



Delft University of Technology

A life course approach to neighbourhood effects

de Vuijst, Elise

Publication date

2018

Document Version

Final published version

Citation (APA)

de Vuijst, E. (2018). *A life course approach to neighbourhood effects*. Delft University of Technology.

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

A life course approach to neighbourhood effects

Elise de Vuijst

Faculty of Architecture and the Built Environment

Delft University of Technology

August 2018

The research reported in this book has been supervised by Prof. dr. Maarten van Ham and Dr. Reinout J. Kleinhans.

This book is based on research, which was fully funded by the European Research Council (ERC). It was brought in the public domain as a book to ensure compliance with ERC regulations on open access publishing of ERC funded research.

The research leading to these results has received funding from the European Research Council under the European Union's Seventh Framework Programme (FP/2007-2013) / ERC Grant Agreement n. 615159 (ERC Consolidator Grant DEPRIVEDHOODS, Socio-spatial inequality, deprived neighbourhoods, and neighbourhood effects) and from the Marie Curie programme under the European Union's Seventh Framework Programme (FP/2007-2013) / Career Integration Grant n. PCIG10-GA-2011-303728 (CIG Grant NBHCHOICE, Neighbourhood choice, neighbourhood sorting, and neighbourhood effects).

© Technische Universiteit Delft 2018

All rights reserved. No part of the material protected by this copyright notice may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system, without written permission from the Technische Universiteit Delft.

Contents

List of tables	8
List of figures	10
Summary	11
Samenvatting	20

1 Introduction

1.1	Background	30
1.1.1	Neighbourhood effects and their discontents	31
1.1.2	A life course approach to neighbourhood effects	32
1.2	Aim and structure	33
1.2.1	Study design	36
	References	39

2 The life course approach as a framework for the study of neighbourhood effects

2.1	Introduction	45
2.2	The life course approach	46
2.2.1	Time elements to effects over the life course	47
2.3	The life course approach and neighbourhood effects	49
2.3.1	Neighbourhood histories of individuals	50
2.3.2	Time and neighbourhood effects	52
2.3.3	A model of a life course approach to understanding neighbourhood effects	54
2.4	Recommendations for future research	57
	References	60

3 The moderating effect of higher education on the intergenerational transmission of residing in poverty neighbourhoods

3.1	Introduction	64
3.2	Theoretical background	66
3.2.1	Introducing a life course approach to neighbourhood effects	67
3.2.2	The impact of the parental neighbourhood	68
3.2.3	Hypotheses	69
3.3	Data	69
3.3.1	Analytic strategy	72
3.4	Results	75
3.4.1	Sequence analyses	75
3.4.2	Multivariate analyses	79
3.5	Discussion and conclusions	83
	References	86

4 Parents and peers: parental neighbourhood- and school-level variation in individual neighbourhood outcomes over time

4.1	Introduction	92
4.2	Theoretical background	95
4.2.1	The impact of the neighbourhood	96
4.2.2	The impact of the school environment	97
4.3	Data	98
4.3.1	Analytic strategy	102
4.4	Results	104
4.5	Discussion and conclusions	107
	References	110

5 Educational attainment and neighbourhood outcomes: differences between highly-educated natives and non-Western ethnic minorities in the Netherlands

5.1	Introduction	115
5.2	Theoretical background	117
5.2.1	Income and the intergenerational transmission of poverty	118
5.2.2	Neighbourhood preference and selection	119
5.3	Analytic strategy	121
5.3.1	Register data	121
5.3.2	Survey data	124
5.3.2.1	Selected survey questions	125
5.4	Results	126
5.4.1	Descriptive results	126
5.4.2	Multilevel models	127
5.4.3	Survey results	129
5.5	Discussion	132
	References	135

6 Conclusions: a life course approach to neighbourhood effects

6.1	Introduction	139
6.2	Book chapters and research questions	140
6.2.1	Chapter 2	141
6.2.2	Chapter 3	142
6.2.3	Chapter 4	143
6.2.4	Chapter 5	144
6.3	Reflections	145
6.4	Challenges and limitations	148

6.4.1	Methodological challenges	148
6.4.2	Data-related challenges	149
6.5	Directions for future research	151
	References	153

List of tables

- 1.1 Overview of dissertation chapters

- 2.1 Cumulative exposure to neighbourhood income quintiles 1991-2008 (years of exposure as percentage of total years)

- 3.1 Descriptive statistics of anchor population in 1999 (in the parental home), 2000 (having left the parental home), 2006, and 2012

- 3.2 Basic descriptive statistics on the neighbourhood quintile-level in 1999 (in the parental home), and in 2006, halfway through the measurement period

- 3.3 Residence in neighbourhood quintiles (2000-2012) by parental neighbourhood quintile (1999)

- 3.4 Multilevel logit models on living in a deprived neighbourhood (quintile 5), 6 and 12 years after leaving the parental home

- 3.5 Descriptive statistics on the 3 most frequent quintile sequence patterns for natives and ethnic minority subgroups over the observation period 1999-2012, with low and high educational attainment

- 4.1 Descriptive statistics of anchor population in 1999 (in the parental home), 2000 (having left the parental home), 2006, and 2012

- 4.2 School-neighbourhood connection: percentage of pupils by number of parental neighbourhoods at t^0 (1999)

- 4.3 Cross-classified multilevel model on individual chance of residing in poverty concentration/ deprived residential neighbourhood after leaving the parental home (2006)

- 5.1 Personal and residential descriptive statistics of the highly-educated native Dutch population from a deprived parental neighbourhood (2000, 2006, and 2012)

- 5.2 Personal and residential descriptive statistics of the highly-educated non-western ethnic minority population from a deprived parental neighbourhood (2000, 2006, and 2012)

- 5.3 Multilevel models on intergenerational income transmission in the Netherlands after leaving the parental home (1999-2012), split up by ethnicity and education

List of figures

- 2.1 Sequence plot on patterns of individual neighbourhood histories in the Netherlands 1999-2012 (on a sample of 5000 individual histories) of those leaving the parental home in 1999-2000, by parental neighbourhood quintile 1 (1: lowest poverty concentration)

- 2.2 Conceptual model of a life course approach to understanding neighbourhood effects

- 3.1 Sequence plot on patterns of individual neighbourhood histories 1999-2012 (on a sample of 5000 individual histories) of those leaving the parental home in 1999-2000, from a parental neighbourhood with the lowest poverty concentration (quintile 1)

- 3.2 Sequence plot on patterns of individual neighbourhood histories 1999-2012 (on a sample of 5000 individual histories) of those leaving the parental home in 1999-2000, from a parental neighbourhood with the highest poverty concentration (quintile 5)

- 3.3 Graph: Three-way interaction effect plot after multilevel logit regression for 2012. Interaction between the deprived parental neighbourhood, educational attainment, and whether an individual belongs to an ethnic minority group

Summary

Introduction

The residential environment has been argued to affect individual-level outcomes in life, through so-called neighbourhood effects (for a compilation see Ellen & Turner 1997; Sampson et al. 2002; Galster 2002; 2012). In particular, deprived neighbourhoods are assumed to negatively affect the life chances of their residents (Friedrichs & Blasius 2003; Wilson 2012[1987]; Crowder & South 2003). Neighbourhood effects have been reported on individual outcomes for both children and adults, ranging from socioeconomic attainment to individual wellbeing and health. However, these studies have been criticised in the scientific field, with literature suggesting that the relative impact of neighbourhood effects and the mechanisms that allegedly produce them remain unclear (Small & Feldman 2011; van Ham et al. 2014; Sampson et al. 2002).

There are two core points of critique. First of all, it has been argued that while many studies claim to have found that localised disadvantage creates and maintains individual disadvantage, they may only show that poor individuals live in concentrated poverty areas because they simply do not have the funds, opportunities, or wish to live elsewhere: thus failing to take into consideration the possible role of neighbourhood selection effects (Durlauf 2004; Bolster et al. 2007; van Ham et al. 2012). Second of all, as many conclusions on neighbourhood effects were drawn from studies using cross-sectional data, experiences over time, lagged or cumulative effects, or patterns between generations could not be captured, making it hard to truly assess whether individuals' chances in life are impaired by where they live (Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012). In order to tackle these challenges, several researchers have argued for a step forward in neighbourhood effects literature: to make better use of longitudinal data and develop a conceptual framework based on a life course approach to neighbourhood effects. Implementing this approach, researchers can examine *how* neighbourhood experiences are embedded in experiences within multiple socio-spatial contexts and careers over an individual life course (Feijten 2005; Aisenbrey & Fasang 2010; Geist & McManus 2008; van Ham et al. 2014). A thorough discussion on the central premises of the life course approach forms an important part of this book. The aim of this book is to gain more insight into a number of potential neighbourhood- and wider contextual effects over time. We assess the role of intergenerational neighbourhood influences, as well as school-composition effects in the Netherlands, and how they affect individual income and chances of residence in poor neighbourhoods after leaving the parental home. We look at differences in the influence of the parental neighbourhood environment between

individuals with different levels of education, as well as between native Dutch and non-Western ethnic minority groups, and further assess their perception of their respective neighbourhood settings.

Empirical chapters

The chapters in this book are comprised of four separate but related papers. Chapter 2 presents the theoretical framework and conceptual model underlying this book. Chapters 3 to 5 are complete research papers; including their own theoretical framework, empirical analyses, results, discussion, and conclusion. The focus, methods and main findings of each chapter are outlined below.

Chapter 2

Many neighbourhood effects theories, on individual outcomes such as employment, health, and education, implicitly or explicitly stress the importance of studying neighbourhood effects from a life course perspective. However, possible temporal dimensions - such as lagged effects, duration effects, or intergenerational effects - received only limited attention in the empirical literature in the past, partly because of a lack of suitable data. The increasing availability of geo-coded longitudinal individual-level data allows for more research into time effects. This paper proposes an overarching framework and conceptual model to better understand and study the temporal dimensions of neighbourhood effects. It reviews and focusses on ways in which to incorporate a life course approach into research; allowing researchers to examine full individual life course biographies over time, taking into consideration multiple parallel life careers (such as education, household, housing, work, and leisure) and their relative importance to individual outcomes.

Chapter 3

It is well-known that socioeconomic outcomes and (dis)advantage over the life course can be transmitted from parent to child. Previous research from Sweden and the United States shows that children who grow up in disadvantaged neighbourhoods experience long-term exposure to such neighbourhoods in their adult lives. This paper contributes to the literature by examining to what extent educational attainment can break the link

between parental neighbourhood disadvantage and the neighbourhood experiences of children as adults up to 12 years after leaving the parental home. It uses longitudinal register data from the Netherlands to follow a complete cohort of parental home leavers, between 1999 to 2012, and applies multilevel logit models and sequence plot visualisations of individual neighbourhood trajectories. The findings demonstrate that children who grew up in deprived neighbourhoods are more likely to live in similar neighbourhoods later in life than children who grew up in more affluent neighbourhoods. The results additionally show that intergenerational neighbourhood patterns of disadvantage can be discontinued when individuals attain higher education over time. Discontinuation is however less prevalent among individuals from ethnic minority groups.

Chapter 4

Children from poor parental neighbourhoods often live in similar neighbourhoods as adults. However, there are multiple socio-spatial contexts besides the neighbourhood to which individuals are exposed over the life course, such as households, schools, and places of work and leisure, which may also influence their outcomes. For children and adolescents, the school environment can be especially important. This paper examines the joint influence of the parental background, the parental neighbourhood, and a compositional measure of the school environment, on individual neighbourhood trajectories. It uses Dutch longitudinal register data to study a complete cohort of adolescents from 1999 to 2012, fitting cross-classified multilevel models, in order to partition the variance of schools and parental neighbourhoods over time. The results show that parental neighbourhood quality strongly determines children's residential outcomes later in life, in line with previous findings. The variation in individual neighbourhood outcomes at the school-level was explained by the ethnicity, parental income and personal income of the research population, suggesting grouping of children from particular backgrounds into specific school environments.

Chapter 5

In the Netherlands, obtaining a higher education increases the chance to move to a better neighbourhood for native Dutch adults who grew up in a deprived parental neighbourhood. For non-Western minorities, education does not have this positive effect on socio-spatial mobility. This paper investigates potential explanations for these ethnic

differences over time. It uses longitudinal register data from the Netherlands to study a complete cohort of parental home leavers who attained higher education by the end of the measurement period (1999 to 2012). It supplements this data with information gathered in the WoON-survey. Differences in income trajectories for highly-educated native Dutch and non-Western ethnic minorities were examined; the strength of intergenerational transmission of income for both groups was investigated; and individual neighbourhood experiences and contentment were assessed. The results show that the highly-educated native Dutch in the subpopulation have a substantially higher average income over time, and a weaker association to the income of their parents compared to the highly-educated non-Western ethnic minorities. Additionally, for ethnic minorities, the results show that the level of contentment with the neighbourhood is highest in deprived neighbourhoods, compared to more affluent residential environments. Additionally, they more often reside in close proximity to their parents compared to the native Dutch, both suggesting an element of choice in neighbourhood selection.

Findings and conclusions

One of the core contributions of this book to the literature on neighbourhood effects is the focus on the role of higher education in moderating intergenerational neighbourhood patterns, and the ethnic differences therein as discussed in chapter 3 and 5. There may well be an element of choice/preference involved in the residential outcomes of ethnic minority groups. However, highly-educated non-Western ethnic minorities also still hold a special position: both within their respective ethnic groups, being among the few to attain higher education, *and* within the labour market at large. As a result, this position can make it very difficult to freely translate educational resources into socio-economic and residential gains. While social policies have aimed to improve the attainment of higher education throughout society for years, it may simply take more time for these measures to result in larger in-group shares of highly-educated ethnic minorities, and for the possible effects of higher education to become apparent. However, these residential and income characteristics across generations are only two factors involved in individual disadvantage over time, both in the neighbourhood and throughout society. It is vital to continue research on long-term disadvantage throughout life careers and socio-spatial contexts. That way, we can further distinguish between choice or necessity behind individual outcomes, and zoom in on the most vulnerable groups in society. Only then can we target individuals who would benefit most from policy interventions, and be able to

pinpoint the areas in life that have the strongest effects on individuals' chances of reaching and staying in a disadvantaged position.

Challenges and limitations

There are a number of limitations to this book, both conceptual/methodological and data-related. First, on the conceptual front, we conducted longitudinal research throughout this book, but there is still a wide range of possible time effects that deserve more attention in the literature (for instance lagged effects, duration effects). They are important in a life course approach to the study of neighbourhood effects. Furthermore, it remains undeniably important to explicitly take the option of selection effects into consideration in neighbourhood effects research. The fact that we were able to assess individual neighbourhood histories, allowing the examination of neighbourhood effects over time, was certainly a step in the right direction.

Second, the type of data used throughout the empirical chapters had certain shortcomings. On the one hand, the Dutch register data did not allow the examination of the precise causal mechanisms behind intergenerational or peer-to-peer transmission of deprived neighbourhood characteristics. Additionally, we had limited information on the composition of the school environment, again affecting the study of peer processes. On the other hand, we faced challenges using the WoON-survey, as the overlap with the individuals in our register data selections was limited. Furthermore, we could not examine the personal experience and possible effects of discrimination.

Directions for future research

Future research into neighbourhood effects over time will need to pay specific attention to individual experiences in parallel housing, household, higher educational, and labour market careers, in addition to the residential setting - both parental and personal - and the secondary school environment, as presented in this book. We strongly believe that by using a life course framework, researchers can gain valuable insights into patterns and trends in these careers over time and their potential effect on individual outcomes: bringing together these separate bodies of literature, in addition to integrating the temporal dimension into the study of neighbourhood effects. It can also shed more light on the possible causal mechanisms behind these processes and behind the selection of

individuals into deprived residential settings. There is a definite need for further research into the role of discrimination in determining residential locations; the broader use of subjective observations on personal neighbourhood experiences; and more comparative international studies on the effect of the neighbourhood, further life careers, and socio-spatial contexts.

