1] Reference category is Scandinavian regime; CI=confidence interval; [a] model contains age, age^2, welfare regime dummy variables and interactions with childhood socioeconomic advantage score ; [b] model contains age, age^2, welfare regime dummy variables and interactions with adulthood socioeconomic advantage score; [c] model contains age, age^2, welfare regime dummy variables, and interactions with cumulative socioeconomic advantage score; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

11.3.1.3 Cumulative socioeconomic advantage

Among men, compared to the Scandinavian regime, the cumulative socioeconomic advantage score was more strongly associated with life satisfaction in all regimes except the Bismarckian (Figure 11.2a). Among women, all regimes displayed stronger associations compared to the Scandinavian regime, especially the Post-communist (Figure 11.2b). Again, at the least advantaged end, differences in life satisfaction between regimes were large, but with increased advantage these were less apparent. For women in the Post-communist regime, the most advantaged (those scoring 8) experienced higher life satisfaction than the Bismarckian and Southern regimes.

Figure 11.2: Age-adjusted predicted mean life satisfaction for men and women in different welfare regimes by cumulative socioeconomic advantage score (with 95% confidence intervals)



11.3.1.4 Mutually adjusting for childhood and adulthood socioeconomic advantage

To further test whether childhood socioeconomic advantage contributed to life satisfaction when adulthood circumstances were taken into account, the scores were included together in age-adjusted multilevel models (Table 11.10). The results in most welfare regimes suggested that the association between childhood advantage and life satisfaction was mediated by adulthood advantage (a pathway effect). However, among women in the Post-communist regime, the childhood socioeconomic advantage score also remained associated. The size of this effect was roughly equivalent to that observed for the adulthood socioeconomic advantage score in the Scandinavian regime.

Table 11.10: Age-adjusted multilevel models for the association between the childhood and adulthood socioeconomic advantage scores (mutually adjusted) and life satisfaction by welfare regime

	Southern	Scandinavian	Post-communist	Bismarckian
	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]	Coeff. [95% CI]
	Men			
Childhood socioeconomic advantage	0.01 [-0.09,0.11]	-0.02 [-0.12,0.09]	0.12 [-0.06,0.30]	-0.03 [-0.10,0.04]
Adulthood socioeconomic advantage	0.40*** [0.30,0.50]	0.25*** [0.15,0.35]	0.51*** [0.35,0.68]	0.27*** [0.21,0.34]
	Women			
Childhood socioeconomic advantage	0.09 [-0.02,0.20]	-0.04 [-0.14,0.05]	0.25** [0.10,0.41]	0.02 [-0.05,0.10]
Adulthood socioeconomic advantage	0.50*** [0.39,0.61]	0.22*** [0.12,0.31]	0.65*** [0.50,0.80]	0.34*** [0.26,0.42]

CI=confidence interval; Coeff.=coefficient; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

11.3.1.5 Factors which help to explain the relationship between the cumulative socioeconomic advantage score and life satisfaction

Consistent with the results for CASP-12, the feeling that the household was able to make ends meet had most influence on the relationship between the cumulative socioeconomic advantage score and life satisfaction across all regimes. Descriptive statistics for life satisfaction according to each potential mediating variable are contained in Appendix 11.8. Full results for the single level regression models are contained in

Appendix 11.9 to Appendix 11.12. The relationship between the cumulative advantage scores and life satisfaction was weak in the Scandinavian regime and among men in the Bismarckian regime, which meant that the cumulative advantage score was no longer significantly associated with life satisfaction when including each potential mediating variable.

11.3.2 Social mobility and life satisfaction by welfare regime

The social mobility theory for each welfare regime was tested by examining inter-generational mobility and investigating mobility using the socioeconomic advantage scores. As for CASP-12, intra-generational mobility was not examined because of the small number of intra-generationally mobile individuals within each welfare regime.

11.3.2.1 Inter-generational mobility

The importance of the interaction between the childhood and adulthood occupations for life satisfaction was tested below in age-adjusted single-level models stratified by welfare regime (using both the binary manual versus non-manual variables and the variables converted to their standardised ranks). Corresponding with the descriptive statistics (Appendix 11.13), the only statistically significant interaction was found among women in the Post-communist regime (Table 11.11). This result was found using both the binary and standardised rank variables.

Figure 11.3 displays the age-adjusted predicted mean life satisfaction for women in the Post-communist regime by origin and destination (using the binary variables). Life satisfaction was similar for those who remained in a non-manual position and who started in a manual position but moved to a non-manual position. The key difference was that for those who started in a non-manual position, but moved to a manual position in adulthood, life satisfaction was higher than those who remained in a manual position at both time points. Thus, exposure to a non-manual class, in either childhood or adulthood, appeared to be beneficial for life satisfaction among women in the Post-communist regime, similar to the result for CASP-12 (chapter 8).

Figure 11.3: Age-adjusted predicted mean life satisfaction (with 95% confidence intervals) for women in the Post-communist regime by socioeconomic trajectory derived from the single level regression model

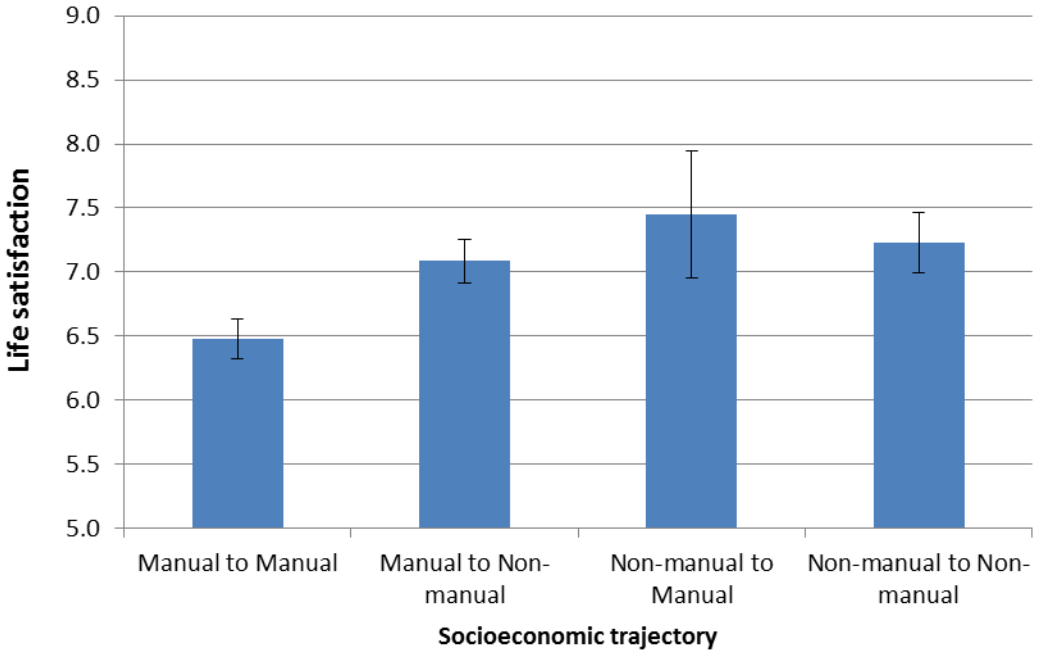


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Table 11.11: Age-adjusted single level regression models stratified by welfare regime for life satisfaction including interaction terms between the occupation of the main breadwinner in childhood and main occupation variables using the binary and standardised rank (manual versus non-manual) variables for men and women

	Southern				Scandinavian			
	Men		Women		Men		Women	
	Binary (manual versus non-manual)							
	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI
Breadwinner (main effect): non-manual [a]	0.15	[-0.15,0.45]	0.13	[-0.19,0.45]	0.07	[-0.22,0.37]	0.00	[-0.45,0.46]
Main job (main effect): : non-manual [a]	0.22**	[0.07,0.37]	0.48***	[0.31,0.66]	0.31***	[0.14,0.47]	0.03	[-0.16,0.23]
Interaction between breadwinner & main jobs	-0.18	[-0.55,0.19]	-0.01	[-0.40,0.39]	-0.06	[-0.41,0.28]	0.01	[-0.47,0.49]
	Standardised rank (manual versus non-manual)							
Breadwinner job (main effect):	0.50	[-0.48,1.48]	0.31	[-0.74,1.35]	0.15	[-0.68,0.99]	0.09	[-1.00,1.17]
Main job (main effect):	0.70	[-0.06,1.47]	1.00*	[0.15,1.85]	0.64	[-0.06,1.34]	0.12	[-0.78,1.01]
Interaction between breadwinner & main jobs	-0.68	[-2.14,0.78]	-0.11	[-1.71,1.49]	-0.16	[-1.55,1.22]	-0.10	[-2.03,1.84]
	Post-communist				Bismarckian			
	Men		Women		Men		Women	
	Binary (manual versus non-manual)							
	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI	Coeff.	95% CI
Breadwinner (main effect): non-manual [a]	-0.15	[-0.63,0.33]	0.97***	[0.45,1.50]	0.03	[-0.19,0.25]	0.05	[-0.23,0.33]
Main job (main effect): non-manual [a]	0.35*	[0.06,0.65]	0.61***	[0.37,0.84]	0.11	[-0.01,0.23]	0.08	[-0.06,0.21]
Interaction between breadwinner & main jobs	0.43	[-0.18,1.05]	-0.83**	[-1.43,-0.24]	0.02	[-0.23,0.27]	-0.05	[-0.35,0.26]
	Standardised rank (manual versus non-manual)							
Breadwinner job (main effect):	-0.71	[-2.38,0.96]	2.20**	[0.72,3.68]	0.12	[-0.50,0.74]	0.31	[-0.40,1.02]
Main job (main effect):	0.08	[-1.31,1.47]	2.15***	[0.97,3.32]	0.26	[-0.24,0.76]	0.35	[-0.23,0.94]
Interaction between breadwinner & main jobs	1.56	[-0.99,4.11]	-2.57*	[-4.92,-0.23]	-0.06	[-1.07,0.95]	-0.51	[-1.71,0.69]

[a] reference category is manual occupation. CI=confidence interval; Coeff.=coefficient; SII=slope index of inequality. All models controlled for age, age^2, and country fixed effects; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

11.3.2.2 Social mobility using the childhood and adulthood socioeconomic advantage scores

When the interaction between the childhood and adulthood socioeconomic advantage scores was examined for each welfare regime, no statistically significant interactions were found (Table 11.12). Among women in the Post-communist regime, the childhood socioeconomic advantage score remained associated even when taking into account adulthood advantage, as found in section 11.3.1.4. Including the interaction term strengthened the association between childhood advantage and life satisfaction for this group. Thus, childhood socioeconomic advantage appeared to contribute more to life satisfaction among women in the Post-communist regime, compared to the other groups.

Table 11.12: Age-adjusted single level regression models for life satisfaction containing interaction terms between the childhood and adulthood socioeconomic advantage scores in different welfare regimes

	Southern	Scandinavian	Post-communist	Bismarckian
	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]	Coefficient [95% CI]
	Men			
Childhood socioeconomic advantage score (main effect)	0.22 [-0.07,0.50]	0.10 [-0.16,0.36]	0.05 [-0.45,0.54]	-0.02 [-0.20,0.16]
Adulthood socioeconomic advantage score (main effect)	0.60*** [0.33,0.87]	0.36** [0.11,0.61]	0.44 [-0.06,0.93]	0.28** [0.10,0.46]
Interaction between childhood and adulthood socioeconomic advantage score	-0.09 [-0.22,0.03]	-0.06 [-0.17,0.06]	0.04 [-0.19,0.26]	-0.00 [-0.08,0.08]
	Women			
Childhood socioeconomic advantage score (main effect)	0.29 [-0.02,0.60]	0.06 [-0.19,0.31]	0.49* [0.06,0.91]	0.19 [-0.02,0.39]
Adulthood socioeconomic advantage score (main effect)	0.70*** [0.40,1.00]	0.32* [0.07,0.58]	0.88*** [0.46,1.30]	0.51*** [0.30,0.71]
Interaction between childhood and adulthood socioeconomic advantage score	-0.09 [-0.23,0.04]	-0.05 [-0.17,0.06]	-0.11 [-0.31,0.08]	-0.08 [-0.17,0.01]

CI=95% confidence interval. * p < 0.05, ** p < 0.01, *** p < 0.001

In age-adjusted models (Table 11.13), results were generally consistent by welfare regime; consistent advantage was the strongest predictor of higher life satisfaction. Moving from advantage to disadvantage was associated with higher life satisfaction compared to consistent disadvantage to a greater extent among women than men, but this association was only statistically significant among women in the Bismarckian regime (perhaps because of the larger sample size). Appendix 11.14 contains the descriptive statistics for life satisfaction by childhood and adulthood socioeconomic advantage and Appendix 11.15 contains mean life satisfaction scores by socioeconomic trajectory.

Table 11.13: Age-adjusted single level regression models of the relationship between different socioeconomic trajectories and life satisfaction stratified by welfare regime

	Southern	Scandinavian	Post-communist	Bismarckian
	Coefficient [95% CI]	**Coefficient [95% CI]**	**Coefficient [95% CI]**	**Coefficient [95% CI]**
	Men			
Disadvantaged-Disadvantaged [a]	-	-	-	-
Advantaged-Disadvantaged	-0.02 [-0.21,0.17]	0.04 [-0.17,0.24]	0.03 [-0.29,0.36]	0.00 [-0.14,0.14]
Disadvantaged-Advantaged	0.44*** [0.26,0.62]	0.33** [0.12,0.53]	0.44** [0.11,0.76]	0.31*** [0.17,0.45]
Advantaged-Advantaged	0.45*** [0.29,0.62]	0.25** [0.07,0.42]	0.81*** [0.52,1.09]	0.35*** [0.23,0.47]
	Women			
Disadvantaged-Disadvantaged [a]	-	-	-	-
Advantaged-Disadvantaged	0.19 [-0.02,0.41]	0.08 [-0.13,0.28]	0.26 [-0.03,0.55]	0.16* [0.01,0.31]
Disadvantaged-Advantaged	0.54*** [0.33,0.75]	0.33** [0.13,0.54]	0.86*** [0.57,1.15]	0.47*** [0.32,0.62]
Advantaged-Advantaged	0.81*** [0.63,0.99]	0.23** [0.06,0.39]	1.11*** [0.86,1.36]	0.53*** [0.40,0.65]

[a] reference category; CI=confidence interval; N=number; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

11.4 Chapter discussion

This chapter explored cumulative and social mobility effects of socioeconomic position across the life course on life satisfaction in early old age. In this section a summary and interpretation of the main results contained in this chapter is provided. The strengths and limitations of the methodological approach taken were documented in chapter 8.

11.4.1 Summary and interpretation of results

11.4.1.1 Overall results

Generally, the results of this chapter were similar to those found for CASP-12 reported in chapter 8. Increased socioeconomic advantage over the life course was associated with higher life satisfaction in early old age. When mutually adjusting for childhood and adulthood socioeconomic advantage, only the adulthood socioeconomic advantage score was associated with life satisfaction among men. But, among women, a very small residual effect of childhood advantage remained. Financial distress had most influence on the relationship between the cumulative advantage scores and life satisfaction.

Among men, there was no evidence for an effect of inter-generational mobility. For women, the interaction between the childhood and adulthood occupational variables was statistically significant. This was similar to the results found for CASP-12, which suggested that for women who started in a non-manual position, a non-manual main occupation had little additional effect on CASP-12. As was found for CASP-12, there was no evidence to suggest an effect of intra-generational mobility. When using the socioeconomic advantage scores to examine social mobility, no evidence was found for an interactive effect between childhood and adulthood socioeconomic advantage among men. However, there was a very small effect among women, which demonstrated that among those who scored lowest on the socioeconomic advantage score during adulthood, increased childhood advantage was associated with higher predicted life satisfaction scores. But among women who had the highest socioeconomic advantage score during adulthood, increased childhood advantage seemed to be related to slightly lower predicted life satisfaction. In addition, when categorising the socioeconomic advantage

scores into specific trajectories, downward mobility was associated with higher mean life satisfaction among women, compared to consistent disadvantage. As for CASP-12, this was not observed among men.

11.4.1.2 The influence of the welfare regime

Among men, the difference in life satisfaction between the most and least advantaged according to the cumulative socioeconomic advantage score was narrowest in the Scandinavian and Bismarckian regimes, and widest in the Post-communist and Southern regimes. For women, this difference was also slightly larger in the Bismarckian regime compared to the Scandinavian regime. The same pattern of results was also observed for the adulthood socioeconomic advantage score. In the models stratified by welfare regime, only among women in the Post-communist regime did the childhood score have an effect in addition to that of the adulthood score.

The only statistically significant interactive effect between the childhood and adulthood occupational variables was also found among women in the Post-communist regime. The key result was that exposure to a non-manual occupation, in either childhood or adulthood, appeared to be beneficial for life satisfaction, compared to remaining in a manual occupation at both time points.

The next chapter synthesises the overall results of the thesis, discusses its overall strengths and weaknesses, and provides recommendations for future research and policy.

12. Discussion

12.1 Chapter introduction

This chapter summarises and discusses key findings of the thesis, considers its over-arching strengths and limitations, places the results in context with the existing literature, and considers the implications for future research and policy.

To recall, the key aims of this thesis were to:

- Investigate whether, and how, life course socioeconomic position influences the quality of life of Europeans in early old age.
- Examine differences in this relationship by welfare regime.

12.2 Summary of the results

12.2.1 Systematic review

Twelve studies were identified that investigated the association between life course socioeconomic position and quality of life, but only five were specific to individuals in older age groups. Half were conducted in either the United States or the United Kingdom, and Scandinavian studies were also common. The review provided some evidence to suggest that experiencing a low socioeconomic position across the life course influences later quality of life. However, results were mixed and the synthesis of results was limited by heterogeneity between studies. Some supportive evidence was found for a latent effect of low childhood socioeconomic position on quality of life among women. Social mobility models were generally not supported. High quality studies addressing inter-generational mobility were lacking and few studies addressed cumulative and pathway effects.

12.2.2 Empirical analyses

12.2.2.1 Independent associations between socioeconomic position and quality of life and the moderating role of the welfare regime

Socioeconomic inequalities in quality of life were apparent by most measures of socioeconomic position from across the life course and in all welfare regimes. Individuals who experienced a higher socioeconomic position had higher quality of life scores, as measured by two different indicators of quality of life: CASP-12 and life satisfaction. The results were reasonably consistent between the formative needs satisfaction-based measure of quality of life (CASP-12) and the reflective indicator (life satisfaction), which captured people's global evaluation of their lives. Overall, the associations were stronger among women compared to men. However, there were differences in the strength of the associations according to whether the measure of socioeconomic position related to childhood or adulthood. In addition, there was evidence to suggest that the type of welfare regime modified the association between socioeconomic position and quality of life.

Childhood socioeconomic position

In the overall age-adjusted analysis, each childhood measure of socioeconomic position was associated with quality of life, but to a lesser degree than the measures of adulthood socioeconomic position. Out of the childhood measures of socioeconomic position, the number of books respondents reported in their household during childhood was the strongest predictor of quality of life. However, the size of this association was relatively small. For example, the age-adjusted difference in mean CASP-12 scores between those with the hypothetically least and most number of books in childhood was 1.6 – less than half of the size of the difference in CASP-12 scores between those who did and did not report being limited in their activities of daily living, as a result of a health problem.

There was evidence to suggest that the type of welfare regime moderated the influence of specific measures of childhood socioeconomic position on quality of life, but also some evidence showing no moderation effect. Table 12.1 summarises the findings from this analysis. Across all measures, there was no difference in the magnitude of socioeconomic

inequalities in quality of life between the Scandinavian and Bismarckian regimes. For the number of books and amenities during childhood, men in the Post-communist regime had larger inequalities in quality of life in comparison to the Scandinavian regime. Further, women in the Southern regime displayed larger inequalities in quality of life compared to the Scandinavian regime, according to each childhood measure, apart from the occupation of the main breadwinner. None of the measures of childhood socioeconomic position were associated with life satisfaction in the Scandinavian regime, and among men, there was no difference in the magnitude of inequalities in life satisfaction between the Scandinavian and Southern regimes. In contrast, inequalities in life satisfaction by each childhood measure of socioeconomic position were greater among women in the Post-communist regime, compared to the Scandinavian regime. Other than these observations, there was no clear pattern in the results for the childhood measures of socioeconomic position.

Table 12.1: Summary of results for the interactions between the measures of childhood socioeconomic position and welfare regime for quality of life in early old age

CASP-12	Scandinavian (ref. category)	Southern	Post-communist	Bismarckian
Men				
Number of books	NS	+	+	=
Rooms per capita	*	=	=	=
Amenities	NS	+	+	=
Breadwinner occupation [a]	*	=	=	=
Women				
Number of books	*	+	+	=
Rooms per capita	NS	+	=	=
Amenities	NS	+	=	=
Breadwinner occupation [a]	*	=	=	=
Life satisfaction	**Scandinavian (ref. category)**	**Southern**	**Post-communist**	**Bismarckian**
Men				
Number of books	NS	=	+	=
Rooms per capita	NS	=	=	=
Amenities	NS	=	+	=
Breadwinner occupation [a]	NS	=	=	=
Women				
Number of books	NS	+	+	=
Rooms per capita	NS	+	+	=
Amenities	NS	+	+	=
Breadwinner occupation [a]	NS	=	+	=

[a] skill level; * Statistically significant association found; NS no statistically significant association found; + association significantly larger compared to the Scandinavian regime; = association not significantly different compared to the Scandinavian regime

Adulthood socioeconomic position

In the overall analysis, inequalities in quality of life were largest by current income and wealth. The difference in quality of life between the least and most wealthy was roughly equivalent to the difference between those who did and did not report being limited in the activities of daily living. Thus, these effect sizes can be considered relatively large. The slope indices of inequality for education and occupational skill level were similar in magnitude or weaker compared to the more proximal measures of income and wealth. This suggests that the most current measures of socioeconomic position were most strongly associated with quality of life in early old age. However, there were differences between welfare regimes.

Table 12.2 summarises the findings for the adulthood measures of socioeconomic position for each welfare regime. A key finding was that there were few differences in the magnitude of socioeconomic inequalities in quality of life between Scandinavian and Bismarckian welfare regimes, consistent with the results for the childhood measures above. The one exception was for education level. In the Scandinavian regime, the difference in CASP-12 scores between the hypothetically least and most educated was particularly small among men and not statistically significant. Men in the Bismarckian regime exhibited significantly larger inequalities in CASP-12 scores by education level, compared to the Scandinavian regime. However, the size of the slope index of inequality in the Bismarckian regime was small in comparison to those observed among the Post-communist and Southern regimes. Among women in the Southern and Post-communist regimes, the difference in CASP-12 scores between the least and most educated was larger than the influence of being limited by a health condition – therefore, these can be considered relatively large effects.

Table 12.2: Summary of results for the interactions between the measures of adulthood socioeconomic position and welfare regime for quality of life in early old age

CASP-12	Scandinavian (ref. category)	Southern	Post-communist	Bismarckian
Men				
Education level	NS	+	+	+
Main occupation [a]	*	+	=	=
Current income	*	=	=	=
Current wealth	*	+	=	=
Women				
Education level	NS	+	+	=
Main occupation [a]	*	+	+	=
Current income	*	+	=	=
Current wealth	*	+	=	=
Life satisfaction	**Scandinavian (ref. category)**	**Southern**	**Post-communist**	**Bismarckian**
Men				
Education level	NS	+	+	=
Main occupation [a]	*	=	=	=
Current income	*	=	+	=
Current wealth	*	+	+	=
Women				
Education level	NS	+	+	=
Main occupation [a]	NS	+	+	=
Current income	*	+	+	=
Current wealth	*	+	+	=

[a] skill level; * Statistically significant association found; NS no statistically significant association found; + association significantly larger compared to the Scandinavian regime; = association not significantly different compared to the Scandinavian regime

12.2.2.2 Latent and pathway effects from childhood socioeconomic position to quality of life in early old age

Overall results from the multilevel models and path analysis suggested a pathway mechanism was operating, whereby childhood socioeconomic position influenced quality of life via its effect on adulthood socioeconomic position. In other words, the measures of adulthood socioeconomic position could be considered to mediate the relationship between childhood socioeconomic position and quality of life. There was little evidence to suggest a strong latent effect for any of the measures of socioeconomic position. However, among both genders a small unexplained association between the number of books in childhood and quality of life remained, even after adjusting for all other measures of adulthood socioeconomic position and the additional measures of childhood

socioeconomic position. This result was found using both CASP-12 and life satisfaction, perhaps suggesting a direct role of the cultural environment during childhood for quality of life in early old age (this finding is discussed in further detail in section 12.3.3). It was interesting to note that for women, including a direct effect from the number of books in childhood to life satisfaction in early old age diminished the direct effect of education level on life satisfaction. In addition, no direct effect from education level to life satisfaction or CASP-12 was found for men, yet a small direct effect from the number of books was observed. This suggests that the number of books could be measuring something independent of education level. However, the potential direct effect from the number of books in childhood to quality of life was not consistently observed in all welfare regimes and there were differences between genders and measures of quality of life.

One consistent finding was that among men in the Post-communist regime and women in the Bismarckian regime, a potential direct effect from the number of books during childhood to quality of life was observed. The results also suggested that there may be a direct effect from the number of books to life satisfaction among women in all welfare regimes, apart from the Scandinavian type. In the Southern and Post-communist regimes, there were also consistent indirect effects from the number of books to quality of life among both genders. It was also noteworthy that among women in the Bismarckian regime, the overall indirect effects from the number of books to life satisfaction were not statistically significant, but a direct effect was suggested.

In summary, there was consistent support for a pathway mechanism relating to the number of books in childhood for most welfare regimes (excluding the Scandinavian regime and men in the Bismarckian regime) and some support for a potential latent effect among Post-communist men and Bismarckian women. Among women in the Post-communist regime, the indirect pathway from the number of books in childhood through education level appeared important for both life satisfaction and CASP-12. Other than this finding and that the distal pathways from the number of books in childhood via education level, occupation, income and wealth often showed small indirect effects, there was no consistent pattern to the results by welfare regime.

12.2.2.3 Cumulative and social mobility effects of socioeconomic position over the life course on quality of life in early old age

There was evidence to suggest that increased socioeconomic advantage over the life course was associated with higher quality of life in early old age. This was a consistent finding across all welfare regimes and among both genders. In addition, the results suggested that the welfare regime may moderate the relationship between cumulative advantage and quality of life. Table 12.3 summarises these findings. The association between cumulative advantage and quality of life was consistently stronger in the Southern and Post-communist regimes, compared with the Scandinavian regime. Little difference was found between the Bismarckian and Scandinavian regimes; similar to the above findings examining the independent influence of each measure of socioeconomic position.

Table 12.3: Summary of results for the interactions between the cumulative advantage score and welfare regime for quality of life in early old age

CASP-12	Scandinavian (ref. category)	Southern	Post-communist	Bismarckian
Men				
Cumulative advantage	*	+	+	=
Women				
Cumulative advantage	*	+	+	=
Life satisfaction				
Men				
Cumulative advantage	*	+	+	=
Women				
Cumulative advantage	*	+	+	+

* Statistically significant association found; NS no statistically significant association found; + association significantly larger compared to the Scandinavian regime; = association not significantly different to the Scandinavian regime

However, the results also suggested that the association between childhood socioeconomic advantage and quality of life was mostly explained by adulthood socioeconomic advantage. This lends further support for a potential pathway mechanism whereby adulthood socioeconomic advantage mediated the relationship between childhood socioeconomic advantage and quality of life.

Among men, there was no evidence for an association between social mobility and quality of life and generally a lack of consistent supportive evidence among women. Some evidence suggested that among women in the Post-communist regime, exposure to a non-manual occupation, in either childhood or adulthood, appeared to be beneficial for quality of life, compared to remaining in a manual occupation at both time points. There was little evidence to support an effect of intra-generational mobility on quality of life among either gender. However, there were few socially mobile individuals in the overall sample, which precluded the examination of intra-generational mobility by welfare regime.

The key finding from the analyses examining the influence of specific socioeconomic trajectories was that the upwardly mobile and the consistently advantaged groups experienced higher quality of life, compared to the consistently disadvantaged group. Generally, there was little difference in quality of life between the upwardly mobile and the consistently advantaged groups. There was some evidence that among women, the downwardly mobile trajectory group had higher quality of life compared to the consistently disadvantaged. This was perhaps because of the 'residual' advantage from childhood, which may be beneficial for quality of life even when socioeconomic disadvantage was experienced by women during adulthood. Rather than social mobility itself, this may represent a cumulative effect of socioeconomic advantage. However, examination by welfare regime revealed no consistent findings. There was some suggestion that among women in the Scandinavian and Bismarckian regimes, the downward trajectory was better for quality of life, compared to remaining in socioeconomic disadvantage.

Financial distress had the greatest influence on explaining the association between life course socioeconomic position (as measured by the cumulative socioeconomic advantage score) and quality of life. This finding suggests that the feeling of being able to make ends meet may partly mediate the association between life course socioeconomic position and quality of life. Although some of the other factors investigated were strongly associated with quality of life, particularly the current health and mood variables, they had little role in influencing the magnitude of inequality in quality of life. Generally consistent results were found between welfare regimes and for both quality of life outcomes.

12.3 Discussion of key findings

12.3.1 Current measures of socioeconomic position were most strongly associated with quality of life in early old age

Overall, and across most welfare regimes, the more proximal measures of socioeconomic position, like current income and wealth, were the strongest predictors of quality of life in early old age. This suggests that current circumstances, such as a lack of income and wealth relative to others within the same country, gender, and cohort, contributed to lower quality of life. This could be due to stress as a result of comparisons with others, which makes individuals feel less satisfied and in control of their lives. Higher income and financial assets in older age also allow the purchase of better quality food and housing, as well as enabling individuals to pursue hobbies and interests that they desire, which often require money to do so. Wealth is also accumulated over the life course and often tied up in housing or other assets. These may influence quality of life by affecting feelings of control and satisfaction with life, and may help provide meaning to life in older age. Inequalities in quality of life by wealth were apparent across all welfare regimes, which suggests that the Scandinavian welfare regime, although considered the most redistributive, has not reduced the negative effects of wealth inequality, which has increased over the past few years (Bonesmo Fredriksen, 2012; Roine & Waldenström, 2009).

The results also suggested that quality of life was influenced by childhood socioeconomic position indirectly via adulthood socioeconomic position, with the distal pathways via education level to the current measures of adulthood socioeconomic position showing small, but statistically significant indirect effects. Thus, although measures of adulthood socioeconomic position were most strongly associated with quality of life, these were highly related to childhood socioeconomic circumstances. By welfare regime, however, it was difficult to discern the specific pathways that were important.

Inequalities in quality of life by education level were narrowest in the Scandinavian welfare regime and widest in Post-communist and Southern regimes. Therefore, despite apparently not being successful at reducing wealth related inequalities in quality of life,

for this cohort, the Scandinavian welfare regime appears to have reduced inequality in quality of life related to education level. This could be because the Scandinavian regime has placed a high emphasis on equality of educational opportunity and values the education system as an integral part of the welfare system and so investment in schools has been high (Antikainen, 2006). Indeed studies have demonstrated that the Scandinavian countries have been effective at achieving more equal opportunities among people from poorer social backgrounds (Iannelli, 2002). Whereas, in Southern countries large inequalities exist in educational opportunities (Rhodes, 1996).

It was interesting to note that educational inequalities in quality of life were also consistently larger in the Post-communist regime. During the 1950s, policies were implemented that ensured a proportion of individuals in secondary and tertiary education were from a working class background (Iannelli, 2002) and those from the upper classes were actively discriminated against in terms of their access to education (Ganzeboom & Nieuwbeerta, 1999). As a result, this might have been expected to narrow educational inequalities, however, studies have shown that this was not the case and the link between parental and children's education may even be stronger in Eastern Europe than in Western European countries (Ganzeboom & Nieuwbeerta, 1999). This may be because the family's cultural resources still had an important influence on the transmission of social advantage and that those from a more advantaged background were able to find ways to sidestep official regulations. In addition, social and economic inequalities have rapidly increased since the transition from communism to market economies (Iannelli, 2002). Large educational inequalities in mortality exist among Eastern European countries (Leinsalu et al., 2009; Mackenbach et al., 2008), therefore it is not particularly surprising that educational inequalities in quality of life were also found to be wide in the Post-communist regime in this thesis.

12.3.2 A mediating role of feeling able to make ends meet?

As well as having a large influence on quality of life, the ability to make ends meet greatly reduced the association between life course socioeconomic position and quality of life across all welfare regimes. This is perhaps because financial distress related to lower income and wealth in early old age highly influences feelings of control over, and

satisfaction with, life. It is also likely that the inability to make ends meet relates to feelings of being left out of the activities that those of higher incomes use to achieve self-realisation and pleasure in early old age. In this respect, the third age can essentially be considered a 'purchased' stage of the life course (Gilleard & Higgs, 1998).

12.3.3 Does the number of books in childhood have an effect on quality of life some 50 years later?

In the overall analysis, the number of books in childhood was consistently associated with quality of life, although the effect size was relatively small. When stratifying by welfare regime, the association between the number of books in childhood appeared, in most regimes, to be mediated by the adulthood measures of socioeconomic position, particularly by education level. However, there were a number of examples when the association was not completely explained by including the other childhood or adulthood measures of socioeconomic position. Specifically, a direct effect of the number of books in childhood was suggested among men in the Post-communist regime and women in the Bismarckian regime. Does this mean that in these groups the number of books the individual reported having when they were aged 10 years old affected their quality of life around half a century later? There could be a number of potential explanations for this finding.

The simplest explanation for this finding is unmeasured confounding. It is possible that other factors which may have confounded the relationship between the number of books in childhood and quality of life, such as childhood intelligence, resulted in the small association remaining. Secondly, another explanation that cannot be ruled out is that the socioeconomic variables were affected by measurement error resulting in residual confounding. For example, if education level was affected by substantial measurement error, the association between the number of books in childhood and quality of life in early old age may be capturing this measurement error. However, for this to have occurred and to result in the associations observed, measurement error would have to be stronger among men in the Post-communist regime and women in the Bismarckian regime, which seems unlikely. Thirdly, it should be noted that the overall study sample size was large, including around 15,000 individuals. Therefore, it is possible that

associations found to be statistically significant were too small to be meaningful. When stratifying by welfare regime and gender the samples were still relatively large, with the largest group being Bismarckian women (containing over 3,000 individuals). Hence, for this group, it is possible that the association between the number of books and quality of life could be a chance finding. However, as it was a consistent result using both outcomes, this explanation is considered unlikely. In contrast, the smallest group was the Post-communist men, which contained around 1,000 individuals. Among this group, the association between the number of books in childhood and CASP-12 was 1.73 (95% CI: 0.21 to 3.25), when including all the other measures of socioeconomic position and roughly similar to the effect size for education level. Therefore, the difference in mean CASP-12 scores between men who reported having the lowest and highest number of books in childhood was a weak association; just over a third of the effect size for CASP-12 related to reporting a limiting illness. However, the effect size is larger than those reported in previous studies using SHARE data and CASP-12 as outcome, including the difference in scores between people who reported current involvement in reciprocal voluntary activities and those who did not, as well as between people living with a partner and living as single (Siegrist & Wahrendorf, 2009).

