

## Summary

One fundamental aspect of social life that produces systematic heterogeneity in the social, mental, and physical functioning of older adults is socioeconomic inequality. Currently, a Dutch adult aged 55 with elementary education has a life expectancy of about five years less than a Dutch adult of the same age with higher vocational or university education. For life expectancy in good self-rated health, in good mental health, and without functional limitations, these differences amount to about six, eight, and ten years, respectively. Socioeconomic inequality is thus associated with many key domains of functioning in which changes tend to occur when growing old.

A long tradition of sociological and social epidemiological research has been concerned with mapping and understanding the pathways that connect one's socioeconomic position (SEP) to functioning at older ages. Three central indicators of SEP are educational attainment, occupational level or prestige, and income. One strand of research has for example shown that the inequalities in health and functioning *between* socioeconomic groups can partly be explained because people from different socioeconomic groups have different lifestyles, psychological characteristics, and social networks, and these are associated with health. A second, more recent line of research attends to factors that explain heterogeneity in functioning *within* purportedly vulnerable groups, such as groups with a low SEP. Such studies ask why some individuals function well *despite* the fact that they belong to a high risk group, while most other experience the ill effects of these health risks. This phenomenon is referred to as 'resilience'. The current studies contribute to research in both areas.

First, I examine associations between (individual) socioeconomic conditions and psychosocial factors across the life course, such as emotional stability, attitudes towards social class and social mobility, and negative life events. Subsequently, I analyse to what extent some of these factors enable or constrain 'successful aging' (SA). For this purpose, I develop a new index of SA, based on indicators of physical, cognitive, emotional and social functioning of older adults. This index reflects how favourable the functioning of a large group of Dutch older adults was during a 16 year period.

Second, I apply the concept of *resilience* to socioeconomic inequalities in the health and functioning of older adults. I examine the question why some older adults aged successfully *despite* a low lifetime SEP.

Six of the seven studies in this thesis are based on longitudinal data from, in total, more than 5000 participants in two population-based prospective cohort studies: the Longitudinal Aging Study Amsterdam (LASA), the Netherlands, and the MRC National Survey of Health and Development (NSHD), United Kingdom. Based on a random sample from eleven municipalities in the Netherlands, LASA has been examining multiple domains of functioning of older adults. Over 3,100 participants aged 55-84 years in 1992 underwent comprehensive (medical) interviews every three years, until now. The NSHD is Britain's oldest birth cohort

study, and follows, since their birth, a sample of over 5,000 persons who were all born in the same week in March 1946.

The seventh study in this thesis applies qualitative methodology to examine resilience in the face of socioeconomic adversity from the perspective of older adults themselves. The interviewed persons in this study were participants from LASA.

### **Research questions**

The central research questions of this thesis are:

- 1) to what extent do Dutch older adults age successfully, if SA is operationally defined on the basis of longitudinal trajectories of subjective and objective indicators of physical, mental and social functioning?
- 2) how is SA affected by individual socioeconomic conditions and psychosocial factors across the life course?
- 3) what characteristics and experiences characterize older adults who aged successfully despite lifelong exposure to socioeconomic adversity?

### **Study 1 (Chapter 2): SEP and psychological factors: two separate domains?**

Applying Latent Class Growth Analysis (LCGA) on data from 2,950 participants in the NSHD, Chapter 2 identified seven distinct types of trajectories of socioeconomic adversity across age four to 53 (1950-1999). The trajectories were based on indicators of SEP (e.g., (father's and own occupational class, education), housing quality (e.g., housing tenure, household amenities) and financial strain. I found the following trajectories: persistent high adversity, relapsing high adversity, strong declining adversity, gradual declining adversity, adverse early childhood, increasing adversity, and persistent low adversity.

Comparing psychosocial profiles of participants between those trajectories, I found that factors such as lower self-management in adolescence and higher emotional instability (neuroticism) in early adulthood were associated with more adverse trajectories. Moreover, at age 26, those with adverse trajectories had more negative expectations of social mobility and considered education less often as a means to change social class. This study suggested that individual socioeconomic conditions, psychological characteristics and particular attitudes towards social class should be considered in the context of one another when examining life course influences on later life inequalities. They both contribute to whether or not one's SEP improves or deteriorates during the life course.