References

- Aisenbrey, S., & Fasang, A. E. (2010). New life for old ideas: The "second wave" of sequence analysis bringing the "course" back into the life course. *Sociological Methods & Research, 38*(3), 420-462.
- Bolster, A., Burgess, S., Johnston, R., Jones, K., Propper, C., & Sarker, R. (2007). Neighbourhoods, households and income dynamics: a semi-parametric investigation of neighbourhood effects. *Journal of Economic Geography, 7*(1), 1-38.
- Crowder, K., & South, S. J. (2003). Neighborhood distress and school dropout: the variable significance of community context. *Social Science Research, 32*(4), 659-698.
- Durlauf, S. N. (2004). Chapter 50: Neighborhood effects. In J. V. Henderson & T. Jacques-François (Eds.), *Handbook of Regional and Urban Economics* (Vol. 4, pp. 2173-2242): Elsevier.
- Ellen, I. G., & Turner, M. A. (1997). Does neighborhood matter? Assessing recent evidence. *Housing Policy Debate, 8*(4), 833-866.
- Feijten, P. (2005). *Life events and the housing career: A retrospective analysis of timed effects*: Eburon Delft.
- Friedrichs, J. r., & Blasius, J. r. (2003). Social norms in distressed neighbourhoods: testing the Wilson hypothesis. *Housing Studies, 18*(6), 807-826.
- Galster, G. (2002). An economic efficiency analysis of deconcentrating poverty populations. *Journal of Housing Economics, 11*(4), 303-329. DOI: 10.1016/S1051-1377(02)00122-5
- Galster, G. C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 23-56): Springer Netherlands.
- Geist, C., & McManus, P. A. (2008). Geographical mobility over the life course: Motivations and implications. *Population, Space and Place, 14*(4), 283-303.
- Musterd, S., Galster, G., & Andersson, R. (2012). Temporal dimensions and measurement of neighbourhood effects. *Environment and Planning A, 44*(3), 605-627.
- Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "Neighborhood Effects": Social Processes and New Directions in Research. *Annual Review of Sociology, 28*, 443-478.

- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *AJS; American journal of sociology*, 116(6), 1934-1981.
- Small, M. L., & Feldman, J. (2012). Ethnographic evidence, heterogeneity, and neighbourhood effects after moving to opportunity. In *Neighbourhood effects research: New perspectives* (pp. 57-77): Springer.
- Van Ham, M., Hedman, L., Manley, D., Coulter, R., & Östh, J. (2014). Intergenerational transmission of neighbourhood poverty: an analysis of neighbourhood histories of individuals. *Transactions of the Institute of British Geographers*, 39(3), 402-417.
- Van Ham, M., Manley, D., Bailey, N., Simpson, L., & Maclennan, D. (2012). Neighbourhood Effects Research: New Perspectives. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 1-21): Springer Netherlands.
- Wilson, W. J. (2012 [1987]). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago: University of Chicago Press.

Samenvatting

Introductie

Er is al jaren veel aandacht in onderzoek en beleid voor de mogelijke relatie tussen de woonomgeving en het individu; zogenoemde buurteffecten (voor een overzicht zie Ellen & Turner 1997; Sampson et al. 2002; Galster 2002; 2012). Het wordt vaak aangenomen dat arme buurten de levenskansen van bewoners sterk beïnvloeden (Friedrichs & Blasius 2003; Wilson 2012[1987]; Crowder & South 2003). Onderzoek naar buurteffecten in de laatste decennia heeft statistische verbanden getoond tussen zowel kinderen als volwassenen enerzijds en de woonomgeving anderzijds, voor sociaaleconomische uitkomsten variërend van welzijn tot gezondheid. Deze studies worden echter sterk bekritiseerd: de relatieve impact van buurteffecten en de onderliggende mechanismes zouden grotendeels onduidelijk blijven (Small & Feldman 2011; van Ham et al. 2014; Sampson et al. 2002).

Er zijn twee belangrijke punten van kritiek op studies naar buurteffecten. Ten eerste wordt beargumenteerd dat deze onderzoeken veelal niet expliciet meenamen dat selectie-effecten een grote rol kunnen spelen in bepaalde individuele uitkomsten op buurtniveau. Met andere woorden, hoewel veel studies naar buurteffecten claimden aan te tonen dat lokale ongelijkheid en armoede individuele ongelijkheid en armoede creëert, lieten deze onderzoeken wellicht alleen zien dat arme mensen in arme wijken wonen; waarschijnlijk omdat ze het zich niet kunnen permitteren om ergens anders te wonen (Durlauf 2004; Bolster et al. 2007; van Ham et al. 2012). Ten tweede zijn veel conclusies over buurteffecten getrokken op basis van analyses van cross-sectionele data, oftewel eenmalige meetmomenten, waardoor individuele ervaringen over langere perioden, vertraagde of cumulatieve effecten, en patronen tussen generaties niet inzichtelijk gemaakt konden worden. Dit belemmert valide onderzoek naar de mogelijkheid dat individuele kansen in het leven daadwerkelijk worden beïnvloed door de woonomgeving (Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012).

Om deze problemen beter het hoofd te kunnen bieden, hopen veel onderzoekers op een vooruitgang in de buurteffecten literatuur, door beter gebruik te maken van beschikbare longitudinale data en een conceptueel model te ontwikkelen op basis van een levensloop benadering van buurteffecten. Door deze benadering toe te passen worden onderzoekers in staat gesteld de rol van buurt- en bredere persoonlijke ervaringen in meerdere sociaal-ruimtelijke contexten en individuele levenspaden door de tijd heen te bestuderen (Feijten 2005; Aisenbrey & Fasang 2010; Geist & McManus 2008; van Ham et al. 2014). Een

belangrijk onderdeel van dit boek is een grondige discussie van een levensloop benadering van buurteffecten. Het doel van dit boek is meer duidelijkheid te verschaffen over een aantal mogelijke buurt- en contextuele effecten over de tijd. We bestuderen de rol van intergenerationale buurtinvloeden en school-compositie effecten in Nederland, alsmede het effect op individueel inkomen en de kans op het wonen in armoedewijken na het verlaten van het ouderlijk huis. We vergelijken de invloed van de ouderlijke wijk tussen mensen met verschillende onderwijsniveaus en tussen autochtone Nederlanders en mensen met een niet-Westerse migratieachtergrond. Tot slot vergelijken we de buurtervaringen van deze verschillende groepen.

Empirische hoofdstukken

De hoofdstukken in dit boek bestaan uit vier afzonderlijke maar gerelateerde papers. In hoofdstuk 2 presenteren we het overkoepelende theoretische kader en conceptuele model van dit boek. Hoofdstuk 3 tot en met 5 zijn complete onderzoekspapers; met een eigen theoretische uiteenzetting, empirische analyses, resultaten, discussie en conclusie. De focus, methoden en voornaamste resultaten van de hoofdstukken worden hieronder beschreven.

Hoofdstuk 2

Veel theorieën over buurteffecten, op individuele uitkomsten zoals werk, gezondheid en onderwijs, benadrukken impliciet of expliciet het belang van het bestuderen van buurteffecten vanuit een levensloopbenadering. Diverse mogelijke tijdsdimensies – zoals vertraagde effecten, effecten van ervaringen over langere perioden, of intergenerationale effecten – krijgen tot nu toe echter weinig aandacht in de empirische literatuur, deels door een gebrek aan geschikte data. De groeiende beschikbaarheid van geo-gecodeerde longitudinale data op individueel niveau biedt meer mogelijkheden om deze tijdsdimensies te onderzoeken. Dit hoofdstuk ontwikkelt een overkoepelend conceptueel model om deze dimensies beter te begrijpen in het kader van buurteffecten onderzoek. Het geeft een overzicht van manieren waarop een levensloop benadering geïntegreerd kan worden in dit type studies, waardoor onderzoekers biografieën van individuele levenslopen over de tijd kunnen analyseren en het relatieve belang van meerdere parallelle levenspaden (bijvoorbeeld onderwijs, het huishouden, huisvesting, werk en vrije tijd) op individuele uitkomsten kunnen bestuderen.

Hoofdstuk 3

Het is bekend dat sociaaleconomische uitkomsten en ongelijkheid kunnen worden 'doorgegeven' van ouder op kind over de levensloop. Eerder onderzoek in Zweden en de Verenigde Staten toont aan dat kinderen die opgroeien in arme wijken, verhoudingsgewijs vaak ook in dit type wijken wonen als volwassenen. Dit hoofdstuk draagt bij aan de literatuur over buurteffecten door te onderzoeken in welke mate hoger onderwijs de overdracht van buurtuitkomsten van ouder op kind kan doorbreken, tot 12 jaar na het verlaten van het ouderlijk huis. We gebruiken longitudinale Nederlandse registerdata en volgen een compleet cohort jongeren die uit huis gegaan zijn en zelfstandig gingen wonen, van 1999 tot 2012. We passen multi-level logistische modellen toe en gebruiken sequentie-analyse om individuele buurtgeschiedenissen te visualiseren. De resultaten laten zien dat kinderen die opgroeien in armoedewijken een veel hogere kans hebben in dit type wijken terecht te komen als volwassenen, vergeleken met kinderen uit relatief rijkere wijken. De resultaten laten tevens zien dat intergenerationale patronen in buurtuitkomsten – het wonen in arme wijken - doorbroken kunnen worden wanneer kinderen een opleiding in het hoger onderwijs (HBO, WO) afronden gedurende de onderzoeksperiode. Dit laatste resultaat geldt echter niet voor personen met een niet-Westerse migratieachtergrond.

Hoofdstuk 4

Kinderen uit een arme ouderlijke woonomgeving wonen verhoudingsgewijs vaker in soortgelijke buurten als ze eenmaal volwassen zijn. Er zijn echter meerdere sociaal-ruimtelijke contexten naast de woonomgeving waar mensen mee te maken hebben in hun levensloop, zoals hun huishouden, school, werk en vrijetijdsomgeving. Deze contexten kunnen ook de individuele buurtuitkomsten beïnvloeden. Voor kinderen en adolescenten kan de schoolomgeving bijzonder belangrijk zijn. Dit hoofdstuk kijkt naar de gecombineerde invloed van het inkomen van de ouders, de ouderlijke wijk en een schoolcompositie maat (percentage kinderen arme ouders) op individuele buurtuitkomsten over de tijd. In het hoofdstuk worden longitudinale Nederlandse register data gebruikt om een cohort adolescenten te volgen van 1999 tot 2012. Met behulp van cross-classified multi-level modellen wordt de variatie van scholen en ouderlijke buurten in individuele buurtuitkomsten door de tijd heen opgesplitst. De resultaten laten zien dat het gemiddelde inkomen in de ouderlijke wijk sterk bepaald waar kinderen later in hun leven wonen, wat overeenkomt met voorgaand onderzoek. De variatie in individuele

buurtuitkomsten op schoolniveau wordt primair verklaard door de etnische achtergrond – niet-Westerse etnische minderheden - het ouderlijk inkomen en het persoonlijk inkomen van de onderzoekspopulatie, wat suggereert dat kinderen van bepaalde arme en etnische achtergronden samenkomen binnen schoolomgevingen, wat hun buurtuitkomsten kan bepalen.

Hoofdstuk 5

Hoogopgeleide autochtone Nederlanders uit arme ouderlijke wijken hebben een hogere kans om in meer welvarende wijken terecht te komen als volwassenen dan hoogopgeleide Nederlanders met een niet-Westerse migratieachtergrond. Dit hoofdstuk onderzoekt mogelijke verklaringen voor deze verschillen tussen bevolkingsgroepen over de tijd. Het gebruikt longitudinale Nederlandse register data om een compleet cohort jongeren die het ouderlijk huis verlaten hebben te volgen van 1999 tot 2012 en richt zich op diegene die binnen de observatieperiode een diploma behaalden in het hoger onderwijs (HBO, WO). Aan deze data wordt informatie uit het Woononderzoek Nederland gekoppeld (WoON). Er wordt gekeken naar verschillen in inkomen tussen hoogopgeleide autochtone Nederlanders en Nederlanders met een niet-Westerse migratieachtergrond over de tijd, mogelijke intergenerationele overdracht van inkomensniveau voor beide groepen en individuele buurtervaringen en woongenot. De resultaten laten zien dat hoogopgeleide autochtone Nederlanders in de onderzoekspopulatie een substantieel hoger inkomen hebben over de tijd en een minder sterke associatie met het inkomen van hun ouders vergeleken met de hoogopgeleide Nederlanders met een niet-Westerse migratieachtergrond. Verder laten resultaten voor de laatste groep een hoger woongenot zien in armere vergeleken met relatief rijkere woonomgevingen en wonen individuen in deze groep vaker dichterbij hun ouders vergeleken met autochtone Nederlanders. Deze laatste twee uitkomsten met betrekking tot woongenot druisen enigszins tegen de verwachting in en suggereren een zekere mate van voorkeur in buurtuitkomsten en – selectie voor deze groep.

Bevindingen en conclusies

Een van de voornaamste bijdragen van dit boek aan de buurteffecten literatuur is de focus op de invloed van hoger onderwijs in het bepalen van intergenerationele buurtuitkomsten en de verschillen daarin tussen bevolkingsgroepen zoals besproken in

hoofdstuk 3 en 5. Het is goed mogelijk dat er een mate van voorkeur aanwezig is in de buurtuitkomsten van hoog opgeleide Nederlanders met een niet-Westerse migratieachtergrond. Deze hoogopgeleide groep heeft echter ook een speciale positie: zowel binnen hun eigen etnische groep, waarin ze qua opleidingsniveau nog in de minderheid zijn, en op de arbeidsmarkt. Dit type positie kan het erg moeilijk maken om opleiding-gerelateerde voordelen vrij te vertalen naar sociaaleconomische groei en verbetering van de woonomgeving. Hoewel beleid zich al jaren richt op het verhogen van het aandeel hoger opgeleiden binnen de maatschappij, kan het simpelweg langer duren voordat deze maatregelen daadwerkelijk resulteren in grotere groepen hoogopgeleide niet-Westerse etnische minderheden en voordat de mogelijke effecten van hoger onderwijs in deze groep zich openbaren.

Kenmerken van de woonomgeving en inkomen tussen generaties zijn echter maar twee van de mogelijke factoren die een rol spelen in individuele armoede en ongelijkheid over de tijd, zowel in de buurt als in de verdere maatschappij. Het is van groot belang om onderzoek voort te zetten naar armoede en ongelijkheid op de lange termijn, binnen meerdere levenspaden en sociaal-ruimtelijke contexten. Hierdoor kunnen we verder onderscheid maken tussen voorkeur/keuze of noodzaak achter individuele uitkomsten en kunnen we inzoomen op de meest kwetsbare groepen in onze maatschappij. Alleen op deze manier kunnen we ons specifiek richten op de mensen die het meest belang en baat hebben bij bepaalde beleidsinterventies en kunnen we meer duidelijkheid verkrijgen over de factoren die individuele kansen op armoede en ongelijkheid het sterkst beïnvloeden.

Uitdagingen en beperkingen

Dit boek kent een aantal beperkingen, zowel conceptueel/methodologisch als data-gerelateerd. Ten eerste, op conceptueel vlak, zijn er nog vele mogelijk tijdsdimensie-effecten die meer aandacht verdienen in de literatuur (bijvoorbeeld vertraagde effecten en effecten van langere perioden van blootstelling aan armoede of andere buurtkenmerken). Deze elementen zijn belangrijk in een levensloop benadering van buurteffecten. We hadden de mogelijkheid om individuele buurtgeschiedenissen te bestuderen, maar dat laat onverlet dat het essentieel blijft om de mogelijkheid van selectie-effecten mee te nemen in buurteffecten onderzoek.

Ten tweede brachten de gebruikte data in de empirische hoofdstukken bepaalde beperkingen met zich mee. De Nederlandse register data gaven geen mogelijkheid tot het bestuderen van de precieze causale mechanismen die ten grondslag liggen aan intergenerationele en leerling-op-leerling overdracht van buurtkenmerken, met name kenmerken gerelateerd aan arme buurten. Ook hadden we beperkte informatie beschikbaar over de compositie van de schoolomgeving, wat wederom onderzoek naar effecten onder leerlingen belemmerde. Tot slot overlapte het sample van de WoON maar beperkt met de register data selecties in de hoofdstukken van dit boek en konden we de ervaringen met en het mogelijke effect van discriminatie niet onderzoeken.

Suggesties voor toekomstig onderzoek

Toekomstig buurteffecten-onderzoek zal specifiek aandacht moeten besteden aan parallelle individuele huisvestings-, huishoudens-, onderwijs-, en werkervaringen in het leven, zoals besproken in dit boek. Wij zijn er van overtuigd dat een levensloop benadering van buurteffecten onderzoekers duidelijkheid kan bieden over patronen in en tussen deze levenspaden over de tijd en hun mogelijke effect op persoonlijke uitkomsten. Dit kan deze literatuur samenbrengen, tijdsdimensies integreren in onderzoek naar buurteffecten en meer licht werpen op de mogelijke causale mechanismes achter deze processen en achter de selectie van individuen in armere woonomgevingen. Er is absoluut meer onderzoek nodig naar de rol van discriminatie en vervreemding in het ontstaan van patronen in buurtuitkomsten voor Nederlanders met een niet-Westerse migratieachtergrond. Tot slot kunnen het gebruik van meer informatie over persoonlijke buurtervaringen en meer vergelijkende internationale studies naar het effect van de woonomgeving, levenspaden en sociaal-ruimtelijke contexten onderzoek verder brengen.