Therefore, if this finding is to be considered meaningful, what might it represent? Firstly, the number of books could signify the cultural environment in a household during childhood, which was not captured via the other childhood socioeconomic variables. A number of other studies have used the number of books in childhood as an indicator of 'cultural capital' during childhood (Brandt et al., 2012; Deindl, 2013; Schaan, 2014), but have provided little explanation of how this might plausibly affect later health and wellbeing. As defined previously, cultural capital refers to the symbolic and informational resources (such as values, behavioural norms, and knowledge) for action, which are mainly gained via education and social learning (Abel, 2008; Bourdieu, 1986). Bourdieu's theory specifies that cultural capital can be objectified in items such as books, paintings, and musical instruments (Abel, 2008; Bourdieu, 1986), which when used can influence both educational and occupational attainment, as well as the lifestyle of an individual (Georg, 2004). Passive cultural transmission from parent to child is also thought to occur via hearing parents talk, observing them read, and having reading materials accessible in the household (Sullivan & Brown, 2013). Therefore, the number of books in childhood

could represent an indicator of cultural capital, which may be especially important in societies where the education system did not provide alternative ways to gain cultural capital (Matějů & Řeháková, 1996).

Relatedly, the number of books could be capturing parental warmth or investment in cognitive stimulation, which may influence the development of secure-attachment, language and socio-emotional skills, general knowledge, and intellectual curiosity (Brunello et al., 2012; Griffin & Morrison, 1997; Guo & Harris, 2000; Parcel & Dufur, 2001; Stansfeld et al., 2008). Brunello et al (2012) found that those with a disadvantaged childhood cultural background (measured by the number of books) invested in fewer years of education and achieved lower lifetime income even when compulsory school reforms were implemented, perhaps because their cognitive ability was crystallised early on or they attended lower quality education. If early old age is a time for pursuing self-actualisation and pleasure, hobbies and interests which were cultivated earlier in life may become important contributors to quality of life in early old age. Furthermore, if intellectual curiosity was encouraged during childhood, it may be important for later quality of life when individuals start becoming free from earlier work and family commitments and have time to pursue their unfulfilled curiosities, like learning a new language or skill. Further research is needed to explore these ideas and in particular how the number of books in childhood is related to cognitive function throughout the life course and to what extent cognitive function may mediate the relationship between the number of books in childhood and quality of life in early old age.

12.4 Overall strengths and limitations of the thesis

The results of this thesis should be considered in the context of its strengths and weaknesses. The specific strengths and limitations of each chapter's analysis were detailed at the end of the respective chapters. Therefore, this section outlines the over-arching strengths and weaknesses of the thesis.

12.4.1 Strengths

12.4.1.1 Data

A key strength of this study was the use of high quality and comparable cross-national survey data, based on general population samples (Börsch-Supan & Jürges, 2005). SHARE is considered to be the most representative survey of older adults within Europe (Börsch-Supan et al., 2013). Previous studies examining socioeconomic inequalities in health and wellbeing have often relied on occupational cohorts (Breeze et al., 2001; Chandola et al., 2003; Marmot et al., 2001; Marmot et al., 1991; Stringhini et al., 2011), the results of which may not be generalisable. Research on cross-national variations in socioeconomic inequalities in health and wellbeing has also frequently used data from a number of different surveys and their comparability is questionable (Cavelaars et al., 1998; Hyde et al., 2006; Kunst et al., 2005; Kunst et al., 1998; Kunst & Mackenbach, 1994; Mackenbach et al., 2008).

Generally consistent results were found for both the formative (CASP-12) and reflective (life satisfaction) indicators of quality of life, which adds to the robustness of the thesis. CASP-12 is a theoretically informed measure of quality of life developed specifically to capture quality of life in early old age (Hyde et al., 2003). Its growing adoption by other countries and surveys, for example its translation into Mandarin and Cantonese (Wu et al., 2013), opens up opportunities for further comparative research to examine if the results of this study hold for other populations in different political and policy contexts. Life satisfaction is also a widely used measure of quality of life and it is considered reasonably comparable across countries; terms such as 'happiness' and 'satisfaction with life' have been shown to mean the same in different languages (Layard, 2011; Ogg, 2010).

12.4.1.2 Methodology

A particular strength of the thesis in terms of the methodology was that it included important control variables that could confound the relationship between life course socioeconomic position and quality of life and considered potential mediating variables. However, it is possible that some of the results observed could be related to potential

unmeasured confounding factors or measurement error in the variables included, although the latter would generally be expected to bias the regression coefficients towards the null (Armstrong, 1998). A further strength of the study was the use of both multilevel models and path analysis, which allowed the consistency of results between methods to be considered. Path analysis also enabled the calculation of direct and indirect effects of the influence of different measures of socioeconomic position on quality of life.

Additionally, an important strength of the thesis was the consideration of effect modification by the welfare state on the relationship between life course socioeconomic position and quality of life, which few previous studies have investigated. The use of multiple measures of socioeconomic position from across the life course also allowed exploration of the multidimensional nature of socioeconomic position and its different effects on quality of life. The slope indices of inequality provided a comparable measure of the influence of socioeconomic position on quality of life between genders and across the life course taking into account the different distributions between countries and cohorts, which previous research has not considered (Knesebeck et al., 2007; Motel-Klingebiel et al., 2009).

12.4.2 Limitations

12.4.2.1 Data

A number of limitations relating to the SHARE data should be noted. Response rates for some countries were not ideal; however, it is expected that this might lead to an underestimation of inequalities as those experiencing a lower socioeconomic position may be less likely to respond (Mishra et al., 1993; Tolonen et al., 2006). Compared to other similar surveys, the response rates achieved are comparable or superior (Börsch-Supan & Jürges, 2005). Like all longitudinal panel surveys, SHARE is also at risk of attrition and survival bias and this thesis has not empirically explored their impact on the results. For this thesis, survival bias was less of an issue as it was focused on the quality of life of individuals who survived up to early old age. Attrition may act to underestimate the results, if those from a lower socioeconomic position were more likely to drop-out of the

survey. Preliminary analysis undertaken by the SHARE team has demonstrated that there were few differences between those who dropped out of the survey and those who remained, but those who participated had a tendency of being in a higher socioeconomic position (Schröder, 2008), as found in other longitudinal studies of ageing (Chatfield et al., 2005; Young et al., 2006). Research has also suggested that attrition which is related to the predictors of interest may not lead to bias in studies that examine the assocation between an exposure and outcome (Wolke et al., 2009). Further, although the analysis contained in this thesis made use of the multiply imputed data provided by the SHARE team for specific variables with missing values, it has not considered the extent to which this influenced the results or examined potential bias resulting from the small amount of missing data present for the variables which were not part of the multiple imputation. Therefore, it cannot be ruled out that missing data may have influenced some of the results observed.

In addition, each variable examined in this study was based on self-reported information, which could be affected by differences in language and reporting styles between countries (Veenhoven, 2012). However, SHARE is subject to rigorous, standardised translation procedures (Börsch-Supan & Jürges, 2005) and previous research has shown that the role of language in explaining cross-national differences in quality of life is minimal (Veenhoven, 2012). Though, in societies where satisfaction is highly valued and sought for, desirability bias may occur if, as a result, individuals are more inclined to report being more satisfied. Some researchers have argued that subjective measures of quality of life and wellbeing are not contaminated by social desirability, and rather than an artifactual effect which is considered a nuisance, social desirability represents a stable personality trait that influences wellbeing (Diener, 1984; Diener et al., 1995; Frisch et al., 1992; Kozma & Stones, 1987; Veenhoven, 2012). CASP-12 has been shown to be reasonably comparable across countries (Netuveli, 2007; Vanhoutte, 2012), but it should be acknowledged that cultural differences in reporting styles between countries could be one potential explanation for the results. However, if this was the case, it might be expected that the magnitude of socioeconomic inequalities in quality of life would be similar by each measure of socioeconomic position, which was not found.

It is also somewhat difficult to ascertain the clinical significance of the outcome measures. Throughout the thesis the effect sizes for the quality of life measures were compared to the effect of experiencing a limiting health condition, which helps to interpret the clinical importance of the results. Higher quality of life, as measured by CASP-12 and life satisfaction, has also been found to be protective against mortality even after adjusting for important confounding factors, such as age, health status, and socioeconomic position (Bowling & Grundy, 2009; Collins et al., 2009; Koivumaa-Honkanen et al., 2000; Netuveli et al., 2012). In particular, a one-unit increase in CASP was shown to be associated with a 3% reduction in the probability of death in a study using data from five waves of the British Household Panel Survey (Netuveli et al., 2012). Therefore, the outcomes may have important clinical implications.

A further drawback of the data relates to the retrospective nature of some of the exposure variables used in the analysis, which may be affected by recall bias and colouring. Recall bias can occur when individuals do not correctly remember details relating to a particular event that took place in the past and colouring (or anchoring) can result from the projection of current events (for example experiencing depression) on to answers about events in the past (Mazzonna & Havari, 2011). Although prospective data derived from birth cohort studies would be the ideal, retrospective data were the only available option to capture early life socioeconomic conditions for this study. The risk of recall bias in SHARE was reduced by the use of the life-grid method of data collection, which has been shown to facilitate the recall of childhood circumstances with accuracy (Berney & Blane, 1997; Blane, 1996). Initial analysis from the SHARE team demonstrated that the measures of childhood environment used in this thesis (like the number of books) show a good level of internal and external consistency, as measured by the correlation between the number of years of schooling for each country, for example (Mazzonna & Havari, 2011). Other studies have demonstrated that the recall of childhood conditions is adequate (Krieger et al., 1998; Lin et al., 2002), but may lead to an underestimation of health inequalities (Batty et al., 2005; Kauhanen et al., 2006; Lundberg, 1991).

In addition, the thesis was limited by the countries included in the survey, which meant that only four welfare regime types were studied and for some types, only two countries

were used to represent particular regimes. Further analysis is therefore required to investigate the relationship between life course socioeconomic position and quality of life in other countries and welfare regimes. The most recent wave of SHARE contains an additional four countries: Estonia, Hungary, Portugal and Slovenia which could allow further analysis of socioeconomic inequalities in quality of life especially in Eastern European countries. However, data have not been collected relating to their childhood circumstances. Additionally, the English Longitudinal Study of Ageing and the American Health and Retirement Study could be used to examine the relationships in a Liberal welfare regime.

12.4.2.2 Methodology

As outlined in chapter 1, welfare regimes are only one approach to examining welfare state influences on health and health inequalities. Although they provided a useful starting point for describing socioeconomic inequalities in quality of life in this thesis, they are limited in the extent to which the findings can be attributed to specific policies. For the purpose of this thesis, overall quality of life and inequalities in quality of life were considered to be the outcome of the collection of policies pursued by governments. Therefore, the welfare regime approach was best suited for the research questions of this project. However, as discussed previously, the welfare regime approach has been extensively criticised. It should be remembered that welfare regimes are 'ideal types'; no one country exhibits all characteristics of a particular welfare regime and policy development within particular regimes has not been uniform (Aidukaite, 2009). Although several welfare regime classification systems have been described (Bambra, 2007), this thesis only considered one type and it is possible that using an alternative scheme may have yielded different results. However, rather than repeat the analysis using a different scheme, it is recommended that a different approach is taken (described further in section 12.6.1).

Another limitation of the thesis was the exclusion of individuals who were born outside their current country of residence. This was due to their likely different life course experiences and the inappropriateness of controlling for country of birth or migrant status (Senior & Bhopal, 1994). Thus, there is a need for further work into the life course

experiences of migrants and the welfare state's role in influencing their health outcomes. An additional population group not examined was individuals resident in institutions, such as nursing homes. This could have resulted in underestimated inequalities in quality of life, if those in a lower socioeconomic position were more likely to be institutionalised. Further, more research is required to examine the life course experiences of women as this thesis has not fully explored the influence of their different roles, including family care, domestic work, and paid employment, as well as changes over time in their opportunities and expectations, for quality of life (Bartley et al., 1999). In particular, the results of this thesis cannot be considered representative of women who have spent much of their life looking after the home or family.

It is also questionable whether the results are generalisable to future cohorts. As life expectancy is increasing, governments across Europe are looking to increase the retirement age (Schwan & Sail, 2013). This could mean that the 'third age' is, for many, no longer a realistic phase of the life course. The population studied was also in a unique position, living through the expansion of higher education and the years after the Second World War which saw expansion, and much support for, the welfare state (Dryzek & Goodin, 1986). This highlights the importance of future monitoring of socioeconomic inequalities in quality of life among older people who have not lived through a time of welfare state expansion.

In addition, quality of life was considered at only one time point, with the outcome data being collected during 2006/07, before the onset of the recent economic recession and implementation of austerity policies across much of Europe (McKee et al., 2012). Relatedly, the potential mediating variables explored, including financial distress and marital status, were only considered at one point of the life course. The thesis has also not explored the health behaviours or hobbies of participants in early old age or across the life course, which may act as mediating factors. A further weakness relates to the consideration of only one macro-level variable: the welfare regime. Further research is needed into other macro-level factors which may influence the relationship between the welfare regime and socioeconomic inequalities in quality of life, such as the level of income inequality and trust within a society. In addition, this thesis has not fully explored the historical, cultural, and economic context in which the respondents grew up and

worked within. It is likely that particular events, such as previous economic recessions and the collapse of communism, may also have had a long-lasting influence on quality of life and its socioeconomic gradient (Leist et al., 2013). A key issue that remains unanswered relates to whether the welfare regime may actually be capturing some other factor, such as a shared culture within particular countries, which may influence quality of life and its distribution.

A further key limitation of this thesis, and indeed of most research, was that the empirical analysis represents only one analysis and interpretation of the data, which has the potential to be influenced by personal values. Relatedly, the path analysis tested only two hypothesised models and there are likely to be several other potential path models that could be tested and fit the data similarly. In addition, the analysis examining social mobility effects on quality of life could be considered quite simple, only considering mobility between a restricted number of points in the life course. More sophisticated modelling strategies, such as latent class growth analysis (Netuveli & Bartley, 2012; Sturgis & Sullivan, 2008), could be used to further examine the detailed occupational histories of the respondents. However, given the overall low level of intra-generational mobility in the sample, this is not likely to be a constructive exercise.

Further, the empirical analysis was purely quantitative; qualitative research could be used in further work to investigate relative aspects of socioeconomic position, including who people compare themselves to, how particular life course experiences shape the quality of life of older people, and help to uncover the influence of culture. In addition, although several measures of individual and household socioeconomic position were included, one notable exclusion was neighbourhood socioeconomic position. More positive neighbourhood characteristics have been implicated in protecting against the decline in quality of life (Webb et al., 2010) and area-level deprivation has been shown to influence quality of life as much as individual level social class (Breeze et al., 2005). Further research is therefore required to unpack how this might relate to quality of life and its distribution across countries.

12.5 In context with previous work

12.5.1 Contribution to knowledge

As found in the systematic review, there have been relatively few studies that have examined the association between life course socioeconomic position and quality of life. These studies have been restricted to Liberal, Scandinavian and Southern welfare regimes and to date, no studies have systematically explored the influence of the welfare regime on the relationship between life course socioeconomic position and quality of life. Therefore, this thesis is the first to systematically investigate the influence of socioeconomic position over the life course on quality of life among Europeans in early old age and examine differences in the relationships by welfare regime.

12.5.2 Life course influences on quality of life

The systematic review provided some evidence that childhood socioeconomic position may have a long-lasting influence on the quality of life of women. In terms of a latent effect from childhood, generally there was little support for a strong association between childhood socioeconomic position and quality of life in the empirical analysis of this thesis, but some indication that the number of books may have a weak direct effect in some welfare regimes. There was more supportive evidence for a pathway effect whereby childhood socioeconomic position influenced quality of life via adulthood socioeconomic position.

The systematic review found little evidence for an influence of social mobility on later quality of life and few studies examined cumulative effects. The empirical analysis in this thesis generally supported the findings of the systematic review in terms of the lack of effect of social mobility, with the persistently advantaged and disadvantaged groups displaying the strongest associations with quality of life. Among women in the Post-communist regime, there was some evidence that their main occupation may modify the effect of the occupation of the main breadwinner during childhood on quality of life in early old age. However, this result requires much further exploration taking into account the wider context and different occupational classification schemes. Studies examining

social mobility and other health outcomes such as self-rated health and psychiatric symptoms have had mixed findings, with some showing no effect (Power et al., 1996; Tiffin et al., 2005) and others suggesting a negative influence of downward mobility (Luo & Waite, 2005; Tiffin et al., 2005; Tiikkaja et al., 2013). It is likely that the inconsistent results are due to the different outcomes, populations, and methods used within the studies.

Since the systematic review was conducted, several other studies have provided additional evidence that support the findings of this thesis, although most research has been confined to single countries. Analysing the influence of social mobility across the life course and CASP at aged 50 years, Netuveli and Bartley (2012) found only the persistently high and low trajectories had a significant influence on quality of life. In addition, Blane et al (2012) found that childhood socioeconomic factors influenced CASP scores at aged 50 years primarily through contemporary socioeconomic circumstances. Similarly, a cross-national examination of childhood conditions on the life satisfaction of older Europeans provided further support for a pathway effect and some evidence for a small latent effect after controlling for adulthood socioeconomic position (Deindl, 2013). Although not specifically focused on childhood socioeconomic conditions, Platts et al (2013) found that exposure to adverse physical occupational exposures measured 20 years previously was associated with lower CASP scores among retired men who participated in the French GAZEL study. But, this association appeared to be mostly mediated by physical and mental health.

In addition, individuals participating in the Boyd Orr study who were classified into structurally advantaged groups according to employment, relationship, and housing statuses were found to generally experience higher levels of quality of life compared to those in disadvantaged positions (Wiggins et al., 2007). However, the most important predictors of quality of life, as found in this thesis, were those related to current socioeconomic circumstances. Other studies examining the influence of childhood socioeconomic position on health outcomes, such as cause-specific mortality and cardiovascular outcomes and risk factors, have demonstrated that it could have as much of an influence as adulthood socioeconomic position (Galobardes et al., 2004; Galobardes et al., 2008; Galobardes et al., 2006c; Pollitt et al., 2005; Power et al., 2007). Quality of

life therefore appears to contrast to objective health measures, being primarily influenced by proximal measures, such as income and wealth.

As noted above, there has been little exploration of how the welfare state might influence the relationship between life course socioeconomic position and quality of life. Research into the effects of the welfare state on socioeconomic inequalities in health has had mixed findings and there is no consensus regarding whether Scandinavian countries exhibit narrower inequalities (Bergqvist et al., 2013; Brennenstuhl et al., 2011). Zambon et al (2006) found some evidence that Social Democratic and Conservative welfare regimes weakened the association between socioeconomic position (measured by the family affluence scale) and adolescent wellbeing, compared to Mediterranean and Post-communist regimes, which is generally consistent with the findings in this thesis.

12.6 Implications

12.6.1 Research

This section first considers general implications for future research into health and wellbeing inequalities and then moves on to describe some specific areas for future exploration.

12.6.1.1 Socioeconomic position

The results of this thesis highlight the importance of examining different measures of socioeconomic position, as the results often differ depending on the choice of variables. However, it should be noted that the concept of socioeconomic position itself lacks a theoretical basis, its dimensions are debated, and its measures unvalidated (indeed, arguably impossible to validate). Future research would benefit from further exploration of the different dimensions of socioeconomic position (for example, social class, social status, and material circumstances) and whether these have particular social and biological pathways that lead to better health and wellbeing. Examining how and why different pathways arise could help develop a more nuanced understanding of the

mechanisms underlying socioeconomic inequalities in health and wellbeing, thereby facilitating the development of more effective interventions for their reduction.

12.6.1.2 Measurement of health and wellbeing

It is recommended that research concerning inequalities in health and wellbeing covers a range of outcomes if possible. The inclusion of measures of subjective wellbeing and quality of life is particularly pertinent given the few studies that have included these outcomes and the increasing interest in the measurement of societal wellbeing to complement economic measures, such as gross domestic product (GDP) (Stiglitz et al., 2010). GDP is now recognised as an inadequate measure of societal quality of life, which primarily captures market transactions and fails to measure what actually makes life worthwhile (Costanza et al., 2014). Some researchers regard measures of subjective quality of life, such as life satisfaction, as the most appropriate measure of societal wellbeing (Layard, 2011). However, others recognise that a composite measure, comprised of both subjective and objective dimensions is required to provide a comprehensive picture of societal wellbeing (Costanza et al., 2014).

Although subjective wellbeing measures have been criticised for perhaps lacking in their sensitivity to detect temporal changes in relevant policies and the economic environment (Frank & Haw, 2013), future studies of health inequalities should include subjective measures to complement more objective health outcomes. The growing interest in using these measures to evaluate population wellbeing suggests that more research is required to test and develop additional indicators if existing ones prove inadequate. However, recent research suggests that measures such as the General Health Questionnaire and the Warwick-Edinburgh Mental Wellbeing Scale are sensitive to changes in the economic environment (Katikireddi et al., 2012) and are associated with policies addressing the social determinants of health, such as the London living wage (Flint et al., 2013). It has been suggested, however, that existing measures may not be adequate for measuring the wellbeing and quality of life among ethnically diverse populations (Bowling, 2009; Flint et al., 2013). Therefore, when developing new measures, it is essential to evaluate these among culturally and ethnically diverse groups, especially if the measure is intended to be used for cross-national research.

12.6.1.3 Investigating welfare state influences on health and wellbeing

Recently, researchers have suggested moving away from descriptive research of socioeconomic inequalities in health using the welfare regime approach, to analyse how particular policies and institutions influence the wider social determinants of health and in turn produce health inequalities (Bergqvist et al., 2013). The authors consider welfare regimes to be "*too crude and imprecise*" to be useful as a tool for researching how specific policies influence health inequalities (Bergqvist et al., 2013, p16) and recommend further larger analyses of social spending and qualifying criteria across policy areas and how these influence health inequalities. This may be useful, but analyses of specific policies are unlikely to capture the complexity of the welfare state, which is why grouping into ideal types is useful, especially when taking a life course approach. However, recent changes to the conventional models of the welfare state mean that welfare regimes are becoming less well defined and are not static. For example, the Scandinavian regime no longer provides adequate levels of benefits to families in order to escape poverty (Kuivalainen et al., 2012) and some countries grouped within the Bismarckian regime are moving towards a more Liberal model (Siegel et al., 2014). It is recognised that when there is less known on a particular outcome or population group, as in this thesis, welfare regimes do provide a useful starting point for comparative welfare state research into health inequalities. This is especially so for research which takes a life course approach, as other methods used within comparative welfare systems research may not be a viable option.

Natural experiments could provide a fruitful way forward for investigating welfare state influences on the distribution of health and wellbeing among older people. A natural experiment *"usually takes the form of an observational study in which the researcher cannot control or withhold the allocation of an intervention to particular areas or communities, but where natural or predetermined variation in allocation occurs"* (Petticrew et al., 2005, p752). As current socioeconomic circumstances were found to be most strongly related to quality of life in early old age, it is recommended that future research focuses on examining the impact of changes to specific policies, such as the generosity of basic public pensions or qualifying criteria (Lundberg et al., 2008), to investigate whether these affect the socioeconomic distribution of health and wellbeing

in early old age. This could help to uncover whether there is a causal relationship between specific welfare policies and socioeconomic inequalities in quality of life.

12.6.1.4 Life course research

Research on life course influences on health and wellbeing has been heavily influenced by the life course models examined in this thesis, perhaps at the expense of substantive theory relating to how and why experiences over the life course affect the biology and psychology of individuals. Although, like the welfare regime approach, these models provide a useful starting point, it is recommended that life course researchers move away from these models and focus more on developing substantive theories about how exposures over the life course influence later health and wellbeing. For example, cultural theories of health inequality have been relatively less researched in comparison to behavioural approaches. As demonstrated in this thesis, these may provide a useful way forward to research early life influences on health and wellbeing. This could be further investigated using the British Birth Cohort studies, which provide more detailed information about the home learning culture during childhood (Sullivan & Brown, 2013).

12.6.1.5 Specific outstanding research questions

Some key outstanding research questions that require further research are as follows:

- Have socioeconomic inequalities in quality of life widened in response to the recession and the implementation of austerity policies across Europe?

- Does cognitive function mediate the association between the number of books in childhood and quality of life in early old age?

- Which particular policies (e.g. more generous basic pensions or universal healthcare) are most successful at producing a more equitable distribution of quality of life among older people?

12.6.2 Policy

Social injustice is not only "*killing on a grand scale*" (Marmot et al., 2008, p 1661), but affecting the quality of people's lives in early old age across the modern welfare states of Europe. Action to reduce socioeconomic inequalities in health and wellbeing is not only warranted on the basis of equity, but as a result of the associated costs to society. It is estimated that inequality underlies around 700,000 deaths per year and 33 million prevalent cases of ill health in the European Union (Mackenbach et al., 2011). Relatedly, this is estimated to cost €980 billion per year (approximately 9.4% of GDP). Many of the policies already recommended by the WHO European review of social determinants of health and the health divide (Marmot et al., 2012) to tackle health inequalities are also potentially relevant to addressing inequalities in quality of life. A few of these recommendations are highlighted below.

The over-arching result of this thesis was that the proximal measures of socioeconomic position, such as income and wealth, were strongly associated with quality of life in all welfare regimes. This suggests that it is not too late to intervene; a more equitable distribution of quality of life in early old age may be possible if action is taken to reduce income and wealth inequalities so that individuals have a more equal chance of experiencing a fulfilling early old age. If growth in income and wealth inequality continues, together with added pressures on the welfare state resulting from demographic change, the financial crisis, and austerity policies, it has the potential to widen socioeconomic inequalities in health and wellbeing across Europe. The finding that older people in Scandinavian and Bismarckian welfare regimes have the highest overall wellbeing and the narrowest socioeconomic inequalities in quality of life, by several measures of socioeconomic position, suggests that welfare policy has important consequences for quality of life in early old age and could be a key mechanism for addressing inequalities in wellbeing among older people.

Ensuring a minimum standard income for healthy living among individuals in early old age may help to reduce feelings of financial distress, which in this thesis were shown to reduce the influence of life course socioeconomic position on quality of life. Thus, a minimum standard income for healthy living could help reduce feelings of distress, which

negatively impact on quality of life, and help reduce socioeconomic inequalities in quality of life. The importance of a minimum income for healthy living has been stressed by others (Blane et al., 2013; Blane et al., 2012; Morris et al., 2007). Marmot et al recommend that the minimum standard is not absolute "*but one that needs to be determined country by country, based on developing national criteria using a standard international framework*" (Marmot et al., 2012, p 1020). Work in England suggests that the state pension during 2007 only covered two-thirds of what it took to achieve a minimum health living (calculated at £131 per week) for an individual aged over 65 years, which included dietary, physical activity, housing, medical care, and social needs (Morris et al., 2007). Further work could explore how other countries in Europe fare with regards to how their basic pensions meet the requirements of a country-specific minimum healthy living.

The thesis also highlighted that quality of life in early old age may be influenced by childhood socioeconomic position, through pathways involving adulthood socioeconomic position. Thus, interventions to reduce inequalities in educational attainment are also merited. The finding that the Scandinavian welfare regime had very narrow educational inequalities in quality of life suggests policies to ensure access to universal, high-quality, and affordable early years education as recommended by Marmot (2012) in the WHO European review of social determinants of health and the health divide, may help towards reducing educational inequalities in quality of life among future generations.

Appendices

Appendix 3.1: Search strategy

Executed in Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) on 2nd January 2012

1 ((((soci* class* or soci* status* or soci* position* or soci* standing* or social group* or socio?economic group* or occupational group* or occupational class* or occupational status* or occupational position* or occupational standing* or prestige or class* schem* or soci* circumstance* or soci* condition* or occupation* or job* or employment* or career* or NS?SEC or E?SEC or registrar general* or Cambridge scale or CASMIN or CAMSIS or SIOPS or ISEI or EGP) not endogenous glucose production) or Erikson* or Goldthorpe* or treiman* or wright* class* or manual class* or non?manual class*) adj3 (life?course* or life?span* or life?time* or life?cycle* or longitudinal or chang* or mov* or mobil* or climb* or fall* or downward* or upward* or increas* or decreas* or migrat* or pathway* or cumulat* or accumulat* or trajector* or pattern* or time)).mp. (20617)

2 (occupation* mobil* or social* mobil* or intra?generation* mobil* or inter?generation* mobil* or socio?cult* mobil* or class mobility or status mobility or career mobility or job mobility or occupation* attainment or status attainment or class attainment).mp. (10216)

3 (social selection or social causation or health selection or social drift* or health constrain* or accumulat* disadvantage* or cumulat* disadvantage* or cumulat* advantage* or accumulation hypothesis or accumulation model or class trajector* or status trajector* or trajectory model or latent model or pathway model or critical period).mp. (6053)

4 exp career mobility/ (8791)

5 exp social mobility/ (753)

6 exp social class/ (28607)

7 exp social hierarchy/ (1533)

8 (life?course* or life?span* or life?time* or life?cycle* or longitudinal or chang* or mov* or mobil* or climb* or fall* or downward* or upward* or increas* or decreas* or migrat* or pathway* or cumulat* or accumulat* or trajector* or pattern* or time).mp. (7700420)

9 6 or 7 (29995)

10 8 and 9 (15067)

11 1 or 2 or 3 or 4 or 5 or 10 (40885)

12 (CASP?19 or CASP?12 or QoL or HRQoL or WEMWBS or SWEMWBS or SF?12 or SF?36 SF?8 or WHOQOL or OPQOL or ICECAP or WHO?5 or PANAS or SWLS or SHS or Fordyce or bradburn or ryffs or GHQ or EURO?D or CES?D or PWI or ABS).mp. (32594)

13 Quality of life/ (97401)

14 personal satisfaction/ (8970)

15 affect/ (22192)

16 happiness/ (2213)

17 exp mental health/ (18125)

18 (Quality of life or life satisfaction or satisfaction with life or personal satisfaction or life evaluat* or Happ* or Well?being or Mental* health* or Psychological* health* or positive affect or negative affect or affect balance or feeling* or Mood or needs satisfaction or psychological needs).mp. (350494)

19 12 or 13 or 14 or 15 or 16 or 17 or 18 (373559)

20 11 and 19 (2935)

21 limit 20 to english language (2702)

Appendix 3.2: Quality appraisal rating system procedure

1. **Response & attrition rates**

   Response rates:

   Over 80% = low risk of bias (+)

   60 to 80% = moderate risk of bias (0)

   Below 60% = greater risk of bias (-)

   Attrition rates:

   Below 20% = low risk of bias (+)

   20 to 40% = moderate risk of bias (0)

   Over 40% = greater risk of bias (-)

2. **Measurement of SEP:**

   Administrative data or prospective collection = higher quality (+)

   Mixed collection methods = average quality (0)

   Retrospective collection = lower quality (-)

3. **Sample size:**

   Over 1000 participants = higher quality (+)

   500 to 1000 participants = average quality (0)

   Below 500 participants = lower quality (-)

Method:

- + equals 3 points; 0 equals 2 points; - equals 1 point
- For response and attrition rates take the lowest score of the two
- If any response or attrition rate not provided, item with lowest score used
- If no response or attrition rate provided score as -
- If method for measuring SEP not specified score as -
- Sum the scores to give an overall rating
- Ratings 3 to 4 = poorer quality; 5 to 7 = average quality; 8 to 9 = higher quality

Appendix 3.3: Full details of included articles categorised by life course model

Reference Study name Country	Study design Sample size	Time period of study	Sample description	Measures of SEP	Life course model Implementation of model	Outcomes Age outcome measured	Summary of results
Cumulative							
Mäkinen *et al* (2006) Helsinki Health Study Finland	Repeat cross-sectional N=8970	2000, 2001, 2002	20% male Aged 40, 45, 50, 55 or 60 years during survey year	Childhood SEP: parent's education using low education (primary school or less) or high education (secondary school or vocational training, matriculation or university degree). Highest level of mother/father selected. Other childhood circumstances: bullied, chronic disease, parental divorce, death, mental problem, drinking problem or economic difficulties, (classified into none or 1 or more). Adulthood SEP: own education level classified as above.	Cumulative Looked at interaction between childhood SEP & adulthood SEP.	SF-36 MCS. Prevalence of limited functioning (lowest quartile). Aged 40, 45, 50, 55 or 60 years	Women: low childhood SEP & low adulthood SEP prevalence was 28% (CI: 26, 30). Low childhood SEP & high adulthood SEP 30% (CI: 29, 31). High childhood SEP & low adulthood SEP 22% (CI: 21, 23). High childhood SEP & high adulthood SEP 22% (CI: 21, 23). Men: low childhood SEP & low adulthood SEP prevalence was 25% (CI: 22, 28). Low childhood SEP & high adulthood SEP 28% (CI: 25, 31). High childhood SEP & low adulthood SEP 17% (CI: 14, 20). High childhood SEP & high adulthood SEP 20% (CI: 18, 22).
Otero-Rodríguez *et al* (2010) Spanish population survey Spain	Cohort N=2117	Wave 1: 2001 Wave 2: 2003	45% male Recruited at age 60+ years	Childhood SEP: father's occupation classified as social class I (professional, managers, proprietors, clerical) II (self-employed farm workers), III (skilled and unskilled manual workers), IV (paid farm workers). Classes I and II grouped into high social class, classes III and IV grouped into low social class. Own education level: low (no education) or high (primary or higher). Adulthood SEP: current or last occupation of household head (classified as above).	Cumulative Index summing number of low (adverse) SEP positions (range 0-3). Those with no adverse SEPs used as reference.	Change in SF-36 MCS between wave 1 and 2. Grouped into decline (decrease of >5 points) no change, improvement (increase of >5 points). 60+ years	Risk of decline in MCS highest in those with 3 adverse SEPs OR 2.07 (CI: 1.45, 2.97). OR with 1 adverse SEP=1.36 (CI: 1.00, 1.85). Linear trend p<0.001. OR for improvement in MCS highest with 3 adverse SEPs 1.64 (CI: 1.08, 2.48). OR with 1 adverse SEP=1.47 (CI: 1.03, 2.08). Linear trend p=0.056.
Singh-Manoux *et al* (2004) Whitehall II study United Kingdom	Cohort N=6128	Wave 1: 1985-88 Wave 5: 1997-99	72% male Recruited at age 35-55 years	Childhood SEP: PCA used to divide scale into tertiles based on father's occupation (Registrar General's social class scheme) and childhood socioeconomic circumstances (4 item scale: not car owner, financial difficulties, no inside toilet, father/mother	Cumulative Constructed trajectories using the 3 SEP indicators, resulting in 27 trajectories. 000= high SEP at 3 time	SF-36 MCS. Poor functioning (worst quintile). 50+ years	Women: adverse SEP at 3 time points OR 2.42 (CI: 1.3, 4.4, p<0.05), no linear trend (p=0.14). Highest OR in SS 3, OR 2.77 (CI: 1.5, 4.9). Lowest OR in SS 4, OR 1.52 (CI: 0.8, 2.7).