### **Study 2 (Chapter 3): how, and how successful do the Dutch age?**

To study the possible consequences of socioeconomic adversity for overall health and functioning in old age, in Chapter 3 I developed an index of successful aging (SA). This index was based on data from 2185 participants in the LASA study, and included nine indicators of mental, social, and physical functioning that were observed longitudinally across 16 years of time (in 1992, 1995, 1998, 2002, 2005 and 2008). The indicators are: Depressive Symptoms, Cognitive Functioning, Social Loneliness, Satisfaction with Life, Emotional Support Given, Instrumental Support Given, Social Activity, Functional Limitations and Self-Rated Health. The SA-index expressed for each participant in how many of these indicators (s)he had a favourable ('successful') trajectory (range: 0-9). Just like in Chapter 2, trajectories were distinguished using LCGA.

Successful trajectories often reflected an absence of decline in functioning, but I also observed recovery from unfavourable functional states and considered this as successful. The chapter showed that 45% of the women and 58% of the men had successful trajectories of functioning in more than five indicators of SA. It also showed that there is much diversity in the extent to and the way in which Dutch older adults aged successfully. Higher age and lower education, chronic diseases and not having a partner inside the household correlated negatively with SA.

### **Study 3 (Chapter 4). Education, occupation and income: unique pathways to successful aging?**

Chapter 4 analyzed socioeconomic inequalities in SA in more detail, again with LASA data. I disentangled associations between three central indicators of SEP – years of education, occupational skill level and income – and the SA index, and also examined their associations with each separate indicator of SA. The findings showed that lower education, lower occupational skill level, and lower income partly independently predicted lower levels of SA. Socioeconomic inequalities were observed across physical, mental, and social domains of SA, although SEP was most strongly associated with cognitive and physical functioning, while I did not find inequalities in loneliness and social activity.

### **Study 4 (Chapter 5). Negative life events as explanations for inequalities in SA?**

Chapter 5 focused on one particular mechanism that has been suggested as an explanation for socioeconomic inequalities in health. Again using the LASA data, I examined whether particular negative life events in childhood and adulthood affected SA. Furthermore, I examined whether these events occurred more often with lower parental or own SEP, and to what extent this unequal distribution of negative life events could account for some of the associations between SEP and SA. I tested different hypothesized direct and indirect

pathways between SEP and life events using 'path analysis' (a form of Structural Equation Modelling). The life events included were: parental death and severe parental problems in childhood, and divorce, widowhood, unemployment, occupational disability and death of an own child in adulthood.

I found that all life events, except for the death of a child, negatively affected SA scores, and that at the same time, exposure to some of these events was influenced by (parental) SEP. Occupational disability occurred more often in those with a low SEP, and formed a partial explanation for the relationship between own SEP and SA. Unexpectedly, parental death (men), divorce, and unemployment (women) occurred more often with higher rather than lower SEP, which partly suppressed socioeconomic inequalities in SA. I concluded that negative life events are important predictors of SA and that they are largely, but not completely independent of (parental) SEP.

### **Study 5 (Chapter 6). Exploring characteristics of a resilient group**

Aiming to identify and describe a group of individuals who aged successfully *despite* a low lifetime SEP, and to better understand how such individuals may have adapted to socioeconomic adversity during their lives, chapters 6-8 focused on resilience. I adopted an 'a-priori' definition of resilience, positing that those who had a lifetime low SEP *and* a high score on the SA index (or who remained free from functional limitations in Chapter 7) can be considered 'resilient'. Subsequently, by comparing several of their characteristics to other groups and interviewing some of their members, I gathered insights into what resilience with a low SEP might entail.

In Chapter 6 I defined a low lifetime SEP as having at most elementary education and a father with at most elementary education, and a low occupational skill level or never a paid job. Aging successfully was defined as having an above average score on the SA-index. Using data from LASA, in Chapter 6 I identified such a group of resilient older adults, and compared their profile with others on the basis of a broad range of factors that have been found to explain differences in average health *between* socioeconomic groups. Among these are, for example, life style factors such as smoking and physical activity, social network characteristics such as network size and social support, and psychological factors such as self-esteem.