Bronnen

- Aisenbrey, S., & Fasang, A. E. (2010). New life for old ideas: The "second wave" of sequence analysis bringing the "course" back into the life course. *Sociological Methods & Research, 38*(3), 420-462.
- Bolster, A., Burgess, S., Johnston, R., Jones, K., Propper, C., & Sarker, R. (2007). Neighbourhoods, households and income dynamics: a semi-parametric investigation of neighbourhood effects. *Journal of Economic Geography, 7*(1), 1-38.
- Crowder, K., & South, S. J. (2003). Neighborhood distress and school dropout: the variable significance of community context. *Social Science Research, 32*(4), 659-698.
- Durlauf, S. N. (2004). Chapter 50: Neighborhood effects. In J. V. Henderson & T. Jacques-François (Eds.), *Handbook of Regional and Urban Economics* (Vol. 4, pp. 2173-2242): Elsevier.
- Ellen, I. G., & Turner, M. A. (1997). Does neighborhood matter? Assessing recent evidence. *Housing Policy Debate, 8*(4), 833-866.
- Feijten, P. (2005). *Life events and the housing career: A retrospective analysis of timed effects*: Eburon Delft.
- Friedrichs, J. r., & Blasius, J. r. (2003). Social norms in distressed neighbourhoods: testing the Wilson hypothesis. *Housing Studies, 18*(6), 807-826.
- Galster, G. (2002). An economic efficiency analysis of deconcentrating poverty populations. *Journal of Housing Economics, 11*(4), 303-329. DOI: 10.1016/S1051-1377(02)00122-5
- Galster, G. C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 23-56): Springer Netherlands.
- Geist, C., & McManus, P. A. (2008). Geographical mobility over the life course: Motivations and implications. *Population, Space and Place, 14*(4), 283-303.
- Musterd, S., Galster, G., & Andersson, R. (2012). Temporal dimensions and measurement of neighbourhood effects. *Environment and Planning A, 44*(3), 605-627.
- Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "Neighborhood Effects": Social Processes and New Directions in Research. *Annual Review of Sociology, 28*, 443-478.

- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *AJS; American journal of sociology*, 116(6), 1934-1981.
- Small, M. L., & Feldman, J. (2012). Ethnographic evidence, heterogeneity, and neighbourhood effects after moving to opportunity. In *Neighbourhood effects research: New perspectives* (pp. 57-77): Springer.
- Van Ham, M., Hedman, L., Manley, D., Coulter, R., & Östh, J. (2014). Intergenerational transmission of neighbourhood poverty: an analysis of neighbourhood histories of individuals. *Transactions of the Institute of British Geographers*, 39(3), 402-417.
- Van Ham, M., Manley, D., Bailey, N., Simpson, L., & Maclennan, D. (2012). Neighbourhood Effects Research: New Perspectives. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 1-21): Springer Netherlands.
- Wilson, W. J. (2012 [1987]). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago: University of Chicago Press.

1 Introduction

1.1 Background

The residential environment has been argued to affect individual-level outcomes in life, through so-called neighbourhood effects (for a compilation see Ellen & Turner 1997; Sampson et al. 2002; Galster 2002; 2012; Dietz 2002; Durlauf 2004; van Ham et al. 2014; de Vuijst et al. 2016; 2017). In particular, deprived neighbourhoods are assumed to negatively affect the life chances of their residents, with concentrated poverty independently adding to the consequences of individual disadvantages (Friedrichs & Blasius 2003; Crowder & South 2003; Wilson 2012[1987]; Hedman et al. 2013). Neighbourhood effects have been reported on individual outcomes from childhood and adolescence up into adulthood, ranging from socioeconomic attainment to individual wellbeing and health. For children and adolescents, previous studies suggest effects of the residential environment on school dropout rates and childhood achievement, cognitive development, child maltreatment, delinquency, and teenage pregnancy (Brooks-Gunn 1997a,b; Overman 2002; Crowder & South 2003; Galster et al. 2007; Sharkey & Elwert 2011). For adults, spatially concentrated disadvantage was shown to affect income levels and social mobility patterns, social exclusion, transition rates from welfare to work, and deviant behaviour and delinquency (Buck 2001; Van der Klaauw & Ours 2003; Friedrichs & Blasius 2003; Simpson et al. 2006; Galster et al. 2007; 2010; de Vuijst et al. 2017).

Generally, four categories of possible causal mechanisms are believed to be behind these neighbourhood effects. They involve social interactive, environmental, geographical, and institutional aspects, each potentially shaping a connection between the residential environment and its inhabitants (Galster 2012). Possible neighbourhood effects through social interaction can arise from processes of social contagion or imitation, such as the remaining collective acceptance or enforcement of (dysfunctional) norms and values, or a limited network range for inhabitants due to a homogeneous neighbourhood population composition, which may for instance affect job-finding opportunities (Tunstall & Fenton 2006; Wilson 2012[1987]). On the environmental and geographical level, residents of poverty neighbourhoods may face further exposure to poverty-related disadvantage such as violence, pollution, or a lack of beneficial public services. Additionally, these mechanisms must be seen as embedded in society as a whole, in which social stigmatisation can arise towards the residents of deprived neighbourhoods on an institutional level, resulting in the continuous reiteration of their disadvantaged position (for an extensive overview see Galster 2012). Through these possible mechanisms behind

neighbourhood effects, individuals' life chances may be impaired (Atkinson & Kintrea 2001; Buck 2001), which makes the potential effect of the residential neighbourhood a relevant factor in a wider social and political discussion on possible reasons behind individual deprivation and poverty.

1.1.1 Neighbourhood effects and their discontents

A large number of studies have focussed on the possibility of neighbourhood effects on individual outcomes over the past few decades, a number of which were listed above (¶1.1). The outcomes of these studies have received widespread social, political, and media attention in recent years, encouraging lively debates on the effect of the residential environment. However, these studies are not without their discontents in the scientific field. An increasingly critical body of literature suggests that we are a long way from identifying the importance and relative impact of neighbourhood effects, and from providing clarity on the precise causal mechanisms that produce them (Sampson et al. 2002; Small & Feldman 2011; van Ham et al. 2014; de Vuijst et al. 2017). I will discuss two main critical arguments in more detail.

First of all, it has been argued that the results from neighbourhood effects studies may not actually reflect a *causal* relationship between neighbourhood poverty and individual outcomes in life, as many researchers fail to adequately take into consideration the role of neighbourhood selection effects (Oreopoulos 2003; Durlauf 2004; Bolster et al. 2007; van Ham & Manley 2012; van Ham et al. 2012). For this reason, while many of the studies listed above (¶1.1) claim to have illustrated that localised disadvantage creates and maintains individual disadvantage, they may only show that poor individuals live in concentrated poverty areas because they simply do not have the funds, opportunities, or wish to live elsewhere (Cheshire 2007; de Vuijst & van Ham 2017a,b). Subsequently, when assessing the effect of the neighbourhood on an individual characteristic, such as income or educational attainment, that individual factor may largely have caused residence in a poverty area in the first place (van Ham et al. 2012).

Second of all, conclusions on neighbourhood effects have often been drawn from measures on individuals' current residential characteristics and their effect on current individual-level outcomes; using cross-sectional or short longitudinal data (Quillian 2003; Clark & Ledwith 2005; Geist & McManus 2008; Sharkey & Elwert 2011; van Ham et al.

2014; de Vuijst et al. 2017). However, intuitively, it is highly probable that a long-term exposure to a deprived neighbourhood will have a stronger negative effect on individual outcomes than a short-term exposure. For outcomes in income and educational attainment, experiences over the life course were indeed shown to have a strong, cumulative effect on current individual outcomes, and patterns were even found between generations (Blanden et al. 2005; Bloome 2014). Using single point-in-time measures, these differences could not have been captured. For this reason, it has increasingly been argued that in order to examine whether individuals' chances in life are impaired by where they live, one must look beyond the current residential location and assess neighbourhood experiences *over time* (Quillian 2003; Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012; Hedman et al. 2013; van Ham et al. 2014).

Considering these two common criticisms, evidence suggesting that residence in a poverty neighbourhood truly has an independent effect over and above observed and unobserved individual- or household-level disadvantages is increasingly questioned (Ellen & Turner 1998; van Ham et al. 2012; Cheshire 2007; van Ham & Manley 2010; Oreopoulos 2003; Bolster et al. 2007). In order to tackle the methodological and conceptual challenges mentioned above, which have cast doubt on conclusions on the relative importance of the neighbourhood to individual outcomes, several researchers have argued for a step forward in neighbourhood effects literature: to make better use of longitudinal data and develop a conceptual framework based on a life course approach to neighbourhood effects (Sampson et al. 2002; Manley & van Ham 2012; Small & Feldman 2012; de Vuijst et al. 2016; 2017). For this reason, a thorough discussion on the central premises of the life course approach forms an integral part of this book.

1.1.2 A life course approach to neighbourhood effects

Central to a life course approach is the understanding that any individual outcome in life, and throughout life, will necessarily be related to both prior, current, and even anticipative experiences over a number of parallel personal careers; encompassing education, household, housing, work, and leisure. For this reason, the focus in a study that takes a life course approach must, by definition, be interdisciplinary and temporal in its nature (Elder 1994; Dykstra & van Wissen 1999; de Vuijst et al. 2016; 2017). Most theories on neighbourhood effects already contain some reference to the importance of time, albeit often implicit (Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012; van

Ham et al. 2014). Nevertheless, in the past, neighbourhood effects studies were often unable to take an explicit life course approach due to a lack of adequate data. Longitudinal data containing geo-coded information were scarce (Galster 2012; van Ham et al. 2014; de Vuijst et al. 2016). For this reason, the temporal context to neighbourhood effects remained largely unaddressed for a long period of time.

With the growing availability of and access to longitudinal spatial data over recent years, studies now have the opportunity to look into potential neighbourhood effects over time, and their results clearly illustrate the benefit of conducting such research (Vartanian et al. 2007; Sharkey 2008; Sharkey & Elwert 2011; Hedman et al. 2013; van Ham et al. 2014; de Sharkey & Faber 2014; Vuijst et al. 2017). Researchers were able to take into consideration elements of temporality in neighbourhood effects such as duration effects and intergenerational effects (ibid.). In the United States, for example, longitudinal neighbourhood research has showed that growing up in the poorest quarter of American neighbourhoods meant remaining in these poorest neighbourhoods as adults in more than 40% of cases for whites, and 70% of cases for blacks over time (Vartanian et al. 2007; Sharkey 2008). In Sweden, studies also showed that children from deprived parental neighbourhoods were likely to reside in similarly deprived neighbourhoods as adults, and that long-term exposure to localised poverty further increased this likelihood within personal neighbourhood histories (Hedman et al. 2013; van Ham et al. 2014). Therefore, researchers are more and more able to examine *how* neighbourhood experiences are embedded in experiences and careers over an individual life course (Feijten 2005; Aisenbrey & Fasang 2010; de Vuijst et al. 2017; Geist & McManus 2008; van Ham et al. 2014). As such, a life course approach to neighbourhood effects can be seen as a starting point in assessing the relative importance of the residential neighbourhood to individual outcomes, and in addressing some of the lingering problems associated with the literature today.

1.2 Aim and structure

The aim of this book is to gain more insight into a number of potential neighbourhood- and wider contextual effects over the life course. We assess the role of intergenerational neighbourhood influences, as well as school-composition effects in the Netherlands, and how they affect individual income and chances of residence in poor neighbourhoods after leaving the parental home. We look at differences in the influence of the parental

neighbourhood environment between individuals with different levels of education, as well as between native Dutch and non-Western ethnic minority groups, and further assess their perception of their respective neighbourhood settings.

The following chapters are comprised of four separate but strongly related studies, each approaching a question derived from the main research question. Table 1.1 provides an overview of the studies, their research questions, main measures, approach and statistical modelling techniques. Chapter 2 presents the theoretical framework and conceptual model underlying this book. Chapters 3 to 5 are complete research papers; including their own theoretical framework, empirical analyses, results, discussion, and conclusion. One of these chapters has been accepted for publication, and the other three are currently under review at peer-reviewed journals. Chapter 6, the final chapter, consists of an overall conclusion and reflection on the research findings, a discussion of study limitations, and suggestions for future research.

Chapter 2 presents a review of ways to explicitly incorporate time in the study of neighbourhood effects, and a discussion on the need to do so in practice. It addresses the question: *To what extent do various elements of time play a role in neighbourhood effects theories, and how can we help integrate these elements into current research?* This chapter proposes the life course approach as an overarching framework to better understand and study the temporal dimensions of neighbourhood effects, and provides a comprehensive conceptual model on the core elements of this approach.

Chapter 3 focusses on the intergenerational transmission of disadvantageous neighbourhood characteristics, and the influence of higher educational attainment in breaking or weakening this association over time. It addresses the question: *To what extent does higher educational attainment affect the intergenerational transmission of residing in poverty neighbourhoods over the life course?* This chapter further examines ethnic differences in the moderating effect of higher education on parent-to-child transmission patterns.

Chapter 4 examines the joint influence of multiple socio-spatial settings on individual neighbourhood trajectories. It addresses the question: *To what extent are individual neighbourhood outcomes affected by parental, parental neighbourhood, and school-*

Table 1.1 Overview of book chapters

	Chapter 2	Chapter 3	Chapter 4	Chapter 5
<i>Title</i>	The life course approach as a framework for the study of neighbourhood effects	The moderating effect of higher education on the intergenerational transmission of residing in poverty neighbourhoods	Parents and peers: parental neighbourhood- and school-level variation in individual neighbourhood outcomes over time	Determinants of differences in neighbourhood outcomes of highly-educated natives and non-Western ethnic minorities in the Netherlands
<i>Research question</i>	To what extent do various elements of time play a role in neighbourhood effects theories, and how can we help integrate these elements into current research?	To what extent does higher educational attainment affect the intergenerational transmission of residing in poverty neighbourhoods over the life course?	To what extent are individual neighbourhood outcomes affected by parental, parental neighbourhood, and school-context characteristics after leaving the parental home?	To what extent do income, intergenerational income transmission, and neighbourhood selection determine ethnic differences in the moderating effect of higher education on intergenerational spatial inequality?
<i>Dependent variable</i>	n/a	Residence in a concentrated poverty area after leaving the parental home (2000-2012)	Residence in a concentrated poverty area after leaving the parental home (2000-2012)	Personal income
<i>Main independent variables</i>	n/a	Parental income Parental neighbourhood quality Personal income Higher education	Parental income Parental neighbourhood quality Personal income	Parental income Parental neighbourhood quality Education
<i>Statistical technique/ approach</i>	Illustrative conceptual model of the life course approach	Sequence analysis; multilevel logistic analysis	Cross-classified multilevel analysis	Longitudinal multilevel analysis; survey data descriptives

context characteristics after leaving the parental home? Cross-classified multilevel models are used in order to partition the variance of parental neighbourhoods and schools over time, controlling for parental income. This chapter emphasises the importance of

assessing contexts beside the residential neighbourhood, in an aim to avoid overestimating the latter's influence on residents' chances of ending up in concentrated poverty areas.

Chapter 5 presents a number of possible explanations for ethnic differences in the moderating effect of higher education on the intergenerational transmission of neighbourhood characteristics. It addresses the question: *To what extent do income, intergenerational income transmission, and neighbourhood selection determine ethnic differences in the moderating effect of higher education on intergenerational spatial inequality?* This chapter uses extensive housing survey data in addition to the register data, in order to assess residents' contentment with and attachment to their living environment/neighbourhood.

1.2.1 Study design

The research in this book makes use of the System of Social statistical Datasets (SSD hereafter), provided by Statistics Netherlands. The SSD are a unique source of information on the entire Dutch population, including all manner of personal demographic and socio-economic characteristics, such as basic personal register information, data on educational outcomes, and income records provided by the Dutch Tax Authority. The SSD further include information on residents' parental background (Bakker, van Rooijen & van Toor 2014), allowing for the examination of direct family characteristics. They additionally contain a range of geographical variables including individuals' location on the level of the municipality, neighbourhood, postal code area, 500x500m grids, and 100x100m grids. All registers are linked at the individual level, making them exceptionally suitable for the examination of socio-spatial settings over time. In this book, specific population selections for each study are discussed at length in the individual chapters. The measurement period throughout the chapters ranges from 1999 to 2012: following residents for 14 years.