		Wave 6: 2000-01		unemployed when desired work, four yes answers indicated poor SEP). Own education level: high (degree or higher degree), intermediate (higher secondary), low (lower secondary or none). Adulthood SEP: employment grade on entry to study: high (administrative), intermediate (professional and executive), & low (clerical & office support staff).	points (SS 0, used as reference), 111= intermediate SEP at 3 time points (SS 3), 222= low SEP at 3 time points (SS 6).		Men: adverse SEP at 3 time points OR 2.60 (CI: 1.4, 4.9, p<0.05). Linear trend (p<0.0001). Lowest OR in SS 3, OR 1.95 (CI: 1.4, 2.7). Highest OR evident in trajectories 100, 200, and 210.
Latent and pathway							
Huurre *et al* (2003) Finnish school survey Finland	Cohort N=1592	Wave 1: 1983 Wave 2: 1989 Wave 3: 1999	45% male Recruited at age 16 years	Childhood SEP: father's occupation, categorised into manual/non-manual (based on Central Statistical Office 1975 Standard Classification of Occupations). Mother's occupation used if father's occupation missing, or education level used if both missing. Adulthood SEP: own occupation at age 32 classified as above.	Latent model Looked at wellbeing by parental SEP & adjusted for adulthood SEP to see if any effect remained.	Wellbeing: assessed using self-esteem measure (7 statements e.g. satisfaction with self) measured on 5 point scale. Higher scores indicated lower wellbeing. 32 years	Women: mean wellbeing for respondents with non-manual parents 14.3, manual 15.6 (p=0.001). Adjusting for adulthood SEP (p=0.02). Men: No difference in wellbeing between respondents with non-manual (13.0) & manual parents (13.5). Adjusted/unadjusted p>0.05.
Marmot *et al* (1998) MIDUS United States	Cross-sectional N=3032	1995	48% male Aged 25 to 74 years	Childhood SEP: father & mother's education (BA/graduate degree, some college, high school graduate, less than high school graduate). Adulthood SEP: own education level classified as above.	Latent model Tested association between own education & wellbeing, controlling for parent's education, age & race. BA/graduate degree used as reference category.	Wellbeing: six dimensions of positive psychological functioning (e.g. purpose in life, self-acceptance). Lowest quintile=least favourable category. 25 to 74 years	Women: adjusting for adulthood SEP, those with mothers who had no junior high education OR 2.22 (CI: 1.1, 4.7). Those with fathers who had no junior high education OR 0.84 (CI: 0.4, 1.6). Men: adjusting for adulthood SEP, those with mothers who had no junior high education OR 0.70 (CI: 0.3, 1.6). Those with fathers who had no junior high education OR 1.16 (CI: 0.6, 2.2). All associations attenuated when adulthood SEP controlled for.
Otero-Rodríguez *et al* (2010) Spanish population survey Spain	Cohort N=2117	Wave 1: 2001 Wave 2: 2003	45% male Recruited at age 60+ years	Childhood SEP: father's occupation classified as social class I (professional, managers, proprietors, clerical) II (self-employed farm workers), III (skilled and unskilled manual workers), IV (paid farm workers). Classes I and II grouped into high social class, classes III and IV grouped into low social class.	Latent model Tested 3 SEP indicators (childhood SEP, education, adulthood SEP) together to see if any had independent effect. High SEP used as reference.	Change in SF-36 MCS between wave 1 and 2. Grouped into decline (decrease of >5 points) no change, improvement (increase of >5 points).	Low childhood SEP associated with greatest risk in decline in MCS OR 1.41 (CI: 1.12, 1.77) & improvement OR 1.32 (CI: 1.02, 1.71). Low education associated with risk in decline OR 1.36 (CI: 1.09, 1.71), but not improvement OR 1.29 (CI: 0.99, 1.67). Adult SEP not associated with change, OR for decline 0.98 (CI: 0.78, 1.23) and

				Own education level: low (no education) or high (primary or higher). Adulthood SEP: current or last occupation of household head (classified as above).		60+ years	improvement OR 0.88 (CI: 0.67, 1.14).
Laaksonen *et al* (2007) Helsinki Health Study Finland	Repeated cross-sectional N=8970	2000, 2001, 2002	20% male Aged 40, 45, 50, 55 or 60 years during survey year	Childhood SEP: mother & father's education level (part of primary school, primary school, secondary school or vocational training, matriculation/college examination, university degree) & childhood economic difficulties (yes/no). Adulthood SEP: own education level classified as above. Individual income. Occupational class (manual, routine non-manual, semi-professionals, professionals, managers) derived using the occupational classification of Statistics Finland and City of Helsinki.	Latent & pathway model Used SEM to model the direct & indirect effects of childhood SEP on HRQoL using latent variables for childhood & adulthood SEP.	SF-36 MCS means Aged 40, 45, 50, 55 or 60 years	Childhood SEP not directly associated with MCS in men (direct effects -0.02, CI: -0.08, 0.04) or women (0.02, CI: -0.01, 0.05). Increased adulthood SEP associated with poorer MCS in women (direct effects -0.14, CI: -0.17, -0.12) & men (-0.10 CI: -0.15, -0.05). Effect via adulthood SEP women (-0.08), men (-0.06).
Mäkinen *et al* (2006) Helsinki Health Study Finland	Repeat cross-sectional N=8970	2000, 2001, 2002	20% male Aged 40, 45, 50, 55 or 60 years during survey year	Childhood SEP: parent's education using low education (primary school or less) or high education (secondary school or vocational training, matriculation or university degree). Highest level of mother/father selected. Adulthood SEP: own education level classified as above.	Latent & pathway model Tested association between childhood SEP & MCS scores, controlling for adulthood SEP & adverse childhood circumstances. High education used as reference.	SF-36 MCS. OR for low functioning (lowest quartile). Aged 40, 45, 50, 55 or 60 years	Women: intermediate childhood SEP OR 0.79 (CI: 0.67, 0.93), low childhood SEP OR 0.76 (CI: 0.65-0.89). Men: intermediate childhood SEP OR 0.75 (CI: 0.54, 1.03), low childhood SEP OR 0.74 (CI: 0.56, 1.00).
Social Mobility							
Blane *et al* (2004) Boyd Orr Cohort United Kingdom	Cohort N=254	Wave 1: 1937-39 Wave 2: 1997-98 Wave 3: 2000	47% male Recruited at age 5 to 14 years	Inter-generational mobility: father's occupation & respondent's longest held occupation (manual/non-manual). Intra-generational mobility: respondent's occupation (manual/non-manual) aged 25 & 50 years.	Social mobility (inter- & intra-generational) Up (manual to non-manual), same, down (non-manual to manual).	Mean CASP-19 scores 55+ years	No difference in mean CASP-19 scores between upwardly mobile (inter=42.1, intra=41.8) or downwardly mobile (inter=43.2, intra=41.5) or in same position (inter=41.2, intra=41.5). Inter-generational mobility p=0.51, intra-generational mobility p=0.96.
Otero-Rodríguez *et al* (2010) Spanish population survey	Cohort N=2117	Wave 1: 2001 Wave 2: 2003	45% male Recruited at age 60+ years	Inter-generational mobility: father's occupation & current or last occupation of household head. Classified as social class I (professional, managers, proprietors, clerical), II (self-employed farm workers), III	Social mobility (inter-generational) Created variable combining social class of	Change in SF-36 MCS between wave 1 & 2. Grouped into decline (decrease of >5 points) no change,	High to low SEP: no association OR 1.07 (CI: 0.76, 1.49). Low to high SEP: more likely to have decline in MCS OR 1.58 (CI: 1.12, 2.22) & improvement OR 1.65 (CI: 1.11, 2.44). Low SEP at both times: greater risk of

Spain				(skilled and unskilled manual workers), IV (paid farm workers). Classes I & II grouped into high social class, classes III and IV grouped into low social class.	father & current social class & tested interaction. Those in high social class at both times used as reference.	improvement (increase of >5 points). 60+ years	decline in MCS OR 1.45 (CI: 1.10, 1.90), but not improvement OR 1.20 (CI: 0.87, 1.64).
Runyan (1980) Oakland Growth Study United States	Cohort N=91	Wave 1: 1932 Wave 2: 1958-59	49% male Recruited in grades 5 & 6 of high school.	Inter-generational mobility: father's occupation & respondent's occupation aged around 38 years, classified using Hollingshead class scheme (groups 1, 2, 3 =middle class & 4, 5=working class).	Social mobility (inter-generational) Upward mobility (working to middle class), non-mobile, downward mobility (middle to working class).	Life satisfaction (rated 1-9, 9=high) retrospectively assessed for the past 4 years using life satisfaction chart. 34 to 38 years	Men: downwardly mobile had lowest satisfaction (mean 6.07). Women: stable group had lowest satisfaction (5.65). Differences between upward, stable & downward groups not significant.
Breeze *et al* (2001) Whitehall Study United Kingdom	Cohort N=7041	Wave 1: 1967-70 Wave 2: 1997-98	100% male Recruited at age 40 to 69 years	Intra-generational mobility: civil service employment grade at baseline wave & employment grade at retirement from wave 2. Classified as high (senior managers & administrators), middle (executives & professionals in less senior professions), low (clerical, catering staff etc.).	Social mobility (intra-generational) Upward mobility (higher employment grade category at retirement) compared with same or lower grade.	SF-36 MCS. Poor score defined as below 60% of the maximum. 67-97 years	Those with higher grade at retirement than baseline less likely to have a poor MCS. Middle grade OR 0.82 (CI: 0.6, 1.0), low grade OR 0.44 (CI: 0.3, 0.8). P for interaction=0.033.
Houle (2011) Wisconsin Longitudinal Study United States	Cohort N=4992	Wave 1: 1957 Wave 2: 1975 Wave 3: 1992-93	100% male Around 18 years	Intra-generational mobility: occupation of respondent aged around 36 years & 52 years classified using 6 class version of EGP scheme, class I (service), II (routine non-manual), III (petty bourgeoisie), IV (farm), V (skilled manual), VI (unskilled manual).	Social mobility (intra-generational) Created dummy variables for downwardly mobile (out of class I or III into II, IV, V or VI), or as result of involuntary job loss, upwardly mobile (from class II, IV, V or VI into class I or III) & all other forms of intra-generational mobility (horizontal, voluntary downward). Non-mobile=reference. Used diagonal mobility models to model mobility effects.	Wellbeing: self-acceptance subscale of Ryff's psychological wellbeing scale. Around 52 years	Mobility not associated with wellbeing. Coefficients for downward mobility (B=-0.112, SE=0.130), upward mobility (B=0.042, SE=0.093) & other mobility (B=0.029, SE=0.041), p>0.10. Mobile individuals more likely to report levels of wellbeing that resemble their current class (B=0.657, SE=0.114, p≤0.001) than their prior class (B=0.343, SE=0.114, p≤0.01).
Huang and Sverke (2007) Individual	Cohort N=291	Wave 1: 1965 Wave 2:	100% female Recruited at age 10 years	Intra-generational mobility: respondent's occupational history from ages 16 to 43 years using Swedish Standard Classification of Occupations 1996.	Social mobility (intra-generational) Used optimal matching	Life satisfaction (rated 1-8, 8=high) 43 years	No difference in mean life satisfaction between upward/stable/downward mobility patterns F=1.32 (p>0.05).

Development and Adaptation Cohort Sweden		1998			and cluster analysis to identify career patterns (upward mobility, stable, downward mobility).		
Johansson *et al* (2007) Individual Development and Adaptation Cohort Sweden	Cohort N=514	Wave 1: 1965 Wave 2: 1998 Wave 3: 2004	100% female Recruited at age 10 years	Intra-generational mobility: respondent's occupational history from ages 16 to 43 years using Swedish Standard Classification of Occupations 1996.	Social mobility (intra-generational) Used optimal matching and cluster analysis to identify career patterns (upward mobility, stable, downward mobility).	Life satisfaction: SWLS (rated 1-7, 7=high) Wellbeing: Ryff's psychological well-being scale 49 years	No difference in mean life satisfaction between upward/stable/downward mobility patterns F=1.75 (p>0.05). Mean wellbeing in upwardly mobile 85.00 (entrepreneurs), 83.20 (professionals), 84.30 (associate professionals), compared with 74.56 in downwardly mobile (unskilled workers) F=3.17 (p=<0.001).

B= beta coefficient; BCS70=1970 British Cohort Study; CASP-19= control, autonomy, self-realisation & pleasure; CI= 95% confidence interval; EGP: Erikson-Goldthorpe-Portocarero class scheme; HRQoL= health-related quality of life; MCS= mental component summary; MIDUS= National Survey of Mid-Life Development in the United States; NCDS=National Child Development Survey 1958; OR= odds ratio; PCS: principal component analysis; SE= standard error; SEM= structural equation modelling; SEP= socioeconomic position; SF-36= short-form 36; SWLS= The Satisfaction with Life Scale

Appendix 3.4: Full quality appraisal of included articles

Reference	Study design	Sampling procedure Representativeness	Final sample size	a) Attrition rate b) Attrition reasons specified c) Response rates	a) Did those lost to attrition differ? b) Did non-responders differ?	Measurement of SEP variables	Missing data reported	Analytical strategy for dealing with missing data	Variables controlled for
Blane *et al* (2004)	Cohort	Wave 1: Non-random sample of 16 survey centres. Wave 2: stratified random sample. Considered representative of British population of similar age.	254	a) Wave 3: 4% b) Yes (death, illness, untraceable) c) From references: Wave 1: Over two thirds. Wave 2: 43%. Wave 3: 90% of those who responded in wave 2.	a) NS b) Non-responders not different in social class or gender but more likely to have limiting long-term illness.	Father's occupation measured prospectively. Respondent's occupational history recorded via retrospective recall using life-grid method.	No	Complete case analysis for each item	No variables adjusted for in inter-generational or intra-generational mobility analyses. Age controlled for in other analyses within the publication
Breeze *et al* (2001)	Cohort	All Whitehall Civil Servants aged around 40-69 years Considered representative of Civil Service employees of that age group	7041	a) Overall: 55% b) Yes (death or migration abroad) c) Wave 2: 82%	a) NS b) Non-responders more likely to be in low employment grade, older, smokers & have increasing symptoms of cough/phlegm at baseline	Prospectively	Approximately 4% were missing MCS score	Complete case analysis for each item	Age, gender, marital status, smoking
Houle (2011)	Cohort	Random sample of high school graduates in Wisconsin during 1957. Considered representative of non-Hispanic white American high school graduates in late 1950s.	4992	From references: a) Overall: 6% b) Yes (death) c) Original NS. 1975 wave: 89%. 1992-93 wave: 80%.	a) NS b) NS	Prospectively	No	Multiple imputation	Age, gender, depression history, marital status in 1975, cognitive ability (human capital), educational attainment in 1975, years in current social class, limiting health conditions, employment status in 1992, recent stressful

									life event
Huang and Sverke (2007)	Cohort	All children in grades 3, 6 & 8 in a mid-size Swedish urban community during 1960s. Considered reasonably representative of overall Swedish female population.	291	a) Wave 2: 6%. Wave 3: 8% from baseline. b) NS c) Wave 2: 89%. Wave 3: 82%.	a) NS b) NS	Retrospective recall via life plot	20 lacked complete occupational histories. 258 missing life satisfaction data	Complete case analysis	Age, gender
Huurre (2003)	Cohort	All 9th grade pupils attending secondary school in the spring of 1983 in Tampere, Finland. NS.	1592	a) Wave 2: 2.5%. Wave 3: 2.2%. b) Yes (death, incomplete or missing ID numbers, address not found, institutionalisation) c) Wave 1: 97% Wave 2: 77% Wave 3: 70%.	a) Non-participants more often male, had poorer school performance, frequently used alcohol & smoked b) NS	Prospectively	No	Complete case analysis	Age, gender
Johansson *et al* (2007)	Cohort	All children in grades 3,6 & 8 in a mid-size Swedish urban community. Considered reasonably representative of overall Swedish female population.	514	a) Wave 2: 6%. Wave 3: 8% from baseline. b) NS c) Wave 2: 89%. Wave 3: 82%.	a) NS b) NS	Retrospective recall via life plot	258 missing life satisfaction data	Complete case analysis	Age, gender
Laaksonen *et al* (2007)	Repeat cross-sectional	All employees aged 40, 45, 50, 55 or 60 years at time of survey employed by the City of Helsinki, identified from personnel register. Generally representative of target population, younger people & manual workers slightly underrepresented.	8970	a) N/A b) N/A c) Overall 67%	a) N/A b) N/A	Retrospective recall, apart from income (derived from employer's personnel register).	22% had missing income data	Complete case analysis except cases with missing income data included in analysis	Age, gender, material circumstances
Mäkinen *et al* (2006)	Repeat cross-sectional	All employees aged 40, 45, 50, 55 or 60 years at time of survey employed by the City of Helsinki, identified from personnel register Generally representative of target population, younger	8970	a) N/A b) N/A c) Overall 67%	a) N/A b) N/A	Retrospective recall	No	Complete case analysis	Age, gender, adverse childhood circumstances

		people & manual workers slightly underrepresented							
Marmot *et al* (1998)	Cross-sectional	Telephone sample followed by self-completed mail questionnaire. Representative of non-institutionalised population in the United States aged 25-84 who had a telephone.	3032	a) N/A b) N/A c) Telephone interview: 70%. Mail questionnaire: 87%. Overall: 61%.	a) N/A b) NS	Retrospective recall	No	If at least 75% of items were completed in scale the mean was imputed. If fewer than 75% completed the scale was classified as missing & excluded	Age, gender, race
Otero-Rodríguez *et al* (2010)	Cohort	NS Considered representative of the non-institutionalised Spanish population aged over 60 years.	2117	a) 19% b) Yes (229 died) c) NS	a) Less likely to report more chronic illness. b) More likely to be older, lower educated, more frequently sedentary, lower alcohol consumption & abdominal obesity.	Retrospective recall	263 lacked SEP measure, 626 lacked SF-36	Complete case analysis	Baseline SF-36, age, sex, marital status, cohabitation, smoking, alcohol consumption, physical activity, obesity, health service use, chronic illnesses
Runyan (1980)	Cohort	Sample of 212 5th and 6th graders in Oakland, California. NS	91	a) 57% b) NS c) NS	a) NS b) NS	NS	No	Complete case analysis	Age, gender
Singh-Manoux *et al* (2004)	Cohort	Contacted all London-based office staff, aged 35–55, working in 20 Civil Service departments. Considered representative of white-collar Civil Service employees of that age group.	6128	a) 3% from phase I to V b) Yes (355 died) c) Phase I: 73%	a) NS b) Missing data more common among lower employment grades	Childhood SEP & education via retrospective recall. Adult employment grade measured prospectively.	3825 of 9953 respondents had missing data.	Complete case analysis	Age, gender

MCS= mental component summary; N/A= not applicable; NS= not specified; SEP= socioeconomic position; SF-36= short form-36

Appendix 3.5: Quality appraisal ratings of included articles

Reference	Response & attrition rates	Sample size	Measurement of SEP	Rating	Overall quality
Blane *et al* (2004)	-	-	0	4	Poorer
Breeze *et al* (2001)	-	+	+	7	Average
Houle (2011)	+	+	+	9	Higher
Huang and Sverke (2007)	+	-	-	5	Average
Huurre (2003)	0	+	+	8	Higher
Johansson *et al* (2007)	+	0	-	6	Average
Laaksonen *et al* (2007)	0	+	0	7	Average
Mäkinen *et al* (2006)	0	+	-	6	Average
Marmot *et al* (1998)	0	+	-	6	Average
Otero-Rodríguez *et al* (2010)	+	+	-	7	Average
Runyan (1980)	-	-	-	3	Poorer
Singh-Manoux *et al* (2004)	0	+	0	7	Average

SEP=socioeconomic position; + equals 3 points; 0 equals 2 points; - equals 1 point; Ratings 3 to 4 = poorer quality; 5 to 7 = average quality; 8 to 9 = higher quality

Appendix 4.1: Details of the derived occupational variables from across the life course (after imputation of a woman's occupation from their partner if missing or if they worked part-time)

	aged 16 to 34 years		aged 35 to 49 years		aged 50 to 65 years		main job	
Occupational position	N	%	N	%	N	%	N	%
legislator, senior official or manager	545	3.0	981	5.4	1,067	5.8	941	5.1
professional	1,566	8.6	1,647	9.0	1,647	9.0	1,650	9.0
technician or associate professional	1,858	10.1	1,902	10.4	1,734	9.5	1,787	9.8
clerk	2,593	14.2	2,389	13.0	2,269	12.4	2,543	13.9
service, shop or market sales worker	2,343	12.8	2,597	14.2	2,572	14.0	2,813	15.4
skilled agricultural or fishery worker	1,348	7.4	1,291	7.1	1,202	6.6	1,270	6.9
craft or related trades worker	2,950	16.1	2,489	13.6	2,162	11.8	2,505	13.7
plant/machine operator or assembler	923	5.0	898	4.9	821	4.5	888	4.9
elementary occupation	3,032	16.6	2,531	13.8	2,369	12.9	3,057	16.7
armed forces	229	1.3	200	1.1	156	0.9	198	1.1
unemployed or similar	72	0.4	60	0.3	25	0.1	13	0.1
looking after home/family	613	3.4	1,079	5.9	1,398	7.6	-	-
other	188	1.0	165	0.9	624	3.4	-	-
missing	64	0.4	95	0.5	278	1.5	659	3.6

N=number of individuals

Appendix 5.1: Multilevel linear models showing the interaction between measures of socioeconomic position and gender for quality of life

CASP-12		Life satisfaction	
Variable	**Coeff. [95% CI]**	**Variable**	**Coeff. [95% CI]**
Age (centered)	0.42*** [0.19,0.64]	Age (centered)	0.07* [0.00,0.13]
Age squared	-0.00*** [-0.01,-0.00]	Age squared	-0.00* [-0.00,-0.00]
Education level (SII)	2.07*** [1.59,2.55]	Number of books in childhood (SII)	0.40*** [0.27,0.53]
Gender [a]	-1.17*** [-1.54,-0.79]	Gender [a]	-0.29*** [-0.39,-0.18]
Education level ## gender [a]	0.80* [0.13,1.46] p=0.019	Number of books in childhood ## gender [a]	0.20* [0.02,0.39] p=0.03
Intercept	52.20*** [45.18,59.22]	Intercept	10.01*** [8.01,12.01]
Variance (country)	5.99*** [2.68,13.37]	Variance (country)	0.31** [0.14,0.69]
Variance (individual)	27.33*** [26.71,27.96]	Variance (individual)	2.33*** [2.28,2.38]
N	**14,789**	***N***	**15,242**

##=interaction term; N=number of individuals; SII=slope index of inequality; a Reference category is male; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix 5.2: Distribution of education level by country, gender, and cohort

Country	Low	Medium	High	Total	Chi-square	P-value
Austria (N)	118	217	104	439	2.9e+03	<0.001
%	26.88	49.43	23.69	100		
Germany (N)	94	607	347	1,048		
%	8.97	57.92	33.11	100		
Sweden (N)	475	298	300	1,073		
%	44.27	27.77	27.96	100		
Netherlands (N)	567	325	333	1,225		
%	46.29	26.53	27.18	100		
Spain (N)	798	93	102	993		
%	80.36	9.37	10.27	100		
Italy (N)	1,080	378	119	1,577		
%	68.48	23.97	7.55	100		
France (N)	387	398	271	1,056		
%	36.65	37.69	25.66	100		
Denmark (N)	209	597	604	1,410		
%	14.82	42.34	42.84	100		
Greece (N)	795	449	261	1,505		
%	52.82	29.83	17.34	100		
Switzerland (N)	192	446	65	703		
%	27.31	63.44	9.25	100		
Belgium (N)	602	410	408	1,420		
%	42.39	28.87	28.73	100		
Czech Republic (N)	700	492	139	1,331		
%	52.59	36.96	10.44	100		
Poland (N)	373	541	95	1,009		
%	36.97	53.62	9.42	100		
Total (N)	6,390	5,251	3,148	14,789		
%	43.21	35.51	21.29	100		
Gender						
Male (N)	2,864	2,567	1,668	7,099	58.89	<0.001
%	40.34	36.16	23.5	100		
Female (N)	3,526	2,684	1,480	7,690		
%	45.85	34.9	19.25	100		
Total (N)	6,390	5,251	3,148	14,789		
%	43.21	35.51	21.29	100		
Cohort						
≤ 1945 (N)	3,823	2,273	1,343	7,439	408.81	<0.001
%	51.39	30.56	18.05	100		
> 1945 (N)	2,567	2,978	1,805	7,350		
%	34.93	40.52	24.56	100		
Total (N)	6,390	5,251	3,148	14,789		
%	43.21	35.51	21.29	100		

N=number of individuals

Appendix 5.3: Conversion of the socioeconomic measures into binary (socioeconomically disadvantaged versus advantaged) variables

Socioeconomic variable	Answer categories or range	Binary variable classification	N (%) disadvantaged N (%) advantaged
Childhood			
Number of books	0-10 11-25 26-100 101-200 >200	0 (disadvantaged) 1 (advantaged) 1 (advantaged) 1 (advantaged) 1 (advantaged)	5,914 (60.0%) 8,875 (40.0%)
Number of amenities in household	0 to 5	0 (disadvantaged) 1 to 5 (advantaged)	6,489 (43.9%) 8,300 (56.1%)
Rooms per capita	Range 0 to 10	≤ country median value (0 disadvantaged) > country median value (1 advantaged)	8,358 (56.5%) 6,431 (43.5%)
Occupational of main breadwinner	Manual Non-manual	0 (disadvantaged) 1 (advantaged)	10,749 (72.7%) 4,040 (27.3%)
Adulthood			
Education level	Low Medium High	0 (disadvantaged) 1 (advantaged) 1 (advantaged)	6,390 (43.2%) 8,399 (56.8%)
Main occupation	Manual Non-manual	0 (disadvantaged) 1 (advantaged)	6,357 (43.0%) 8,432 (57.0%)
Current income	Range 0 to 1,019,084 Euros per year	≤ country median value (0 disadvantaged) > country median value (1 advantaged)	7,404 (50.1%) 7,385 (49.9%)
Current wealth	Range -1,105,182 to 15,000,000	≤ country median value (0 disadvantaged) > country median value (1 advantaged)	7,411 (50.1%) 7,378 (49.9%)

N=number of individuals

Appendix 6.1: Descriptive statistics for CASP-12 by occupational prestige at different stages of the life course

	MEN				***WOMEN***			
	N	**%**	**Mean CASP**	**SD**	**N**	**%**	**Mean CASP**	**SD**
Childhood								
21	1211	17.06	36.66	5.75	1316	17.11	35.27	6.65
32	654	9.21	38.05	5.42	747	9.71	37.36	5.83
34	396	5.58	38.91	5.24	398	5.18	38.05	6.07
37	2338	32.93	37.67	5.90	2488	32.35	36.51	6.1
38	1575	22.19	38.26	5.53	1702	22.13	38.06	5.58
48	339	4.78	39.56	5.13	391	5.08	38.40	5.41
51	308	4.34	39.95	5.32	362	4.71	39.55	4.99

62	278	3.92	39.71	4.64	286	3.72	37.80	5.32
16 to 34 years								
21	1036	14.59	36.02	6.14	1374	17.87	34.68	6.49
32	783	11.03	38.59	5.43	1381	17.96	37.90	5.76
34	509	7.17	37.68	5.66	282	3.67	36.66	5.41
37	1225	17.26	37.68	5.87	2174	28.27	37.11	6.09
38	1582	22.28	38.17	5.41	872	11.34	36.75	5.94
48	959	13.51	38.90	5.19	719	9.35	39.13	5.41
51	297	4.18	40.10	5.26	198	2.57	39.55	4.84
62	708	9.97	38.97	5.18	690	8.97	38.57	4.97
35 to 49 years								
21	876	12.34	35.86	6.22	1244	16.18	34.45	6.62
32	907	12.78	38.65	5.31	1504	19.56	37.79	5.67
34	495	6.97	37.35	5.87	270	3.51	36.27	5.82
37	1194	16.82	37.59	5.79	2084	27.10	37.17	6.13
38	1371	19.31	37.86	5.44	766	9.96	36.49	5.91
48	979	13.79	38.77	5.40	732	9.52	38.61	5.22
51	563	7.93	39.90	5.09	340	4.42	39.60	5.07
62	714	10.06	39.16	5.12	750	9.75	38.57	5.05
50 to 65 years								
21	892	12.57	35.78	6.21	1265	16.45	34.45	6.58
32	937	13.20	38.47	5.38	1595	20.74	37.88	5.75
34	494	6.96	37.62	5.76	266	3.46	36.54	5.93
37	1162	16.37	37.60	5.71	2051	26.67	37.21	5.99
38	1289	18.16	37.70	5.57	711	9.25	36.36	5.89
48	943	13.28	38.70	5.44	666	8.66	38.33	5.42
51	643	9.06	40.05	5.17	373	4.85	39.64	5.09
62	739	10.41	39.40	4.81	763	9.92	38.49	5.28
Main job								
21	882	12.42	35.93	6.27	1434	18.65	34.63	6.52
32	875	12.33	38.21	5.53	1615	21.00	37.77	5.71
34	504	7.10	37.42	5.8	248	3.22	36.71	5.84
37	1178	16.59	37.52	5.72	2086	27.13	37.24	6.01
38	1371	19.31	37.94	5.44	688	8.95	36.70	5.88
48	977	13.76	38.75	5.45	616	8.01	38.62	5.63
51	584	8.23	40.41	4.91	280	3.64	39.70	5.14
62	728	10.25	39.17	4.95	723	9.40	38.60	5.07

N=number of individuals; SD=standard deviation

Appendix 6.2: Descriptive statistics by welfare regime for the measures of childhood socioeconomic position among men

	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD
Number of books	**Southern**				**Scandinavian**				**Post-communist**				**Bismarckian**			
0-10	1,409	67.8	35.7	5.7	216	18.2	39.4	5.1	353	35.3	36.2	6.2	1,007	35.5	39.0	5.7
11-25	389	18.7	36.4	5.2	269	22.7	40.4	4.2	285	28.5	36.4	5.5	690	24.3	39.5	5.2
26-100	196	9.4	37.3	5.5	397	33.5	40.9	4.0	252	25.2	36.7	5.3	717	25.3	39.5	5.2
101-200	52	2.5	38.6	4.7	145	12.2	40.9	4.3	57	5.7	37.4	5.5	203	7.2	39.7	4.9
>200	32	1.5	38.3	3.3	158	13.3	40.6	3.3	52	5.2	36.9	5.5	220	7.8	40.4	4.9
Number of amenities																
0	816	39.3	35.3	5.8	118	10.0	40.5	5.0	422	42.2	36.2	5.9	429	15.1	39.1	5.5
1	470	22.6	36.3	5.4	168	14.2	40.7	4.2	108	10.8	37.4	5.7	655	23.1	38.7	5.5
2	362	17.4	36.1	5.6	128	10.8	40.1	4.9	104	10.4	36.8	5.9	570	20.1	39.6	5.5
3	172	8.3	38.0	5.3	78	6.6	40.6	4.5	200	20.0	36.5	6.1	467	16.5	39.7	5.2
4	170	8.2	36.3	4.9	119	10.0	41.2	3.5	85	8.5	37.9	4.7	351	12.4	40.4	4.4
5	88	4.2	37.7	5.0	574	48.4	40.3	4.1	80	8.0	35.4	4.7	365	12.9	39.5	5.5
Occupation of main breadwinner																
1st skill level	474	22.8	35.8	5.5	183	15.4	40.1	4.6	79	7.9	35.0	5.3	475	16.7	37.8	5.9
2nd skill level	1,477	71.1	36.1	5.7	778	65.7	40.5	4.3	818	81.9	36.6	5.8	1,890	66.6	39.5	5.2
3rd skill level	47	2.3	37.3	4.9	55	4.6	40.3	3.7	57	5.7	37.0	5.4	180	6.3	40.6	4.9
4th skill level	80	3.8	37.8	5.0	169	14.3	40.7	3.9	45	4.5	36.6	5.7	292	10.3	40.7	4.8

N=number of individuals; SD=standard deviation

Appendix 6.3: Descriptive statistics by welfare regime for the measures of childhood socioeconomic position among women

	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD
Number of books	**Southern**				**Scandinavian**				**Post-communist**				**Bismarckian**			
0-10	1,284	64.3	33.9	6.3	226	17.4	39.6	4.9	420	31.3	34.1	6.5	999	32.7	37.8	6.1
11-25	415	20.8	35.4	5.4	280	21.6	40.0	4.9	359	26.8	35.4	5.8	758	24.8	38.7	5.4
26-100	216	10.8	36.9	5.5	431	33.2	40.4	4.1	385	28.7	36.0	5.5	830	27.2	39.3	5.0
101-200	54	2.7	38.5	4.9	167	12.9	40.9	4.4	98	7.3	37.0	6.3	250	8.2	39.8	4.7
>200	28	1.4	38.2	4.7	194	14.9	41.0	4.4	79	5.9	36.1	5.7	217	7.1	39.6	4.3
Number of amenities																
0	715	35.8	33.6	6.3	121	9.3	39.8	5.1	543	40.5	34.5	6.3	466	15.3	37.4	5.7
1	449	22.5	34.5	5.9	202	15.6	40.5	4.4	164	12.2	35.8	6.0	643	21.1	38.3	5.5
2	363	18.2	35.0	6.0	129	9.9	40.3	4.7	160	11.9	36.9	6.0	563	18.4	38.4	5.5
3	177	8.9	36.1	6.2	76	5.9	38.9	5.3	264	19.7	35.4	5.5	534	17.5	39.5	5.3
4	197	9.9	35.8	5.6	139	10.7	40.6	4.4	114	8.5	35.5	6.0	441	14.4	40.1	4.6
5	96	4.8	37.3	5.4	631	48.6	40.5	4.3	96	7.2	36.5	5.5	407	13.3	39.1	5.5
Occupation of main breadwinner																
1st skill level	474	22.8	35.8	5.5	183	15.4	40.1	4.6	79	7.9	35.0	5.3	475	16.7	37.8	5.9
2nd skill level	1,477	71.1	36.1	5.7	778	65.7	40.5	4.3	818	81.9	36.6	5.8	1,890	66.6	39.5	5.2
3rd skill level	47	2.3	37.3	4.9	55	4.6	40.3	3.7	57	5.7	37.0	5.4	180	6.3	40.6	4.9
4th skill level	80	3.8	37.8	5.0	169	14.3	40.7	3.9	45	4.5	36.6	5.7	292	10.3	40.7	4.8

N=number of individuals; SD=standard deviation

Appendix 6.4: Descriptive statistics by welfare regime for the measures of adulthood socioeconomic position