I found that the resilient group had exceptionally high levels of physical activity and a high likelihood of having a partner in their household at the baseline measurement in 1992. Furthermore, in many other respects the resilient resembled those who aged successfully with a *high* SEP. For example, on average, the resilient had a comparably low number of chronic diseases, high emotional support, a strong sense of having control over one's life chances ('mastery'), and were as likely to engage in religious activity (particularly prayer).

### **Study 6 (Chapter 7). Resilience, with physical functional limitations as outcome.**

In chapter 7 I applied analyses similar to those in Chapter 6 to the NSHD dataset, and now defined resilience as remaining free from physical functional limitations (from this point forward: ‘functional limitations’) at age 60-64 despite lifelong exposure to socioeconomic adversity. I focused on this outcome because compared to other aspects of functioning, the physical domain tends to show the largest socioeconomic inequalities.

Building on the LCGA analysis from Chapter 2, I categorized the seven trajectories of socioeconomic adversity into three levels of lifetime adversity (low, intermediate, high). Functional limitations were defined as experiencing difficulties in carrying out any fundamental physical tasks of daily life (e.g., walking stairs, bending up and down, or carrying shopping bags in each hand). Again, I used a broad selection of psychological, social, and health-behavioural factors to compare the profile of the resilient group (high adversity but no functional limitations) to groups with other combinations of adversity and functional limitations.

The results showed that also when focusing on one physical aspect of SA, resilience was associated with multiple factors. A combination of high self-management, low neuroticism, and favourable health behaviours characterised resilient individuals. Social factors such as marital status and contact frequency with friends did not characterise resilient individuals in this study.

### **Study 7 (Chapter 8). “Tough times became good times”: Resilience from the perspective of older adults themselves**

In Chapter 8 I presented findings from an analysis of qualitative interviews with eleven resilient participants identified in Chapter 6 using LASA data. Among other things, I asked these participants how they dealt with adversity throughout their lives and where they would place themselves on a “societal ladder”. Analysis of the transcripts using coding techniques from a grounded theory framework resulted in six themes and eleven subthemes that reflected elements of resilience in the face of socioeconomic adversity: *drawing support from social contacts* (instrumental support and a sense of belonging); *investing in younger generations* (encouraging one’s children’s career success and transmitting knowledge and experience); *taking actions to manage or improve socioeconomic conditions* (managing expenses and developing one’s working career); *putting the impact of a low SEP into perspective* (valuing one’s skills, valuing other aspects of life more highly than social status and emphasizing gradual improvements in living conditions); *persevering* (mentally combating adversity and holding on to faith); and *resigning oneself to adversity*. The interviews also showed that the presence of social security arrangement (e.g., child and unemployment benefits) contributed to resilience. Particularly generativity (investing in the

younger generations) and resignation are factors that have received little attention in resilience research so far, and represent potentially important areas for future studies.

### **General conclusions**

The extent to and the ways in which older adults age successfully are diverse and partly confined by one's socioeconomic circumstances. One's SEP is likely to affect multiple aspects of health and functioning in old age. Education, occupation and income reflect partly overlapping, and partly unique pathways towards SA, and these pathways are associated with psychological and social factors across the life course. These factors include negative life events in early and later life, which affect SA largely, but not completely independent of SEP.

Resilience provides a valuable new lens on inequalities in SA, because it focuses on heterogeneity in functioning of older adults *within* groups who faced adversity, such as a persistently low SEP. In this thesis I defined resilience as successful aging despite socioeconomic adversity, and found that four domains contribute to resilience: self-regulation, social support, lifestyle factors (particularly physical activity and a healthy weight) and chronic diseases, and social security arrangements. These domains suggest that for improving resilience within low socioeconomic groups, policies and interventions might focus on increasing self-regulation and feelings of control, stimulating social participation, and promoting healthy lifestyles, where responsibility should be shared between individuals and society.

Several areas remain to be further investigated, including the roles of generativity and purportedly passive coping strategies such as resignation for resilience, the impact of using particular methods to study resilience on the results, and the extent to which protective factors vary according to the adversity and outcome being studied.