Throughout the chapters of this book, 500x500 meter grids cells were selected as the research populations' neighbourhood boundaries. The Netherlands is comprised of 34,094 inhabited 500x500 meter grid cells, which contain an average of 496 inhabitants. They are therefore smaller than most standard Dutch administrative units such as postal code areas. Research has shown that the size of these grids is particularly likely to reflect

inhabitants' social perception of their direct residential environment (see e.g. Kearns & Parkinson 2001; Wassenberg et al. 2006; Musterd et al. 2011). Additionally, using these grids enables the comparison of equally-sized, smaller spatial units throughout the Netherlands, with boundaries lines that are constant over time. They therefore form a highly suitable spatial scale on which to examine neighbourhood histories.

While these register data are unique and provide a wealth of information on the entire Dutch population, they are not without their limitations. Most importantly, they do not include individual subjective observations or assessments. Therefore, when using only the register data, it is not possible to conduct research into some of the likely mechanisms behind neighbourhood effects (listed above ¶ 1.1, see Galster 2012 for an extensive discussion). Complex processes such as social contagion, for example, or the acceptance and enforcement of dysfunctional norms and values within a community, cannot be addressed. Nevertheless, these could all affect individual chances to participate in society, or to experience an improvement of the residential setting. Additionally, the SSD registers does not contain information on whether individuals reside in particular neighbourhoods out of choice or necessity. Therefore, these limitations need to be taken into consideration when working within these data. One way of addressing these limitations is to merge large-scale survey data to the national registers in order to further address these possibilities. These additions can thus offer new opportunities to neighbourhood effects researchers, as well as clear methodological advances.

In addition to the SSD registers, chapter 5 makes use of the Netherlands' Housing Survey (WoON hereafter). Using the same individual identifier, the WoON and the SSD registers can be directly linked. The WoON contains information on the housing situation of the Dutch population, as well as their living wishes and needs (Statistics Netherlands 2012), with a large sample taken from all Dutch residents 18-years and up, whose address information was available (N = 69,330). The core topics include the composition of the individual household and information on partners, and individual experiences and perceptions of the dwelling and neighbourhood, housings costs, and intended and/or realised moving behaviour. In the scope of the fifth book chapter, questions were selected on the respondents' contentment with their current dwelling and neighbourhood, their moving desires, and their emotional attachment to their residential environment. The WoON *does* include subjective observations, and as it assesses the experience of the neighbourhood by its inhabitants, it greatly adds to the available

register data. One limitation to this data is that although the sample is large and representative on both the individual- and municipality-level, the overlap with the register data selections used in this study remains somewhat limited. Therefore, the number of cases that could be merged was small. Nonetheless, the SSD registers and the WoON-survey form an interesting combination and offer further opportunities to the research in this book.

References

- Aisenbrey, S., & Fasang, A. E. (2010). New life for old ideas: The "second wave" of sequence analysis bringing the "course" back into the life course. *Sociological Methods & Research, 38*(3), 420-462.
- Atkinson, R., & Kintrea, K. (2001). Disentangling Area Effects: Evidence from Deprived and Non-deprived Neighbourhoods. *Urban Studies, 38*(12), 2277-2298.
- Bakker, B. F., van Rooijen, J., & van Toor, L. (2014). The system of social statistical datasets of Statistics Netherlands: An integral approach to the production of register-based social statistics. *Statistical Journal of the IAOS: Journal of the International Association for Official Statistics*.
- Blanden, J., Gregg, P., & Machin, S. (2005). Intergenerational Mobility in Europe and North America. *Report supported by the Sutton Trust, Centre for Economic Performance, London School of Economics*.
- Bloome, D. (2014). Racial Inequality Trends and the Intergenerational Persistence of Income and Family Structure. *American Sociological Review, 79*(6), 1196-1225.
- Bolster, A., Burgess, S., Johnston, R., Jones, K., Propper, C., & Sarker, R. (2007). Neighbourhoods, households and income dynamics: a semi-parametric investigation of neighbourhood effects. *Journal of Economic Geography, 7*(1), 1-38.
- Brooks-Gunn, J., Duncan, G., & Aber, J. L. (1997a). *Neighborhood poverty, volume 1: Context and consequences for children*: Russell Sage Foundation.
- Brooks-Gunn, J., Duncan, G., & Aber, J. L. (1997b). *Neighborhood Poverty, volume 2: Policy Implications in Studying Neighborhoods*: Russell Sage Foundation.
- Buck, N. (2001). Identifying Neighbourhood Effects on Social Exclusion. *Urban Studies, 38*(12), 2251-2275.
- Cheshire, P. (2007). *Segregated neighbourhoods and mixed communities: a critical analysis*: Joseph Rowntree Foundation.
- Clark, W. A., & Huang, Y. (2003). The life course and residential mobility in British housing markets. *Environment and Planning A, 35*(2), 323-340.
- Clark, W. A., & Ledwith, V. (2005). Mobility, housing stress and neighborhood contexts: evidence from Los Angeles. *California Center for Population Research*.
- Crowder, K., & South, S. J. (2003). Neighborhood distress and school dropout: the variable significance of community context. *Social Science Research, 32*(4), 659-698.

- De Vuijst, E., & van Ham, M. (2017). Educational Attainment and Neighbourhood Outcomes: Differences between Highly-Educated Natives and Non-Western Ethnic Minorities in the Netherlands. *IZA Discussion paper* No. 10999, Bonn, Institute for the Study of Labor.
- De Vuijst, E., & van Ham, M. (2017). Parents and Peers: parental neighbourhood- and school-level variation in individual neighbourhood outcomes over time, *IZA Discussion paper* No. 10526, Bonn, Institute for the Study of Labor.
- De Vuijst, E., van Ham, M., & Kleinhans, R. (2016). A life course approach to understanding neighbourhood effects, *IZA Discussion paper* No 10276, Bonn, Institute for the Study of Labor.
- De Vuijst, E., van Ham, M., & Kleinhans, R. (2017). The moderating effect of higher education on the intergenerational transmission of neighbourhood characteristics, *Environment and Planning A*, 49(9), 2135-2154.
- Dietz, R. D. (2002). The estimation of neighborhood effects in the social sciences: An interdisciplinary approach. *Social Science Research*, 31(4), 539-575.
- Durlauf, S. N. (2004). Chapter 50: Neighborhood effects. In J. V. Henderson & T. Jacques-François (Eds.), *Handbook of Regional and Urban Economics* (Vol. 4, pp. 2173-2242): Elsevier.
- Dykstra, P. A., & van Wissen, L. J. (1999). Introduction: The life course approach as an interdisciplinary framework for population studies. In *Population Issues* (pp. 1-22): Springer.
- Elder Jr, G. H. (1994). Time, Human Agency, and Social Change: Perspectives on the Life Course. *Social Psychology Quarterly*, 57(1), 4-15.
- Ellen, I. G., & Turner, M. A. (1997). Does neighborhood matter? Assessing recent evidence. *Housing Policy Debate*, 8(4), 833-866.
- Feijten, P. (2005). *Life events and the housing career: A retrospective analysis of timed effects*: Eburon Delft.
- Friedrichs, J. r., & Blasius, J. r. (2003). Social norms in distressed neighbourhoods: testing the Wilson hypothesis. *Housing Studies*, 18(6), 807-826.
- Galster, G. (2002). An economic efficiency analysis of deconcentrating poverty populations. *Journal of Housing Economics*, 11(4), 303-329. DOI: 10.1016/S1051-1377(02)00122-5
- Galster, G. (2007). Neighbourhood Social Mix as a Goal of Housing Policy: A Theoretical Analysis. *International Journal of Housing Policy*, 7(1), 19-43.

- Galster, G., Andersson, R., & Musterd, S. (2010). Who Is Affected by Neighbourhood Income Mix? Gender, Age, Family, Employment and Income Differences. *Urban Studies*, 47(14), 2915-2944.
- Galster, G., Cutsinger, J., & Lim, U. (2007). Are Neighbourhoods Self-stabilising? Exploring Endogenous Dynamics. *Urban Studies*, 44(1), 167-185.
- Galster, G. C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 23-56): Springer Netherlands.
- Geist, C., & McManus, P. A. (2008). Geographical mobility over the life course: Motivations and implications. *Population, Space and Place*, 14(4), 283-303.
- Hedman, L., Manley, D., van Ham, M., & Östh, J. (2013). Cumulative exposure to disadvantage and the intergenerational transmission of neighbourhood effects. *Journal of Economic Geography*, 15(1), 195-215.
- Kearns, A., & Parkinson, M. (2001) The significance of the neighbourhood. *Urban Studies*, 38(12), 2103-2110
- Musterd, S., Galster, G., & Andersson, R. (2012). Temporal dimensions and measurement of neighbourhood effects. *Environment and Planning A*, 44(3), 605-627.
- Musterd, S., Vos, S., Das, M., & Latten, J. (2011) Neighbourhood composition and economic prospects: a longitudinal study in the Netherlands. *Tijdschrift voor Economische en Sociale Geografie*, 103(1), 85-100
- Oreopoulos, P. (2003). The long-run consequences of living in a poor neighborhood. *The quarterly journal of economics*, 118(4), 1533-1575.
- Ostendorf, W., & Musterd, S. (2005). Segregatie en integratie: feiten en visies. In: P. Brasse en H. Krijnen (red.), *Gescheiden of gemengd. Een verkenning van ethnische concentratie op school en in de wijk*. 77-93. Utrecht: Forum.
- Overman, H. G. (2002). Neighbourhood Effects in Large and Small Neighbourhoods. *Urban Studies*, 39(1), 117-130.
- Quillian, L. (2003). How Long are Exposures to Poor Neighborhoods? The Long-Term Dynamics of Entry and Exit from Poor Neighborhoods. *Population Research and Policy Review*, 22(3), 221-249.
- Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "Neighborhood Effects": Social Processes and New Directions in Research. *Annual Review of Sociology*, 28, 443-478.

- Sharkey, P. (2008). The Intergenerational Transmission of Context1. *American Journal of Sociology*, 113(4), 931-969.
- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *AJS; American journal of sociology*, 116(6), 1934-1981.
- Sharkey, P., & Faber, J. W. (2014). Where, when, why, and for whom do residential contexts matter? Moving away from the dichotomous understanding of neighborhood effects. *Annual Review of Sociology*, 40, 559-579.
- Simpson, L., Purdam, K., Tajar, A., Fieldhouse, E., Gavalas, V., Tranmer, M., Dorling, D. (2006). *Ethnic minority populations and the labour market: an analysis of the 1991 and 2001 Census*. Department for Work and Pensions.
- Small, M. L., & Feldman, J. (2012). Ethnographic evidence, heterogeneity, and neighbourhood effects after moving to opportunity. In *Neighbourhood effects research: New perspectives* (pp. 57-77): Springer.
- Statistics Netherlands. (2012). WoonOnderzoek Nederland (WoON) 2012. Vragenlijst module Woningmarkt CAPI/CATI, versie 3.4. *Centraal bureau voor de Statistiek, Den Haag*.
- Tunstall, R., & Fenton, A. (2006). *In the Mix, a Review of Mixed Income, Mixed Tenure and Mixed Communities: What do we know*. Housing Corporation, Joseph Rowntree Foundation & English Partnerships.
- Van der Klaauw, B., & van Ours, J. C. (2003). From welfare to work: does the neighborhood matter? *Journal of Public Economics*, 87(5-6), 957-985.
- Van Ham, M., Hedman, L., Manley, D., Coulter, R., & Östh, J. (2014). Intergenerational transmission of neighbourhood poverty: an analysis of neighbourhood histories of individuals. *Transactions of the Institute of British Geographers*, 39(3), 402-417.
- Van Ham, M., & Manley, D. (2012). Neighbourhood effects research at a crossroads. Ten challenges for future research. *Environment and Planning A*, 44(12), 2787-2793.
- Van Ham, M., Manley, D., Bailey, N., Simpson, L., & Maclennan, D. (2012). Neighbourhood Effects Research: New Perspectives. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 1-21): Springer Netherlands.
- Van Ham, M., & Tammaru, T. (2016). New perspectives on ethnic segregation over time and space. A domains approach. *Urban Geography*, 37(7), 953-962.

- Van Kempen, R. (1999). De buurt van belang? Activiteiten en sociale contacten van bewoners van twee Utrechtse achterstandsbuurten. *B. Völker en R. Verhoeff (red.), Buren en buurten*, 69-86.
- Vartanian, T. P., Walker Buck, P., & Gleason, P. (2007). Intergenerational Neighborhood-Type Mobility: Examining Differences between Blacks and Whites. *Housing Studies*, 22(5), 833-856.
- Wassenberg, F.M., Arnoldus, R., Goetgeluk, F., Penninga, F., & Reinders, L. (2006) *Hoe breed is de buurt? Typologie van woonmilieus: herkenbaar, bruikbaar en beschikbaar*. Den Haag: VROM 5322/januari2006
- Wilson, W. J. (2012 [1987]). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago: University of Chicago Press.

2 The life course approach as a framework for the study of neighbourhood effects

2.1 Introduction

Many theories on the effects of the neighbourhood on individual outcomes in life contain some explicit or implicit reference to the importance of time (Sharkey and Elwert 2011; Musterd et al. 2012; Galster 2012; van Ham et al. 2014). For example, long-term exposure to neighbourhood characteristics is often assumed to have a stronger effect on residents than short-term exposure. However, despite the acknowledgement that time is important, an explicit empirical focus on time effects has been hindered by a lack of adequate geo-coded longitudinal data. Many studies of neighbourhood effects have relied on cross-sectional data, or longitudinal data collected over relatively short periods of time, while acknowledging that such data are inadequate to fully address the temporal dimensions of neighbourhood effects. The growing availability of geo-coded longitudinal individual-level data leads to more and more (opportunities for) research into time effects. Indeed, the increasing number of neighbourhood effects studies that *have* focused on spatial effects over time, have clearly illustrated the benefit of conducting thorough longitudinal research (de Vuijst et al. 2017; van Ham et al. 2014; Hedman et al. 2013; Vartanian et al. 2007; Sharkey 2008; Sharkey & Elwert 2011; Sharkey & Faber 2014).

Studies that investigate the time effects of the spatial context on individual outcomes implicitly adopt elements of a life course approach. Central to the life course approach is the notion that individual outcomes in a particular period of life must be seen in relation to both foregoing and current experiences in a number of parallel individual careers, to do with education, the household, housing, work, and leisure. A life course study must therefore always be seen to have an intrinsically interdisciplinary focus (Elder 1994), and its insights can benefit the body of the neighbourhood effects literature by serving as an overarching theoretical/conceptual framework that explicitly places the temporal dimension at the heart of understanding neighbourhood effects: enabling researchers to examine *how* neighbourhood experiences are embedded in individual neighbourhood biographies over time (Feijten 2005; Aisenbrey & Fasang 2010; de Vuijst et al. 2017; Geist & McManus 2008; van Ham et al. 2014). Furthermore, a life course approach can capture individual experiences in these parallel careers, unfolding within multiple socio-spatial contexts over time, and thus simultaneously assess their relative importance to individual outcomes over the life course. These outcomes are the result of three dimensions of time regarding events in the past: the actual timing, duration, and order of events. The practical incorporation of life course insights into the study of neighbourhood effects also stresses the multi-disciplinary nature of neighbourhood effects research; bringing together

separate bodies of literature, in addition to integrating the study of time effects into the field of neighbourhood effects research.

The aim of this paper is to use the life course approach to outline a framework which integrates various elements of time into theories of neighbourhood effects. We provide an in-depth discussion on a number of studies that have operationalised (parts of) life course insights, by focussing both conceptually and empirically on the temporal dimension to neighbourhood effects. We closely examine the incorporation of time into their theory, as well as their statistical modelling strategies. These studies have provided important insights into the role of (various dimensions of) time in understanding neighbourhood effects. We argue that a more explicit use of the life course framework can help effectively integrate a comprehensive and dynamic spatial-temporal framework into this field of research: capturing individual experiences in parallel housing, household, education, and labour market careers, within multiple socio-spatial contexts over time. Strongly inspired by Hägerstrand's time-space geography (1970), we provide an illustrative conceptual model that captures these separate elements of a life course approach to neighbourhood effects. While the time-space geography is predominantly renowned in geographical research and literature, our proposed model is highly applicable to illustrate how time and space come together in research into neighbourhood effects when taking a broader interdisciplinary approach. We hope that the review and discussion in this paper will make it easier for the reader to think about, and explicitly incorporate time when looking at neighbourhood effects.