	Southern				Scandinavian				Post-communist				Bismarckian			
	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD
Education level							Men									
low	1,317	63.4	35.5	5.7	313	26.4	39.8	4.5	442	44.2	35.3	6.2	792	27.9	39.2	5.7
medium	468	22.5	37.0	4.9	480	40.5	40.9	4.1	413	41.3	36.7	5.4	1,206	42.5	39.2	5.4
high	293	14.1	37.8	5.4	392	33.1	40.5	4.2	144	14.4	38.2	5.5	839	29.6	39.9	4.9
Main occupation																
1st skill level	411	19.8	34.8	5.9	101	8.5	39.7	4.5	46	4.6	37.3	6.4	324	11.4	37.8	6.6
2nd skill level	1,293	62.2	36.1	5.4	558	47.1	40.5	4.3	689	69.0	36.1	5.7	1,388	48.9	39.3	5.3
3rd skill level	169	8.1	36.8	5.1	155	13.1	39.6	3.9	156	15.6	36.5	6.2	497	17.5	39.8	5.2
4th skill level	205	9.9	38.7	5.2	371	31.3	40.9	4.1	108	10.8	38.3	5.0	628	22.1	40.1	4.9
Education level							Women									
low	1,356	67.9	33.8	6.2	371	28.6	40.1	4.8	631	47.1	33.5	6.2	1,168	38.2	37.8	6.2
medium	452	22.6	36.7	5.2	415	32.0	40.0	4.6	620	46.2	36.0	5.9	1,197	39.2	38.8	5.1
high	189	9.5	37.7	5.0	512	39.4	40.8	4.2	90	6.7	38.3	5.2	689	22.6	39.8	4.7
Main occupation																
1st skill level	590	29.5	33.4	6.4	145	11.2	40.0	4.6	187	13.9	34.1	5.8	512	16.8	36.4	6.5
2nd skill level	1,139	57.0	35.1	6.0	754	58.1	40.2	4.5	885	66.0	34.7	6.2	1,859	60.9	38.8	5.2
3rd skill level	98	4.9	36.4	5.3	177	13.6	40.8	4.3	137	10.2	36.9	6.3	204	6.7	40.1	5.2
4th skill level	170	8.5	37.0	5.4	222	17.1	40.4	4.7	132	9.8	37.3	5.1	479	15.7	39.9	4.8

N=number of individuals; SD=standard deviation

Appendix 6.5: Age-adjusted slope indices of inequality among men stratified by welfare regime

	Southern		Scandinavian		Post-communist		Bismarckian	
	SII	**95% CI**	**SII**	**95% CI**	**SII**	**95% CI**	**SII**	**95% CI**
Childhood								
Number of books	2.31	[1.32,3.29]	0.93	[0.06,1.79]	2.77	[1.46,4.07]	1.32	[0.64,2.01]
Rooms per capita	2.01	[1.20,2.82]	1.16	[0.32,2.00]	1.12	[-0.10,2.33]	0.22	[-0.43,0.88]
Amenities	1.34	[0.49,2.19]	-0.07	[-1.00,0.86]	2.03	[0.66,3.40]	0.56	[-0.11,1.24]
Breadwinner occupation	1.33	[0.29,2.36]	1.55	[0.57,2.54]	0.73	[-1.08,2.53]	1.29	[0.50,2.08]
Adulthood								
Education level	3.87	[2.89,4.84]	0.16	[-0.76,1.08]	2.85	[1.50,4.19]	1.57	[0.86,2.29]
Main occupational position	3.33	[2.39,4.26]	1.35	[0.45,2.25]	2.21	[0.73,3.69]	1.43	[0.71,2.14]
Current income	2.94	[2.13,3.74]	2.16	[1.32,3.00]	3.40	[2.21,4.59]	2.74	[2.10,3.39]
Current wealth	3.93	[3.14,4.72]	2.60	[1.77,3.42]	3.21	[2.02,4.40]	3.70	[3.06,4.34]
N	**2,078**		**1,185**		**999**		**2,837**	

CI=confidence interval; N=number of individuals; SII=slope index of inequality; controlled for age, age^2, and country fixed effects

Appendix 6.6: Age-adjusted slope indices of inequality among women stratified by welfare regime

	Southern		Scandinavian		Post-communist		Bismarckian	
	SII	**95% CI**	**SII**	**95% CI**	**SII**	**95% CI**	**SII**	**95% CI**
Childhood								
Number of books	2.96	[1.93,3.99]	1.38	[0.53,2.23]	2.75	[1.59,3.91]	1.66	[0.99,2.33]
Rooms per capita	2.11	[1.24,2.98]	0.85	[0.03,1.68]	1.27	[0.18,2.36]	0.59	[-0.05,1.23]
Amenities	2.05	[1.14,2.96]	0.86	[-0.05,1.78]	1.81	[0.59,3.02]	0.91	[0.25,1.58]
Breadwinner occupation	2.00	[0.90,3.10]	1.55	[0.57,2.53]	2.28	[0.68,3.88]	1.24	[0.47,2.02]
Adulthood								
Education level	5.07	[3.98,6.16]	0.93	[0.03,1.83]	4.78	[3.56,6.00]	1.77	[1.07,2.48]
Main occupational position	3.58	[2.59,4.56]	1.45	[0.52,2.38]	3.67	[2.40,4.95]	1.45	[0.71,2.20]
Current income	3.74	[2.88,4.60]	2.36	[1.53,3.19]	3.17	[2.10,4.25]	3.29	[2.66,3.92]
Current wealth	4.55	[3.70,5.40]	2.96	[2.14,3.77]	3.06	[1.98,4.14]	3.86	[3.23,4.48]
N	**1,997**		**1,298**		**1,341**		**3,054**	

CI=confidence interval; N=number of individuals; SII=slope index of inequality; controlled for age, age^2, and country fixed effects

Appendix 6.7: Age-adjusted multilevel models for each measure of socioeconomic position estimating CASP-12 SIIs excluding each country in turn

	Childhood				Adulthood			
	Number of books	Rooms per capita	Amenities	Breadwinner occupation [a]	Education level	Main occupation [a]	Income	Wealth
Country excluded	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]
					Men			
None	1.64*** [1.18,2.09]	1.04*** [0.62,1.46]	0.85*** [0.40,1.29]	1.29*** [0.76,1.81]	2.09*** [1.62,2.56]	2.03*** [1.56,2.49]	2.78*** [2.37,3.20]	3.51*** [3.10,3.92]
Austria	1.58*** [1.11,2.04]	0.99*** [0.57,1.42]	0.77*** [0.32,1.22]	1.26*** [0.73,1.79]	2.04*** [1.56,2.52]	2.05*** [1.57,2.52]	2.71*** [2.29,3.12]	3.50*** [3.09,3.92]
Belgium	1.82*** [1.35,2.30]	1.33*** [0.90,1.77]	1.23*** [0.76,1.70]	1.55*** [0.99,2.11]	2.19*** [1.70,2.69]	2.35*** [1.86,2.84]	2.86*** [2.43,3.30]	3.41*** [2.99,3.84]
Czech Republic	1.42*** [0.95,1.90]	0.98*** [0.55,1.42]	0.69** [0.23,1.15]	1.30*** [0.76,1.84]	2.09*** [1.60,2.58]	2.00*** [1.52,2.49]	2.77*** [2.34,3.19]	3.57*** [3.14,3.99]
Denmark	1.85*** [1.36,2.34]	1.03*** [0.58,1.47]	0.99*** [0.51,1.46]	1.20*** [0.63,1.77]	2.31*** [1.80,2.82]	2.14*** [1.64,2.65]	2.88*** [2.43,3.32]	3.61*** [3.17,4.05]
Spain	1.63*** [1.16,2.10]	1.08*** [0.65,1.51]	0.78*** [0.32,1.24]	1.34*** [0.80,1.88]	2.06*** [1.59,2.54]	1.87*** [1.39,2.36]	2.85*** [2.42,3.27]	3.67*** [3.25,4.09]
France	1.66*** [1.19,2.13]	1.06*** [0.63,1.49]	0.96*** [0.50,1.42]	1.16*** [0.62,1.71]	2.20*** [1.71,2.69]	2.00*** [1.51,2.49]	2.79*** [2.36,3.21]	3.53*** [3.11,3.96]
Germany	1.58*** [1.10,2.05]	0.94*** [0.50,1.37]	0.63** [0.16,1.09]	1.10*** [0.56,1.65]	2.07*** [1.59,2.56]	1.93*** [1.45,2.42]	2.64*** [2.21,3.07]	3.39*** [2.96,3.81]
Greece	1.68*** [1.20,2.16]	1.01*** [0.57,1.45]	0.94*** [0.47,1.41]	1.27*** [0.73,1.82]	1.78*** [1.28,2.28]	1.98*** [1.49,2.47]	2.77*** [2.33,3.20]	3.30*** [2.86,3.73]
Italy	1.47*** [1.00,1.94]	0.69** [0.25,1.13]	0.68** [0.21,1.15]	1.24*** [0.68,1.79]	1.91*** [1.42,2.40]	1.82*** [1.33,2.32]	2.69*** [2.26,3.13]	3.41*** [2.98,3.84]
Netherlands	1.66*** [1.17,2.14]	1.13*** [0.69,1.58]	0.77** [0.30,1.24]	1.35*** [0.80,1.91]	2.15*** [1.65,2.65]	2.06*** [1.56,2.56]	2.89*** [2.46,3.33]	3.54*** [3.11,3.97]

Poland	1.67*** [1.21,2.13]	1.08*** [0.65,1.50]	0.85*** [0.40,1.30]	1.33*** [0.80,1.86]	1.97*** [1.49,2.45]	2.02*** [1.55,2.50]	2.71*** [2.29,3.13]	3.49*** [3.07,3.90]
Sweden	1.58*** [1.10,2.06]	1.03*** [0.59,1.47]	0.88*** [0.41,1.34]	1.31*** [0.76,1.86]	2.25*** [1.75,2.74]	2.04*** [1.55,2.53]	2.82*** [2.39,3.25]	3.57*** [3.14,3.99]
Switzerland	1.70*** [1.23,2.17]	1.11*** [0.68,1.54]	0.87*** [0.41,1.33]	1.31*** [0.77,1.85]	2.13*** [1.65,2.61]	2.07*** [1.58,2.55]	2.83*** [2.40,3.25]	3.58*** [3.16,4.00]
Women								
Country excluded	**Number of books**	**Rooms per capita**	**Amenities**	**Breadwinner occupation [a]**	**Education level**	**Main occupation [a]**	**Income**	**Wealth**
None	2.07*** [1.63,2.52]	1.17*** [0.75,1.58]	1.31*** [0.87,1.75]	1.60*** [1.08,2.12]	2.84*** [2.37,3.32]	2.34*** [1.87,2.82]	3.21*** [2.80,3.62]	3.75*** [3.34,4.15]
Austria	2.08*** [1.63,2.53]	1.23*** [0.81,1.65]	1.28*** [0.83,1.72]	1.59*** [1.06,2.12]	2.82*** [2.34,3.30]	2.30*** [1.82,2.79]	3.17*** [2.76,3.59]	3.75*** [3.34,4.17]
Belgium	2.16*** [1.70,2.63]	1.30*** [0.87,1.73]	1.59*** [1.14,2.05]	1.66*** [1.11,2.20]	2.92*** [2.43,3.42]	2.75*** [2.25,3.25]	3.15*** [2.72,3.57]	3.52*** [3.10,3.94]
Czech Republic	2.05*** [1.58,2.52]	1.21*** [0.77,1.65]	1.33*** [0.87,1.80]	1.58*** [1.04,2.12]	2.68*** [2.18,3.18]	2.29*** [1.79,2.79]	3.24*** [2.81,3.67]	3.84*** [3.41,4.27]
Denmark	2.17*** [1.69,2.65]	1.11*** [0.67,1.55]	1.37*** [0.90,1.84]	1.57*** [1.01,2.13]	3.03*** [2.52,3.54]	2.46*** [1.95,2.97]	3.30*** [2.86,3.74]	3.82*** [3.38,4.25]
Spain	1.96*** [1.51,2.42]	1.05*** [0.63,1.48]	1.10*** [0.65,1.55]	1.47*** [0.93,2.01]	2.71*** [2.24,3.19]	2.13*** [1.64,2.62]	3.22*** [2.80,3.64]	3.73*** [3.32,4.15]
France	1.94*** [1.48,2.40]	1.21*** [0.78,1.64]	1.30*** [0.84,1.75]	1.61*** [1.07,2.15]	2.87*** [2.38,3.36]	2.18*** [1.68,2.67]	3.24*** [2.82,3.66]	3.75*** [3.33,4.16]
Germany	2.12*** [1.65,2.59]	1.14*** [0.70,1.57]	1.23*** [0.77,1.69]	1.59*** [1.05,2.13]	2.89*** [2.40,3.39]	2.31*** [1.81,2.80]	3.14*** [2.71,3.57]	3.71*** [3.28,4.13]
Greece	2.18*** [1.71,2.64]	1.19*** [0.76,1.63]	1.47*** [1.01,1.93]	1.76*** [1.22,2.30]	2.69*** [2.19,3.18]	2.33*** [1.83,2.83]	3.19*** [2.76,3.62]	3.65*** [3.22,4.08]
Italy	1.88*** [1.42,2.34]	0.97*** [0.54,1.41]	1.15*** [0.69,1.62]	1.48*** [0.93,2.02]	2.61*** [2.12,3.10]	2.22*** [1.72,2.72]	3.09*** [2.67,3.52]	3.62*** [3.20,4.05]

Netherlands	2.26*** [1.79,2.74]	1.22*** [0.78,1.66]	1.33*** [0.86,1.80]	1.73*** [1.18,2.29]	3.12*** [2.62,3.62]	2.51*** [2.01,3.02]	3.30*** [2.86,3.73]	3.86*** [3.43,4.30]
Poland	1.96*** [1.50,2.41]	1.10*** [0.67,1.52]	1.21*** [0.77,1.66]	1.53*** [1.01,2.05]	2.63*** [2.15,3.12]	2.18*** [1.69,2.66]	3.19*** [2.77,3.61]	3.78*** [3.36,4.19]
Sweden	2.12*** [1.65,2.59]	1.27*** [0.84,1.71]	1.33*** [0.87,1.80]	1.65*** [1.10,2.20]	3.05*** [2.55,3.55]	2.42*** [1.91,2.92]	3.30*** [2.87,3.73]	3.82*** [3.39,4.25]
Switzerland	2.07*** [1.60,2.53]	1.13*** [0.70,1.56]	1.32*** [0.86,1.77]	1.59*** [1.06,2.13]	2.93*** [2.44,3.41]	2.42*** [1.93,2.91]	3.25*** [2.83,3.67]	3.83*** [3.41,4.25]

CI=confidence interval; N=number of individuals; SII=slope index of inequality; controlled for age and age^2; [a] skill level; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix 7.1: Pearson's correlation matrix for the measures of socioeconomic position among men and women in the Southern regime

	Childhood				***Adulthood***			
	Number of books	*Rooms per capita*	*Amenities*	*Breadwinner job*	*Education level*	*Main job*	*Current income*	*Current wealth*
Childhood	**Men**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.32	1.00	-	-	-	-	-	-
Amenities	0.45	0.36	1.00	-	-	-	-	-
Breadwinner job	0.25	0.14	0.16	1.00	-	-	-	-
Adulthood								
Education level	0.38	0.20	0.30	0.18	1.00	-	-	-
Main job	0.32	0.22	0.24	0.26	0.42	1.00	-	-
Current income	0.22	0.17	0.17	0.09	0.34	0.24	1.00	-
Current wealth	0.14	0.14	0.07	0.07	0.26	0.21	0.27	1.00
Childhood	**Women**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.33	1.00	-	-	-	-	-	-
Amenities	0.49	0.39	1.00	-	-	-	-	-
Breadwinner job	0.26	0.20	0.21	1.00	-	-	-	-
Adulthood								
Education level	0.44	0.24	0.33	0.19	1.00	-	-	-
Main job	0.31	0.23	0.26	0.26	0.42	1.00	-	-
Current income	0.24	0.18	0.18	0.11	0.35	0.21	1.00	-
Current wealth	0.23	0.18	0.12	0.09	0.26	0.19	0.31	1.00

Appendix 7.2: Pearson's correlation matrix for the measures of socioeconomic position among men and women in the Scandinavian regime

	Childhood				***Adulthood***			
	Number of books	*Rooms per capita*	*Amenities*	*Breadwinner job*	*Education level*	*Main job*	*Current income*	*Current wealth*
Childhood	**Men**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.31	1.00	-	-	-	-	-	-
Amenities	0.42	0.15	1.00	-	-	-	-	-
Breadwinner job	0.43	0.26	0.28	1.00	-	-	-	-
Adulthood								
Education level	0.38	0.21	0.22	0.23	1.00	-	-	-
Main job	0.34	0.21	0.23	0.26	0.53	1.00	-	-
Current income	0.20	0.14	0.14	0.14	0.31	0.27	1.00	-
Current wealth	0.21	0.15	0.13	0.16	0.26	0.31	0.40	1.00
Childhood	**Women**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.29	1.00	-	-	-	-	-	-
Amenities	0.39	0.26	1.00	-	-	-	-	-
Breadwinner job	0.40	0.33	0.30	1.00	-	-	-	-
Adulthood								
Education level	0.35	0.21	0.28	0.28	1.00	-	-	-
Main job	0.31	0.21	0.24	0.26	0.54	1.00	-	-
Current income	0.16	0.10	0.16	0.09	0.25	0.27	1.00	-
Current wealth	0.18	0.18	0.18	0.16	0.23	0.25	0.48	1.00

Appendix 7.3: Pearson's correlation matrix for the measures of socioeconomic position among men and women in the Post-communist regime

	Childhood				***Adulthood***			
	Number of books	*Rooms per capita*	*Amenities*	*Breadwinner job*	*Education level*	*Main job*	*Current income*	*Current wealth*
Childhood	**Men**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.20	1.00	-	-	-	-	-	-
Amenities	0.38	0.30	1.00	-	-	-	-	-
Breadwinner job	0.33	0.15	0.22	1.00	-	-	-	-
Adulthood								
Education level	0.37	0.16	0.23	0.20	1.00	-	-	-
Main job	0.36	0.19	0.21	0.27	0.56	1.00	-	-
Current income	0.16	0.07	0.13	0.07	0.27	0.25	1.00	-
Current wealth	0.11	0.04	0.06	0.07	0.17	0.19	0.24	1.00
Childhood	**Women**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.25	1.00	-	-	-	-	-	-
Amenities	0.38	0.36	1.00	-	-	-	-	-
Breadwinner job	0.31	0.20	0.22	1.00	-	-	-	-
Adulthood								
Education level	0.36	0.20	0.27	0.23	1.00	-	-	-
Main job	0.30	0.12	0.19	0.24	0.50	1.00	-	-
Current income	0.19	0.12	0.16	0.15	0.25	0.20	1.00	-
Current wealth	0.11	0.09	0.09	0.08	0.17	0.15	0.24	1.00

Appendix 7.4: Pearson's correlation matrix for the measures of socioeconomic position among men and women in the Bismarckian regime

	Childhood				***Adulthood***			
	Number of books	*Rooms per capita*	*Amenities*	*Breadwinner job*	*Education level*	*Main job*	*Current income*	*Current wealth*
Childhood	**Men**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.25	1.00	-	-	-	-	-	-
Amenities	0.43	0.30	1.00	-	-	-	-	-
Breadwinner job	0.35	0.19	0.30	1.00	-	-	-	-
Adulthood								
Education level	0.33	0.17	0.27	0.23	1.00	-	-	-
Main job	0.28	0.14	0.23	0.25	0.46	1.00	-	-
Current income	0.21	0.14	0.19	0.15	0.33	0.30	1.00	-
Current wealth	0.14	0.13	0.13	0.16	0.25	0.19	0.36	1.00
Childhood	**Women**							
Number of books	1.00	-	-	-	-	-	-	-
Rooms per capita	0.26	1.00	-	-	-	-	-	-
Amenities	0.40	0.28	1.00	-	-	-	-	-
Breadwinner job	0.34	0.23	0.29	1.00	-	-	-	-
Adulthood								
Education level	0.40	0.22	0.28	0.28	1.00	-	-	-
Main job	0.30	0.19	0.25	0.30	0.44	1.00	-	-
Current income	0.17	0.10	0.17	0.11	0.23	0.20	1.00	-
Current wealth	0.14	0.14	0.15	0.12	0.17	0.16	0.38	1.00

Appendix 8.1: Descriptive statistics for CASP-12 according to the potential mediating variables

	MEN				WOMEN			
	N	**%**	**Mean CASP**	**SD**	**N**	**%**	**Mean CASP**	**SD**
Employment status								
Retired	3,955	55.7	**37.7**	5.9	3,507	45.6	**36.7**	6.2
Employed or self-employed	2,812	39.6	**38.8**	5.1	2,391	31.1	**38.7**	5.2
Other (unemployed, sick or disabled)	332	4.7	**34.6**	6.2	426	5.5	**34.7**	6.5
Homemaker	-	-	**-**	-	1,366	17.8	**36.2**	6.3
Ability to make ends meet								
With great difficulty	675	9.5	**33.4**	5.5	829	10.8	**32.1**	6.4
With some difficulty	1,832	25.8	**35.9**	5.4	2,146	27.9	**34.9**	5.9
Fairly easily	2,439	34.4	**38.8**	5.1	2,561	33.3	**38.2**	5.1
Easily	2,153	30.3	**41.1**	4.7	2,154	28.0	**40.8**	4.4
	p<0.001 for linear trend				p<0.001 for linear trend			
Limitations with daily activities								
No	4,772	67.2	**39.0**	5.2	4,705	61.2	**38.5**	5.4
Yes	2,327	32.8	**36.1**	6.1	2,985	38.8	**34.9**	6.4
Sad or depressed mood								
No	5,351	75.4	**39.0**	5.2	4,500	58.5	**39.0**	5.2
Yes	1,748	24.6	**35.4**	5.9	3,190	41.5	**35.1**	6.3
Marital status								
Living with spouse or partner	6,218	87.6	**38.1**	5.6	6,163	80.1	**37.2**	6.1
Living as single	881	12.4	**37.5**	6.0	1,527	19.9	**36.6**	6.0

N=number; SD=standard deviation

Appendix 8.2: Descriptive statistics for CASP-12 for each potential mediating variable by welfare regime and gender

	Southern				Scandinavian				Post-communist				Bismarckian			
	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD
Employment status	**Men**															
retired	1,227	59.0	35.5	5.7	553	46.7	40.3	4.6	566	56.7	36.3	5.8	1,609	56.7	39.7	5.4
employed or self-employed	772	37.2	37.5	5.1	595	50.2	40.8	3.9	364	36.4	37.5	5.3	1,081	38.1	39.7	4.9
other	79	3.8	33.8	5.9	37	3.1	38.2	4.4	69	6.9	32.9	6.4	147	5.2	35.6	6.2
Ability to make ends meet																
with great difficulty	389	18.7	33.0	5.2	13	1.1	34.1	5.6	164	16.4	34.0	5.8	109	3.8	33.8	6.0
with some difficulty	855	41.1	35.2	5.4	97	8.2	37.5	4.3	442	44.2	36.3	5.4	438	15.4	36.6	5.2
fairly easily	622	29.9	37.8	5.3	406	34.3	39.8	3.9	313	31.3	37.8	5.5	1,098	38.7	39.4	4.9
easily	212	10.2	39.0	4.9	669	56.5	41.6	4.0	80	8.0	40.5	5.5	1,192	42.0	41.6	4.6
Limitations with daily activities																
No	1,521	73.2	37.2	5.1	840	70.9	41.1	3.9	526	52.7	38.1	5.2	1,885	66.4	40.3	4.9
Yes	557	26.8	33.3	5.7	345	29.1	38.8	4.7	473	47.3	34.5	5.9	952	33.6	37.8	5.7
Sad or depressed mood																
No	1,640	78.9	37.0	5.2	918	77.5	40.9	4.1	699	70.0	37.8	5.4	2,094	73.8	40.7	4.7
Yes	438	21.1	33.2	5.8	267	22.5	39.0	4.6	300	30.0	34.4	5.7	743	26.2	36.7	5.7
Marital status																
Living with spouse or partner	1,857	89.4	36.0	5.6	1,012	85.4	40.7	4.1	864	86.5	36.7	5.6	2,485	87.6	39.7	5.1
Living as single	221	10.6	37.1	5.6	173	14.6	39.5	4.7	135	13.5	35.4	6.4	352	12.4	38.2	6.1
Employment status	**Women**															
retired	688	34.5	34.6	6.1	581	44.8	40.2	4.8	916	68.3	34.7	6.1	1,322	43.3	38.2	5.7
employed or self-employed	424	21.2	36.2	5.4	619	47.7	40.7	4.0	301	22.4	36.6	5.4	1,047	34.3	39.6	4.8
other	75	3.8	31.4	6.6	79	6.1	37.8	5.7	86	6.4	34.5	6.9	186	6.1	36.3	5.7
homemaker	810	40.6	34.6	6.2	19	1.5	40.1	5.6	38	2.8	34.9	7.4	499	16.3	39.3	5.1
Ability to make ends meet																

with great difficulty	409	20.5	31.3	6.0	25	1.9	37.2	6.0	246	18.3	31.7	6.1	149	4.9	34.0	6.9
with some difficulty	830	41.6	33.6	6.1	122	9.4	37.0	5.5	650	48.5	34.9	5.5	544	17.8	36.3	5.5
fairly easily	578	28.9	36.9	5.0	431	33.2	40.0	4.2	362	27.0	37.9	5.6	1,190	39.0	38.7	5.0
easily	180	9.0	38.8	4.8	720	55.5	41.4	4.0	83	6.2	39.9	5.2	1,171	38.3	41.2	4.3
Limitations with daily activities																
No	1,336	66.9	36.5	5.3	855	65.9	41.3	4.0	614	45.8	37.7	5.5	1,900	62.2	39.8	5.1
Yes	661	33.1	31.7	6.3	443	34.1	38.5	4.8	727	54.2	32.8	5.8	1,154	37.8	37.2	5.5
Sad or depressed mood																
No	1,184	59.3	36.9	5.1	869	66.9	41.4	3.8	669	49.9	37.1	5.4	1,778	58.2	40.4	4.7
Yes	813	40.7	32.3	6.2	429	33.1	38.3	5.1	672	50.1	33.8	6.3	1,276	41.8	37.0	5.6
Marital status																
Living with spouse or partner	1,733	86.8	34.8	6.1	1,019	78.5	40.7	4.3	988	73.7	35.5	6.2	2,423	79.3	39.1	5.4
Living as single	264	13.2	34.3	6.4	279	21.5	39.5	4.9	353	26.3	34.3	6.0	631	20.7	37.9	5.3

N=number of individuals; SD=standard deviation

Appendix 8.3: Age adjusted single level regression models for cumulative advantage score and CASP-12 in the Southern regime (adjusting for potential mediating variables)

	(1) Coeff. 95% CI	(2) Coeff. 95% CI	(3) Coeff. 95% CI	(4) Coeff. 95% CI	(5) Coeff. 95% CI	(6) Coeff. 95% CI
Men						
Cumulative advantage score	**0.96*** [0.76,1.15]**	**0.47*** [0.27,0.67]**	**0.86*** [0.68,1.05]**	**1.01*** [0.83,1.19]**	**1.03*** [0.84,1.22]**	**0.39*** [0.20,0.58]**
***Current employment status [a]:* employed**	0.84* [0.14,1.55]	-	-	-	-	0.45 [-0.19,1.10]
***Current employment status [a]:* other**	-2.83*** [-4.11,-1.55]	-	-	-	-	-1.57** [-2.74,-0.41]
***Ability to make ends meet* [b]**	-	1.85*** [1.58,2.12]	-	-	-	1.54*** [1.29,1.80]
***Limited in daily activities* [c]**	-	-	-3.63*** [-4.14,-3.12]	-	-	-2.75*** [-3.25,-2.26]
***Sad or depressed mood* [c]**	-	-	-	-3.48*** [-4.02,-2.94]	-	-2.55*** [-3.07,-2.03]
***Marital status: living as single* [d]**	-	-	-	-	0.59 [-0.15,1.33]	0.23 [-0.44,0.90]
Women						
Cumulative advantage score	**1.12*** [0.92,1.33]**	**0.64*** [0.44,0.85]**	**0.98*** [0.79,1.17]**	**1.05*** [0.87,1.24]**	**1.18*** [0.98,1.37]**	**0.50*** [0.30,0.69]**
***Current employment status [a]:* employed**	0.21 [-0.62,1.04]	-	-	-	-	-0.29 [-1.03,0.44]
***Current employment status [a]:* other**	-0.43 [-1.04,0.18]	-	-	-	-	-0.37 [-0.92,0.18]
***Ability to make ends meet* [b]**	-	1.95*** [1.66,2.24]	-	-	-	1.52*** [1.25,1.79]
***Limited in daily activities* [c]**	-	-	-3.85*** [-4.36,-3.34]	-	-	-2.96*** [-3.45,-2.47]
***Sad or depressed mood* [c]**	-	-	-	-3.78*** [-4.26,-3.29]	-	-2.84*** [-3.30,-2.38]
***Marital status: living as single* [d]**	-	-	-	-	-0.96** [-1.68,-0.23]	-0.49 [-1.16,0.18]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 8.4: Age adjusted single level regression models for the cumulative advantage score and CASP-12 in the Scandinavian regime (adjusting for potential mediating variables)

	(1) Coeff. 95% CI	(2) Coeff. 95% CI	(3) Coeff. 95% CI	(4) Coeff. 95% CI	(5) Coeff. 95% CI	(6) Coeff. 95% CI
Men						
Cumulative advantage score	**0.43*** [0.24,0.61]**	**0.25** [0.06,0.43]**	**0.37*** [0.18,0.55]**	**0.49*** [0.31,0.67]**	**0.40*** [0.21,0.59]**	**0.19* [0.01,0.36]**
***Current employment status [a]:* employed**	0.36 [-0.39,1.11]	-	-	-	-	-0.09 [-0.78,0.60]
***Current employment status [a]:* other**	-1.64* [-3.10,-0.18]	-	-	-	-	-0.58 [-1.92,0.77]
***Ability to make ends meet* [b]**	-	1.89*** [1.55,2.22]	-	-	-	1.62*** [1.29,1.95]
***Limited in daily activities* [c]**	-	-	-2.29*** [-2.81,-1.77]	-	-	-1.85*** [-2.34,-1.35]
***Sad or depressed mood* [c]**	-	-	-	-2.45*** [-3.01,-1.90]	-	-1.92*** [-2.45,-1.39]
***Marital status: living as single* [d]**	-	-	-	-	-1.00** [-1.69,-0.31]	-0.61 [-1.25,0.02]
Women						
Cumulative advantage score	**0.51*** [0.33,0.69]**	**0.35*** [0.17,0.53]**	**0.40*** [0.23,0.58]**	**0.50*** [0.32,0.67]**	**0.53*** [0.35,0.72]**	**0.19* [0.02,0.37]**
***Current employment status [a]:* employed**	0.61 [-0.14,1.36]	-	-	-	-	-0.10 [-0.79,0.59]
***Current employment status [a]:* other**	-1.60** [-2.65,-0.56]	-	-	-	-	-0.86 [-1.82,0.09]
***Ability to make ends meet* [b]**	-	1.67*** [1.36,1.99]	-	-	-	1.38*** [1.08,1.68]
***Limited in daily activities* [c]**	-	-	-2.59*** [-3.08,-2.11]	-	-	-1.88*** [-2.35,-1.41]
***Sad or depressed mood* [c]**	-	-	-	-2.86*** [-3.34,-2.38]	-	-2.28*** [-2.74,-1.82]
***Marital status: living as single* [d]**	-	-	-	-	-0.79** [-1.37,-0.20]	-0.17 [-0.71,0.37]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 8.5: Age adjusted single level regression models for the cumulative advantage score and CASP-12 in the Post-communist regime (adjusting for potential mediating variables)

	(1) Coeff. 95% CI	(2) Coeff. 95% CI	(3) Coeff. 95% CI	(4) Coeff. 95% CI	(5) Coeff. 95% CI	(6) Coeff. 95% CI
Men						
Cumulative advantage score	**0.90*** [0.61,1.20]**	**0.58*** [0.28,0.89]**	**0.73*** [0.45,1.02]**	**0.98*** [0.69,1.26]**	**0.96*** [0.66,1.25]**	**0.39** [0.11,0.67]**
***Current employment status [a]:* employed**	0.33 [-0.82,1.47]	-	-	-	-	-0.12 [-1.15,0.91]
***Current employment status [a]:* other**	-3.62*** [-5.12,-2.11]	-	-	-	-	-2.06** [-3.43,-0.69]
***Ability to make ends meet* [b]**	-	1.79*** [1.36,2.22]	-	-	-	1.36*** [0.95,1.76]
***Limited in daily activities* [c]**	-	-	-3.73*** [-4.40,-3.05]	-	-	-3.02*** [-3.67,-2.37]
***Sad or depressed mood* [c]**	-	-	-	-3.77*** [-4.52,-3.03]	-	-2.78*** [-3.49,-2.07]
***Marital status: living as single* [d]**	-	-	-	-	-1.32** [-2.32,-0.32]	-1.10* [-1.99,-0.20]
Women						
Cumulative advantage score	**1.10*** [0.83,1.37]**	**0.63*** [0.37,0.90]**	**0.80*** [0.55,1.06]**	**1.05*** [0.79,1.30]**	**1.13*** [0.86,1.40]**	**0.42** [0.17,0.68]**
***Current employment status [a]:* employed**	0.20 [-0.89,1.29]	-	-	-	-	-0.39 [-1.37,0.60]
***Current employment status [a]:* other**	-1.17 [-2.39,0.06]	-	-	-	-	-0.10 [–1.20,1.01]
***Ability to make ends meet* [b]**	-	2.27*** [1.88,2.66]	-	-	-	1.90*** [1.52,2.27]
***Limited in daily activities* [c]**	-	-	-3.78*** [-4.38,-3.17]	-	-	-2.84*** [-3.44,-2.25]
***Sad or depressed mood* [c]**	-	-	-	-3.25*** [-3.86,-2.64]	-	-2.43*** [-3.01,-1.85]
***Marital status: living as single* [d]**	-	-	-	-	-0.24 [-0.97,0.48]	0.32 [-0.34,0.98]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 8.6: Age adjusted single level regression models for the cumulative advantage score and CASP-12 in the Bismarckian regime (adjusting for potential mediating variables)