2.2 The life course approach

An individual life course consists of a succession of events and transitions that unfold within several socio-spatial contexts. People get married; buy a house; become parents; retire; and all of these experiences fundamentally alter their lives and behaviour. From early on in the literature, we find a consensus on an important underlying structure to these event-successions, which is the seemingly simple concept of "time" (Hareven 1977; Heinz 1991; Elder 1994; Dykstra & van Wissen 1999). Time, and its possible elements in effects and patterns, began to be seen as the ultimate means to gain insight into aspects of individual behaviour. In line with this conviction, there was an upsurge in the field of life course studies from the 1940s onwards (Hareven 1977). Life course theory quickly established itself as a distinct theoretical and methodological outlook in the social

sciences, focussing on complexities and themes in individual behaviour and experiences over time: '(...) an appreciation of "the long way" of thinking about human personality and its social pathways in changing societies' (Elder 1994, p. 4).

In life course theory, any point in an individual life is considered inescapably related to their foregoing events and transitions over time, each determining subsequent movement through time and space: an endogenous process (Hareven 1977; Dykstra & van Wissen 1999). As such, life events and states are in constant flux, and their transitions make up multiple large dynamic, rather than static, life course careers or trajectories (Sampson et al. 2002; van Ham et al. 2014; de Vuijst et al. 2017). Careers can be formed within every vital life theme that is subject to change over time, ranging from education, work, and leisure, to housing and household formation (Elder 1994; Willekens 1999). Central to life course theory is the notion that experiences and pressures in one career can accelerate or hinder what happens in other careers as there are links between their events (Dykstra & van Wissen 1999; Willekens 1999). For example, financial problems due to job loss can influence household behaviour, for instance by negatively affecting marriage quality or decisions on family planning. Given these dependencies between life careers, the life course must be viewed as a multilevel phenomenon. Important life events and transitions are shown to take place due a variety of reasons or causes. Events can be the result of intentional individual choices, i.e. "I will buy a house", or they can be caused by other events taking place around the individual, either at the micro-level; "Susie is leaving John, i.e. John is now single", or at the macro-level; "John just turned 67, i.e. John has to leave the labour market because of his retirement age". Additionally, at the macro-level, individual lives can be shaped due to persistent societal norms and values (Dykstra & van Wissen 1999). For this reason, a life course approach does not only introduce the importance of thinking about time when looking at life events within life course pathways, it further sets out the life course as an inherently multilevel phenomenon throughout time, and life course study as an intrinsically and necessarily interdisciplinary field (Elder 1994; also see Dykstra & van Wissen 1999).

2.2.1 Time elements to effects over the life course

An effect on a personal outcome, and the relation to its cause, can differ in timing, duration and order (Feijten 2005). Therefore, life course theory builds on the basic underlying principle that effects of events within life careers, in addition to the events

themselves, are fundamentally time-variant (Feijten 2005; Feijten et al. 2008; see also Blossfeld & Mills 2001). We will explain these time elements in more detail. First of all, in relation to timing, effects can be either immediate, or they can be lagged. In lagged effects, an effect takes time to manifest itself (Feijten 2005). Therefore, the relation between the cause and a lagged effect can easily be overlooked when analysing cross-sectional data, as they may miss either the cause or the effect in their timespan. A clear example of a lagged effect is that going to a specific school during childhood, can result in long lasting friendships and memberships of networks, which can help in finding a job later in life, or even a partner. The latter event is an effect of the former experience. Second of all, effects can either last or not, and research on short spells of data cannot capture the duration of effects on individual outcomes (ibid.). So, for example, growing up in a deprived neighbourhood might have a short term effect on individual labour careers while the effect can wear off with age, but the effect might also be long-lasting, even further into adulthood. Therefore, temporary effects run the risk of being over- or under-estimated, and incorrect assumptions about their relative importance and persistence over time are all too easy to make. Finally, the order between cause and effect is not as straightforward as one would think. Even though the notion of causality dictates that effects occur after its causes, they can in fact be anticipative. Young couples may for instance move to a suburban area in anticipation of starting a family, in which case the moving behaviour and the subsequent birth of a child are again linked, in that order. For anticipative behaviour, patterns can be even more difficult to discern when events and effects are not observed over time (ibid.). The aforementioned examples also shows a lagged effects (anticipation) across careers, namely the housing and household career, showing that anticipation can only be detected if events and effects across multiple careers are simultaneously observed over time. In short, as demonstrated above, conclusions on effects drawn from point-in-time data focussing on individuals' current state and its instantaneous effect on current individual-level outcomes cannot capture the time-variant nature of both event and effect (van Ham et al. 2014; de Vuijst et al. 2017).

There are a number of fields of research that have studied the temporal dimension to spatial patterns, for instance by focussing on mobility patterns in the study of the residential environment, housing careers and homeownership trends over time (Clark & Huang 2003; Feijten & Mulder 2005; Helderma & Mulder 2007). Some of these studies have explicitly applied a life course approach. For example, research has focussed on

tracking mobility across neighbourhoods over the life course, and has examined the effect of several personal and spatial characteristics on upward or downward trajectories with regard to neighbourhood quality (de Vuijst et al. 2017; van Ham et al. 2014; Hedman et al. 2013; Sharkey & Elwert 2011; Sharkey & Faber 2014). Studies focussing on the effects of public housing or welfare support, for instance, have persistently shown that these factors result in less upward spatial mobility over time (South & Crowder 1997; Vartanian et al. 2007), whereas increases in socioeconomic resources had the opposite effect (Clark et al. 2014). For ethnic minority groups, it was shown to be more common to reside in neighbourhoods with high concentrations of poverty, or to lack access to adequate social provisions, in comparison to other residents and neighbourhoods over time (Crowder & South 2003; Vartanian et al. 2007; Simpson & Finney 2009; van Ham et al. 2014; de Vuijst et al. 2017). Furthermore, children were shown to prefer similar types of accommodation to their parents with regard to homeownership, which subsequently affected their choice of neighbourhoods throughout life (Kunz et al. 2003; Helderma & Mulder 2007; Feijten et al. 2008). It is clear from these findings that a focus on the temporal dimension to spatial characteristics and outcomes is crucial, and has enormously benefited these fields of research in their ability to identify the relative importance of these characteristics over time. Cross-sectional studies could not have revealed the results and effects described above, and our insights into these spatial patterns would still have been limited. It is interesting to note that when examining both the theoretical approaches and the analytical methods used in this mobility research, they are certainly translatable to the study of neighbourhood effects.

2.3 The life course approach and neighbourhood effects

The body of studies that investigate neighbourhood histories of individuals, or explicitly incorporate time and neighbourhood histories in models of neighbourhood effects is growing. Here we review a number of key studies which use life course insights and incorporate time into their modelling strategies to examine how life course approach has been incorporated into neighbourhood effects research to date.

2.3.1 Neighbourhood histories of individuals

A small number of recent studies have investigated the neighbourhood histories of individuals, including intergenerational transmission of neighbourhoods, and the effect of

these neighbourhood histories on individual outcomes. These studies have operationalised elements of a life course approach in the study of neighbourhood effects, and by doing so they yielded new and important findings. In the United States, longitudinal neighbourhood research has shown intergenerational neighbourhood stratification along socio-economic lines (Vartanian et al. 2007; Sharkey 2008), where growing up in the poorest quarter of American neighbourhoods meant remaining in these poorest neighbourhoods as adults in more than 40% of cases for whites, and 70% of cases for blacks (Sharkey 2008). This persistence also entailed intergenerational transmission of racial inequality in individual outcomes, as black Americans were more likely to continuously reside in deprived neighbourhoods, and thus to be exposed to localised disadvantage (*ibid.*). In a follow-up study by Sharkey and Elwert (2011), which we will discuss in more detail later on, spatial characteristics were shown to not only affect the neighbourhood outcomes of children, but also those of grandchildren. These results thus support the assumption that neighbourhood experiences over time are linked to a range of outcomes spanning across several generations, suggesting multi-generational continuity.

Van Ham and colleagues (2014) analysed the population of the Stockholm metropolitan area, and followed the neighbourhood outcomes of individuals up to almost 20 years after leaving the parental home (also see Hedman et al. 2013). Using Swedish register data, the researchers were able to access yearly neighbourhood and income characteristics for all inhabitants, and subsequently defined spatial deprivation based on percentages of poor neighbours in the residential environment. Individuals were considered to be poor if their income was part of the lowest 20% of incomes in Stockholm. Results showed that children from deprived parental neighbourhoods were likely to reside in similarly deprived neighbourhoods as adults, and that long-term exposure to localised poverty further increased this likelihood within personal neighbourhood histories (Hedman et al. 2013; van Ham et al. 2014). Table 2.1 shows results on the cumulative exposure; the percentage of years that individuals are exposed to five categories of neighbourhood deprivation over the measurement period (by the parental neighbourhood at the start of the observation) (source: van Ham et al. 2014).

Table 2.1. Cumulative exposure to neighbourhood income quintiles 1991-2008 (years of exposure as percentage of total years)

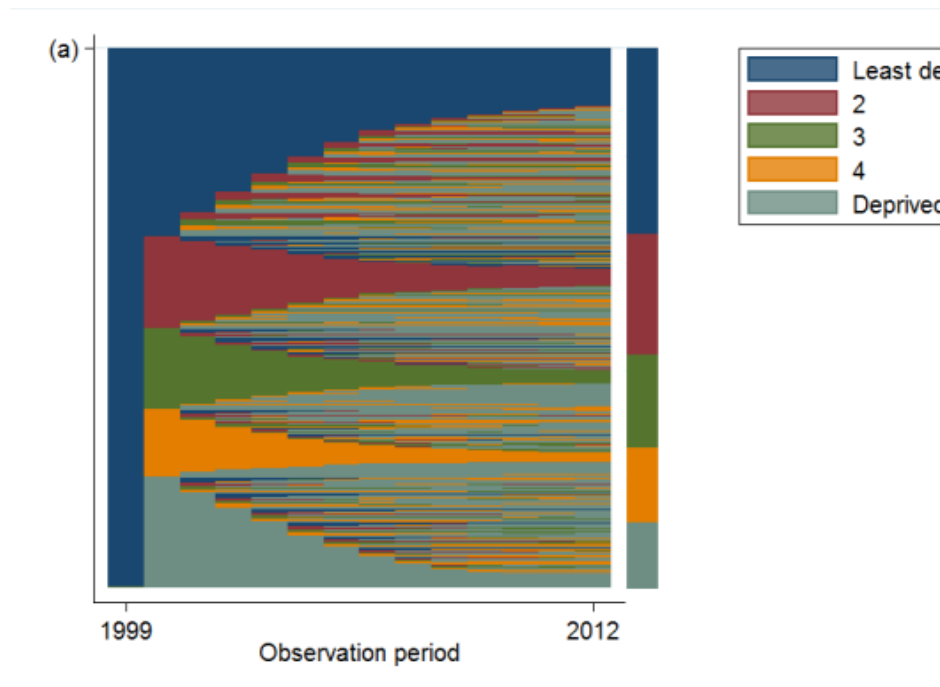
Parental neighbourhood in 1990 (quintiles)	1	2	3	4	5	Total
1 Low poverty neighbourhood	17.9	14.9	16.0	20.6	30.6	100
2	16.3	14.7	16.9	21.9	30.3	100
3	13.1	12.8	16.9	23.6	33.6	100
4	10.6	10.9	15.7	24.4	38.3	100
5 High poverty neighbourhood	8.9	9.0	13.1	20.3	48.8	100

Source: Authors calculations on GeoSweden dataset

In the Netherlands, de Vuijst et al. (2017) implemented the same definition of spatial deprivation to that used in the previously described Swedish study, and used Dutch register data to follow a complete cohort of parental home-leavers over a 14-year period, from 1999 to 2012. The researchers analysed the effect of the parental neighbourhood on the neighbourhood outcomes of their children over time, and found that after leaving the parental home, the characteristics of the parental neighbourhood continued to have a strong effect on the neighbourhood histories of their children, even after controlling for parental income and the socio-economic attainments of their children over the life course (de Vuijst et al. 2017). These results were very similar to those found in the Stockholm metropolitan area. Figure 2.1 shows a sequence-index plot of individual neighbourhood histories in the measurement period, where each horizontal line represents an individual trajectory. If the colour of the line changes between years, the individual moved to a neighbourhood with a different level of localised poverty (see de Vuijst et al. 2017 for a more detailed description of the method and output).

In both Sweden and the Netherlands, intergenerational neighbourhood patterns were shown to be much stronger for non-western ethnic minorities than for other groups (van Ham et al. 2014; de Vuijst et al. 2017). In the Netherlands, further analyses showed that individuals from deprived parental neighbourhoods can discontinue these intergenerational patterns of spatial deprivation when they attain higher education over time. In other words, higher education attainment can break the link between the neighbourhood where children grew up, and their residential outcomes as adults later in life. This discontinuation was however shown to be less prevalent for individuals from ethnic minority groups (de Vuijst et al. 2017).

Figure 2.1. Sequence plot on patterns of individual neighbourhood histories in the Netherlands 1999-2012 (on a sample of 5000 individual histories) of those leaving the parental home in 1999-2000, by parental neighbourhood quintile 1 (1: lowest poverty concentration)



Source: Author calculations on Statistics Netherlands, System of Social Statistical Datasets

Naturally, there are large differences between the USA, The Netherlands, and Sweden with regard to their societal and political structure and organisation, including their welfare systems. Furthermore, the data used, as well as the neighbourhood definitions, differ substantially between the studies described. Nevertheless, the above findings do suggest that individual neighbourhood outcomes in life are strongly path dependent; ‘enclosed’ as it were, in past residential experiences, which span across generations (and societies) through childhood experiences in the parental home. Therefore, combined, they suggest a clear benefit of adopting a life course approach in order to study neighbourhood effects over time, which we will explore in more depth below.

2.3.2 Time and neighbourhood effects

In addition to studies focussing on the path dependence of individual neighbourhood histories, tracking individual residential settings over time, a number of studies also use

neighbourhood histories as an explanation of individual outcomes in life. These studies emphasise the need to look at a variety of time elements in personal neighbourhood experiences. To illustrate, Galster (2012) suggests a number of ways in which *exposure* to the residential environment could determine the strength of its potential effects. Following on from his work, it has repeatedly been suggested that the frequency and intensity of exposure to the neighbourhood over time, as well as the duration of the exposure are vital in assessing the connection between neighbourhood characteristics and individual outcomes over time (Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012; van Ham et al. 2014; de Vuijst et al. 2017). We will now provide a number of examples of studies that have explicitly included time elements in their examination of neighbourhood effects.

In Sweden, Hedman and colleagues (2013) used a population of parental home-leavers in Stockholm, Sweden, to study the effect of two separate temporal dimensions of exposure to neighbourhood environments on personal income over time: the parental neighbourhood, measured at the time the research population left the parental home, and cumulative exposure to neighbourhood poverty in the following 17 years. The researchers found independent effects on income of both temporal dimensions. A deprived parental neighbourhood was clearly shown to have a negative effect on individuals' income later in life, up to the end of the measurement period. Furthermore, higher levels (more years) of exposure to concentrated poverty neighbourhoods, especially later in life, were shown to have a strong negative effect on later income levels.

In the Netherlands, following on from research on children from disadvantaged parental neighbourhoods, and their long-term exposure to similar neighbourhoods as adults (de Vuijst et al. 2017), De Vuijst and Van Ham (2016) focus on parallel socio-spatial contexts besides the residential space, which may further influence individual outcomes. This study examines the joint influence of the parental background, the parental neighbourhood, and a compositional measure of the school environment, using longitudinal register data from the Netherlands on a complete cohort of school-going home-leavers for a 14-year period (1999 to 2012). The results show that when splitting up the variance components of both spatial settings, using cross-classified multilevel models, the poverty concentration in the parental neighbourhood plays an important role in determining their children's residential outcomes later in life. The variation in individual neighbourhood outcomes at the level of the secondary school is explained by personal characteristics of

the research population, in particular ethnicity, income and parental income, suggesting grouping of children from particular parental and ethnic backgrounds (Turks, Moroccans, Antillean/Aruban, Surinamese) into specific school environments.

In the United States, Sharkey and Elwert (2011), as briefly mentioned above, stress the fact that research into neighbourhood effects on child development has largely overlooked the temporal dimension. A child's neighbourhood environment may influence their developmental outcomes and cognitive ability in numerous ways, for instance through the quality of their available schooling system and experience, or the influence of their peers (ibid.). The results indicate that the neighbourhood environment and cognitive ability are strongly connected: exposure to deprived neighbourhoods across two consecutive generations strongly reduces child cognitive ability. In other words, growing up in poverty concentration in one generation has a strong negative effect on child cognitive ability in the following generation.

All examples discussed above clearly show the benefit of practically incorporating life course insights into studies on neighbourhood effects. They highlight spatial patterns and effects over time, such as intergenerational continuity of spatial characteristics; the effect of long-term, cumulative exposure to neighbourhood poverty; and variation in neighbourhood outcomes assessed over parallel socio-spatial contexts. By using advanced longitudinal analyses and visualisation techniques, these studies broaden our understanding on *how* neighbourhood experiences are embedded in full individual biographies over time. Researchers can thus integrate the temporal dimension into the study of neighbourhood effects, and additionally combine insights from results on previously separate bodies of literature on multiple parallel life careers.

2.3.3 A model of a life course approach to understanding neighbourhood effects

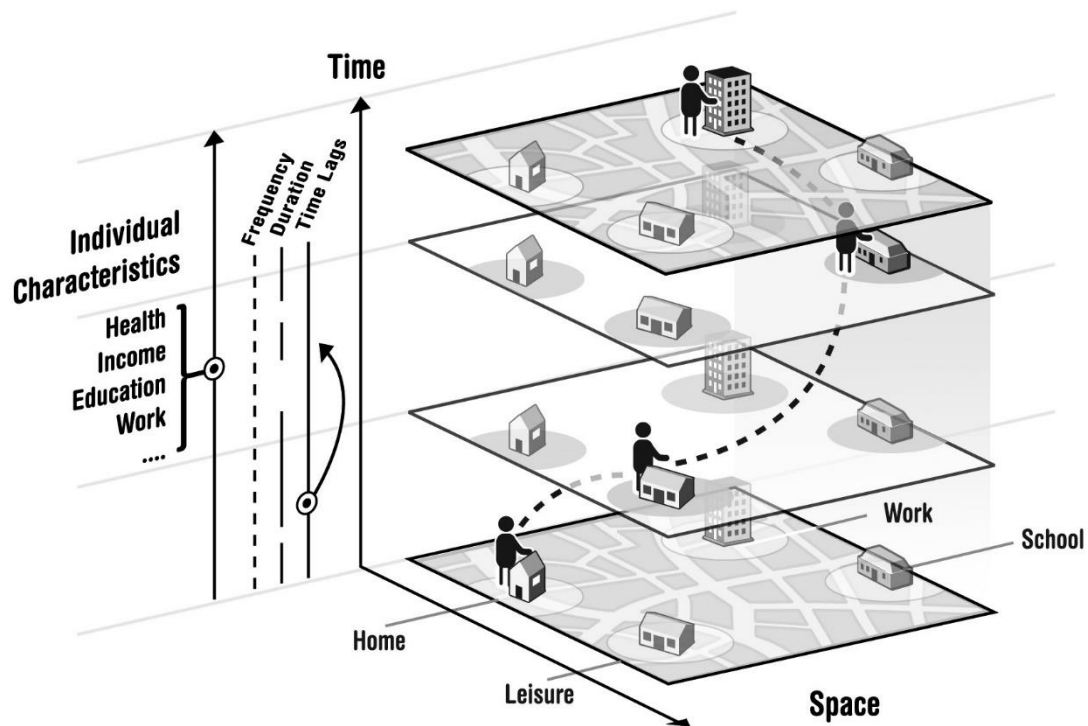
Following our discussion above, we provide a visualisation which summarises the life course approach to neighbourhood effects as implicitly used in many recent studies (Figure 2.2). This model takes inspiration from time-space geography by Hägerstrand (1970) by graphically illustrating the idea that an individual follows a certain path over their life course through space and time, incorporating various spatial contexts such as the residential neighbourhood where one lives (home), but also other contexts such as places of work, leisure and schools. For geographers, this space-time visualisation does

not necessarily offer new insights being highly familiar (presumably) with Hägerstrand's work, but for many other researchers in the increasingly multi-disciplinary field of neighbourhood effects, the use of this type of visualisation can provide an opportunity to link the life course and neighbourhood effects, both conceptually and empirically. As such, the proposed model can make it easier for the reader to think about the role of the temporal dimension, and explicitly incorporate time in the study of neighbourhood effects.

The model illustrates a full individual biography comprised of numerous states, events, spells, *and* their effects on individual outcomes over time, that need to be taken into consideration when operationalising/practically incorporating life course insights into neighbourhood effects studies (Feijten et al. 2008; de Vuijst et al. 2017). The model further captures the essence of the life course approach to neighbourhood effects, looking at individual experiences in parallel housing, household, education, labour market and leisure careers that unfold within multiple socio-spatial contexts over time.

The key interest in Figure 2.2 lies in the dot which lists individual outcomes on the solid far-left line, with examples such as health; income; education; and work. From a neighbourhood effects perspective, we aim to understand these individual outcomes in a variety of careers, from residential contexts in which people live or have lived in the past. The right side of figure 2.2 depicts an individual time-space path, where time can consist of periods or even a life time, in which a person spends time in a variety of spaces related to home, school, leisure, work, and other spatial contexts. Therefore, the model explicitly takes into account the effects of other contexts than the residential neighbourhood. The relationship between these (combined) spatial contexts and the time spent in each of these contexts lies in the time effects of frequency, duration, and time-lags. On the left side of the figure, these three dimensions are illustrated by the dotted, broken and solid lines between the two upward arrows indicating time. As discussed above, *frequency* refers to the number of spells spent in a certain spatial context, while *duration* refers to the duration of these spells. The *time-lags* indicate the potential of past experiences in certain spaces to influence individual outcomes (much) later in life.

Figure 2.2. Conceptual model of a life course approach to understanding neighbourhood effects



Source: Authors

When using a life course approach to neighbourhood effects, rather than just identifying the occurrence of a neighbourhood event, the event and its effects can be placed within a full individual biography over time and space, which enables research into the order and the timing of these occurrences, as well as their duration (Giele & Elder 1998; Feijten 2005). As such, researchers can examine the ways in which a neighbourhood experience is embedded within individual careers at large (Feijten 2005; Aisenbrey & Fasang 2010; de Vuijst et al. 2017), and assess the relative importance of these events and their effects to certain individual outcomes (Geist & McManus 2008; de Vuijst et al. 2017). By applying this approach to the study of neighbourhood effects, therefore, empirical studies can specifically focus on the temporal dimension to spatial effects, and further determine time elements that affect the nature and strength of these effects, the importance of which has been stressed throughout literature in the past (for example, see Galster 2012).

As stated, the operationalisation of life course insights in the study of neighbourhood effects can be highly instructive as it encourages simultaneous research into *parallel* life careers, and the various socio-spatial contexts in which they unfold. The neighbourhood is only one area in which exposure to, for instance, spatial or income deprivation can take place, but poverty concentration at the school or work environment may equally influence individual outcomes over time, within a range of life careers. Therefore, a life course approach may not only serve as an overarching conceptual framework to integrate the temporal dimension into the study of neighbourhood effects, but it also has the ability to bring together separate bodies of literature on vital life themes; the significance and interaction of which can only be understood in relation to other careers. This latter benefit further suits the current discussion on the relative importance of the residential location. After all, while the neighbourhood was once the hub of social interaction in everyday life, one can now equally, or more so, be influenced by the work or educational settings they frequent, by places of leisure and travel (Manley 2014; Kwan 2012; van Ham & Manley 2012; Wheaton & Clarke 2003; van Ham & Tammaru 2016), or even by online interactions in popular social media, which are not connected to a particular career. For this reason, the life course approach neatly fits into the steps that have already been made in the neighbourhood effects literature over the last decades; both for those steps in which theory has been developed on the importance of time to the effect of the residential environment, and for the steps made by those arguing for an extension of the research focus on the residential environment alone. Integrating the life course approach into neighbourhood effects research allows researchers to take into consideration *contextual effects* over time, if you will; a terminological notion, the practical incorporation of which can bring the neighbourhood effects literature forward both on the conceptual and methodological front. The life course approach ticks all the boxes given our current theoretical outlook and our everyday socio-spatial interaction patterns.

2.4 Recommendations for future research

In this paper, we set out to review both the central premises of life course theory and to assess ways in which to practically incorporate life course insights into the study of neighbourhood effects, in order to explicitly integrate various elements of time into this field of research. Many theories on the effect of the residential environment on individual outcomes strongly acknowledge that there are multiple time elements to neighbourhood exposure that can determine the nature and strength of potential neighbourhood effects

(Musterd et al. 2012; Galster 2012; de Vuijst et al. 2017). Notwithstanding practical limitations in the past, such as the absence of adequate longitudinal data, the growing availability of adequate longitudinal data currently leads to more and more research into effects over time. As discussed, the neighbourhood effects studies that explicitly focus on spatial patterns and effects over time, clearly demonstrate the benefit of conducting thorough longitudinal research, and of implementing a life course framework: bringing the literature and modelling strategies in neighbourhood effects research forward. Their results stress the importance of time to neighbourhood effects, and of a life course approach, as a suitable conceptual framework and an effective tool to bring about change: easing the thought of time with regard to spatial effects, and further encouraging the integration of separate bodies of literature on vital life themes, into one, comprehensive research setting. Therefore, we encourage the reader to take these examples on into future research; applying dynamic spatial-temporal research framework in the study of neighbourhood effects, and examining *how* neighbourhood experiences are embedded in individual neighbourhood biographies over time (Feijten 2005; Aisenbrey & Fasang 2010; de Vuijst et al. 2017; Geist & McManus 2008; van Ham et al. 2014). In doing so, studies can additionally be extended to capture individual experiences in parallel housing, household, education, and labour market careers, unfolding within multiple socio-spatial contexts over time, and thus simultaneously assess their relative importance to individual outcomes over the life course.

To summarise, a life course approach, which basically reflects a “long way” of thinking about individual human trajectories over time, views life and its life course careers as both fundamentally time-variant notions as well as necessarily multilevel concepts. It introduces the importance of thinking about time when looking at successions of events in central life themes, and acknowledges the variety of reasons and causes that may be behind these transitions. Vital to this approach, life course theory stresses the dependencies between both causes and events throughout various careers and socio-spatial contexts. An event or outcome within one pathway in life can only be seen in relation to both foregoing and current experiences in parallel careers. Life course study must therefore always be seen as intrinsically interdisciplinary (Elder 1994), and can greatly benefit the body of the neighbourhood effects literature. We strongly believe that by using a life course approach researchers can gain valuable insights into patterns and trends over time, assess the timing, duration and order of cause and effect, and take a broader stance on contextual effects on individual outcomes at large. As such, a life course

approach has the potential to combine insights from results on multiple topics of interest, and to bring together these separate bodies of literature, in addition to integrating the temporal dimension into the study of neighbourhood effects. That is not to say, however, that this approach does not have its difficulties. Movement through time and space can be seen as an endogenous process, with experiences in multiple careers and contexts determining future movement and subsequent experiences. Add to that multiple time periods, each with a number of potential time effects, and identifying causal effects will certainly not be easy. Nevertheless, the few neighbourhood effects studies that *have* focused on spatial effects over time - on intergenerational transmission of neighbourhood characteristics, the path dependence of individual neighbourhood histories, and examples of neighbourhood histories as an explanatory factor to various individual outcomes - have clearly illustrated the benefit of conducting thorough longitudinal research within a life course framework. The graphically depicted conceptual model, which we composed inspired by Hägerstrand, illustrates the central premises of this approach, and can facilitate researchers in their operationalisation of life course insights within neighbourhood effects theory. We strongly believe that a life course approach can be seen as an effective tool to help explicitly integrate the temporal dimension into these studies, allowing researchers to capture individual experiences in parallel housing, household, education, and labour market careers, within multiple socio-spatial contexts over time. As such, in line with recent developments in neighbourhood effects research, a life course approach can neatly fill the gap acknowledged within the literature, and can help future research over the crossroads and further the debate.

References

- Aisenbrey, S., & Fasang, A. E. (2010). New life for old ideas: The "second wave" of sequence analysis bringing the "course" back into the life course. *Sociological Methods & Research, 38*(3), 420-462.
- Blossfeld, H.-P., & Mills, M. (2001). A Causal Approach to Interrelated Family Events: A Cross-National Comparison of Cohabitation, Non-marital Conception, and Marriage. *Canadian Studies in Population, 28*(2), 409-437.
- Clark, W. A., & Huang, Y. (2003). The life course and residential mobility in British housing markets. *Environment and Planning A, 35*(2), 323-340.
- Clark, W. V., van Ham, M., & Coulter, R. (2014). Spatial mobility and social outcomes. *Journal of Housing and the Built Environment, 29*(4), 699-727.
- Crowder, K., & South, S. J. (2003). Neighborhood distress and school dropout: the variable significance of community context. *Social Science Research, 32*(4), 659-698.
- De Vuijst, E., Van Ham, M., & Kleinhans, R. (2017). The moderating effect of higher education on the intergenerational transmission of neighbourhood characteristics. *Environment and Planning A, Vol. 49*(9), 2135-2154.
- Dykstra, P. A., & van Wissen, L. J. (1999). Introduction: The life course approach as an interdisciplinary framework for population studies. In *Population Issues* (pp. 1-22): Springer.
- Elder Jr, G. H. (1994). Time, Human Agency, and Social Change: Perspectives on the Life Course. *Social Psychology Quarterly, 57*(1), 4-15.
- Feijten, P. (2005). *Life events and the housing career: A retrospective analysis of timed effects*: Eburon Delft.
- Feijten, P., Hooimeijer, P., & Mulder, C. H. (2008). Residential experience and residential environment choice over the life-course. *Urban Studies, 45*(1), 141-162.
- Feijten, P., & Mulder, C. H. (2005). Life-course experience and housing quality. *Housing Studies, 20*(4), 571-587.
- Galster, G. C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 23-56): Springer Netherlands.
- Geist, C., & McManus, P. A. (2008). Geographical mobility over the life course: Motivations and implications. *Population, Space and Place, 14*(4), 283-303.

- Giele, J. Z., & Elder, G. H. (1998). *Methods of life course research: Qualitative and quantitative approaches*: Sage.
- Hägerstrand, T. (1970). What about people in regional science? *Papers in regional science*, 24(1), 7-24.
- Hareven, T. K. (1977). Family time and historical time. *Daedalus*, 57-70.
- Hedman, L., Manley, D., van Ham, M., & Östh, J. (2013). Cumulative exposure to disadvantage and the intergenerational transmission of neighbourhood effects. *Journal of Economic Geography*, 15(1), 195-215.
- Heinz, W. R. (1991). Status passages, social risks and the life course: A conceptual framework. *Theoretical advances in life course research*, 1, 9-22.
- Helderman, A., & Mulder, C. (2007). Intergenerational transmission of homeownership: The roles of gifts and continuities in housing market characteristics. *Urban Studies*, 44(2), 231-247.
- Kunz, J., Page, M. E., & Solon, G. (2003). Are point-in-time measures of neighborhood characteristics useful proxies for children's long-run neighborhood environment? *Economics Letters*, 79(2), 231-237.
- Kwan, M.-P. (2012). The uncertain geographic context problem. *Annals of the Association of American Geographers*, 102(5), 958-968.
- Manley, D. (2014). Scale, Aggregation, and the Modifiable Areal Unit Problem. In M. M. Fischer & P. Nijkamp (Eds.), *Handbook of Regional Science* (pp. 1157-1171): Springer Berlin Heidelberg.
- Mulder, C., & Hooimeijer, P. (1999). Residential Relocations in the Life Course. In L. G. van Wissen & P. Dykstra (Eds.), *Population Issues* (pp. 159-186): Springer Netherlands.
- Musterd, S., Galster, G., & Andersson, R. (2012). Temporal dimensions and measurement of neighbourhood effects. *Environment and Planning A*, 44(3), 605-627.
- Sharkey, P. (2008). The Intergenerational Transmission of Context1. *American Journal of Sociology*, 113(4), 931-969.
- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *AJS; American journal of sociology*, 116(6), 1934-1981.
- Sharkey, P., & Faber, J. W. (2014). Where, when, why, and for whom do residential contexts matter? Moving away from the dichotomous understanding of neighborhood effects. *Annual Review of Sociology*, 40, 559-579.