	(1) Coeff. 95% CI	(2) Coeff. 95% CI	(3) Coeff. 95% CI	(4) Coeff. 95% CI	(5) Coeff. 95% CI	(6) Coeff. 95% CI
Men						
Cumulative advantage score	**0.56*** [0.41,0.71]**	**0.25*** [0.11,0.40]**	**0.55*** [0.40,0.69]**	**0.56*** [0.42,0.70]**	**0.59*** [0.44,0.74]**	**0.20** [0.06,0.33]**
***Current employment status [a]:* employed**	-0.37 [–1.01,0.26]	-	-	-	-	-0.56 [-1.13,0.01]
***Current employment status [a]:* other**	-3.48*** [-4.40,-2.56]	-	-	-	-	-1.26** [-2.11,-0.41]
***Ability to make ends meet* [b]**	-	1.95*** [1.72,2.17]	-	-	-	1.68*** [1.47,1.89]
***Limited in daily activities* [c]**	-	-	-2.75*** [-3.14,-2.37]	-	-	-2.07*** [-2.43,-1.70]
***Sad or depressed mood* [c]**	-	-	-	-3.45*** [-3.86,-3.05]	-	-2.77*** [-3.16,-2.38]
***Marital status: living as single* [d]**	-	-	-	-	-0.91** [-1.48,-0.34]	-0.47 [-0.98,0.04]
Women						
Cumulative advantage score	**0.70*** [0.55,0.85]**	**0.34*** [0.20,0.49]**	**0.68*** [0.54,0.82]**	**0.70*** [0.56,0.84]**	**0.70*** [0.55,0.84]**	**0.33*** [0.19,0.46]**
***Current employment status [a]:* employed**	0.67* [0.06,1.28]	-	-	-	-	0.16 [-0.38,0.71]
***Current employment status [a]:* other**	-0.07 [-0.61,0.46]	-	-	-	-	0.03 [-0.45,0.51]
***Ability to make ends meet* [b]**	-	1.98*** [1.77,2.19]	-	-	-	1.69*** [1.49,1.90]
***Limited in daily activities* [c]**	-	-	-2.92*** [-3.29,-2.55]	-	-	-2.34*** [-2.68,-1.99]
***Sad or depressed mood* [c]**	-	-	-	-3.10*** [-3.45,-2.74]	-	-2.46*** [-2.79,-2.12]
***Marital status: living as single* [d]**	-	-	-	-	-1.13*** [-1.59,-0.68]	-0.51* [-0.93,-0.10]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 8.7: Inter-generational social mobility table showing origin (occupation of main breadwinner during childhood) and destination (main occupation) classes

	Destination (main occupation)											
	Southern			Scandinavian			Post-communist			Bismarckian		
Men												
Origin (childhood)	**Manual**	**Non-manual**	**Total**	**Manual**	**Non-manual**	**Total**	**Manual**	**Non-manual**	**Total**	**Manual**	**Non-manual**	**Total**
Manual (N)	1,105	556	1,661	388	410	798	590	199	789	952	1,002	1,954
%	66.5	33.5	100.0	48.6	51.4	100.0	74.8	25.2	100.0	48.7	51.3	100.0
Non-manual (N)	103	314	417	80	307	387	63	147	210	158	725	883
%	24.7	75.3	100.0	20.7	79.3	100.0	30.0	70.0	100.0	17.9	82.1	100.0
Total (N)	1,208	870	2,078	468	717	1,185	653	346	999	1,110	1,727	2,837
%	58.1	41.9	100.0	39.5	60.5	100.0	65.4	34.6	100.0	39.1	60.9	100.0
Women												
Origin (childhood)	**Manual**	**Non-manual**	**Total**	**Manual**	**Non-manual**	**Total**	**Manual**	**Non-manual**	**Total**	**Manual**	**Non-manual**	**Total**
Manual (N)	1,018	558	1,576	197	672	869	568	461	1,029	811	1,262	2,073
%	64.6	35.4	100.0	22.7	77.3	100.0	55.2	44.8	100.0	39.1	60.9	100.0
Non-manual (N)	115	306	421	35	394	429	56	256	312	118	863	981
%	27.3	72.7	100.0	8.2	91.8	100.0	18.0	82.1	100.0	12.0	88.0	100.0
Total (N)	1,133	864	1,997	232	1,066	1,298	624	717	1,341	929	2,125	3,054
%	56.7	43.3	100.0	17.9	82.1	100.0	46.5	53.5	100.0	30.4	69.6	100.0

N=number of individuals

Appendix 8.8: Descriptive statistics by childhood and adulthood socioeconomic advantage for men and women in different welfare regimes

	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD	N	%	Mean CASP	SD
	Southern				Scandinavian				Post-communist				Bismarckian			
Childhood	Men															
Disadvantaged	1,146	55.1	35.7	5.8	610	51.5	40.3	4.4	520	52.1	36.2	5.9	1,499	52.8	38.9	5.5
Advantaged	932	44.9	36.7	5.3	575	48.5	40.6	4.0	479	47.9	36.8	5.6	1,338	47.2	40.0	5.1
Adulthood																
Disadvantaged	1,104	53.1	35.1	5.7	610	51.5	40.2	4.4	528	52.9	35.4	6.0	1,486	52.4	38.6	5.6
Advantaged	974	46.9	37.3	5.2	575	48.5	40.8	4.0	471	47.1	37.7	5.3	1,351	47.6	40.5	4.9
Childhood	Women															
Disadvantaged	1,079	54.0	33.8	6.3	651	50.2	39.8	4.8	700	52.2	34.4	6.3	1,587	52.0	38.3	5.6
Advantaged	918	46.0	35.8	5.7	647	49.8	40.8	4.2	641	47.8	36.0	5.9	1,467	48.0	39.2	5.2
Adulthood																
Disadvantaged	1,063	53.2	33.3	6.3	651	50.2	39.6	4.8	699	52.1	33.7	6.1	1,569	51.4	37.7	5.6
Advantaged	934	46.8	36.4	5.4	647	49.8	41.1	4.1	642	47.9	36.6	5.8	1,485	48.6	40.1	4.8

N=number of individuals; SD=standard deviation

Appendix 9.1: Descriptive statistics for life satisfaction by welfare regime

	Men			Women		
Welfare regime	**N**	**Mean LS**	**SD**	**N**	**Mean LS**	**SD**
Southern	**2,101**	**7.6**	**1.5**	**2,037**	**7.3**	**1.7**
Spain	498	7.7	1.5	514	7.3	1.8
Italy	798	7.6	1.5	810	7.3	1.8
Greece	805	7.3	1.4	713	7.0	1.4
Scandinavian	**1,209**	**8.5**	**1.2**	**1,328**	**8.5**	**1.3**
Sweden	505	8.4	1.3	592	8.4	1.3
Denmark	704	8.6	1.2	736	8.6	1.3
Post-communist	**1,021**	**7.1**	**2.0**	**1,368**	**6.7**	**2.0**
Czech Republic	574	7.5	1.9	779	7.1	2.0
Poland	447	7.0	2.0	589	6.6	2.0
Bismarckian	**2,969**	**7.8**	**1.5**	**3,209**	**7.7**	**1.7**
Austria	203	7.9	1.8	237	7.7	2.2
Germany	522	7.8	1.6	553	7.8	1.7
Netherlands	614	8.0	1.0	642	8.0	1.1
France	527	7.7	1.4	629	7.4	1.8
Switzerland	330	8.5	1.3	376	8.4	1.4
Belgium	773	7.9	1.2	772	7.7	1.3
Total	**7,300**	**7.7**	**1.6**	**7,942**	**7.5**	**1.8**

LS=life satisfaction; N=number of individuals; SD=standard deviation

Appendix 9.2: Descriptive statistics for life satisfaction by socioeconomic position

	MEN				WOMEN			
	N	**%**	**Mean LS**	**SD**	**N**	**%**	**Mean LS**	**SD**
Childhood								
Number of books (p<0.001 for linear trend among both men and women)								
0-10	3,079	42.2	**7.5**	1.6	3,043	38.3	**7.1**	1.9
11-25	1,673	22.9	**7.7**	1.6	1,866	23.5	**7.5**	1.7
26-100	1,601	21.9	**7.9**	1.5	1,915	24.1	**7.7**	1.6
101-200	472	6.5	**7.9**	1.4	588	7.4	**8.1**	1.5
+ 200	475	6.5	**8.0**	1.5	530	6.7	**8.0**	1.5
Rooms per capita [a]	-	-	**0.06**	<0.001	-	-	**0.13**	<0.001
Amenities (p<0.001 for linear trend among both men and women)								
0	1,829	25.1	**7.4**	1.7	1,914	24.1	**6.9**	1.9
1	1,456	20.0	**7.6**	1.5	1,509	19.0	**7.4**	1.8
2	1,189	16.3	**7.8**	1.4	1,258	15.8	**7.6**	1.7
3	944	12.9	**7.8**	1.6	1,079	13.6	**7.7**	1.6
4	754	10.3	**7.9**	1.5	917	11.6	**7.8**	1.7
5	1,128	15.5	**8.0**	1.5	1,265	15.9	**7.9**	1.6
Adulthood								
Education level (p<0.001 for linear trend among both men and women)								
Low	2,945	40.3	**7.5**	1.6	3,658	46.1	**7.2**	1.9
Medium	2,631	36.0	**7.7**	1.6	2,761	34.8	**7.6**	1.8
High	1,724	23.6	**7.9**	1.4	1,523	19.2	**7.9**	1.5
Household income [a]	-	-	**0.12**	<0.001	-	-	**0.15**	<0.001
Household wealth [a]	-	-	**0.10**	<0.001	-	-	**0.07**	<0.001

LS=life satisfaction; N=number of individuals; SD=standard deviation; [a] Continuous variable showing associated correlation coefficient and p-value

Appendix 9.3: Descriptive statistics for life satisfaction by manual versus non-manual occupation at different stages of the life course

	MEN				*WOMEN*			
	N	**%**	**Mean LS**	**SD**	**N**	**%**	**Mean LS**	**SD**
Childhood								
manual	5,358	73.4	**7.6**	1.6	5,721	72.0	**7.5**	1.8
non-manual	1,942	26.6	**7.9**	1.4	2,221	28.0	**7.7**	1.6
16 to 34 years								
manual	3,981	54.5	**7.6**	1.6	3,247	40.9	**7.1**	1.9
non-manual	3319	45.5	**7.9**	1.5	4,695	59.1	**7.7**	1.6
35 to 49 years								
manual	3,513	48.1	**7.5**	1.7	2,992	37.7	**7.1**	1.9
non-manual	3,787	51.9	**7.9**	1.5	4,950	62.3	**7.7**	1.6
50 to 65 years								
manual	3,424	46.9	**7.5**	1.7	2,944	37.1	**7.0**	1.9
non-manual	3,876	53.1	**7.9**	1.5	4,998	62.9	**7.7**	1.6
Main job								
manual	3,533	48.4	**7.5**	1.7	3,013	37.9	**7.1**	1.9
non-manual	3,767	51.6	**7.9**	1.5	4,929	62.1	**7.7**	1.6

LS=life satisfaction; N=number of individuals; SD=standard deviation

Appendix 9.4: Descriptive statistics for life satisfaction by occupational skill level at different stages of the life course

	MEN				*WOMEN*			
	N	**%**	**Mean LS**	**SD**	**N**	**%**	**Mean LS**	**SD**
Childhood								
1	1,245	17.1	**7.7**	1.5	1,363	17.2	**7.2**	2.0
2	5,106	70.0	**7.6**	1.6	5,504	69.3	**7.5**	1.7
3	346	4.7	**8.1**	1.4	407	5.1	**7.7**	1.8
4	603	8.3	**8.0**	1.4	668	8.4	**7.9**	1.5
16 to 34 years								
1	1,076	14.7	**7.5**	1.6	1,420	17.9	**7.0**	2.0
2	4,205	57.6	**7.7**	1.6	4,863	61.2	**7.5**	1.8
3	986	13.5	**7.9**	1.6	735	9.3	**7.9**	1.5
4	1,033	14.2	**7.9**	1.4	924	11.6	**7.8**	1.5
35 to 49 years								
1	905	12.4	**7.4**	1.6	1,283	16.2	**7.0**	2.1
2	4,068	55.7	**7.6**	1.6	4,774	60.1	**7.5**	1.8
3	1,014	13.9	**7.9**	1.5	757	9.5	**7.8**	1.5
4	1,313	18.0	**8.0**	1.5	1,128	14.2	**7.9**	1.5
50 to 65 years								
1	926	12.7	**7.4**	1.6	1,310	16.5	**7.0**	2.0
2	3,981	54.5	**7.6**	1.6	4,764	60.0	**7.5**	1.8
3	973	13.3	**7.9**	1.5	692	8.7	**7.8**	1.6
4	1,420	19.5	**8.0**	1.4	1,176	14.8	**7.8**	1.6
Main job								
1	916	126	**7.5**	1.6	1,478	18.6	**7.1**	2.0
2	4,027	55.2	**7.6**	1.6	4,787	60.3	**7.5**	1.8
3	1,008	13.8	**7.9**	1.6	634	8.0	**7.8**	1.6
4	1,349	18.5	**8.1**	1.3	1,043	13.1	**7.8**	1.5

LS=life satisfaction; N=number of individuals; SD=standard deviation

Appendix 9.5: Age-adjusted slope indices of inequality for life satisfaction among men stratified by welfare regime

	Southern		Scandinavian		Post-communist		Bismarckian	
	SII	**95% CI**	**SII**	**95% CI**	**SII**	**95% CI**	**SII**	**95% CI**
Childhood								
Number of books	0.45	[0.17,0.72]	0.10	[-0.15,0.35]	1.00	[0.57,1.42]	0.34	[0.17,0.51]
Rooms per capita	0.50	[0.27,0.72]	0.21	[-0.03,0.45]	0.03	[-0.36,0.43]	-0.01	[-0.18,0.15]
Amenities	0.18	[-0.06,0.41]	0.12	[-0.14,0.39]	0.76	[0.31,1.21]	0.16	[-0.01,0.33]
Breadwinner occupation	0.18	[-0.11,0.47]	0.31	[0.02,0.60]	0.58	[-0.01,1.18]	0.18	[-0.02,0.38]
Adulthood								
Education level	0.69	[0.41,0.96]	0.26	[-0.00,0.53]	0.94	[0.49,1.38]	0.37	[0.18,0.55]
Main occupational position	0.56	[0.30,0.82]	0.43	[0.17,0.69]	0.86	[0.38,1.35]	0.35	[0.17,0.54]
Current income	0.66	[0.44,0.89]	0.70	[0.46,0.94]	1.06	[0.67,1.45]	0.66	[0.49,0.82]
Current wealth	1.00	[0.78,1.22]	0.53	[0.29,0.77]	1.09	[0.71,1.48]	0.60	[0.44,0.77]
N	**2,101**		**1,209**		**1,021**		**2,969**	

CI=confidence interval; N=number of individuals; SII=slope index of inequality; controlled for age, age^2, and country fixed effects

Appendix 9.6: Age-adjusted slope indices of inequality for life satisfaction among women stratified by welfare regime

	Southern		Scandinavian		Post-communist		Bismarckian	
	SII	**95% CI**	**SII**	**95% CI**	**SII**	**95% CI**	**SII**	**95% CI**
Childhood								
Number of books	0.99	[0.69,1.29]	0.10	[-0.14,0.34]	1.09	[0.70,1.47]	0.43	[0.24,0.61]
Rooms per capita	0.49	[0.23,0.74]	0.04	[-0.20,0.28]	0.63	[0.28,0.99]	0.27	[0.09,0.45]
Amenities	0.58	[0.31,0.84]	0.17	[-0.09,0.43]	0.95	[0.56,1.35]	0.28	[0.09,0.46]
Breadwinner occupation	0.47	[0.15,0.80]	0.07	[-0.21,0.35]	1.26	[0.73,1.78]	0.31	[0.09,0.52]
Education level	1.05	[0.72,1.37]	0.05	[-0.20,0.31]	1.42	[1.01,1.82]	0.31	[0.11,0.50]
Main occupational position	0.93	[0.64,1.22]	0.15	[-0.11,0.42]	0.91	[0.49,1.33]	0.31	[0.11,0.52]
Current income	1.00	[0.75,1.25]	0.70	[0.46,0.93]	1.44	[1.09,1.79]	0.89	[0.71,1.06]
Current wealth	1.04	[0.78,1.29]	0.59	[0.36,0.83]	1.25	[0.90,1.60]	0.86	[0.68,1.04]
N	**2,037**		**1,328**		**1,368**		**3,209**	

CI=confidence interval; N=number of individuals; SII=slope index of inequality; controlled for age, age^2, and country fixed effects

Appendix 9.7: Descriptive statistics for life satisfaction by welfare regime for the measures of childhood socioeconomic position among men

	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD
Number of books	**Southern**				**Scandinavian**				**Post-communist**				**Bismarckian**			
0-10	1,430	68.1	7.6	1.5	224	18.5	8.5	1.6	359	35.2	6.7	2.1	1,066	35.9	7.7	1.6
11-25	389	18.5	7.6	1.5	274	22.7	8.5	1.2	292	28.6	7.3	1.9	718	24.2	7.8	1.5
26-100	197	9.4	7.7	1.5	404	33.4	8.6	1.2	255	25.0	7.5	1.6	745	25.1	7.9	1.5
101-200	53	2.5	8.1	1.2	148	12.2	8.4	1.2	60	5.9	7.4	1.8	211	7.1	7.9	1.4
>200	32	1.5	7.9	1.0	159	13.2	8.4	1.1	55	5.4	7.9	2.0	229	7.7	8.0	1.5
Number of amenities																
0	825	39.3	7.5	1.6	123	10.2	8.5	1.6	436	42.7	6.9	2.1	445	15.0	7.9	1.4
1	473	22.5	7.6	1.5	176	14.6	8.6	1.3	113	11.1	7.5	1.6	694	23.4	7.6	1.5
2	368	17.5	7.7	1.4	128	10.6	8.5	1.3	105	10.3	7.3	1.7	588	19.8	7.8	1.4
3	172	8.2	7.8	1.7	79	6.5	8.5	1.4	200	19.6	7.4	1.9	493	16.6	7.8	1.5
4	174	8.3	7.7	1.2	121	10.0	8.7	1.2	86	8.4	7.4	1.9	373	12.6	8.0	1.5
5	89	4.2	7.8	1.2	582	48.1	8.4	1.1	81	7.9	7.2	1.8	376	12.7	7.9	1.5
Occupation of main breadwinner																
1st skill level	479	22.8	7.7	1.5	183	15.1	8.4	1.4	80	7.8	6.9	1.8	503	16.9	7.7	1.4
2nd skill level	1,493	71.1	7.6	1.5	801	66.3	8.5	1.3	838	82.1	7.1	2.0	1,974	66.5	7.8	1.5
3rd skill level	48	2.3	7.8	1.4	55	4.5	8.6	0.9	57	5.6	7.5	1.6	186	6.3	8.2	1.3
4th skill level	81	3.9	7.8	1.3	170	14.1	8.5	1.0	46	4.5	7.5	2.1	306	10.3	8.1	1.3

LS=life satisfaction; N=number of individuals; SD=standard deviation

Appendix 9.8: Descriptive statistics for life satisfaction by welfare regime for the measures of childhood socioeconomic position among women

	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD
Number of books	**Southern**				**Scandinavian**				**Post-communist**				**Bismarckian**			
0-10	1,317	64.7	7.1	1.8	234	17.6	8.4	1.4	432	31.6	6.3	2.2	1,060	33.0	7.5	1.9
11-25	420	20.6	7.5	1.6	285	21.5	8.4	1.4	366	26.8	6.8	1.9	795	24.8	7.5	1.6
26-100	218	10.7	7.9	1.3	439	33.1	8.6	1.2	392	28.7	7.1	1.8	866	27.0	7.8	1.6
101-200	54	2.7	8.1	1.3	173	13.0	8.6	1.0	99	7.2	7.1	1.7	262	8.2	8.2	1.5
>200	28	1.4	7.8	1.4	197	14.8	8.5	1.3	79	5.8	7.4	1.9	226	7.0	8.1	1.4
Number of amenities																
0	741	36.4	7.0	1.9	126	9.5	8.3	1.5	555	40.6	6.4	2.0	492	15.3	7.2	1.8
1	454	22.3	7.2	1.8	207	15.6	8.5	1.3	169	12.4	6.6	2.3	679	21.2	7.5	1.7
2	366	18.0	7.5	1.6	132	9.9	8.6	1.3	166	12.1	7.5	1.8	594	18.5	7.7	1.7
3	179	8.8	7.5	1.6	78	5.9	8.5	1.4	266	19.4	7.0	1.7	556	17.3	7.8	1.5
4	201	9.9	7.5	1.6	139	10.5	8.4	1.4	115	8.4	7.0	1.9	462	14.4	8.0	1.6
5	96	4.7	7.9	1.5	646	48.6	8.5	1.2	97	7.1	7.4	1.8	426	13.3	7.8	1.7
Occupation of main breadwinner																
1st skill level	493	24.2	7.2	1.8	212	16.0	8.6	1.2	106	7.7	5.8	2.2	552	17.2	7.2	2.1
2nd skill level	1,412	69.3	7.3	1.7	860	64.8	8.5	1.3	1,113	81.4	6.8	2.0	2,119	66.0	7.7	1.6
3rd skill level	51	2.5	8.1	1.0	74	5.6	8.5	1.1	88	6.4	7.0	1.7	194	6.0	7.6	2.0
4th skill level	81	4.0	7.1	1.7	182	13.7	8.5	1.3	61	4.5	7.1	1.7	344	10.7	8.1	1.4

LS=life satisfaction; N=number of individuals; SD=standard deviation

Appendix 9.9: Descriptive statistics for life satisfaction by welfare regime for the measures of adulthood socioeconomic position

	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD
	Southern				Scandinavian				Post-communist				Bismarckian			
Education level							Men									
low	1,332	63.4	7.5	1.6	323	26.7	8.3	1.4	449	44.0	6.8	2.1	841	28.3	7.7	1.5
medium	473	22.5	7.8	1.3	488	40.4	8.6	1.2	425	41.6	7.1	1.9	1,245	41.9	7.8	1.6
high	296	14.1	7.8	1.4	398	32.9	8.5	1.2	147	14.4	7.9	1.8	883	29.7	7.9	1.4
Main occupation																
1st skill level	418	19.9	7.4	1.6	104	8.6	8.3	1.8	48	4.7	7.1	1.9	346	11.7	7.5	1.4
2nd skill level	1,307	62.2	7.6	1.5	571	47.2	8.5	1.3	706	69.1	6.9	1.9	1,443	48.6	7.7	1.5
3rd skill level	170	8.1	7.7	1.6	155	12.8	8.5	1.1	157	15.4	7.3	2.3	526	17.7	8.0	1.5
4th skill level	206	9.8	8.0	1.2	379	31.3	8.6	1.1	110	10.8	8.0	1.5	654	22.0	8.0	1.3
Education level							Women									
low	1,390	68.2	7.1	1.8	384	28.9	8.5	1.4	648	47.4	6.3	2.2	1,236	38.5	7.4	1.8
medium	455	22.3	7.8	1.7	428	32.2	8.4	1.3	629	46.0	7.0	1.9	1,249	38.9	7.7	1.7
high	192	9.4	7.8	1.3	516	38.9	8.6	1.2	91	6.7	7.2	1.7	724	22.6	7.9	1.5
Main occupation																
1st skill level	601	29.5	7.1	1.9	153	11.5	8.5	1.4	191	14.0	6.5	2.2	533	16.6	7.3	2.1
2nd skill level	1,162	57.0	7.3	1.7	769	57.9	8.5	1.3	905	66.2	6.6	2.0	1,951	60.8	7.7	1.7
3rd skill level	100	4.9	7.8	1.4	180	13.6	8.6	1.2	138	10.1	7.2	1.9	216	6.7	7.8	1.5
4th skill level	174	8.5	7.8	1.2	226	17.0	8.5	1.3	134	9.8	7.2	1.8	509	15.9	7.8	1.5

LS=life satisfaction; N=number of individuals; SD=standard deviation

Appendix 9.10: Age-adjusted multilevel models for each measure of socioeconomic position estimating life satisfaction SIIs excluding each country in turn

	Childhood				Adulthood			
	Number of books	Rooms per capita	Amenities	Breadwinner occupation [a]	Education level	Main occupation [a]	Income	Wealth
Country excluded	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]	SII [95% CI]
				Men				
None	0.40*** [0.28,0.53]	0.18** [0.06,0.29]	0.22*** [0.10,0.35]	0.24** [0.09,0.38]	0.51*** [0.38,0.64]	0.48*** [0.35,0.61]	0.72*** [0.60,0.83]	0.77*** [0.66,0.89]
Austria	0.38*** [0.25,0.51]	0.16** [0.05,0.28]	0.22*** [0.09,0.34]	0.24** [0.09,0.39]	0.49*** [0.35,0.62]	0.49*** [0.36,0.62]	0.68*** [0.56,0.79]	0.77*** [0.66,0.89]
Belgium	0.44*** [0.31,0.58]	0.28*** [0.15,0.40]	0.28*** [0.14,0.41]	0.31*** [0.15,0.47]	0.54*** [0.40,0.68]	0.54*** [0.40,0.69]	0.75*** [0.63,0.87]	0.78*** [0.65,0.90]
Czech Republic	0.33*** [0.20,0.46]	0.18** [0.06,0.30]	0.17* [0.04,0.29]	0.20** [0.05,0.35]	0.47*** [0.33,0.60]	0.44*** [0.31,0.58]	0.71*** [0.59,0.82]	0.75*** [0.63,0.87]
Denmark	0.44*** [0.30,0.57]	0.18** [0.05,0.30]	0.23*** [0.10,0.36]	0.19* [0.04,0.35]	0.53*** [0.39,0.67]	0.48*** [0.34,0.62]	0.74*** [0.61,0.86]	0.80*** [0.68,0.92]
Spain	0.42*** [0.29,0.55]	0.20** [0.08,0.32]	0.22*** [0.10,0.35]	0.26*** [0.11,0.41]	0.52*** [0.38,0.65]	0.48*** [0.35,0.61]	0.76*** [0.64,0.87]	0.78*** [0.66,0.90]
France	0.39*** [0.26,0.52]	0.17** [0.05,0.29]	0.23*** [0.10,0.36]	0.24** [0.09,0.40]	0.54*** [0.40,0.67]	0.49*** [0.36,0.63]	0.73*** [0.61,0.85]	0.79*** [0.67,0.91]
Germany	0.40*** [0.26,0.53]	0.17** [0.05,0.29]	0.20** [0.07,0.33]	0.17* [0.02,0.32]	0.49*** [0.36,0.63]	0.45*** [0.32,0.59]	0.70*** [0.59,0.82]	0.75*** [0.63,0.86]
Greece	0.39*** [0.26,0.53]	**0.11 [-0.02,0.23]**	0.25*** [0.12,0.38]	0.24** [0.09,0.39	0.46*** [0.32,0.60]	0.46*** [0.33,0.60]	0.73*** [0.61,0.85]	0.71*** [0.59,0.83]
Italy	0.40*** [0.26,0.53]	0.13* [0.00,0.25]	0.22*** [0.09,0.35]	0.23** [0.08,0.39]	0.50*** [0.36,0.63]	0.48*** [0.34,0.62]	0.68*** [0.56,0.81]	0.75*** [0.63,0.87]
Netherlands	0.42*** [0.28,0.56]	0.18** [0.06,0.30]	0.23*** [0.10,0.36]	0.26** [0.10,0.42]	0.53*** [0.39,0.68]	0.50*** [0.36,0.64]	0.76*** [0.63,0.88]	0.83*** [0.70,0.95]

Poland	0.38*** [0.26,0.51]	0.19** [0.08,0.31]	0.21*** [0.09,0.34]	0.24** [0.10,0.38]	0.48*** [0.35,0.62]	0.47*** [0.35,0.60]	0.68*** [0.57,0.80]	0.75*** [0.63,0.86]
Sweden	0.44*** [0.30,0.57]	0.18** [0.05,0.30]	0.24*** [0.11,0.37]	0.27*** [0.12,0.42]	0.54*** [0.40,0.67]	0.49*** [0.36,0.63]	0.71*** [0.59,0.83]	0.79*** [0.67,0.91]
Switzerland	0.43*** [0.30,0.56]	0.20** [0.08,0.32]	0.23*** [0.10,0.35]	0.25*** [0.10,0.40]	0.53*** [0.40,0.67]	0.49*** [0.36,0.62]	0.73*** [0.61,0.85]	0.79*** [0.67,0.91]
Women								
Country excluded	**Number of books**	**Rooms per capita**	**Amenities**	**Breadwinner occupation [a]**	**Education level**	**Main occupation [a]**	**Income**	**Wealth**
None	0.60*** [0.47,0.73]	0.36*** [0.23,0.48]	0.44*** [0.31,0.57]	0.42*** [0.26,0.57]	0.61*** [0.47,0.75]	0.53*** [0.39,0.67]	0.98*** [0.86,1.10]	0.93*** [0.81,1.05]
Austria	0.59*** [0.45,0.72]	0.35*** [0.23,0.47]	0.43*** [0.30,0.56]	0.43*** [0.28,0.58]	0.61*** [0.47,0.75]	0.52*** [0.38,0.67]	0.94*** [0.81,1.06]	0.90*** [0.78,1.03]
Belgium	0.65*** [0.51,0.79]	0.41*** [0.28,0.54]	0.51*** [0.37,0.65]	0.47*** [0.31,0.64]	0.66*** [0.51,0.81]	0.61*** [0.46,0.76]	1.02*** [0.89,1.15]	0.94*** [0.81,1.07]
Czech Republic	0.52*** [0.38,0.65]	0.32*** [0.19,0.44]	0.38*** [0.24,0.51]	0.34*** [0.19,0.50]	0.49*** [0.35,0.64]	0.49*** [0.35,0.64]	0.91*** [0.79,1.04]	0.89*** [0.77,1.02]
Denmark	0.67*** [0.53,0.81]	0.38*** [0.25,0.51]	0.47*** [0.33,0.61]	0.44*** [0.28,0.61]	0.64*** [0.49,0.79]	0.56*** [0.41,0.71]	1.00*** [0.87,1.13]	0.95*** [0.83,1.08]
Spain	0.56*** [0.43,0.70]	0.35*** [0.22,0.47]	0.42*** [0.28,0.55]	0.38*** [0.22,0.53]	0.58*** [0.44,0.72]	0.45*** [0.31,0.60]	1.00*** [0.87,1.12]	0.93*** [0.81,1.06]
France	0.57*** [0.44,0.71]	0.33*** [0.20,0.45]	0.43*** [0.30,0.57]	0.39*** [0.23,0.55]	0.59*** [0.44,0.73]	0.50*** [0.36,0.65]	0.97*** [0.85,1.10]	0.94*** [0.81,1.06]
Germany	0.60*** [0.46,0.74]	0.34*** [0.21,0.47]	0.41*** [0.28,0.55]	0.38*** [0.23,0.54]	0.62*** [0.47,0.76]	0.54*** [0.40,0.69]	0.97*** [0.84,1.09]	0.91*** [0.78,1.03]
Greece	0.62*** [0.48,0.75]	0.34*** [0.22,0.47]	0.46*** [0.32,0.59]	0.44*** [0.28,0.60]	0.58*** [0.43,0.73]	0.49*** [0.34,0.64]	0.98*** [0.86,1.11]	0.92*** [0.79,1.04]
Italy	0.53*** [0.39,0.66]	0.34*** [0.21,0.46]	0.39*** [0.26,0.53]	0.42*** [0.26,0.58]	0.56*** [0.41,0.70]	0.55*** [0.40,0.70]	0.95*** [0.83,1.08]	0.90*** [0.78,1.03]

Netherlands	0.65*** [0.51,0.80]	0.37*** [0.24,0.50]	0.45*** [0.31,0.59]	0.45*** [0.29,0.62]	0.68*** [0.53,0.83]	0.58*** [0.43,0.73]	1.03*** [0.91,1.16]	0.97*** [0.84,1.10]
Poland	0.58*** [0.45,0.72]	0.34*** [0.21,0.46]	0.41*** [0.28,0.54]	0.38*** [0.22,0.53]	0.56*** [0.42,0.71]	0.52*** [0.37,0.66]	0.95*** [0.83,1.08]	0.90*** [0.78,1.02]
Sweden	0.63*** [0.49,0.77]	0.39*** [0.26,0.52]	0.45*** [0.31,0.58]	0.46*** [0.30,0.63]	0.68*** [0.54,0.83]	0.59*** [0.44,0.73]	1.01*** [0.88,1.14]	0.96*** [0.84,1.09]
Switzerland	0.62*** [0.48,0.75]	0.37*** [0.24,0.49]	0.46*** [0.32,0.59]	0.42*** [0.26,0.58]	0.63*** [0.49,0.77]	0.55*** [0.40,0.69]	0.98*** [0.86,1.11]	0.93*** [0.81,1.06]

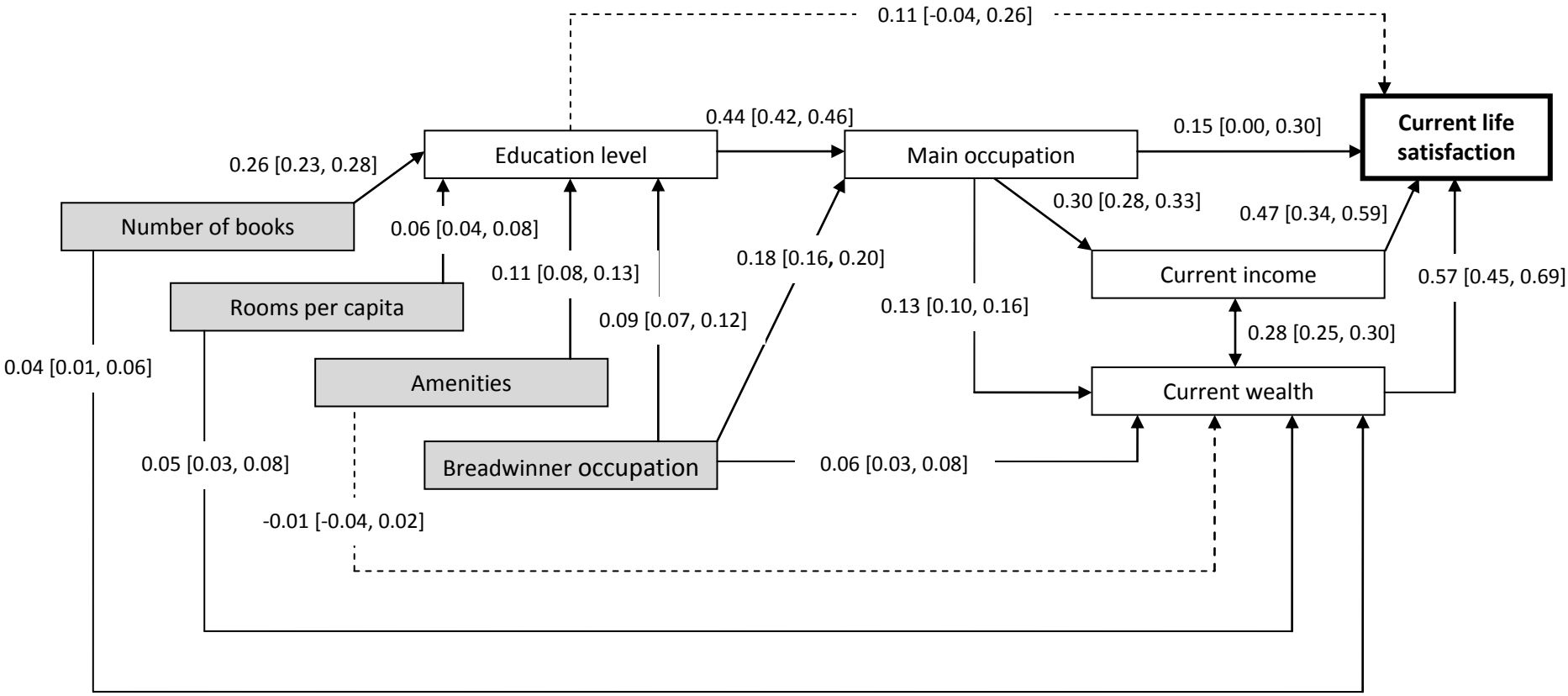
CI=confidence interval; N=number of individuals; SII=slope index of inequality; controlled for age and age^2; [a] skill level; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix 10.1: Model fit statistics for the base path model for life satisfaction

Gender	AIC	Chi-square df (p-value)	RMSEA [95% CI]	CFI	TLI	SRMR
Men	29066.75	749.74 df=65 (p<0.001)	0.038 [0.036, 0.040]	0.90	0.85	0.023
Women	32384.16	642.54 df=65 (p<0.001)	0.033 [0.031, 0.036]	0.92	0.89	0.022

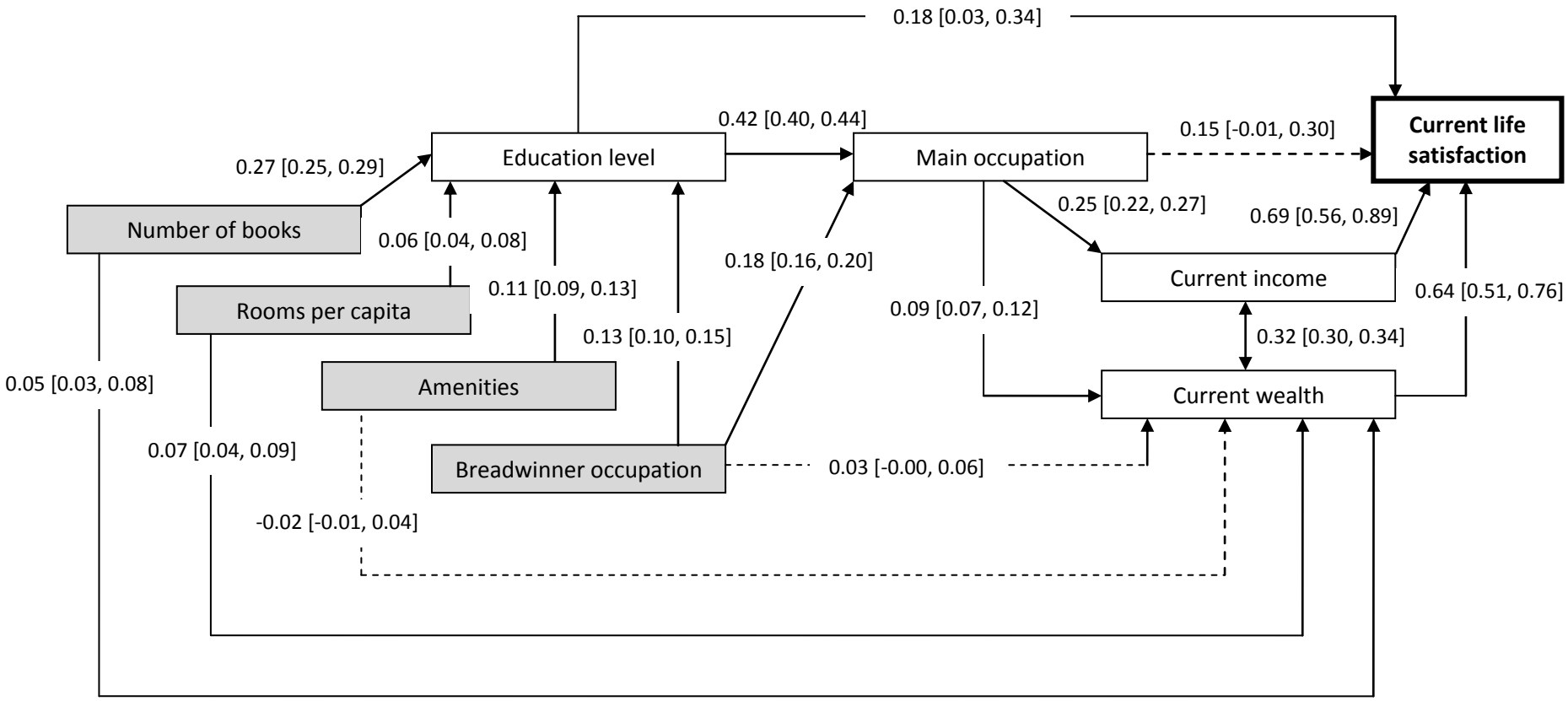
AIC=Akaike information criteria; CFI=comparative fit index; df=degrees of freedom; RMSEA=root mean square error of approximation; SRMR= Standardized Root Mean Square Residual; TLI=Tucker Lewis Index

Appendix 10.2: Path analysis (showing unstandardised regression coefficients with 95% confidence intervals) for the life satisfaction base model among men



Grey boxes indicated childhood measure of socioeconomic position; controlled for age and country fixed effects; dashed line shows statistically insignificant path (p>0.05); correlations between the childhood measures of socioeconomic position and residual variances not shown

Appendix 10.3: Path analysis (showing unstandardised regression coefficients with 95% confidence intervals) for the life satisfaction base model among women



Grey boxes indicate measures of childhood socioeconomic position; controlled for age and country fixed effects; dashed line shows statistically insignificant path (p>0.05); correlations between the childhood measures of socioeconomic position and residual variances not shown

Appendix 11.1: Descriptive statistics for life satisfaction according to the socioeconomic advantage scores (derived using the binary method)

	Men				*Women*			
Score	**N**	**%**	**Mean**	**SD**	**N**	**%**	**Mean**	**SD**
Childhood								
0	1,424	19.5	**7.5**	1.7	1,449	18.2	**6.9**	2.0
1	1,682	23.0	**7.5**	1.6	1,709	21.5	**7.3**	1.8
2	1,785	24.5	**7.8**	1.6	1,961	24.7	**7.6**	1.6
3	1,539	21.1	**7.9**	1.5	1,826	23.0	**7.8**	1.6
4	870	11.9	**8.0**	1.4	997	12.6	**7.9**	1.6
Adulthood								
0	955	13.1	**7.2**	1.7	1,068	13.5	**6.7**	2.1
1	1,474	20.2	**7.5**	1.6	1,599	20.1	**7.2**	1.8
2	1,793	24.6	**7.6**	1.6	2,035	25.6	**7.4**	1.7
3	1,654	22.7	**7.9**	1.5	1,800	22.7	**7.8**	1.6
4	1,424	19.5	**8.1**	1.4	1,440	18.1	**8.1**	1.5
Cumulative								
0	405	5.6	**7.1**	1.8	469	5.9	**6.4**	2.2
1	736	10.1	**7.4**	1.7	783	9.9	**6.9**	2.0
2	946	13.0	**7.4**	1.6	952	12.0	**7.1**	1.8
3	983	13.5	**7.7**	1.5	1,063	13.4	**7.3**	1.7
4	1,146	15.7	**7.6**	1.6	1,208	15.2	**7.6**	1.6
5	1,078	14.8	**7.8**	1.7	1,165	14.7	**7.7**	1.6
6	911	12.5	**8.1**	1.4	1,121	14.1	**7.7**	1.7
7	710	9.7	**8.0**	1.2	781	9.8	**8.1**	1.5
8	385	5.3	**8.1**	1.3	400	5.0	**8.2**	1.2

LS= life satisfaction; N=number; SD=standard deviation

Appendix 11.2: Pearson's correlation coefficients for the association between the childhood, adulthood, and cumulative socioeconomic advantage scores and life satisfaction

	Men		*Women*	
	r	**P-value**	**r**	**P-value**
Childhood	0.07	p<0.01	0.14	p<0.01
Adulthood	0.18	p<0.01	0.21	p<0.01
Cumulative	0.15	p<0.01	0.21	p<0.01

r=Pearson’s correlation coefficient

Appendix 11.3: Descriptive statistics for life satisfaction according to the potential mediating variables

	MEN				WOMEN			
	N	**%**	**Mean LS**	**SD**	**N**	**%**	**Mean LS**	**SD**
Employment status								
Retired	4,077	55.9	**7.7**	1.6	3,630	45.7	**7.3**	1.9
Employed or self-employed	2,878	39.4	**7.9**	1.5	2,452	30.9	**7.8**	1.6
Other (unemployed, sick or disabled)	345	4.7	**6.7**	2.0	447	5.6	**6.7**	2.0
Homemaker	-	-	-	-	1,413	17.8	**7.5**	1.7
Ability to make ends meet								
With great difficulty	689	9.4	**6.7**	1.8	852	10.7	**6.3**	2.1
With some difficulty	1,879	25.7	**7.4**	1.6	2,219	27.9	**7.1**	1.8
Fairly easily	2,514	34.4	**7.9**	1.4	2,649	33.4	**7.6**	1.6
Easily	2,218	30.4	**8.2**	1.4	2,222	28.0	**8.2**	1.4
	p<0.001 for linear trend				p<0.001 for linear trend			
Limitations with daily activities								
No	4,890	67.0	**7.9**	1.4	4,855	61.1	**7.8**	1.6
Yes	2,410	33.0	**7.3**	1.8	3,087	38.9	**6.9**	1.9
Sad or depressed mood								
No	5,478	75.0	**8.0**	1.4	4,622	58.2	**8.0**	1.5
Yes	1,822	25.0	**7.0**	1.8	3,320	41.8	**6.9**	1.9
Marital status								
Living with spouse or partner	6,378	87.4	**7.8**	1.5	6,350	79.9	**7.6**	1.7
Living as single	922	12.6	**7.2**	1.7	1,592	20.1	**7.0**	1.0

LS=life satisfaction; N=number; SD=standard deviation

Appendix 11.4: Descriptive statistics for life satisfaction by origin (occupation of main breadwinner during childhood) and destination (main occupation) classes

	Destination (main occupation)							
	Men				Women			
	Mean LS	SD	Mean LS	SD	Mean LS	SD	Mean LS	SD
Origin (childhood)	**Manual**		**Non-manual**		**Manual**		**Non-manual**	
Manual	**7.5**	1.7	**7.8**	1.5	**7.1**	1.9	**7.6**	1.7
Non-manual	**7.6**	1.6	**8.0**	1.4	**7.4**	1.9	**7.8**	1.6

LS=life satisfaction; SD=standard deviation

Appendix 11.5: Descriptive statistics for life satisfaction by origin (occupation aged 16 to 34 years) and destination (occupation aged 35 to 49 years)

	Destination (35 to 49 years)							
	Men				Women			
	Mean LS	SD	Mean LS	SD	Mean LS	SD	Mean LS	SD
Origin (16 to 34 years)	**Manual**		**Mon-manual**		**Manual**		**Non-manual**	
Manual	**7.5**	1.7	**7.8**	1.5	**7.0**	2.0	**7.6**	1.7
Non-manual	**7.5**	1.6	**7.9**	1.5	**7.5**	1.7	**7.7**	1.6

LS=life satisfaction; SD=standard deviation

Appendix 11.6: Descriptive statistics for life satisfaction according to childhood and adulthood advantage and disadvantage

	Men				Women			
	N	%	Mean LS	SD	N	%	Mean LS	SD
Childhood								
Disadvantaged	3,872	53.0	**7.6**	1.6	4,143	52.2	**7.2**	1.9
Advantaged	3,428	47.0	**7.8**	1.5	3,799	47.8	**7.7**	1.7
Adulthood								
Disadvantaged	3,835	52.5	**7.5**	1.6	4,104	51.7	**7.1**	1.9
Advantaged	3,465	47.5	**7.9**	1.5	3,838	48.3	**7.8**	1.6

LS=life satisfaction; N=number; SD=standard deviation

Appendix 11.7: Descriptive statistics for life satisfaction by socioeconomic trajectory

	Men				Women			
Trajectory	**N**	**%**	**Mean LS**	**SD**	**N**	**%**	**Mean LS**	**SD**
Disadvantaged-Disadvantaged	2,538	34.8	**7.5**	1.6	2,732	34.4	**7.0**	1.9
Advantaged-Disadvantaged	1,297	17.8	**7.5**	1.7	1,372	17.3	**7.4**	1.8
Disadvantaged-Advantaged	1,334	18.3	**7.9**	1.5	1,411	17.8	**7.7**	1.7
Advantaged-Advantaged	2,131	29.2	**8.0**	1.4	2,427	30.6	**7.9**	1.5

LS= life satisfaction; N=number; SD=standard deviation

Appendix 11.8: Descriptive statistics for life satisfaction for each potential mediating variable by welfare regime and gender

	Southern				Scandinavian				Post-communist				Bismarckian			
	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD
Employment status	**Men**															
retired	1,242	59.1	7.6	1.6	570	47.1	8.5	1.4	581	56.9	7.1	2.0	1,684	56.7	7.8	1.5
employed or self-employed	780	37.1	7.8	1.3	600	49.6	8.5	1.1	369	36.1	7.4	1.7	1,129	38.0	7.9	1.5
other	79	3.8	7.2	1.6	39	3.2	8.1	1.5	71	7.0	5.6	2.2	156	5.3	6.8	1.9
Ability to make ends meet																
with great difficulty	392	18.7	6.9	1.7	13	1.1	7.3	1.2	170	16.7	6.2	2.0	114	3.8	6.6	1.7
with some difficulty	865	41.2	7.6	1.5	102	8.4	7.7	1.6	453	44.4	7.1	1.9	459	15.5	7.2	1.6
fairly easily	629	29.9	7.8	1.4	415	34.3	8.4	1.2	315	30.9	7.7	1.8	1,155	38.9	7.8	1.4
easily	215	10.2	8.1	1.1	679	56.2	8.7	1.1	83	8.1	7.9	1.7	1,241	41.8	8.2	1.4
Limitations with daily activities																
No	1,536	73.1	7.8	1.3	851	70.4	8.6	1.1	532	52.1	7.5	1.8	1,971	66.4	8.0	1.4
Yes	565	26.9	7.1	1.8	358	29.6	8.2	1.5	489	47.9	6.7	2.0	998	33.6	7.4	1.7
Sad or depressed mood																
No	1,654	78.7	7.8	1.3	935	77.3	8.6	1.2	706	69.1	7.6	1.7	2,183	73.5	8.1	1.3
Yes	447	21.3	6.9	1.7	274	22.7	8.0	1.4	315	30.9	6.3	2.0	786	26.5	7.2	1.8
Marital status																
Living with spouse or partner	1,875	89.2	7.7	1.5	85.19	85.2	8.7	1.1	881	86.3	7.2	1.9	2,592	87.3	7.9	1.4
Living as single	226	10.8	7.3	1.5	179	14.8	7.9	1.4	140	13.7	6.6	2.1	377	12.7	7.1	1.6
Employment status	**Women**															
retired	697	34.2	7.3	1.8	599	45.1	8.5	1.3	937	68.5	6.6	2.0	1,397	43.5	7.5	1.8
employed or self-employed	430	21.1	7.5	1.4	625	47.1	8.6	1.2	305	22.3	7.1	1.8	1,092	34.0	7.9	1.6
other	78	3.8	6.0	1.9	84	6.3	7.6	1.7	88	6.4	6.5	2.1	197	6.1	7.0	1.8
homemaker	832	40.8	7.4	1.7	20	1.5	8.7	0.9	38	2.8	6.4	2.2	523	16.3	7.9	1.5
Ability to make ends meet																

with great difficulty	419	20.6	6.5	2.0	25	1.9	8.0	1.9	250	18.3	5.7	2.1	158	4.9	6.5	2.3
with some difficulty	848	41.6	7.2	1.8	128	9.6	8.2	1.4	662	48.4	6.8	1.8	581	18.1	7.2	1.7
fairly easily	588	28.9	7.6	1.5	437	32.9	8.3	1.3	370	27.0	7.4	1.9	1,254	39.1	7.6	1.7
easily	182	8.9	7.9	1.3	738	55.6	8.7	1.2	86	6.3	7.8	1.6	1,216	37.9	8.2	1.4
Limitations with daily activities																
No	1,355	66.5	7.7	1.5	872	65.7	8.7	1.1	626	45.8	7.2	1.8	2,002	62.4	7.9	1.6
Yes	682	33.5	6.6	1.9	456	34.3	8.2	1.5	742	54.2	6.3	2.1	1,207	37.6	7.3	1.8
Sad or depressed mood																
No	1,205	59.2	7.9	1.3	887	66.8	8.8	1.1	681	49.8	7.3	1.9	1,849	57.6	8.2	1.4
Yes	832	40.8	6.6	1.9	441	33.2	8.0	1.5	687	50.2	6.3	2.0	1,360	42.4	7.2	1.8
Marital status																
Living with spouse or partner	1,771	86.9	7.4	1.7	1,039	78.2	8.7	1.2	1,002	73.3	7.0	1.9	2,538	79.1	7.8	1.6
Living as single	266	13.1	6.8	1.8	289	21.8	8.1	1.5	366	26.8	6.2	2.0	671	20.9	7.3	1.8

LS=life satisfaction; N=number of individuals; SD=standard deviation

Appendix 11.9: Age-adjusted single level regression models for cumulative advantage scale and life satisfaction in the Southern regime (adjusting for potential mediating variables)

	(1) Coeff. 95% CI	(2) Coeff. 95% CI	(3) Coeff. 95% CI	(4) Coeff. 95% CI	(5) Coeff. 95% CI	(6) Coeff. 95% CI
Men						
Cumulative advantage scale	**0.20*** [0.15,0.25]**	**0.09** [0.03,0.15]**	**0.18*** [0.12,0.23]**	**0.21*** [0.15,0.26]**	**0.20*** [0.15,0.26]**	**0.06* [0.01,0.12]**
***Current employment status [a]:* employed**	0.06 [-0.14,0.26]	-	-	-	-	0.01 [-0.17,0.20]
***Current employment status [a]:* other**	-0.60** [-0.96,-0.24]	-	-	-	-	-0.25 [-0.59,0.08]
***Ability to make ends meet* [b]**	-	0.40*** [0.33,0.48]	-	-	-	0.35*** [0.28,0.42]
***Limited in daily activities* [c]**	-	-	-0.76*** [-0.91,-0.61]	-	-	-0.54*** [-0.69,-0.40]
***Sad or depressed mood* [c]**	-	-	-	-1.01*** [-1.17,-0.86]	-	-0.81*** [-0.96,-0.66]
***Marital status: living as single* [d]**	-	-	-	-	-0.45*** [-0.65,-0.24]	-0.51*** [-0.71,-0.32]
Women						
Cumulative advantage scale	**0.30*** [0.24,0.36]**	**0.18*** [0.12,0.24]**	**0.25*** [0.19,0.31]**	**0.26*** [0.20,0.31]**	**0.30*** [0.24,0.35]**	**0.16*** [0.10,0.22]**
***Current employment status [a]:* employed**	-0.10 [-0.34,0.15]	-	-	-	-	-0.20 [-0.42,0.02]
***Current employment status [a]:* other**	-0.00 [-0.18,0.18]	-	-	-	-	-0.06 [-0.23,0.11]
***Ability to make ends meet* [b]**	-	0.41*** [0.33,0.50]	-	-	-	0.29*** [0.20,0.37]
***Limited in daily activities* [c]**	-	-	-0.90*** [-1.05,-0.74]	-	-	-0.65*** [-0.80,-0.51]
***Sad or depressed mood* [c]**	-	-	-	-1.12*** [-1.27,-0.98]	-	-0.92*** [-1.06,-0.78]
***Marital status: living as single* [d]**	-	-	-	-	-0.69*** [-0.91,-0.48]	-0.54*** [-0.75,-0.34]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 11.10: Age-adjusted single level regression models for the cumulative advantage scale and life satisfaction in the Scandinavian regime (adjusting for potential mediating variables)

	(1) Coeff. 95% CI	(2) Coeff. 95% CI	(3) Coeff. 95% CI	(4) Coeff. 95% CI	(5) Coeff. 95% CI	(6) Coeff. 95% CI
	Men					
Cumulative advantage scale	**0.11*** [0.06,0.17]**	**0.08** [0.02,0.13]**	**0.11*** [0.05,0.16]**	**0.13*** [0.08,0.18]**	**0.09** [0.03,0.14]**	**0.05 [-0.00,0.10]**
***Current employment status [a]:* employed**	0.24* [0.02,0.46]	-	-	-	-	0.13 [-0.08,0.33]
***Current employment status [a]:* other**	-0.09 [-0.51,0.33]	-	-	-	-	0.12 [-0.28,0.52]
***Ability to make ends meet* [b]**	-	0.38*** [0.28,0.48]	-	-	-	0.29*** [0.19,0.39]
***Limited in daily activities* [c]**	-	-	-0.41*** [-0.57,-0.26]	-	-	-0.31*** [-0.46,-0.16]
***Sad or depressed mood* [c]**	-	-	-	-0.68*** [-0.84,-0.52]	-	-0.59*** [-0.74,-0.43]
***Marital status: living as single* [d]**	-	-	-	-	-0.58*** [-0.78,-0.38]	-0.50*** [-0.69,-0.31]
	Women					
Cumulative advantage scale	**0.07** [0.02,0.12]**	**0.05* [0.00,0.11]**	**0.06* [0.00,0.11]**	**0.07** [0.02,0.12]**	**0.06* [0.01,0.12]**	**0.00 [-0.05,0.05]**
***Current employment status [a]:* employed**	0.06 [-0.16,0.28]	-	-	-	-	-0.01 [-0.22,0.20]
***Current employment status [a]:* other**	-0.63*** [-0.93,-0.33]	-	-	-	-	-0.42** [-0.70,-0.14]
***Ability to make ends meet* [b]**	-	0.27*** [0.17,0.36]	-	-	-	0.14** [0.05,0.23]
***Limited in daily activities* [c]**	-	-	-0.53*** [-0.67,-0.39]	-	-	-0.36*** [-0.50,-0.22]
***Sad or depressed mood* [c]**	-	-	-	-0.76*** [-0.90,-0.62]	-	-0.63*** [-0.77,-0.50]
***Marital status: living as single* [d]**	-	-	-	-	-0.62*** [-0.78,-0.45]	-0.54*** [-0.70,-0.38]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 11.11: Age adjusted single level regression models for the cumulative advantage scale and life satisfaction in the Post-communist regime (adjusting for potential mediating variables)

	(1) Coeff. 95% CI	(2) Coeff. 95% CI	(3) Coeff. 95% CI	(4) Coeff. 95% CI	(5) Coeff. 95% CI	(6) Coeff. 95% CI
	Men					
Cumulative advantage scale	**0.29*** [0.20,0.39]**	**0.22*** [0.12,0.32]**	**0.27*** [0.17,0.36]**	**0.32*** [0.23,0.42]**	**0.31*** [0.22,0.41]**	**0.17*** [0.07,0.26]**
***Current employment status [a]:* employed**	0.45* [0.08,0.82]	-	-	-	-	0.35* [0.00,0.69]
***Current employment status [a]:* other**	-1.08*** [-1.57,-0.59]	-	-	-	-	-0.63** [-1.09,-0.17]
***Ability to make ends meet* [b]**	-	0.47*** [0.33,0.62]	-	-	-	0.33*** [0.19,0.46]
***Limited in daily activities* [c]**	-	-	-0.91*** [-1.14,-0.69]	-	-	-0.66*** [-0.87,-0.44]
***Sad or depressed mood* [c]**	-	-	-	-1.29*** [-1.53,-1.04]	-	-1.04*** [-1.27,-0.80]
***Marital status: living as single* [d]**	-	-	-	-	-0.55*** [-0.88,-0.23]	-0.47** [-0.77,-0.17]
	Women					
Cumulative advantage scale	**0.43*** [0.34,0.52]**	**0.34*** [0.25,0.42]**	**0.38*** [0.29,0.46]**	**0.42*** [0.34,0.51]**	**0.43*** [0.34,0.51]**	**0.26*** [0.17,0.35]**
***Current employment status [a]:* employed**	0.28 [-0.07,0.64]	-	-	-	-	0.17 [-0.16,0.50]
***Current employment status [a]:* other**	-0.24 [-0.63,0.16]	-	-	-	-	-0.02 [-0.39,0.36]
***Ability to make ends meet* [b]**	-	0.53*** [0.40,0.66]	-	-	-	0.39*** [0.26,0.52]
***Limited in daily activities* [c]**	-	-	-0.87*** [-1.07,-0.67]	-	-	-0.62*** [-0.83,-0.42]
***Sad or depressed mood* [c]**	-	-	-	-0.98*** [-1.18,-0.78]	-	-0.77*** [-0.96,-0.57]
***Marital status: living as single* [d]**	-	-	-	-	-0.51*** [-0.74,-0.28]	-0.37** [-0.59,-0.14]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 11.12: Age adjusted single level regression models for the cumulative advantage scale and life satisfaction in the Bismarckian regime (adjusting for potential mediating variables)

	Coeff. 95% CI	Coeff. 95% CI	Coeff. 95% CI	Coeff. 95% CI	Coeff. 95% CI	Coeff. 95% CI
	Men					
Cumulative advantage scale	**0.11*** [0.07,0.15]**	**0.06** [0.02,0.10]**	**0.11*** [0.08,0.15]**	**0.12*** [0.08,0.15]**	**0.11*** [0.07,0.15]**	**0.04 [-0.00,0.07]**
***Current employment status [a]:* employed**	0.19* [0.03,0.35]	-	-	-	-	0.18* [0.03,0.33]
***Current employment status [a]:* other**	-0.68*** [-0.91,-0.44]	-	-	-	-	-0.21 [-0.44,0.01]
***Ability to make ends meet* [b]**	-	0.35*** [0.29,0.41]	-	-	-	0.28*** [0.23,0.34]
***Limited in daily activities* [c]**	-	-	-0.55*** [-0.65,-0.44]	-	-	-0.39*** [-0.49,-0.30]
***Sad or depressed mood* [c]**	-	-	-	-0.76*** [-0.87,-0.66]	-	-0.61*** [-0.72,-0.51]
***Marital status: living as single* [d]**	-	-	-	-	-0.52*** [-0.66,-0.38]	-0.45*** [-0.59,-0.32]
	Women					
Cumulative advantage scale	**0.18*** [0.14,0.22**	**0.10*** [0.06,0.14**	**0.17*** [0.13,0.21**	**0.17*** [0.13,0.21]**	**0.17*** [0.13,0.21]**	**0.09*** [0.05,0.13]**
***Current employment status [a]:* employed**	0.19* [0.02,0.36]	-	-	-	-	0.10 [-0.06,0.26]
***Current employment status [a]:* other**	0.11 [-0.04,0.26]	-	-	-	-	0.07 [-0.07,0.21]
***Ability to make ends meet* [b]**	-	0.41*** [0.35,0.47]	-	-	-	0.32*** [0.26,0.38]
***Limited in daily activities* [c]**	-	-	-0.56*** [-0.66,-0.45]	-	-	-0.42*** [-0.52,-0.32]
***Sad or depressed mood* [c]**	-	-	-	-0.81*** [-0.91,-0.71]	-	-0.66*** [-0.76,-0.57]
***Marital status: living as single* [d]**	-	-	-	-	-0.60*** [-0.73,-0.47]	-0.45*** [-0.57,-0.33]

CI=confidence interval; Coeff.=coefficient. [a] reference category is retired; [b] continuous variable; [c] binary variables (reference category is yes); [d] reference category is living with spouse or partner; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 11.13: Descriptive statistics for life satisfaction by origin (occupation of main breadwinner during childhood) and destination (main occupation) classes

	Destination (main occupation)															
	Southern				Scandinavian				Post-communist				Bismarckian			
	Mean LS	SD	Mean LS	SD	Mean LS	SD	Mean LS	SD	Mean LS	SD	Mean LS	SD	Mean LS	SD	Mean LS	SD
Origin (childhood)	Manual		Non-manual		Manual		Non-manual		Manual		Non-manual		Manual		Non-manual	
Manual	**7.5**	1.6	**7.7**	1.5	**8.4**	1.4	**8.6**	1.2	**6.9**	1.9	**7.4**	2.0	**7.6**	1.6	**7.8**	1.5
Non-manual	**7.6**	1.4	**7.8**	1.2	**8.2**	1.6	**8.6**	1.0	**6.7**	2.1	**7.7**	1.7	**7.8**	1.4	**8.0**	1.4
	Women															
Manual	**7.1**	1.8	**7.6**	1.6	**8.5**	1.3	**8.5**	1.3	**6.3**	2.1	**7.1**	1.9	**7.4**	1.9	**7.7**	1.6
Non-manual	**7.1**	1.7	**7.5**	1.5	**8.7**	1.5	**8.5**	1.3	**7.3**	1.6	**7.1**	1.8	**7.6**	2.1	**7.9**	1.6

LS=life satisfaction; SD=standard deviation

Appendix 11.14: Descriptive statistics for life satisfaction by childhood and adulthood socioeconomic advantage for men and women in different welfare regimes

	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD
	Southern				Scandinavian				Post-communist				Bismarckian			
Childhood	Men															
Disadvantaged	1,151	54.8	7.6	1.5	619	51.2	8.5	1.4	530	51.9	6.9	2.0	1,572	52.9	7.7	1.5
Advantaged	950	45.2	7.7	1.5	590	48.8	8.5	1.1	491	48.1	7.3	1.9	1,397	47.1	7.9	1.5
Adulthood																
Disadvantaged	1,118	53.2	7.4	1.6	621	51.4	8.4	1.4	540	52.9	6.8	2.0	1,556	52.4	7.6	1.5
Advantaged	983	46.8	7.9	1.4	588	48.6	8.6	1.1	481	47.1	7.5	1.8	1,413	47.6	8.0	1.4
Childhood	Women															
Disadvantaged	1,100	54.0	7.1	1.8	670	50.5	8.5	1.4	715	52.3	6.5	2.1	1,658	51.7	7.4	1.8
Advantaged	937	46.0	7.5	1.6	658	49.5	8.6	1.2	653	47.7	7.0	1.9	1,551	48.3	7.9	1.6
Adulthood																
Disadvantaged	1,087	53.4	7.0	1.9	660	49.7	8.4	1.4	710	51.9	6.3	2.1	1,647	51.3	7.4	1.8
Advantaged	950	46.6	7.6	1.5	668	50.3	8.7	1.2	658	48.1	7.2	1.8	1,562	48.7	8.0	1.5

LS=life satisfaction; N=number of individuals; SD=standard deviation

Appendix 11.15: Descriptive statistics for life satisfaction by socioeconomic trajectory for men and women in different welfare regimes

	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD	N	%	Mean LS	SD
	Southern				Scandinavian				Post-communist				Bismarckian			
Trajectory	Men															
Disadvantaged-Disadvantaged	758	36.1	**7.4**	1.6	410	33.9	**8.4**	1.5	342	33.5	**6.7**	2.0	1,028	34.6	**7.5**	1.5
Advantaged-Disadvantaged	360	17.1	**7.3**	1.6	211	17.5	**8.3**	1.2	198	19.4	**6.9**	2.0	528	17.8	**7.7**	1.6
Disadvantaged-Advantaged	393	18.7	**7.9**	1.3	209	17.3	**8.7**	1.2	188	18.4	**7.2**	1.9	544	18.3	**8.0**	1.5
Advantaged-Advantaged	590	28.1	**7.8**	1.4	379	31.3	**8.6**	1.0	293	28.7	**7.6**	1.7	869	29.3	**8.1**	1.4
Trajectory	Women															
Disadvantaged-Disadvantaged	752	36.9	**6.9**	1.9	443	33.4	**8.3**	1.5	457	33.4	**6.1**	2.1	1,080	33.7	**7.2**	1.8
Advantaged-Disadvantaged	335	16.4	**7.1**	1.8	217	16.3	**8.5**	1.2	253	18.5	**6.5**	2.0	567	17.7	**7.6**	1.7
Disadvantaged-Advantaged	348	17.1	**7.5**	1.6	227	17.1	**8.7**	1.0	258	18.9	**7.0**	1.9	578	18.0	**7.9**	1.6
Advantaged-Advantaged	602	29.6	**7.7**	1.5	441	33.2	**8.6**	1.2	400	29.2	**7.3**	1.7	984	30.7	**8.1**	1.4

LS=life satisfaction; N=number of individuals; SD=standard deviation

References

Abel, T. (2008). Cultural capital and social inequality in health. *Journal of Epidemiology and Community Health,* 62, e13.

Aidukaite, J. (2009). Old welfare state theories and new welfare regimes in Eastern Europe: Challenges and implications. *Communist and Post-Communist Studies,* 42, 23-39.

Andersen, T.M. (2004). Challenges to the Scandinavian welfare model. *European Journal of Political Economy,* 20, 743-754.

Antikainen, A. (2006). In search of the Nordic model in education. *Scandinavian journal of educational research,* 50, 229-243.

Armstrong, B.G. (1998). Effect of measurement error on epidemiological studies of environmental and occupational exposures. *Occupational and Environmental Medicine,* 55, 651-656.

Arts, W., & Gelissen, J. (2012). Models of the welfare state. In F.G. Castles, S. Leibfried, J. Lewis, H. Obinger, & C. Pierson (Eds.), *The Oxford Handbook of the Welfare State*. Oxford, UK: Oxford University Press.

Avendano, M., Glymour, M.M., Banks, J., & Mackenbach, J.P. (2009). Health Disadvantage in US Adults Aged 50 to 74 Years: A Comparison of the Health of Rich and Poor Americans With That of Europeans. *American Journal of Public Health,* 99, 540-548.

Baayen, R.H., Davidson, D.J., & Bates, D.M. (2008). Mixed-effects modeling with crossed random effects for subjects and items. *Journal of Memory and Language,* 59, 390-412.

Bambra, C. (2007). Going beyond The three worlds of welfare capitalism: regime theory and public health research. *Journal of Epidemiology and Community Health,* 61, 1098-1102.

Bambra, C. (2011). Health inequalities and welfare state regimes: theoretical insights on a public health 'puzzle'. *Journal of Epidemiology and Community Health,* 65, 740-745

Bambra, C. (2012). *Work, Worklessness, and the Political Economy of Health*: Oxford Univ Press.

Bambra, C., Fox, D., & Scott-Samuel, A. (2005). Towards a politics of health. *Health Promotion International,* 20, 187-193.

Bambra, C., Netuveli, G., & Eikemo, T. (2010). Welfare state regime life courses : the development of Western European welfare state regimes and age related patterns of educational inequalities in self-reported health. *International Journal of Health Services,* 40, 399-420.

Barker, D., Coggon, D., Osmond, C., & Wickham, C. (1990). Poor housing in childhood and high rates of stomach cancer in England and Wales. *British Journal of Cancer,* 61, 575.

Barker, D.J. (1995). Fetal origins of coronary heart disease. *BMJ: British Medical Journal,* 311, 171.

Barnett, K., Mercer, S.W., Norbury, M., Watt, G., Wyke, S., & Guthrie, B. (2012). Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. *The Lancet,* 380, 37-43.

Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual Differences,* 42, 815-824.

Bartley, M. (2004). *Health inequality: an introduction to theories, concepts, and methods*. Cambridge: Polity Press.

Bartley, M., & Blane, D. (2009). Life-course influences on health at older ages. In H. Graham (Ed.), *Understanding health inequalities*: McGraw-Hill International.