- Simpson, L., & Finney, N. (2009). Spatial patterns of internal migration: evidence for ethnic groups in Britain. *Population, Space and Place*, 15(1), 37-56.
- Small, M. L., & Feldman, J. (2012). Ethnographic evidence, heterogeneity, and neighbourhood effects after moving to opportunity. In *Neighbourhood effects research: New perspectives* (pp. 57-77): Springer.
- South, S. J., & Crowder, K. D. (1997). Escaping distressed neighborhoods: Individual, community, and metropolitan influences. *American Journal of Sociology*, 102(4), 1040-1084.
- Van Ham, M., Hedman, L., Manley, D., Coulter, R., & Östh, J. (2014). Intergenerational transmission of neighbourhood poverty: an analysis of neighbourhood histories of individuals. *Transactions of the Institute of British Geographers*, 39(3), 402-417.
- Van Ham, M., & Manley, D. (2012). Neighbourhood effects research at a crossroads. Ten challenges for future research. *Environment and Planning A*, 44(12), 2787-2793.
- Van Ham, M., & Tammaru, T. (2016). New perspectives on ethnic segregation over time and space. A domains approach. *Urban Geography*, 1-10.
- Vartanian, T. P., Walker Buck, P., & Gleason, P. (2007). Intergenerational Neighborhood-Type Mobility: Examining Differences between Blacks and Whites. *Housing Studies*, 22(5), 833-856.
- Wheaton, B., & Clarke, P. (2003). Space Meets Time: Integrating Temporal and Contextual Influences on Mental Health in Early Adulthood. *American Sociological Review*, 68(5), 680-706.
- Willekens, F. J. (1999). The life course: models and analysis *Population Issues* (pp. 23-51): Springer.

3 The moderating effect of higher education on the intergenerational transmission of residing in poverty neighbourhoods

Elise de Vuijst, Maarten van Ham and Reinout Kleinhans

Published in Environment and Planning A, Vol. 49(9), 2135-2154

3.1 Introduction

The residential environment has increasingly been argued to affect individual-level outcomes in life, through supposed neighbourhood effects. Deprived neighbourhoods in particular are assumed to have a negative impact on the life chances of their residents, with spatial poverty concentrations functioning as an amplifier of the consequences of individual disadvantages (for a compilation see Ellen & Turner, 1997; Sampson et al. 2002; Galster 2002, 2012; Dietz 2002; Friedrichs & Blasius 2003; Crowder & South 2003; Durlauf 2004; Wilson 2012[1987]; van Ham & Manley 2012; van Ham et al. 2014). It has repeatedly been suggested that individuals' long-term neighbourhood experiences are *crucial* in determining the possible causal connection between neighbourhood characteristics and individual outcomes (Quillian 2003; Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012; Hedman et al. 2013). Individual outcomes are likely not only affected by the current residential location, but also by all previous experiences in the individual residential history. Hence, researchers have argued that individuals and their neighbourhoods must be seen as fundamentally dynamic, rather than static entities *over the life course*. Therefore, the full impact of neighbourhoods on individual outcomes cannot be captured when leaving out of consideration the temporal context to spatial patterns of deprivation (Sampson et al. 2002; van Ham et al. 2014). Nevertheless, most studies to date have not conducted longitudinal analyses of individual neighbourhood histories, often due to a lack of geo-coded data over longer periods of time. This limitation entails that the bulk of studies into neighbourhood effects has had to use point-in-time measures of neighbourhood characteristics, and that researchers have thus largely overlooked the temporal dimension of neighbourhood effects (Sharkey & Elwert 2011; van Ham et al. 2014).

The argument for a dynamic interpretation of individuals and their neighbourhood history over the life course is reinforced by the body of research on intergenerational continuity of disadvantage. Sociological literature has stressed the continuity of poverty patterns across generations, suggesting great difficulty in upward social mobility throughout life for those born in the lowest social classes (Blanden et al. 2005; Bloome 2014). The neighbourhood, however, as a potential spatial dimension to such intergenerational transmission patterns, has largely been left out of consideration. To our knowledge, there are only a few studies that have examined parent-to-child transfer of disadvantageous neighbourhood characteristics, conducted on Swedish and United States' national data (Vartanian et al. 2007; Sharkey & Elwert 2011; Hedman et al. 2013; van Ham et al. 2014).

These authors have found that even in adulthood, up to almost two decades after leaving the parental home, parental neighbourhood characteristics are a strong predictor for the independent neighbourhood history of their children and for the length of their exposure to deprived neighbourhoods over the life course. Furthermore, for ethnic minority groups, these patterns were stronger than for majority groups (ibid.).

In this study, we use data from the Netherlands to examine the extent to which growing up in a deprived neighbourhood influences the neighbourhood histories of adults. We take an explicit life course approach to neighbourhood effects by assessing the *temporal* context to intergenerational transmission of residence in poverty neighbourhoods. Our main contribution to the literature is that we investigate whether educational attainment can break the link between parental neighbourhood disadvantage and the neighbourhood experiences of children as adults. We expect that higher education will moderate the effect of the deprived parental neighbourhood on individual neighbourhood outcomes for a number of reasons. First, higher educational attainment can provide the opportunity to attain higher income jobs, which can subsequently enable people to move into more expensive housing, which is commonly located in more affluent neighbourhoods. Second, the opportunity to get employed elsewhere, in itself, makes moving behaviour more likely. Third, individual neighbourhood preferences may change in accordance to educational and subsequent income levels. As individuals from non-Western ethnic minority groups were previously shown to be most likely to live in continuous poverty before and after leaving the parental home (van Ham et al. 2014), we further assess whether the moderation of an intergenerational neighbourhood effect by educational attainment is weaker for ethnic minority groups than for others.

We make use of individual-level, geo-coded longitudinal register data provided by Statistics Netherlands. These data allow us to track a complete cohort (not a sample) of parental home leavers from 1999 to 2012. We follow 119,167 Dutch inhabitants, and are able to construct and assess their individual neighbourhood histories, as well as their key demographic and socio-economic characteristics. We use sequence analyses to display the most common neighbourhood history patterns over the measurement period, and fit multilevel logit models to determine the effect of the parental neighbourhood on personal residential outcomes, as well as the moderating effect of education.

3.2 Theoretical background

Over the past decades, alleged neighbourhood effects have been reported on individual outcomes from childhood and adolescence up into adulthood, ranging from socioeconomic attainment to individual wellbeing and health. For children and adolescents, literature suggests an effect of the residential environment on school dropout rates and childhood achievement, child maltreatment, delinquency, and teenage pregnancy (Overman 2002; Brooks-Gunn 1997a, 1997b; Galster et al. 2007; Crowder & South 2003). For adults, spatially concentrated disadvantage was shown to affect income levels and social mobility patterns, social exclusion, transition rates from welfare to work, and deviant behaviour and delinquency (Van der Klaauw & Ours 2003; Simpson et al. 2006; Buck 2001; Galster et al. 2007; Galster et al. 2010; Friedrichs & Blasius 2003). Nevertheless, an essential and persistent problem to the body of neighbourhood effects literature, is the fact that most research to date, including examples listed above, has used either cross-sectional data or short periods of longitudinal data in their analyses (van Ham et al. 2014; Clark & Ledwith 2005; Geist & McManus 2008; Quillian 2003; Sharkey & Elwert 2011). For this reason, conclusions on neighbourhood effects are commonly drawn from single point-in-time measures of individuals' current neighbourhood characteristics and their instantaneous effect on current individual-level outcomes (van Ham et al. 2014). However, it makes strong intuitive sense to assume that a lengthy exposure to deprived neighbourhoods will have a stronger negative effect on individual outcomes than exposure for short periods of time. For socioeconomic outcomes, such as income and educational attainment, similar mechanisms have indeed been identified, where experiences over time were shown to have a strong cumulative effect on current individual outcomes, and patterns could be discerned *between generations* (Blanden et al. 2005; Bloome 2014). For this reason, studies using single point-in-time measures of neighbourhood characteristics are increasingly criticised. It is argued that in order to assess whether individuals' chances are truly impaired by where they live, it is vital to take into consideration their full neighbourhood histories, rather than focus on their current residential location alone (Quillian 2003; Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012; Hedman et al. 2013; van Ham et al. 2014). Several researchers have argued for a step forward in neighbourhood effects research by tackling this problem.

3.2.1 Introducing a life course approach to neighbourhood effects

We argue that a life course approach to neighbourhood effects and thorough longitudinal research must be the starting point in bringing the neighbourhood effects literature forward (Manley & van Ham 2010; Small & Feldman 2012; van Ham et al. 2014). In relation to the residential environment, life course research has predominantly been applied in residential mobility studies into housing careers over time (Clark & Huang 2003; Feijten & Mulder 2005). For example, individuals receiving welfare support, or living in public housing, were shown to experience less upward mobility across neighbourhoods over time, as did homeowners (South & Crowder 1997; Vartanian et al. 2007). Meanwhile, an increase in socioeconomic resources and status was shown to increase the chances of upward neighbourhood mobility (Clark et al. 2003). Ethnic minorities were repeatedly shown to live in neighbourhoods with higher concentrations of poverty, and worse social provisions and services, than other residents over the life course (Crowder & South 2005; Vartanian et al. 2007; Simpson & Finney 2009; van Ham et al. 2014). Additionally, children were shown to prefer similar types of accommodation to their parents over time with regard to rental versus privately owned housing, thus affecting their choice of neighbourhood (Kurz 2004; Helderma & Mulder 2007; Feijten et al. 2008).

A vital notion to the life course approach is that any point in an individual's biography *must* be seen in the light of foregoing experiences in their lives. It is thus put forward that seemingly separate life events, in relation to experiences in the household, housing, education and the labour market, are in fact inescapably interrelated and can accumulate in their effect on personal outcomes over time (Dykstra and van Wissen 1999; Feijten 2005; Feijten et al. 2008). When using single point-in-time measures of neighbourhood characteristics, researchers cannot grasp individuals' full personal biographies, visualise their unique sequence of life events over time, or truly assess the relative or cumulative importance thereof (Feijten 2005; Geist & McManus 2008; van Ham et al. 2014). Applied to our study of intergenerational transmission of residence in poverty neighbourhoods, a life course approach enables us to examine the manner in which neighbourhood experiences are embedded in larger individual neighbourhood histories, the order and timing of these occurrences, as well as their duration (Giele & Elder 1998; Feijten 2005; Aisenbrey & Fasang 2010).

3.2.2 The impact of the parental neighbourhood

The parental neighbourhood can play an important role in determining the neighbourhood experiences of children after leaving the parental home, for a number of reasons. First of all, parental income has repeatedly been shown to be strong predictor for individual attributes related to income, including income levels and sources, homeownership, and further socioeconomic attainments over the life course (Becker & Tomes 1979; Solon 2002; D'Addio 2007). Therefore, as all such attributes were shown to influence individual mobility across neighbourhoods over time, and selection into deprived neighbourhoods, parental transmission of neighbourhood characteristics may in part result from these income mechanisms. Second of all, children are socialised into similar norms and values to those of their parents, and the cultural traits of the groups and individuals their parents associate with in everyday life (Galster 2012). Therefore, in individuals' formative period, norms and attitudes towards customs and social processes are largely inherited from their parents and are dependent on the contacts and environment to which they are exposed. While norms continuously develop over the life course, acting in accordance to parental convictions early on in life can have long-lasting consequences to individual outcomes over time. This transmission of norms could accordingly play an important role in the transmission of neighbourhood characteristics between generations, independent to the transmission through income mechanisms. Norms can determine attitudes towards employment, income, and other socioeconomic factors involved in shaping individual neighbourhood histories and housing options (Bisin & Verdier 1998; for an extensive discussion see Galster 2012). Previous studies conducted in Sweden and the United States do suggest an independent effect of the parental neighbourhood on the neighbourhood outcomes of their children, and attribute their results to such transmission and inheritance mechanisms (Vartanian et al. 2007; Sharkey & Elwert 2011; van Ham et al. 2014). Additionally, however, after leaving the parental home, individuals may prefer similar types of neighbourhoods to those of their parents because the composition and facilities are familiar to them, or they want to be close to their family.

Despite the various possible influences of the parental neighbourhood, we strongly expect that as an individual progresses through life and their neighbourhood history, their *personal* rather than inherited attributes and socioeconomic resources will become increasingly important to their personal outcomes. One important attainable resource over time, which can strongly determine individual outcomes in life, is education. As

education can positively affect income levels; moving behaviour; subsequent housing opportunities; and thus upward social mobility, educational attainment has the potential to break the link between parental neighbourhood disadvantage and the neighbourhood experiences of children after leaving the parental home. Additionally, a higher education may lead to different neighbourhood preferences in everyday services and facilities, for instance in higher-end educational, leisure, or retail opportunities nearby. Therefore, both the opportunities and demand of socio-spatial mobility are likely to increase with higher educational attainment. As such, educational attainment can be seen as a means to escape the determining impact of the parental neighbourhood on individual neighbourhood outcomes over the life course.

3.2.3 Hypotheses

Based on the discussion of literature above, as well as recent findings in Sweden and the United States (Sharkey & Elwert 2011; Hedman et al. 2013; van Ham et al. 2014), we expect that individuals from a deprived parental neighbourhood will have a higher probability of spending time and ending up in deprived neighbourhoods after leaving the parental home, compared to individuals from a more affluent parental background. In this study, our main hypothesis reads that intergenerational transmission of residence in poverty neighbourhoods can in time be significantly weakened, or even discontinued, by individuals' educational attainment over the life course. Finally, as ethnic minorities have been suggested to be less likely to translate resources into mobility across neighbourhoods, we examine whether educational attainment is a stronger moderator of an intergenerational neighbourhood effect for ethnic majorities than for ethnic minorities.

3.3 Data

For this study, data was derived from the System of Social statistical Datasets (SSD hereafter), which is an integrated, longitudinal database of numerous surveys and administrative registers provided by Statistics Netherlands. The SSD registers contain core demographic, socio-economic and geographic observations on the entire Dutch population tracked from 1995 to 2014. The SSD provides information on family background (Bakker et al. 2014), which allows us to distinguish personal and geographic parental characteristics for individuals in our selected subpopulation. All available

registers are linked at the individual level, which makes these data exceptionally suitable for a visualisation of individual neighbourhood histories. Additionally, using the SSD, we faced hardly any attrition within our subpopulation over time, as it is not a sample. Since 1999, in comparison to previous years, the number and quality of the socio-economic and demographic data in the SSD substantially increased. For the most recent years, not all registers have been released in full for public use. For this reason, the measurement period for this study will range from 1999 to 2012. Individuals can thus be followed for a period of 14 years.

In this study, we made a number of population selections in order to construct a suitable subgroup for whom to examine individual neighbourhood histories. To establish our subpopulation, first of all, we selected individuals from ten different birth cohorts; born within 1974 to 1983. We thus restricted the selection to individuals aged 16 to 25 in 1999 ($N=2,389,031$). Second of all, individuals who lacked information on parental characteristics and residential location, and those who died or emigrated during the measurement period, were excluded from our selection (remaining: $N=1,810,449$). Third of all, we took into consideration those individuals for whom we had full demographic, socioeconomic and residential information, and who lived with their parents in 1999, and had left the parental home in the following year (remaining: $N=154,189$), thus starting their individual neighbourhood trajectory. The characteristics used to define anchors' neighbourhood experiences before leaving the parental home are thus based on one year of observations, namely 1999. While this may produce bias in representing the entire childhood neighbourhood experience, previous research has shown that neighbourhood characteristics are highly correlated throughout childhood (Vartanian et al. 2007; Kunz et al. 2003; Manley et al. 2013). For this reason, using a singular year of parental neighbourhood characteristics is unlikely to offset the validity of our results. Finally, if both partners in a household (registered partnership or marriage) were present in our subpopulation, i.e. if both fitted the initial selection criteria described above, we dropped one of them at random. We subsequently reorganised the data into person-year format. The total number of individual records after this selection consisted of 119,167 people (N), and 1,668,338 year-files ($N. obs$) accordingly, over the 14-year measurement period. In this final selection, 11.9% of the research population has a non-Western ethnic minority background, which is close to the national share of 11.6% in 2012. Table 3.1 provides a further overview of the core descriptive statistics on the individual-level for our subpopulation.

Table 3.1. Descriptive statistics of anchor population in 1999 (in the parental home), 2000 (having left the parental home), 2006, and 2012.