Bartley, M., Fitzpatrick, R., Firth, D., & Marmot, M. (2000). Social distribution of cardiovascular disease risk factors: change among men in England 1984–1993. *Journal of Epidemiology and Community Health,* 54, 806-814.

Bartley, M., & Owen, C. (1996). Relation between socioeconomic status, employment, and health during economic change, 1973-93. *BMJ,* 313, 445-449.

Bartley, M., & Plewis, I. (1997). Does health-selective mobility account for socioeconomic differences in health? Evidence from England and Wales, 1971 to 1991. *Journal of Health and Social Behavior*, 376-386.

Bartley, M., & Plewis, I. (2002). Accumulated labour market disadvantage and limiting long-term illness: data from the 1971–1991 Office for National Statistics' Longitudinal Study. *International Journal of Epidemiology,* 31, 336-341.

Bartley, M., & Plewis, I. (2007). Increasing social mobility: an effective policy to reduce health inequalities. *Journal of the Royal Statistical Society: Series A (Statistics in Society),* 170, 469-481.

Bartley, M., Sacker, A., Firth, D., & Fitzpatrick, R. (1999). Social position, social roles and women's health in England: changing relationships 1984–1993. *Social Science and Medicine,* 48, 99-115.

Batty, G.D., Lawlor, D.A., Macintyre, S., Clark, H., & Leon, D.A. (2005). Accuracy of adults' recall of childhood social class: findings from the Aberdeen children of the 1950s study. *Journal of Epidemiology and Community Health,* 59, 898-903.

Bauman, A.E., Sallis, J.F., Dzewaltowski, D.A., & Owen, N. (2002). Toward a better understanding of the influences on physical activity: The role of determinants, correlates, causal variables, mediators, moderators, and confounders. *American Journal of Preventive Medicine,* 23, 5-14.

Baumgarten, M., Siemiatycki, J., & Gibbs, G.W. (1983). Validity of work histories obtained by interview for epidemiologic purposes. *American Journal of Epidemiology,* 118, 583-591.

Beckfield, J., & Krieger, N. (2009). Epi + demos + cracy: Linking Political Systems and Priorities to the Magnitude of Health Inequities—Evidence, Gaps, and a Research Agenda. *Epidemiologic Reviews,* 31, 152-177.

Beebe-Dimmer, J., Lynch, J.W., Turrell, G., Lustgarten, S., Raghunathan, T., & Kaplan, G.A. (2004). Childhood and Adult Socioeconomic Conditions and 31-Year Mortality Risk in Women. *American Journal of Epidemiology,* 159, 481-490.

Ben-Shlomo, Y., & Kuh, D. (2002). A life course approach to chronic disease epidemiology: conceptual models, empirical challenges and interdisciplinary perspectives. *International Journal of Epidemiology,* 31, 285-293.

Benzeval, M., Green, M., & Leyland, A. (2011). Do social inequalities in health widen or converge with age? Longitudinal evidence from three cohorts in the West of Scotland. *BMC Public Health,* 11, 947.

Bergman, M.M., & Joye, D. (2005). Comparing Social Stratification Schemata: CAMSIS, CSP-CH, Goldthorpe, ISCO-88, Treiman, and Wright. *Cambridge Studies in Social Research,* SSRG Publications.

Bergqvist, K., Aberg Yngwe, M., & Lundberg, O. (2013). Understanding the role of welfare state characteristics for health and inequalities - an analytical review. *BMC Public Health,* 13, 1234.

Berney, L., Blane, D., Davey Smith, G., Gunnell, D., Holland, P., & Montgomery, S. (2000). Socioeconomic measures in early old age as indicators of previous lifetime exposure to environmental health hazards. *Sociology of Health and Illness,* 22, 415-430.

Berney, L.R., & Blane, D.B. (1997). Collecting retrospective data: Accuracy of recall after 50 years judged against historical records. *Social Science and Medicine,* 45, 1519-1525.

Black, D., Morris, J., Smith, C., & Townsend, P. (1980). Inequalities in health: report of a Research Working Group. *London: Department of Health and Social Security,* 19.

Bland, J.M., & Altman, D.G. (1997). Statistics notes: Cronbach's alpha. *British Medical Journal,* 314, 572.

Blane, D., Berney, L., Smith, G.D., Gunnell, D.J., & Holland, P. (1999a). Reconstructing the life course: health during early old age in a follow-up study based on the Boyd Orr cohort. *Public Health,* 113, 117-124.

Blane, D., Higgs, P., Hyde, M., & Wiggins, R.D. (2004). Life course influences on quality of life in early old age. *Social Science and Medicine,* 58, 2171-2179.

Blane, D., Kelly-Irving, M., Errico, A., Bartley, M., & Montgomery, S. (2013). Social-biological transitions: how does the social become biological? *Longitudinal and Life course Studies,* 4, 136-146.

Blane, D., Netuveli, G., & Bartley, M. (2007a). Does Quality of Life at Older Ages Vary with Socio-Economic Position? *Sociology,* 41, 717-726.

Blane, D., Netuveli, G., & Montgomery, S.M. (2008). Quality of life, health and physiological status and change at older ages. *Social Science and Medicine,* 66, 1579-1587.

Blane, D., Netuveli, G., & Stone, J. (2007b). The development of life course epidemiology. *Revue d Epidemiologie et de Sante Publique,* 55, 31-38.

Blane, D., Smith, G.D., & Bartley, M. (1993). Social selection: what does it contribute to social class differences in health? *Sociology of Health and Illness,* 15, 1-15.

Blane, D., Smith, G.D., & Hart, C. (1999b). Some Social and Physical Correlates of Intergenerational Social Mobility: Evidence from the West of Scotland Collaborative Study. *Sociology,* 33, 169-183.

Blane, D., Webb, E., Wahrendorf, M., & Netuveli, G. (2012). Life course influences on quality of life at age 50 years: evidence from the National Child Development Study (1958 British birth cohort study). *Longitudinal and Life course Studies,* 3, 346-358.

Blane, D.B. (1996). Collecting retrospective data: Development of a reliable method and a pilot study of its use. *Social Science and Medicine,* 42, 751-757.

Blom, A.G., & Schröder, M. (2011). Sample Composition 4 Years on: Retention in SHARE Wave 3. In M. Schröder (Ed.), *Retrospective Data Collection in the Survey of Health, Ageing and Retirement in Europe. SHARELIFE Methodology*. Mannheim Mannheim Research Institute for the Economics of Aging (MEA).

Bonesmo Fredriksen, K. (2012). Less Income Inequality and More Growth – Are they Compatible? Part 6. The Distribution of Wealth. *OECD Economics Department Working Papers, No. 929, OECD Publishing.*

Bonoli, G. (1997). Classifying Welfare States: a Two-dimension Approach. *Journal of Social Policy,* 26, 351-372.

Borrell, C., Regidor, E., Arias, L.-C., Navarro, P., Puigpinós, R., Domínguez, V., & Plasència, A. (1999). Inequalities in mortality according to educational level in two large Southern European cities. *International Journal of Epidemiology,* 28, 58-63.

Börsch-Supan, A., Brandt, M., Hunkler, C., Kneip, T., Korbmacher, J., Malter, F., Schaan, B., Stuck, S., & Zuber, S. (2013). Data Resource Profile: The Survey of Health, Ageing and Retirement in Europe (SHARE). *International Journal of Epidemiology,* 42, 992-1001.

Börsch-Supan, A., & Jürges, H. (2005). *The Survey of Health, Ageing and Retirement in Europe – methodology*: Mannheim: Mannheim Research Institute for the Economics of Aging (MEA).

Bourdieu, P. (1986). The forms of capital. In J.G. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education*. New York: Greenwood Publishing Group, Incorporated.

Bowling, A. (2009). The Psychometric Properties of the Older People's Quality of Life Questionnaire, Compared with the CASP-19 and the WHOQOL-OLD. *Current Gerontology & Geriatrics Research,* 2009, 1-12.

Bowling, A., Banister, D., Sutton, S., Evans, O., & Windsor, J. (2002). A multidimensional model of the quality of life in older age. *Aging & Mental Health,* 6, 355-371.

Bowling, A., & Ebrahim, S. (2001). Glossaries in public health: older people. *Journal of Epidemiology and Community Health,* 55, 223-226.

Bowling, A., & Grundy, E. (2009). Differentials in mortality up to 20 years after baseline interview among older people in East London and Essex. *Age and Ageing,* 38, 51-55.

Bowling, A., & Iliffe, S. (2006). Which model of successful ageing should be used? Baseline findings from a British longitudinal survey of ageing. *Age and Ageing,* 35, 607-614.

Boyle, P.J., Norman, P., & Popham, F. (2009). Social mobility: Evidence that it can widen health inequalities. *Social Science and Medicine,* 68, 1835-1842.

Brandt, M., Deindl, C., & Hank, K. (2012). Tracing the origins of successful aging: The role of childhood conditions and social inequality in explaining later life health. *Social Science and Medicine,* 74, 1418-1425.

Breeze, E., Fletcher, A.E., Leon, D.A., Marmot, M.G., Clarke, R.J., & Shipley, M.J. (2001). Do socioeconomic disadvantages persist into old age? Self-reported morbidity in a 29-year follow-up of the Whitehall Study. *American Journal of Public Health,* 91, 277-283.

Breeze, E., Jones, D., Wilkinson, P., Bulpitt, C., Grundy, C., Latif, A., & Fletcher, A. (2005). Area deprivation, social class, and quality of life among people aged 75 years and over in Britain. *International Journal of Epidemiology,* 34, 276-283.

Brennenstuhl, S., Quesnel-Vallée, A., & McDonough, P. (2011). Welfare regimes, population health and health inequalities: a research synthesis. *Journal of Epidemiology and Community Health,* 66, 397-409.

Brewer, R.I. (1986). A Note on the Changing Status of the Registrar General's Classification of Occupations. *The British journal of sociology,* 37, 131-140.

Brunello, G., Weber, G., & Weiss, C.T. (2012). Books are Forever: Early Life Conditions, Education and Lifetime Income. *IZA Discussion Paper No. 6386,* Available at SSRN: http://ssrn.com/abstract=2019438.

Calasanti, T.M. (1996). Gender and life satisfaction in retirement: An assessment of the male model. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences,* 51, S18-S29.

Carle, A. (2009). Fitting multilevel models in complex survey data with design weights: Recommendations. *BMC Medical Research Methodology,* 9, 49.

Carr, D. (2008). Redefining the role of older adults in society: Does the “third age promote a successful alternative to the tripartitioned life course?”. *Journal of Societal and Social Policy,* 7, 27-51.

Cavelaars, A.E., Kunst, A.E., Geurts, J.J., Crialesi, R., Grötvedt, L., Helmert, U., Lahelma, E., Lundberg, O., Matheson, J., Mielck, A., Mizrahi, A., Rasmussen, N.K., Regidor, E., Spuhler, T., & Mackenbach, J.P. (1998). Differences in self reported morbidity by educational level: a comparison of 11 western European countries. *Journal of Epidemiology and Community Health,* 52, 219-227.

Centre for Reviews and Dissemination (2009). Systematic reviews: CRD's guidance for undertaking reviews in healthcare. *University of York*.

Chan, T.W., & Goldthorpe, J.H. (2007). Class and Status: The Conceptual Distinction and its Empirical Relevance. *American Sociological Review,* 72, 512-532.

Chandola, T., Bartley, M., Sacker, A., Jenkinson, C., & Marmot, M. (2003). Health selection in the Whitehall II study, UK. *Social Science and Medicine,* 56, 2059-2072.

Chandola, T., Ferrie, J., Sacker, A., & Marmot, M. (2007). Social inequalities in self reported health in early old age: follow-up of prospective cohort study. *BMJ,* 334, 990.

Chandola, T., & Jenkinson, C. (2000). The new UK national statistics socio-economic classification (NS-SEC); investigating social class differences in self-reported health status. *Journal of Public Health,* 22, 182-190.

Chatfield, M.D., Brayne, C.E., & Matthews, F.E. (2005). A systematic literature review of attrition between waves in longitudinal studies in the elderly shows a consistent pattern of dropout between differing studies. *Journal of Clinical Epidemiology,* 58, 13-19.

Christelis, D. (2011). "Imputation of Missing Data in Waves 1 and 2 of SHARE." Retrieved 06/02/2013, from http://www.share-project.org/t3/share/fileadmin/pdf_documentation/Imputation_of_Missing_Data_in_Waves_1_and_2_of_SHARE.pdf

Christelis, D., Jappelli, T., Paccagnella, O., & Weber, G. (2009). Income, wealth and financial fragility in Europe. *Journal of European Social Policy,* 19, 359-376.

Claussen, B., Smits, J., Naess, O., & Davey Smith, G. (2005). Intragenerational mobility and mortality in Oslo: Social selection versus social causation. *Social Science and Medicine,* 61, 2513-2520.

Collins, A.L., Glei, D.A., & Goldman, N. (2009). The role of life satisfaction and depressive symptoms in all-cause mortality. *Psychology and Aging,* 24, 696.

Cook, L.J. (2012). Eastern Europe and Russia. In F.G. Castles, S. Leibfried, J. Lewis, H. Obinger, & C. Pierson (Eds.), *The Oxford Handbook of the Welfare State*. Oxford, UK: Oxford University Press.

Corna, L.M. (2013). A life course perspective on socioeconomic inequalities in health: A critical review of conceptual frameworks. *Advances in Life Course Research,* 18, 150-159.

Costanza, R., Kubiszewski, I., Giovannini, E., Lovins, H., McGlade, J., Pickett, K., Ragnarsdóttir, K., Roberts, D., De Vogli, R., & Wilkinson, R. (2014). Development: Time to leave GDP behind. *Nature,* 505, 283-285.

Coughlin, S. (1990). Recall bias in epidemiologic studies. *Journal of Clinical Epidemiology,* 43, 87 - 91.

Crystal, S., & Shea, D. (1990). Cumulative Advantage, Cumulative Disadvantage, and Inequality Among Elderly People. *The Gerontologist,* 30, 437-443.

Cullati, S., Rousseaux, E., Gabadinho, A., Courvoisier, D.S., & Burton-Jeangros, C. (2014). Factors of change and cumulative factors in self-rated health trajectories: A systematic review. *Advances in Life Course Research,* 19, 14-27.

Dahl, E., & van der Wel, K.A. (2013). Educational inequalities in health in European welfare states: A social expenditure approach. *Social Science and Medicine,* 81, 60-69.

Davey Smith, G., Hart, C., Hole, D., MacKinnon, P., Gillis, C., Watt, G., Blane, D., & Hawthorne, V. (1998). Education and occupational social class: which is the more important indicator of mortality risk? *Journal of Epidemiology and Community Health,* 52, 153-160.

De Luca, G., & Rossetti, C. (2008). Sampling Design and Weighting Strategies in the Second wave of SHARE. In A. Börsch-Supan, A. Brugiavini, H. Jürges, A. Kapteyn, J.P. Mackenbach, J. Siegrist, et al. (Eds.), *First Results from the Survey of Health, Ageing and Retirement in Europe (2004-2007). Starting the Longitudinal Dimension*: Mannheim: Mannheim Research Institute for the Economics of Aging (MEA).

De Luca, G., & Rossetti, C. (2011). Weights in the first three waves of SHARE. In Mannheim Research Institute for the Economics of Aging (Ed.), *SHARE Release Guide 2.5.0 Waves 1 & 2*: Mannheim Research Institute for the Economics of Aging.

Deindl, C. (2013). The influence of living conditions in early life on life satisfaction in old age. *Advances in Life Course Research,* 18, 107-114.

Depp, C., & Jeste, D. (2006). Definitions and predictors of successful aging: A comprehensive review of larger quantitative studies. *American Journal of Geriatric Psychiatry,* 14, 6-20.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin,* 95, 542-575.

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

Diez Roux, A.V. (2002). A glossary for multilevel analysis. *Journal of Epidemiology and Community Health,* 56, 588-594.

Dillaway, H.E., & Byrnes, M. (2009). Reconsidering Successful Aging: A Call for Renewed and Expanded Academic Critiques and Conceptualizations. *Journal of Applied Gerontology,* 28, 702-722.

Doyal, L., & Gough, I. (1991). *A Theory of Human Need*. Hong Kong: Macmillan.

Dragano, N., Siegrist, J., & Wahrendorf, M. (2010). Welfare regimes, labour policies and unhealthy psychosocial working conditions: a comparative study with 9917 older employees from 12 European countries. *Journal of Epidemiology and Community Health*.

Dryzek, J., & Goodin, R.E. (1986). Risk-Sharing and Social Justice: The Motivational Foundations of the Post-War Welfare State. *British Journal of Political Science,* 16, 1-34.

Duncan, G.J., Daly, M.C., McDonough, P., & Williams, D.R. (2002). Optimal Indicators of Socioeconomic Status for Health Research. *American Journal of Public Health,* 92, 1151-1157.

Edlund, J. (1999). Citizens and taxation: Sweden in comparative perspective. Doctoral Thesis. Department of Sociology. Umea: Umea University.

Effective Public Health Practice Project. (1998). "Quality Assessment Tool For Quantitative Studies." Retrieved 08/02/2012, from http://www.nccmt.ca/uploads/registry/QATool.pdf.

Eichhorn, J. (2012). Happiness for Believers? Contextualizing the Effects of Religiosity on Life-Satisfaction. *European Sociological Review,* 28, 583-593.

Eikemo, T.A., & Bambra, C. (2008). The welfare state: a glossary for public health. *Journal of Epidemiology and Community Health,* 62, 3-6.

Eikemo, T.A., Bambra, C., Joyce, K., & Dahl, E. (2008a). Welfare state regimes and income-related health inequalities: a comparison of 23 European countries. *Eur J Public Health,* 18, 593-599.

Eikemo, T.A., Bambra, C., Judge, K., & Ringdal, K. (2008b). Welfare state regimes and differences in self-perceived health in Europe: A multilevel analysis. *Social Science and Medicine,* 66, 2281-2295.

Eikemo, T.A., Huisman, M., Bambra, C., & Kunst, A.E. (2008c). Health inequalities according to educational level in different welfare regimes: a comparison of 23 European countries. *Sociology of Health and Illness,* 30, 565-582.

Elias, P. (1997). Occupational Classification (ISCO-88): Concepts, Methods, Reliability, Validity and Cross-National Comparability. *OECD Labour Market and Social Policy Occasional Papers,* 20 (http://dx.doi.org/10.1787/304441717388).

Erikson, R., & Goldthorpe, J.H. (1992). *The constant flux: a study of class mobility in industrial societies*. Oxford: Clarendon Press.

Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Cambridge: Polity Press.

Farrar, D.E., & Glauber, R.R. (1967). Multicollinearity in Regression Analysis: The Problem Revisited. *The Review of Economics and Statistics,* 49, 92-107.

Feinstein, J.S. (1993). The relationship between socioeconomic status and health: a review of the literature. *The Milbank Quarterly*, 279-322.

Ferragina, E., & Seeleib-Kaiser, M. (2011). Thematic Review: Welfare regime debate: past, present, futures? *Policy & Politics,* 39, 583-611.

Ferraro, K.F., & Shippee, T.P. (2009). Aging and Cumulative Inequality: How Does Inequality Get Under the Skin? *The Gerontologist,* 49, 333-343.

Ferrera, M. (1996). The 'Southern Model' of Welfare in Social Europe. *Journal of European Social Policy,* 6, 17-37.

Ferrera, M. (2012). Th Southern European countries. In F.G. Castles, S. Leibfried, J. Lewis, H. Obinger, & C. Pierson (Eds.), *The Oxford Handbook of the Welfare State*. Oxford, UK: Oxford University Press.

Flavin, P., Pacek, A.C., & Radcliff, B. (2011). State Intervention and Subjective Well-Being in Advanced Industrial Democracies. *Politics & Policy,* 39, 251-269.

Flint, E., Cummins, S., & Wills, J. (2013). Investigating the effect of the London living wage on the psychological wellbeing of low-wage service sector employees: a feasibility study. *Journal of Public Health*, fdt093.

Freedman, D., Thornton, A., Camburn, D., Alwin, D., & Young-DeMarco, L. (1988). The Life History Calendar: A Technique for Collecting Retrospective Data. *Sociological Methodology,* 18, 37-68.

Frisch, M.B., Cornell, J., Villanueva, M., & Retzlaff, P.J. (1992). Clinical validation of the Quality of Life Inventory. A measure of life satisfaction for use in treatment planning and outcome assessment. *Psychological Assessment,* 4, 92-101.

Galobardes, B., Lynch, J., & Smith, G.D. (2007). Measuring socioeconomic position in health research. *British Medical Bulletin,* 81-82, 21-37.

Galobardes, B., Lynch, J.W., & Davey Smith, G. (2004). Childhood Socioeconomic Circumstances and Cause-specific Mortality in Adulthood: Systematic Review and Interpretation. *Epidemiologic Reviews,* 26, 7-21.

Galobardes, B., Lynch, J.W., & Smith, G.D. (2008). Is the association between childhood socioeconomic circumstances and cause-specific mortality established? Update of a systematic review. *Journal of Epidemiology and Community Health,* 62, 387-390.

Galobardes, B., Shaw, M., Lawlor, D.A., Lynch, J.W., & Davey Smith, G. (2006a). Indicators of socioeconomic position (part 1). *Journal of Epidemiology and Community Health,* 60, 7-12.

Galobardes, B., Shaw, M., Lawlor, D.A., Lynch, J.W., & Davey Smith, G. (2006b). Indicators of socioeconomic position (part 2). *Journal of Epidemiology and Community Health,* 60, 95-101.

Galobardes, B., Smith, G.D., & Lynch, J.W. (2006c). Systematic Review of the Influence of Childhood Socioeconomic Circumstances on Risk for Cardiovascular Disease in Adulthood. *Annals of Epidemiology,* 16, 91-104.

Ganzeboom, H.B., & Nieuwbeerta, P. (1999). Access to education in six Eastern European countries between 1940 and 1985. Results of a cross-national survey. *Communist and Post-Communist Studies,* 32, 339-357.

Ganzeboom, H.B.G. (2010). Occupation coding: do's and don't: With special reference to the International Standard Classification of Occupations ISCO-88. *Department of Social Research Methodology. Free University Amsterdam*.

Ganzeboom, H.B.G., De Graaf, P.M., & Treiman, D.J. (1992). A standard international socio-economic index of occupational status. *Social Science Research,* 21, 1-56.

Ganzeboom, H.B.G., & Treiman, D.J. (1996). Internationally Comparable Measures of Occupational Status for the 1988 International Standard Classification of Occupations. *Social Science Research,* 25, 201–239.

Gardner, M.J., & Altman, D.G. (1986). Confidence intervals rather than P values: estimation rather than hypothesis testing. *BMJ,* 292, 746.

Garrouste, C., & Paccagnella, O. (2011). Data Quality: Three Examples of Consistency Across SHARE and SHARELIFE Data. In M. Schröder (Ed.), *Retrospective Data Collection in the Survey of Health, Ageing and Retirement in Europe. SHARELIFE Methodology*. Mannheim Mannheim Research Institute for the Economics of Aging (MEA).

Georg, W. (2004). Cultural Capital and Social Inequality in the Life Course. *European Sociological Review,* 20, 333-344.

George, L.K., & Bearon, L.B. (1980). *Quality of life in older persons: Meaning and measurement*: Human Sciences Press New York.

Giampaolo, L. (2011). "The greying of the baby boomers." Population and social conditions Retrieved 19/12/13, from http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-11-023/EN/KS-SF-11-023-EN.PDF.

Giannakouris, K. (2008, 13/04/11). "Population and Social conditions. Ageing characterises the demographic perspective of the European societies." Eurostat Statistics in Focus 72 Retrieved 08/04/2014, from http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-08-072/EN/KS-SF-08-072-EN.PDF.

Gill, T.M., & Feinstein, A.R. (1994). A critical appraisal of the quality of quality-of-life measurements. *JAMA,* 272, 619-626.

Gilleard, C., & Higgs, P. (1998). Old people as users and consumers of healthcare: A third age rhetoric for a fourth age reality? *Ageing and society,* 18, 233-248.

Gough, D., Thomas, J., & Oliver, S. (2012). Clarifying differences between review designs and methods. *Systematic Reviews,* 1, 28.

Graham, H. (2009a). *Understanding health inequalities*. Maidenhead: McGraw-Hill International.

Graham, J.W. (2009b). Missing Data Analysis: Making It Work in the Real World. *Annual Review of Psychology,* 60, 549-576.

Griffin, E.A., & Morrison, F.J. (1997). The unique contribution of home literacy environment to differences in early literacy skills 1. *Early Child Development and Care,* 127, 233-243.

Grundy, E., & Holt, G. (2001). The socioeconomic status of older adults: How should we measure it in studies of health inequalities? *Journal of Epidemiology and Community Health,* 55, 895-904.

Guo, G., & Harris, K.M. (2000). The mechanisms mediating the effects of poverty on children's intellectual development. *Demography,* 37, 431-447.

Hallqvist, J., Lynch, J., Bartley, M., Lang, T., & Blane, D. (2004). Can we disentangle life course processes of accumulation, critical period and social mobility? An analysis of disadvantaged socio-economic positions and myocardial infarction in the Stockholm Heart Epidemiology Program. *Social Science and Medicine,* 58, 1555-1562.

Halvorsrud, L., & Kalfoss, M. (2007). The conceptualization and measurement of quality of life in older adults: a review of empirical studies published during 1994–2006. *European Journal of Ageing,* 4, 229-246.

Hank, K. (2010). Societal Determinants of Productive Aging: A Multilevel Analysis Across 11 European Countries. *European Sociological Review,* 27, 526-541.

Hank, K. (2011). How "Successful" Do Older Europeans Age? Findings From SHARE. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences,* 66B, 230-236.

Hank, K., & Korbmacher, J.M. (2012). Parenthood and retirement. *European Societies,* 15, 446-461.

Hertzman, C., Power, C., Matthews, S., & Manor, O. (2001). Using an interactive framework of society and lifecourse to explain self-rated health in early adulthood. *Social Science and Medicine,* 53, 1575-1585.

Higgs, P. (2008). Later life, health and society. In G. Scambler (Ed.), *Sociology As Applied to Medicine*. London: Elsevier Health Sciences.

Higgs, P., Hyde, M., Wiggins, R., & Blane, D. (2003). Researching Quality of Life in Early Old Age: The Importance of the Sociological Dimension. *Social Policy & Administration,* 37, 239-252.

Hill, D.H., & Willis, R.J. (2001). Reducing Panel Attrition: A Search for Effective Policy Instruments. *The Journal of Human Resources,* 36, 416-438.

Hoffmann, E., & United Nations Statistics Division (1999). *International Statistical Comparisons of Occupational and Social Structures: Problems, Possibilities and the Role of ISCO-88; Meeting of the Expert Group on International Economic and Social Classifications, New York, 15 - 17 November 1999*: UN.

Holstein, M.B., & Minkler, M. (2003). Self, Society, and the "New Gerontology". *The Gerontologist,* 43, 787-796.

Hook, E.B., & Regal, R.R. (1997). Validity of Methods for Model Selection, Weighting for Model Uncertainty, and Small Sample Adjustment in Capture-Recapture Estimation. *American Journal of Epidemiology,* 145, 1138-1144.

Houle, J.N. (2011). The psychological impact of intragenerational social class mobility. *Social Science Research,* 40, 757-772.

Howel, D. (2012). Interpreting and evaluating the CASP-19 quality of life measure in older people. *Age and Ageing,* 41, 612-617.

Hox, J.J., & Maas, C.J.M. (2001). The Accuracy of Multilevel Structural Equation Modeling With Pseudobalanced Groups and Small Samples. *Structural Equation Modeling: A Multidisciplinary Journal,* 8, 157-174.

Hu, L.t., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal,* 6, 1-55.

Huang, Q.H., & Sverke, M. (2007). Women's occupational career patterns over 27 years: Relations to family of origin, life careers, and wellness. *Journal of Vocational Behavior,* 70, 369-397.

Huisman, M., Kunst, A.E., Andersen, O., Bopp, M., Borgan, J.-K., Borrell, C., Costa, G., Deboosere, P., Desplanques, G., Donkin, A., Gadeyne, S., Minder, C., Regidor, E., Spadea, T., Valkonen, T., & Mackenbach, J.P. (2004). Socioeconomic inequalities in mortality among elderly people in 11 European populations. *Journal of Epidemiology and Community Health,* 58, 468-475.

Huisman, M., Kunst, A.E., & Mackenbach, J.P. (2003). Socioeconomic inequalities in morbidity among the elderly; a European overview. *Social Science and Medicine,* 57, 861-873.

Hurrelmann, K., Rathmann, K., & Richter, M. (2011). Health inequalities and welfare state regimes. A research note. *Journal of Public Health,* 19, 3-13.

Huurre, T., Aro, H., & Rahkonen, O. (2003). Well-being and health behaviour by parental socioeconomic status: a follow-up study of adolescents aged 16 until age 32 years. *Social Psychiatry and Psychiatric Epidemiology,* 38, 249-255.

Hyde, M., Jakub, H., Melchior, M., Van Oort, F., & Weyers, S. (2006). Comparison of the effects of low childhood socioeconomic position and low adulthood socioeconomic position on self rated health in four European studies. *Journal of Epidemiology and Community Health,* 60, 882-886.

Hyde, M., Wiggins, R.D., Higgs, P., & Blane, D.B. (2003). A measure of quality of life in early old age: The theory, development and properties of a needs satisfaction model (CASP-19). *Aging & Mental Health,* 7, 186 - 194.

Iannelli, C. (2002). Parental education and young people's educational and labour market outcomes: A comparison across Europe. Mannheim: Mannheimer Zentrum für Europäische Sozialforschung ; 45.

International Labour Organization. (1990). "International Standard Classification of Occupations." Retrieved 13/06/2013, from http://www.ilo.org/public/english/bureau/stat/isco/isco88/publ3.htm.

Jagger, C., Gillies, C., Cambois, E., Van Oyen, H., Nusselder, W., & Robine, J.-M. (2010). The Global Activity Limitation Index measured function and disability similarly across European countries. *Journal of Clinical Epidemiology,* 63, 892-899.

James, O., Davies, A.D., & Ananthakopan, S. (1986). The life satisfaction index--well-being: its internal reliability and factorial composition. *The British Journal of Psychiatry,* 149, 647-650.

Johansson, G., Huang, Q., & Lindfors, P. (2007). A life-span perspective on women's careers, health, and well-being. *Social Science & Medicine,* 65, 685-697.

Jones, S.R.G., & Riddell, W.C. (1999). The Measurement of Unemployment: An Empirical Approach. *Econometrica,* 67, 147-162.

Jürges, H. (2007). Unemployment, life satisfaction and retrospective error. *Journal of the Royal Statistical Society: Series A (Statistics in Society),* 170, 43-61.

Kapteyn, A., Michaud, P.-C., Smith, J.P., & Van Soest, A. (2006). Effects of attrition and non-response in the Health and Retirement Study. IZA Discussion Papers 2246.

Kasza, G.J. (2002). The Illusion of Welfare'Regimes'. *Journal of Social Policy,* 31, 271-287.

Katikireddi, S.V., Higgins, M., Smith, K.E., & Williams, G. (2013). Health inequalities: the need to move beyond bad behaviours. *Journal of Epidemiology and Community Health,* 67, 715-716.

Katikireddi, S.V., Niedzwiedz, C.L., & Popham, F. (2012). Trends in population mental health before and after the 2008 recession: a repeat cross-sectional analysis of the 1991–2010 Health Surveys of England. *BMJ Open,* 2.

Kauhanen, L., Lakka, H.-M., Lynch, J.W., & Kauhanen, J. (2006). Social disadvantages in childhood and risk of all-cause death and cardiovascular disease in later life: a comparison of historical and retrospective childhood information. *International Journal of Epidemiology,* 35, 962-968.

Kautto, M. (2012). The Nordic countries. In F.G. Castles, S. Leibfried, J. Lewis, H. Obinger, & C. Pierson (Eds.), *The Oxford Handbook of the Welfare State*. Oxford, UK: Oxford University Press.

Kawachi, I., Subramanian, S.V., & Almeida-Filho, N. (2002). A glossary for health inequalities. *Journal of Epidemiology and Community Health,* 56, 647-652.

Kjellsson, S. Accumulated occupational class and self-rated health. Can information on previous experience of class further our understanding of the social gradient in health? *Social Science and Medicine,* 81, 26-33.

Kline, R.B. (2011). *Principles and Practice of Structural Equation Modeling*. New York: Guilford Press.

Knesebeck, O., Hyde, M., Higgs, P., Kupfer, A., & Siegrist, J. (2005). Quality of Life and Well-Being. In A. Börsch-Supan, A. Brugiavini, H. Jürges, J. Mackenbach, J. Siegrist, & G. Weber (Eds.), *Health, Ageing and Retirement in Europe. First Results from the Survey of Health, Ageing and Retirement in Europe*. Mannheim: Mannheim Research Institute for the Economics of Aging (MEA).

Knesebeck, O.V., Wahrendorf, M., Hyde, M., & Siegrist, J. (2007). Socio-economic position and quality of life among older people in 10 European countries: results of the SHARE study. *Ageing & Society,* 27, 269-284.

Knesebeck, O.v.d., Lüschen, G., Cockerham, W.C., & Siegrist, J. (2003). Socioeconomic status and health among the aged in the United States and Germany: A comparative cross-sectional study. *Social Science and Medicine,* 57, 1643-1652.

Koivumaa-Honkanen, H., Honkanen, R., Viinamäki, H., Heikkilä, K., Kaprio, J., & Koskenvuo, M. (2000). Self-reported life satisfaction and 20-year mortality in healthy Finnish adults. *American Journal of Epidemiology,* 152, 983-991.

Kovács, J.M. (2002). Approaching the EU and reaching the US? Rival narratives on transforming welfare regimes in East-Central Europe. *West European Politics,* 25, 175-204.

Kozma, A., & Stones, M.J. (1987). Social Desirability in Measures of Subjective Well-being: a Systematic Evaluation. *Journal of Gerontology,* 42, 56-59.

Krieger, N., Okamoto, A., & Selby, J.V. (1998). Adult Female Twins' Recall of Childhood Social Class and Father's Education: A Validation Study for Public Health Research. *American Journal of Epidemiology,* 147, 704-708.

Krieger, N., Williams, D.R., & Moss, N.E. (1997). Measuring Social Class in US Public Health Research: Concepts, Methodologies, and Guidelines. *Annual Review of Public Health,* 18, 341-378.

Kuh, D., Ben-Shlomo, Y., Lynch, J., Hallqvist, J., & Power, C. (2003). Life course epidemiology. *Journal of Epidemiology and Community Health,* 57, 778-783.

Kuh, D., Cooper, R., Hardy, R., Richards, M., & Ben-Shlomo, Y. (2014). *A Life Course Approach to Healthy Ageing*. Oxford: Oxford University Press.

Kuhnle, S., & Sander, A. (2012). The emergence of the Western welfare state. In F.G. Castles, S. Leibfried, J. Lewis, H. Obinger, & C. Pierson (Eds.), *The Oxford Handbook of the Welfare State*. Oxford, UK: Oxford University Press.

Kuivalainen, S., Nelson, K., & Kvist, J. (2012). Eroding minimum income protection in the Nordic countries? Reassessing the Nordic model of social assistance. *Changing social equality The Nordic welfare model in the 21st century*. Bristol: Policy Press.

Kunst, A.E., Bos, V., Lahelma, E., Bartley, M., Lissau, I., Regidor, E., Mielck, A., Cardano, M., Dalstra, J.A., Geurts, J.J., Helmert, U., Lennartsson, C., Ramm, J., Spadea, T., Stronegger, W.J., & Mackenbach, J.P. (2005). Trends in socioeconomic inequalities in self-assessed health in 10 European countries. *International Journal of Epidemiology,* 34, 295-305.

Kunst, A.E., Leon, D.A., Groenhof, F., & Mackenbach, J.P. (1998). Occupational class and cause specific mortality in middle aged men in 11 European countries: comparison of population based studies. *BMJ,* 316, 1636-1642.

Kunst, A.E., & Mackenbach, J.P. (1994). International Variation in the Size of Mortality Differences Associated with Occupational Status. *International Journal of Epidemiology,* 23, 742-750.

Laaksonen, M., Silventoinen, K., Martikainen, P., Rahkonen, O., Pitkaniemi, J., & Lahelma, E. (2007). The effects of childhood circumstances, adult socioeconomic status, and material circumstances on physical and mental functioning: a structural equation modelling approach. *Annals of Epidemiology,* 17, 431-439.

Lambert, P., Tan, K., Prandy, K., Gayle, V., & Bergman, M.M. (2008). The importance of specificity in occupation-based social classifications. *International Journal of Sociology and Social Policy,* 28, 179-192.

Laslett, P. (1996). *A Fresh Map of Life*. 2nd Edition. London: Macmillan Press.

Lawlor, D.A., Batty, G.D., Morton, S.M.B., Clark, H., Macintyre, S., & Leon, D.A. (2005a). Childhood Socioeconomic Position, Educational Attainment, and Adult Cardiovascular Risk Factors: The Aberdeen Children of the 1950s Cohort Study. *American Journal of Public Health,* 95, 1245-1251.

Lawlor, D.A., Ebrahim, S., & Davey Smith, G. (2005b). Adverse socioeconomic position across the lifecourse increases coronary heart disease risk cumulatively: findings from the British women's heart and health study. *Journal of Epidemiology and Community Health,* 59, 785-793.

Layard, R. (2011). *Happiness: Lessons from a New Science (Second Edition)*. London: Penguin Books Limited.

Layte, R. (2012). The association between income inequality and mental health: testing status anxiety, social capital, and neo-materialist explanations. *European Sociological Review,* 28, 498-511.

Leinsalu, M., Stirbu, I., Vågerö, D., Kalėdienė, R., Kovács, K., Wojtyniak, B., Wróblewska, W., Mackenbach, J.P., & Kunst, A.E. (2009). Educational inequalities in mortality in four Eastern European countries: divergence in trends during the post-communist transition from 1990 to 2000. *International Journal of Epidemiology,* 38, 512-525.

Leist, A.K., Hessel, P., & Avendano, M. (2013). Do economic recessions during early and mid-adulthood influence cognitive function in older age? *Journal of Epidemiology and Community Health,* 68, 151-158.

Leplège, A., & Hunt, S. (1997). The problem of quality of life in medicine. *JAMA,* 278, 47-50.

Lin, S.S., Glaser, S.L., & Stewart, S.L. (2002). Reliability of Self-Reported Reproductive Factors and Childhood Social Class Indicators in a Case-Control Study in Women. *Annals of Epidemiology,* 12, 242-247.

Link, B.G., & Phelan, J. (1995). Social Conditions As Fundamental Causes of Disease. *Journal of Health and Social Behavior,* 35, 80-94.

Ljung, R., & Hallqvist, J. (2006). Accumulation of adverse socioeconomic position over the entire life course and the risk of myocardial infarction among men and women: results from the Stockholm Heart Epidemiology Program (SHEEP). *Journal of Epidemiology and Community Health,* 60, 1080-1084.

Lundberg, O. (1991). Causal explanations for class inequality in health—An empirical analysis. *Social Science and Medicine,* 32, 385-393.

Lundberg, O., Fritzell, J., Åberg Yngwe, M., & Kölegård, M.L. (2010). The potential power of social policy programmes: income redistribution, economic resources and health. *International Journal of Social Welfare,* 19, S2-S13.

Lundberg, O., Yngwe, M.Å., Stjärne, M.K., Elstad, J.I., Ferrarini, T., Kangas, O., Norström, T., Palme, J., & Fritzell, J. (2008). The role of welfare state principles and generosity in social policy programmes for public health: an international comparative study. *The Lancet,* 372, 1633-1640.

Luo, Y., & Waite, L.J. (2005). The Impact of Childhood and Adult SES on Physical, Mental, and Cognitive Well-Being in Later Life. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences,* 60, S93-S101.

Lynch, J.W., Kaplan, G.A., & Salonen, J.T. (1997). Why do poor people behave poorly? Variation in adult health behaviours and psychosocial characteristics by stages of the socioeconomic lifecourse. *Social Science and Medicine,* 44, 809-819.

Lynch, J.W., Smith, G.D., Kaplan, G.A., & House, J.S. (2000). Income inequality and mortality: importance to health of individual income, psychosocial environment, or material conditions. *BMJ,* 320, 1200-1204.

Maas, C.J., & Hox, J.J. (2004). Robustness issues in multilevel regression analysis. *Statistica Neerlandica,* 58, 127-137.

Maas, C.J., & Hox, J.J. (2005). Sufficient sample sizes for multilevel modeling. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences,* 1, 86-92.

Macintyre, S., Maciver, S., & Sooman, A. (1993). Area, class and health: should we be focusing on places or people? *Journal of Social Policy,* 22, 213-234.

Mackenbach, J.P. (2012). The persistence of health inequalities in modern welfare states: The explanation of a paradox. *Social Science and Medicine,* 75, 761-769.

Mackenbach, J.P., Bos, V., Andersen, O., Cardano, M., Costa, G., Harding, S., Reid, A., Hemström, Ö., Valkonen, T., & Kunst, A.E. (2003). Widening socioeconomic inequalities in mortality in six Western European countries. *International Journal of Epidemiology,* 32, 830-837.

Mackenbach, J.P., Kunst, A.E., Cavelaars, A.E.J.M., Groenhof, F., & Geurts, J.J.M. (1997). Socioeconomic inequalities in morbidity and mortality in western Europe. *The Lancet,* 349, 1655-1659.

Mackenbach, J.P., Meerding, W.J., & Kunst, A.E. (2011). Economic costs of health inequalities in the European Union. *Journal of Epidemiology and Community Health,* 65, 412-419.

Mackenbach, J.P., Stirbu, I., Roskam, A.-J.R., Schaap, M.M., Menvielle, G., Leinsalu, M., & Kunst, A.E. (2008). Socioeconomic Inequalities in Health in 22 European Countries. *New England Journal of Medicine,* 358, 2468-2481.

Mäkinen, T., Laaksonen, M., Lahelma, E., & Rahkonen, O. (2006). Associations of childhood circumstances with physical and mental functioning in adulthood. *Social Science and Medicine,* 62, 1831-1839.

Mannheim Research Institute for the Economics of Aging (2010). *SHARELIFE Release Guide 1*: Mannheim Research Institute for the Economics of Aging.

Mannheim Research Institute for the Economics of Aging. (2011). "SHARE Release Guide 2.5.0 Waves 1 & 2." Retrieved 14/02/2014, from http://www.share-project.org/fileadmin/pdf_documentation/SHARE_release_guide.pdf.

Marmot, M., Allen, J., Bell, R., Bloomer, E., & Goldblatt, P. (2012). WHO European review of social determinants of health and the health divide. *The Lancet,* 380, 1011-1029.

Marmot, M., Friel, S., Bell, R., Houweling, T.A., & Taylor, S. (2008). Closing the gap in a generation: health equity through action on the social determinants of health. *The Lancet,* 372, 1661-1669.

Marmot, M., Shipley, M., Brunner, E., & Hemingway, H. (2001). Relative contribution of early life and adult socioeconomic factors to adult morbidity in the Whitehall II study. *Journal of Epidemiology and Community Health,* 55, 301-307.

Marmot, M.G. (2006). Status syndrome. *JAMA,* 295, 1304-1307.

Marmot, M.G., Fuhrer, R., Ettner, S.L., Marks, N.F., Bumpass, L.L., & Ryff, C.D. (1998). Contribution of psychosocial factors to socioeconomic differences in health. *Milbank Quarterly,* 76, 403-448.

Marmot, M.G., Stansfeld, S., Patel, C., North, F., Head, J., White, I., Brunner, E., Feeney, A., & Smith, G.D. (1991). Health inequalities among British civil servants: the Whitehall II study. *The Lancet,* 337, 1387-1393.

Maslow, A.H. (1968). *Toward a Psychology of Being*. 2nd Edition. Princeton, NJ: Van Nostrand.

Matějů, P., & Řeháková, B. (1996). Education as a Strategy for Life Success in the Postcommunist Transformation: The Case of the Czech Republic. *Comparative Education Review,* 40, 158-176.

Mathiowetz, N.A., & Ouncan, G.J. (1988). Out of Work, Out of Mind: Response Errors in Retrospective Reports of Unemployment. *Journal of Business & Economic Statistics,* 6, 221-229.

Matthews, R.J., Smith, L.K., Hancock, R.M., Jagger, C., & Spiers, N.A. (2005). Socioeconomic factors associated with the onset of disability in older age: a longitudinal study of people aged 75 years and over. *Social Science and Medicine,* 61, 1567-1575.

Mazzonna, F., & Havari, E. (2011). Can We Trust Older People's Statements on their Childhood Circumstances? Evidence from SHARELIFE. SHARE Working Paper Series 05-2011.

McCartney, G., Collins, C., & Mackenzie, M. (2013). What (or who) causes health inequalities: Theories, evidence and implications? *Health Policy,* 113, 221-227.

McDonald, R.P., & Ho, M.-H.R. (2002). Principles and practice in reporting structural equation analyses. *Psychological methods,* 7, 64.

McKee, M., Karanikolos, M., Belcher, P., & Stuckler, D. (2012). Austerity: a failed experiment on the people of Europe. *Clinical Medicine,* 12, 346-350.

McKnight, P.E., McKnight, K.M., Sidani, S., & Figueredo, A.J. (2007). *Missing Data: A Gentle Introduction*: Guilford Publications.

McLaughlin, S.J., Connell, C.M., Heeringa, S.G., Li, L.W., & Roberts, J.S. (2010). Successful Aging in the United States: Prevalence Estimates From a National Sample of Older Adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences,* 65B, 216-226.

McLaughlin, S.J., Jette, A.M., & Connell, C.M. (2012). An Examination of Healthy Aging Across a Conceptual Continuum: Prevalence Estimates, Demographic Patterns, and Validity. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences,* 67, 783-789.

Merlo, J., Chaix, B., Yang, M., Lynch, J., & Råstam, L. (2005). A brief conceptual tutorial of multilevel analysis in social epidemiology: linking the statistical concept of clustering to the idea of contextual phenomenon. *Journal of Epidemiology and Community Health,* 59, 443-449.

Mishra, G., Nitsch, D., Black, S., De Stavola, B., Kuh, D., & Hardy, R. (2009). A structured approach to modelling the effects of binary exposure variables over the life course. *International Journal of Epidemiology,* 38, 528-537.

Mishra, S.I., Dooley, D., Catalano, R., & Serxner, S. (1993). Telephone health surveys: potential bias from noncompletion. *American Journal of Public Health,* 83, 94-99.

Mitchell, R., Gleave, S., Bartley, M., Wiggins, D., & Joshi, H. (2000). Do attitude and area influence health? *Health & place,* 6, 67-79.

Mohd Hairi, F., Mackenbach, J.P., Andersen-Ranberg, K., & Avendano, M. (2010). Does socio-economic status predict grip strength in older Europeans? Results from the SHARE study in non-institutionalised men and women aged 50+. *Journal of Epidemiology and Community Health,* 64, 829-837.

Morris, J., Wilkinson, P., Dangour, A.D., Deeming, C., & Fletcher, A. (2007). Defining a minimum income for healthy living (MIHL): older age, England. *International Journal of Epidemiology,* 36, 1300-1307.

Motel-Klingebiel, A., Romeu Gordo, L., & Betzin, J. (2009). Welfare states and quality of later life: distributions and predictions in a comparative perspective. *European Journal of Ageing,* 6, 67-78.

Mullen, P.D., & Ramirez, G. (2006). The promise and pitfalls of systematic reviews. *Annual Review of Public Health,* 27, 81-102.

Munoz-Arroyo, R., & Sutton, M. (2007). Measuring Socio-Economic Inequalities in Health. A Practical Guide. Edinburgh, ScotPHO, Public Health Information for Scotland.

Muthén, L.K., & Muthén, B.O. (2013). Mplus. *Statistical analysis with latent variables. Version 7.11*.

Navarro, V., & Shi, L. (2001). The political context of social inequalities and health. *Social Science and Medicine,* 52, 481-491.

Netuveli, G. (2007). Cross national comparison of quality of life in Europe: Full Research Report. ESRC End of Award Report, RES-000-22-1281: Swindon: ESRC.

Netuveli, G., & Bartley, M. (2012). Class trajectories and quality of life. Presented at ICLS mid term conference. Goodenough College, London, October 22-23, 2012.

Netuveli, G., Pikhart, H., Bobak, M., & Blane, D. (2012). Generic quality of life predicts all-cause mortality in the short term: evidence from British Household Panel Survey. *Journal of Epidemiology and Community Health,* 66, 962-966.

Netuveli, G., Wiggins, R.D., Hildon, Z., Montgomery, S.M., & Blane, D. (2005). Functional limitation in long standing illness and quality of life: evidence from a national survey. *BMJ,* 331, 1382-1383.

Netuveli, G., Wiggins, R.D., Hildon, Z., Montgomery, S.M., & Blane, D. (2006). Quality of life at older ages: evidence from the English longitudinal study of aging (wave 1). *Journal of Epidemiology and Community Health,* 60, 357-363.

O'Brien, R.M. (2007). A Caution Regarding Rules of Thumb for Variance Inflation Factors. *Quality & Quantity,* 41, 673-690.

OECD. (2006). "What Are Equivalence Scales? Paris." Retrieved 08/04/2013, from http://www.oecd.org/eco/growth/OECD-Note-EquivalenceScales.pdf.

OECD. (2009). "Life expectancy at birth, total population 2009." Retrieved 16/12/2013, from http://dx.doi.org/10.1787/20758480-2009-table8.

OECD. (2012). "List of OECD Member countries - Ratification of the Convention on the OECD." Retrieved 20/02/2012, from

http://www.oecd.org/document/58/0,3746,en_2649_201185_1889402_1_1_1_1,00.html.

Ogg, J. (2010). Discussion: Socioeconomic and psychosocial determinants of well-being in early old age. In L. Bovenberg, A.H. Van Soest, & A. Zaidi (Eds.), *Ageing, health and pensions in Europe: an economic and social policy perspective*. Basingstoke: Palgrave Macmillan.

Olobatuyi, M.E. (2006). *A User's Guide to Path Analysis*: University Press of America.

Osika, W., & Montgomery, S.M. (2008). Economic disadvantage modifies the association of height with low mood in the US, 2004: The disappointment paradox. *Economics & Human Biology,* 6, 95-107.

Otero-Rodriguez, A., Leon-Munoz, L.M., Banegas, J.R., Guallar-Castillon, P., Rodriguez-Artalejo, F., & Regidor, E. (2011). Life-course socioeconomic position and change in quality of life among older adults: evidence for the role of a critical period, accumulation of exposure and social mobility. *Journal of Epidemiology & Community Health,* 65, 964-971.

Pacek, A., & Radcliff, B. (2008). Welfare Policy and Subjective Well-Being Across Nations: An Individual-Level Assessment. *Social Indicators Research,* 89, 179-191.

Parcel, T.L., & Dufur, M.J. (2001). Capital at home and at school: Effects on student achievement. *Social Forces,* 79, 881-911.

Patrick, B.C., Skinner, E.A., & Connell, J.P. (1993). What motivates children's behavior and emotion? Joint effects of perceived control and autonomy in the academic domain. *J Pers Soc Psychol.,* 65, 781-791.

Peel, N., Bartlett, H., & McClure, R. (2004). Healthy ageing: how is it defined and measured? *Australasian Journal on Ageing,* 23, 115-119.

Petticrew, M., Cummins, S., Ferrell, C., Findlay, A., Higgins, C., Hoy, C., Kearns, A., & Sparks, L. (2005). Natural experiments: an underused tool for public health? *Public Health,* 119, 751-757.

Pittau, M.G., Zelli, R., & Gelman, A. (2010). Economic Disparities and Life Satisfaction in European Regions. *Social Indicators Research,* 96, 339-361.

Platt, S.D., Martin, C.J., Hunt, S.M., & Lewis, C.W. (1989). Damp housing, mould growth, and symptomatic health state. *BMJ,* 298, 1673–1678.

Platts, L.G., Netuveli, G., Webb, E., Zins, M., Goldberg, M., Blane, D., & Wahrendorf, M. (2013). Physical occupational exposures during working life and quality of life after labour market exit: results from the GAZEL study. *Aging & Mental Health,* 17, 697–706.

Ploubidis, G.B., Benova, L., Grundy, E., Laydon, D., & DeStavola, B. (2014). Lifelong Socio Economic Position and biomarkers of later life health: Testing the contribution of competing hypotheses. *Social Science and Medicine,* doi: 10.1016/j.socscimed.2014.02.018.

Pollack, C.E., Chideya, S., Cubbin, C., Williams, B., Dekker, M., & Braveman, P. (2007). Should Health Studies Measure Wealth?: A Systematic Review. *American Journal of Preventive Medicine,* 33, 250-264.

Pollitt, R., Rose, K., & Kaufman, J. (2005). Evaluating the evidence for models of life course socioeconomic factors and cardiovascular outcomes: a systematic review. *BMC Public Health,* 5, 7.

Power, C., Atherton, K., Strachan, D.P., Shepherd, P., Fuller, E., Davis, A., Gibb, I., Kumari, M., Lowe, G., Macfarlane, G.J., Rahi, J., Rodgers, B., & Stansfeld, S. (2007). Life-course influences on health in British adults: effects of socio-economic position in childhood and adulthood. *International Journal of Epidemiology,* 36, 532-539.

Power, C., & Hertzman, C. (1997). Social and biological pathways linking early life and adult disease. *British Medical Bulletin,* 53, 210-221.

Power, C., Matthews, S., & Manor, O. (1996). Inequalities in self rated health in the 1958 birth cohort: lifetime social circumstances or social mobility? *BMJ,* 313, 449-453.

Regidor, E. (2004). Measures of health inequalities: part 2. *Journal of Epidemiology and Community Health,* 58, 900-903.

Reinhardt, J.D., Wahrendorf, M., & Siegrist, J. (2013). Socioeconomic position, psychosocial work environment and disability in an ageing workforce: a longitudinal analysis of SHARE data from 11 European countries. *Occupational and Environmental Medicine,* 70, 156-163.

Rhodes, M. (1996). Southern European welfare states: identity, problems and prospects for reform. *South European Society and Politics,* 1, 1-22.

Rockwell, R.C. (1975). Assessment of Multicollinearity: The Haitovsky Test of the Determinant. *Sociological Methods & Research,* 3, 308-320.

Roine, J., & Waldenström, D. (2009). Wealth Concentration over the Path of Development: Sweden, 1873–2006*. *The Scandinavian journal of economics,* 111, 151-187.

Rose, D., Pevalin, D., Elias, P., & Martin, J. (2001). "Towards A European Socio-economic Classification." Final Report to Eurostat of the Expert Group Retrieved 08/04/2014, from https://www.iser.essex.ac.uk/files/nssec/esec_final_report.pdf.

Rothman, K.J., Greenland, S., & Lash, T.L. (2008). *Modern epidemiology*: Lippincott Williams & Wilkins.

Runyan, W.M. (1980). The life satisfaction chart: perceptions of the course of subjective experience. *International Journal of Aging and Human Development,* 11, 45-64.

Schaan, B. (2014). The interaction of family background and personal education on depressive symptoms in later life. *Social Science and Medicine,* 102, 94-102.

Schafer, J.L. (1999). Multiple imputation: a primer. *Statistical Methods in Medical Research,* 8, 3-15.

Schröder, M. (2008). Attrition. In A. Börsch-Supan, A. Brugiavini, H. Jürges, A. Kapteyn, J.P. Mackenbach, J. Siegrist, et al. (Eds.), *First Results from the Survey of Health, Ageing and Retirement in Europe (2004-2007). Starting the Longitudinal Dimension*: Mannheim: Mannheim Research Institute for the Economics of Aging (MEA).

Schröder, M. (2011). *Retrospective Data Collection in the Survey of Health, Ageing and Retirement in Europe. SHARELIFE Methodology*: Mannheim Research Institute for the Economics of Aging (MEA).

Schwan, A., & Sail, E. (2013). Assessing the economic and budgetary impact of linking retirement ages and pension benefits to increases in longevity. Economic Papers 512. Brussels: European Commission.

Semyonov, M., Lewin-Epstein, N., & Maskileyson, D. (2013). Where wealth matters more for health: The wealth–health gradient in 16 countries. *Social Science and Medicine,* 81, 10-17.

Senior, P.A., & Bhopal, R. (1994). Ethnicity as a variable in epidemiological research. *BMJ,* 309, 327-330.

SHARE. (2005). "Share 2004 Questionnaire version 10 (manually edited April 2005)." Retrieved 23/06/13, from http://www.share-project.org/data-access-documentation/questionnaires/questionnaire-wave-1.html.

SHARE. (2006). "Share w2 Questionnaire version 2.7 2006-09-21." Retrieved 04/03/2013, from http://www.share-project.org/data-access-documentation/questionnaires/questionnaire-wave-2.html.

SHARE. (2012). "SHARE Sample." Retrieved 01/10/2012, from http://www.share-project.org/data-access-documentation/sample.html.

Siegel, M., Vogt, V., & Sundmacher, L. (2014). From a conservative to a liberal welfare state: decomposing changes in income-related health inequalities in Germany, 1994-2011. *Social Science and Medicine,* doi.org/10.1016/j.socscimed.2014.02.022.

Siegrist, J., & Wahrendorf, M. (2009). Participation in socially productive activities and quality of life in early old age: findings from SHARE. *Journal of European Social Policy,* 19, 317-326.

Siegrist, J., & Wahrendorf, M. (2010). Socioeconomic and Psychosocial Determinants of Well-being in Old Age. In L. Bovenberg, A.H.O. Van Soest, & A. Zaidi (Eds.), *Ageing, health and pensions in Europe: an economic and social policy perspective*. Basingstoke: Palgrave Macmillan.

Siegrist, J., Wahrendorf, M., Von Dem Knesebeck, O., Jurges, H., & Borsch-Supan, A. (2007). Quality of work, well-being, and intended early retirement of older employees - Baseline results from the SHARE Study. *European Journal of Public Health,* 17, 62-68.

Sim, J., Bartlam, B., & Bernard, M. (2011). The CASP-19 as a measure of quality of life in old age: evaluation of its use in a retirement community. *Quality of Life Research,* 20, 997-1004.

Singh-Manoux, A., Clarke, P., & Marmot, M. (2002). Multiple measures of socio-economic position and psychosocial health: proximal and distal measures. *International Journal of Epidemiology,* 31, 1192-1199.

Singh-Manoux, A., Ferrie, J.E., Chandola, T., & Marmot, M. (2004). Socioeconomic trajectories across the life course and health outcomes in midlife: evidence for the accumulation hypothesis? *International Journal of Epidemiology,* 33, 1072-1079.

Singh-Manoux, A., Gourmelen, J., Ferrie, J., Silventoinen, K., Guéguen, A., Stringhini, S., Nabi, H., & Kivimaki, M. (2010). Trends in the association between height and socioeconomic indicators in France, 1970–2003. *Economics & Human Biology,* 8, 396-404.

Singh-Manoux, A., Richards, M., & Marmot, M. (2005). Socioeconomic Position across the Lifecourse: How Does it Relate to Cognitive Function in Mid-life? *Annals of Epidemiology,* 15, 572-578.

Sirgy, M.J. (1986). A Quality-of-Life Theory Derived from Maslow's Developmental Perspective. *American Journal of Economics and Sociology,* 45, 329-342.

Sirgy, M.J. (2002). *The psychology of quality of life: : Hedonic Well-Being, Life Satisfaction, and Eudaimonia*: Springer.

Sirgy, M.J. (2012). Philosophical Foundations, Definitions, and Measures. *The Psychology of Quality of Life*: Springer Netherlands.

Smith, G.D., Blane, D., & Bartley, M. (1994). Explanations for socio-economic differentials in mortality: Evidence from Britain and elsewhere. *The European Journal of Public Health,* 4, 131-144.

Smith, G.D., Hart, C., Blane, D., & Hole, D. (1998). Adverse socioeconomic conditions in childhood and cause specific adult mortality: prospective observational study. *BMJ,* 316, 1631-1635.

Snijders, T.A.B., & Bosker, R.J. (2012). *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling. 2nd Edition.* London: SAGE Publications Ltd.

Spijker, J., & MacInnes, J. (2013). Population ageing: the timebomb that isn't? *BMJ,* 347, f6598.

Stafford, M., Bartley, M., Mitchell, R., & Marmot, M. (2001). Characteristics of individuals and characteristics of areas: investigating their influence on health in the Whitehall II study. *Health & place,* 7, 117-129.

Stansfeld, S., Head, J., Bartley, M., & Fonagy, P. (2008). Social position, early deprivation and the development of attachment. *Social Psychiatry and Psychiatric Epidemiology,* 43, 516-526.

StataCorp (2011). Stata: Release 12. Statistical Software. College Station, TX: StataCorp LP.

Sterne, J.A.C., Cox, D.R., & Smith, G.D. (2001). Sifting the evidence—what's wrong with significance tests? Another comment on the role of statistical methods. *BMJ,* 322, 226-231.

Stiglitz, J.E., Sen, A.K., Fitoussi, J.P., & Commission on the Measurement of Economic Performance & Social Progress (2010). *Mismeasuring Our Lives: Why GDP Doesn't Add Up*. New York: The New Press.

Stringhini, S., Dugravot, A., Kivimaki, M., Shipley, M., Zins, M., Goldberg, M., Ferrie, J.E., & Singh-Manoux, A. (2011). Do different measures of early life socioeconomic circumstances predict adult mortality? Evidence from the British Whitehall II and French GAZEL studies. *Journal of Epidemiology and Community Health,* 65, 1097-1103.

Stringhini, S., Sabia, S., Shipley, M., Brunner, E., Nabi, H., Kivimaki, M., & Singh-Manoux, A. (2010). Association of socioeconomic position with health behaviors and mortality. *JAMA,* 303, 1159-1166.

Sturgis, P., & Sullivan, L. (2008). Exploring social mobility with latent trajectory groups. *Journal of the Royal Statistical Society: Series A (Statistics in Society),* 171, 65-88.

Sullivan, A., & Brown, M. (2013). Social inequalities in cognitive scores at age 16: The role of reading. Centre for Longitudinal Studies Working Paper 2013/10. London: Institute of Education, University of London.

Svallfors, S. (2011). A bedrock of support? Trends in welfare state attitudes in Sweden, 1981–2010. *Social Policy & Administration,* 45, 806-825.

Telhaug, A.O., Medias, O.A., & Aasen, P. (2006). The Nordic model in education: Education as part of the political system in the last 50 years. *Scandinavian journal of educational research,* 50, 245-283.

The World Bank (2002). *The First Ten Years. Analysis and Lessons for Eastern Europe and the Former Soviet Union*. Washington: The World Bank.

Tiffin, P.A., Pearce, M.S., & Parker, L. (2005). Social mobility over the lifecourse and self reported mental health at age 50: prospective cohort study. *Journal of Epidemiology and Community Health,* 59, 870-872.

Tiikkaja, S., Sandin, S., Malki, N., Modin, B., Sparén, P., & Hultman, C.M. (2013). Social Class, Social Mobility and Risk of Psychiatric Disorder - A Population-Based Longitudinal Study. *PLoS ONE,* 8, e77975.

Tolonen, H., Helakorpi, S., Talala, K., Helasoja, V., Martelin, T., & Prättälä, R. (2006). 25-year Trends and Socio-demographic Differences in Response Rates: Finnish Adult Health Behaviour Survey. *European Journal of Epidemiology,* 21, 409-415.

Townsend, P. (1981). The structured dependency of the elderly: a creation of social policy in the twentieth century. *Ageing and society,* 1, 5-28.

Treiman, D.J. (1976). A Standard Occupational Prestige Scale for Use with Historical Data. *The Journal of Interdisciplinary History,* 7, 283-304.

Treiman, D.J. (1977). *Occupational prestige in comparative perspective*: Academic Press.

UNESCO. (2012). "United Nations Educational, Scientific and Cultural Organization ISCED 1997 Mappings." Retrieved 24/06/2013, 24/06/2013, from http://www.uis.unesco.org/Education/ISCEDMappings/Pages/default.aspx.

Vanhoutte, B. (2012). Measuring subjective well-being in later life: A review. Manchester: The Cathie Marsh Centre for Census and Survey Research.

Veenhoven, R. (2012). Cross-national differences in happiness: Cultural measurement bias or effect of culture? *International Journal of Wellbeing,* 2, 333-353.

von Stumm, S., Macintyre, S., Batty, D.G., Clark, H., & Deary, I.J. (2010). Intelligence, social class of origin, childhood behavior disturbance and education as predictors of status attainment in midlife in men: The Aberdeen Children of the 1950s study. *Intelligence,* 38, 202-211.

Wahrendorf, M. (2011). Personal communication. London.

Wahrendorf, M., Ribet, C., Zins, M., & Siegrist, J. (2008). Social productivity and depressive symptoms in early old age-results from the GAZEL study. *Aging & Mental Health,* 12, 310-316.

Wahrendorf, M., & Siegrist, J. (2010). Are changes in productive activities of older people associated with changes in their well-being? Results of a longitudinal European study. *European Journal of Ageing,* 7, 59-68.

Wahrendorf, M., von dem Knesebeck, O., & Siegrist, J. (2006). Social productivity and well-being of older people: Baseline results from the SHARE study. *European Journal of Ageing,* 3, 67-73.

Walker, A. (2005). A European perspective on quality of life in old age. *European Journal of Ageing,* 2, 2-12.

Walker, J.J. (2010). Housing,Environment and Cardio-Respiratory Health: The Relative Influence of the Past and the Present. PhD Thesis.: University of Edinburgh.

Walker, J.J., Mitchell, R., Platt, S.D., Petticrew, M.P., & Hopton, J. (2006). Does usage of domestic heating influence internal environmental conditions and health? *The European Journal of Public Health,* 16, 463-469.

Webb, E., Blane, D., McMunn, A., & Netuveli, G. (2010). Proximal predictors of change in quality of life at older ages. *Journal of Epidemiology and Community Health,* 65, 542-547.

Weiner, I.B., Schinka, J.A., & Velicer, W.F. (2012). *Handbook of Psychology, Research Methods in Psychology*. New Jersey: Wiley.

West, P. (1991). Rethinking the health selection explanation for health inequalities. *Social Science and Medicine,* 32, 373-384.

Wiggins, R., Netuveli, G., Hyde, M., Higgs, P., & Blane, D. (2008). The Evaluation of a Self-enumerated Scale of Quality of Life (CASP-19) in the Context of Research on Ageing: A Combination of Exploratory and Confirmatory Approaches. *Social Indicators Research,* 89, 61-77.

Wiggins, R.D., Erzberger, C., Hyde, M., Higgs, P., & Blane, D. (2007). Optimal Matching Analysis Using Ideal Types to Describe the Lifecourse: An Illustration of How Histories of Work, Partnerships and Housing Relate to Quality of Life in Early Old Age. *International Journal of Social Research Methodology,* 10, 259 - 278.

Wiggins, R.D., Netuveli, G., Hyde, M., & Blane, D. (2004). Quality of life in the third age: key predictors of the CASP-19 measure. *Ageing & Society,* 24, 693-708.

Wikman, A., Wardle, J., & Steptoe, A. (2011). Quality of Life and Affective Well-Being in Middle-Aged and Older People with Chronic Medical Illnesses: A Cross-Sectional Population Based Study. *PLoS ONE,* 6, e18952.

Wilkinson, R.G. (1994). The epidemiological transition: from material scarcity to social disadvantage? *Daedalus*, 61-77.

Wilkinson, R.G., & Pickett, K.E. (2009). Income inequality and social dysfunction. *Annual Review of Sociology,* 35, 493-511.

Williams, R. (2011). Using Stata's Margins Command to Estimate and Interpret Adjusted Predictions and Marginal Effects. *University of Notre Dame, Notre Dame, IN*.

Wolf, C. (1997). The ISCO-88 International Standard Classification of Occupations in Cross-National Survey Research. *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique,* 54, 23-40.

Wolke, D., Waylen, A., Samara, M., Steer, C., Goodman, R., Ford, T., & Lamberts, K. (2009). Selective drop-out in longitudinal studies and non-biased prediction of behaviour disorders. *The British Journal of Psychiatry,* 195, 249-256.

World Health Organization. (2006). "Constitution of the World Health Organization." Basic Documents. Forty-fifth edition, Supplement, October 2006 Retrieved 25/06/2013, from http://www.who.int/governance/eb/who_constitution_en.pdf.

World Health Organization. (2010). "Definition of an older or elderly person." Health statistics and health information systems Retrieved 19/12/13, from http://www.who.int/healthinfo/survey/ageingdefnolder/en/.

World Health Organization. (2012). " Health 2020: the European policy for health and well-being." Retrieved 22/05/2013, from http://www.euro.who.int/en/what-we-do/health-topics/health-policy/health-2020.

World Health Organization. (2013). "The European health report 2012: charting the way to well-being." Retrieved 17/01/2014, from http://www.euro.who.int/__data/assets/pdf_file/0004/197113/The-European-health-report-2012.-Charting-the-way-to-well-being.pdf.

Wu, T.-Y., Chie, W.-C., Kuo, K.-L., Wong, W.-K., Liu, J.-P., Chiu, S.-T., Cheng, Y.-H., Netuveli, G., & Blane, D. (2013). Quality of life (QOL) among community dwelling older people in Taiwan measured by the CASP-19, an index to capture QOL in old age. *Archives of Gerontology and Geriatrics,* 57, 143-150.

Young, A.F., Powers, J.R., & Bell, S.L. (2006). Attrition in longitudinal studies: who do you lose? *Australian and New Zealand Journal of Public Health,* 30, 353-361.

Zambon, A., Boyce, W., Cois, E., Currie, C., Lemma, P., Dalmasso, P., Borraccino, A., & Cavallo, F. (2006). Do welfare regimes mediate the effect of socioeconomic position on health in adolescence? A cross-national comparison in Europe, North America, and Israel. *International Journal of Health Services,* 36, 309-329.