	1999	2000	2006	2012
<i>Age Mean (Std. dev.)</i>	20.59 (2.61)	21.58 (2.61)	27.57 (2.60)	33.57 (2.61)
Share males	45.85	45.85	45.85	45.85
<i>Ethnic background</i>				
Dutch	81.50	81.50	81.50	81.50
Moroccan	3.02	3.02	3.02	3.02
Turkish	3.48	3.48	3.48	3.48
Surinamese	2.50	2.50	2.50	2.50
Antillean/Aruban	0.62	0.62	0.62	0.62
Other non-western	2.27	2.27	2.27	2.27
Other western	6.62	6.62	6.62	6.62
Share students	46.48	37.13	6.95	0.84
<i>Level of education</i>				
Low	84.00	76.56	57.32	53.42
High	16.00	23.44	42.68	46.58
Share with children	.50	2.93	28.31	57.57
Share single household ^a	-	42.28	28.59	22.70
Share couple/married	2.02	40.98	59.59	71.62
Share primary income from benefits	13.48	8.04	12.39	17.48
Share primary income from work	86.52	91.96	87.61	82.52
Income (1000 EU) <i>Mean (Std. dev.)</i>	10.37 (9.90)	14.21 (9.99)	25.13 (16.92)	33.99 (26.47)
<i>Housing tenure</i>				
Homeowner ^b	63.18	41.06	54.17	64.57
Rent	36.79	58.88	45.55	35.14
<i>Residential location</i>				
4 biggest municipalities	10.12	18.07	18.68	18.53
35 following biggest municipalities	24.53	37.71	32.62	29.62
Other municipalities	65.36	44.21	48.70	51.86
N	119 167	119 167	119 167	119 167

Note: Unless otherwise indicated, values are reported in percentages. As some variables contain missing or unknown values, not all values will sum up to 100%

^aAll anchors were registered as 'child within the parental home' in 1999, the 'single household' category was therefore not applicable in this year

^bThe homeowner category refers to the record of the building in the national housing registers, not the individual residing in it. Therefore, the homeowner category may include individuals who rent from a landlord/lady who did not officially declare their property to be let out to tenants

^cThe housing tenure in 1999 refers to the parental home

The SSD provides unique geo-coded information, including an array of spatial levels differing in size. In this study, we selected 500x500 meter grids to define our neighbourhood boundaries. The Netherlands consist of 34,094 inhabited 500x500 meter grid cells containing 496 inhabitants on average. These grids are smaller than most standard Dutch administrative units, such as postal code areas, and are thus more likely to depict inhabitants' perceived neighbourhood boundaries and direct neighbourhood environment. Using these grids further enables us to compare equally-sized, smaller spatial units throughout the Netherlands, the boundaries lines of which are constant over time. For this reason, while grids are not defined based on logical structural, and infrastructural characteristics, but on assigned coordinates of square geographic areas, they nonetheless form a suitable spatial scale on which to construct, measure, and compare neighbourhood histories.

As we examine intergenerational continuity of neighbourhood status over time, our primary neighbourhood characteristic is the concentration of poverty within the grid cell. Personal income was defined as the sum of income from a variety of sources, consisting of wages, benefits, and student scholarships. On data containing the economic characteristics and income distribution of the entire Dutch population, we constructed *income* quintiles, the last of which contained all inhabitants who fell into the lowest 20 percent of incomes. Subsequently, we constructed *neighbourhood* quintiles, in which poverty concentration was defined based on the share of low-income neighbours. Neighbourhoods in the first income quintile have the lowest concentration of poverty, while those in the fifth quintile have the highest concentration of poverty. We thus refer to neighbourhoods in the latter category as deprived neighbourhoods. Table 3.2 shows a number of basic descriptive statistics at the quintile-level, at the time of living in the parental home (1999), and halfway through the measurement period (2006).

3.3.1 Analytic strategy

In this study, we used sequence analyses to visualise individual neighbourhood residence in the constructed income-quintiles over time. In recent years, sequence visualisation has become increasingly popular in social research, and a small number of neighbourhood studies have used this method before to investigate individual neighbourhood histories and track residential change over a measurement period (Coulter & van Ham 2013; van Ham et al. 2014).

Table 3.2. Basic descriptive statistics on the neighbourhood quintile-level in 1999 (in the parental home), and in 2006, halfway through the measurement period

Quintile <i>Mean(Std. dev.)</i>	1999			2006		
	<i>% low-income inhabitants</i>	<i>% ethnic minorities</i>	<i>Number per quintile</i>	<i>% low-income inhabitants</i>	<i>% ethnic minorities</i>	<i>Number per quintile</i>
1.	13.56 (3.54)	4.63 (5.30)	17 721	14.43 (4.11)	6.74 (4.74)	23 089
2.	17.74 (.69)	5.58 (7.00)	21.515	17.90 (2.39)	6.81 (5.34)	21 419
3.	19.84 (.57)	5.48 (7.05)	24.359	19.95 (2.41)	7.62 (6.52)	21 361
4.	21.97 (.69)	6.77 (9.75)	26.657	22.10 (2.52)	9.07 (8.34)	21 777
5.	27.39 (6.57)	10.50 (15.96)	28 915	26.63 (6.17)	13.27 (12.66)	31. 521
N			119 167			119 167

We used the SQ-Ados bundle of Stata programs in Stata 12 to create individual sequences for the anchor population. Each individual person-year observation on the neighbourhood quintile forms an element in the sequence of a respondent (Brzinsky-Fay et al. 2006). In theory, each horizontal line in the sequence plots shows the entire 14-year neighbourhood history of an individual within our subpopulation, from 1999 to 2012 (see figures 3.1 and 3.2 in ¶3.4.1). In practice however, due to pixilation restrictions, the figures show larger population trends in neighbourhood histories rather than identifiable personal tracks. As stated, the neighbourhood quintile in 1999 is used to represent the parental neighbourhood characteristics. All five neighbourhood quintiles were given a separate colour-coding to discern their difference in poverty concentration. A change of colour in an individual timeline from one year to the next indicates a residential move to a grid area with a higher or lower concentration of low-income neighbours compared to the previous year. If there is no change of colour between years in the sequence, either the individual has not experienced a residential move, or the individual has moved but their neighbourhood quality has not changed. We constructed the data in such a way that individuals will not experience a change of neighbourhood status (and quintile colour) unless they actually move.

In addition to the visualisation techniques, in order to examine how neighbourhood histories are likely to develop after leaving the parental home, we estimated neighbourhood outcomes over the measurement period using multilevel logit models. We were thus able to look at a number of time points within the *individual* neighbourhood trajectories, between 2000-2012, and assess intergenerational aspects and its moderation by higher education accordingly. The dependent variable in these models is the probability of residing in a deprived neighbourhood after leaving the parental home. Using a dichotomous dependent variable, we fitted xtlogit models for two points in the measurement period, 2006 and 2012, which provided us with logistic estimates. In order to examine intergenerational neighbourhood continuity over time, the most important independent variable in our analyses is the parental neighbourhood quintile, measured in 1999. In model 2, we add an interaction between deprived parental neighbourhoods (in quintile 5) and individuals' personal educational attainment, in order to check for a moderating effect of education on the influence of childhood experiences with poverty concentration. Subsequently, in model 3, we add a three-way interaction between the deprived parental neighbourhood (quintile 5); individuals' personal educational attainment; and whether the individual belongs to an ethnic minority group. By doing so, we are able to check whether an effect of personal educational attainment on the expected intergenerational transmission of deprived neighbourhood characteristics is stronger for non-ethnic minorities in our subpopulation, as opposed to those from an ethnic minority. In other words, this model will enable us to examine whether non-ethnic minorities are more likely to discontinue poverty patterns across generations through positive accumulation of individual socioeconomic resources over the life course compared to individuals from an ethnic minority.

A selection of individual and household characteristics, described (among others) in table 3.1 above, are included as further independent variables throughout the models. Socioeconomic observations include individuals' highest level of education over time; their annual income; and their type of housing tenure (when available; see table 3.1). Concerning the anchors' educational level, the SSD contains information on degrees obtained in higher education from 1986 onwards (Bakker et al. 2014). Low and middle levels of education however were not officially recorded until 2003. Therefore, for our subpopulation, we have reliable integrated data on anchors' attainment of higher education (i.e. higher vocational or professional (HBO), college, or university), but we cannot distinguish low and middle level degrees. We thus include a dummy for higher

education (yes/no) in our models, both as a main effect and in the interactions with the parental neighbourhood characteristics and ethnicity. We further include the individual's gender; whether they are single; and whether they belong to one of the main ethnic minority groups in the Netherlands (i.e. Moroccan, Turkish, Surinamese, and Dutch Antillean/Aruban). Finally, we add individuals' age, and the income of the parental household in 1999 as controls in the models.

Due to our focus on active moving behaviour, we did not take into consideration contextual changes in the residential neighbourhood, unless a residential move was observed. Therefore, neighbourhood processes such as gentrification or changing housing affordability over time are not expanded upon in this particular study. In our data, the number of cases of substantial neighbourhood change (in terms of the concentration of lowest incomes) without a physical move of the individual in question was very small. Only 5% of the contextual neighbourhood changes involved a change in neighbourhood status larger than 1 quintile category (for instance from 1 to 3, or from 4 to 2) over the 12-year measurement period. All models in this study (sequence and multilevel logit) were additionally run on neighbourhood status (quintiles) that did take contextual change into account, but the models did not show significant differences from our current results on active moving behaviour (analyses not shown, available upon request).

3.4 Results

3.4.1 Sequence analyses

Figures 3.1 and 3.2 show the 14-year neighbourhood histories of two random samples of 5000 individuals in our subpopulation, from 1999 to 2012, organised by the parental neighbourhood quintiles with the lowest (blue segments) and highest (grey segments) concentrations of poverty accordingly (quintile 1 and 5). At the beginning of our measurement period, there is a slight overrepresentation in our subpopulation of individuals residing with their parents in a deprived neighbourhood (24.3%) compared to other neighbourhood types. For individuals from a relatively affluent parental background, displayed in figure 3.1, we see that a large part continue to live in neighbourhoods with the lowest concentration of poverty when leaving the parental home in 2000, but that the majority move into neighbourhoods with higher concentrations of poverty, some deprived. These residential changes can be expected for

Figure 3.1. Sequence plot on patterns of individual neighbourhood histories 1999-2012 (on a sample of 5000 individual histories) of those leaving the parental home in 1999-2000, from a parental neighbourhood with the lowest poverty concentration (quintile 1)

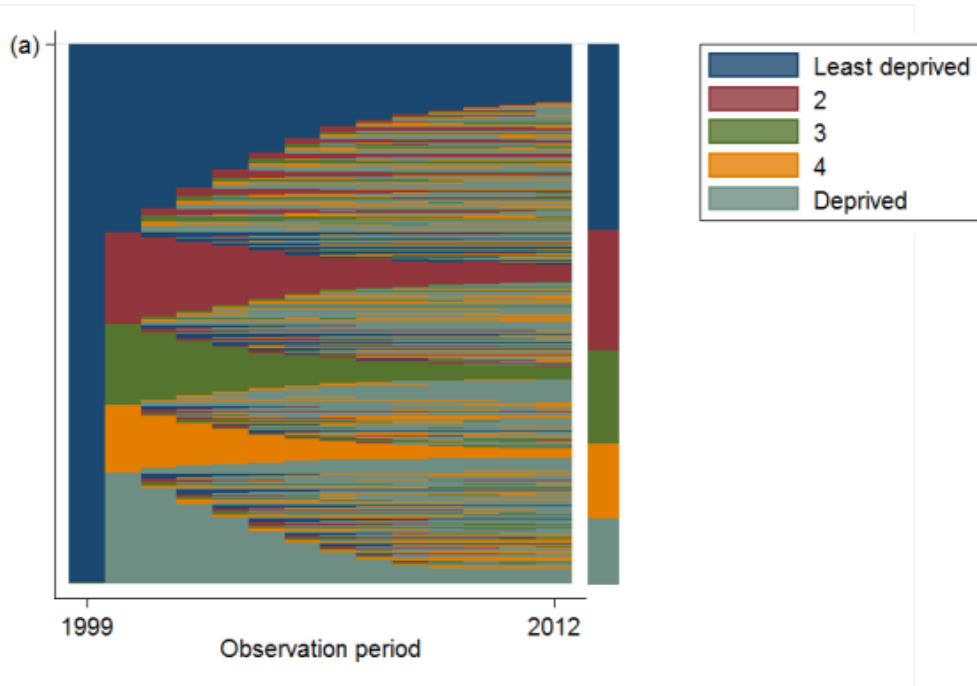
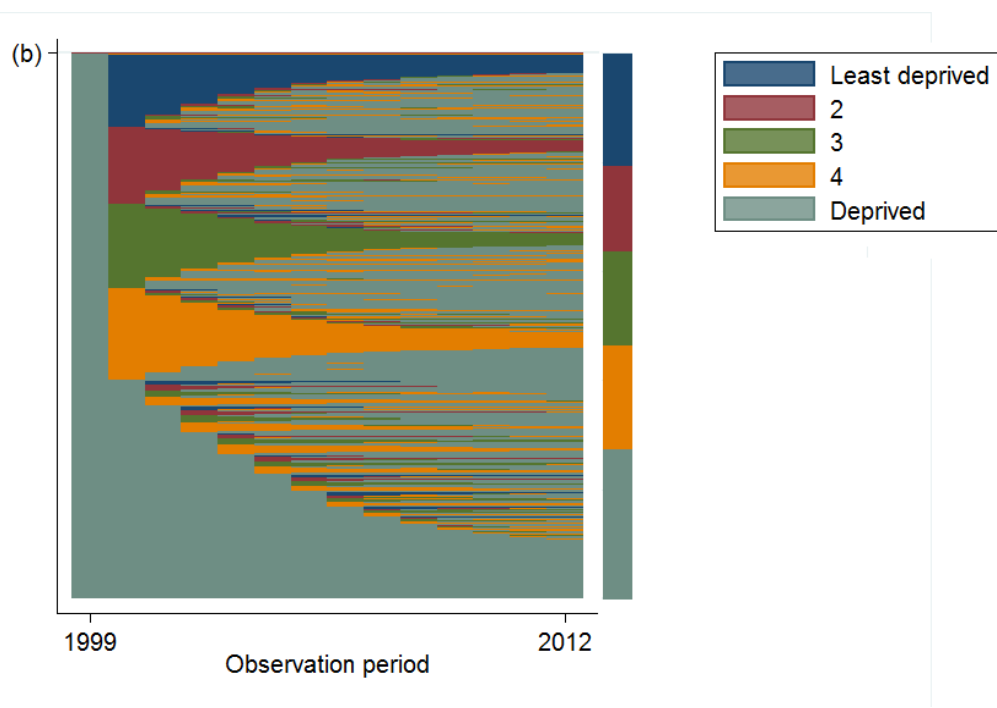


Figure 3.2. Sequence plot on patterns of individual neighbourhood histories 1999-2012 (on a sample of 5000 individual histories) of those leaving the parental home in 1999-2000, from a parental neighbourhood with the highest poverty concentration (quintile 5)



a young subpopulation, which likely consists of students and starters on the labour market. In the following years, the majority of this young subgroup begin to reside in more affluent neighbourhoods once again. The column to the right of the figure shows the individuals' residential locations sorted by quintile type in 2012. At the final measurement point, individuals are relatively equally distributed over neighbourhood quintiles 2 to 5, with a distinct overrepresentation of individuals residing in quintile 1, with the lowest concentration of poverty. Nevertheless, the majority of individuals are shown not to have reached the same neighbourhood type as their parents 12 years after starting their individual residential histories. The sequence plot thus suggests that individuals from an affluent background experience upward social residential mobility after leaving the parental home, but that it takes a lot of time to reach the same neighbourhood type as their parents, if they do at all.

For individuals from a deprived parental neighbourhood in figure 3.2, at first glance, the residential trajectories show a similar pattern to those of individuals in figure 3.1. For this subgroup, a large group of individuals remain to reside in poverty quintiles after having left the parental home, while a small majority initially switches neighbourhood types. When taking a closer look at the sequence plot however, the dominance of the grey (deprived) segments throughout the individual trajectories, especially towards the end of the 12-year measurement period, is striking compared to the lack of blue (affluent) segments around the same time in figure 3.1. Again, the column right of the figure shows the individuals' residential locations sorted by quintile type in 2012, and interestingly, there is only a slight overrepresentation of individuals residing in deprived neighbourhoods. Additionally, however, while a large number of trajectories for individuals from a wealthy parental background show episodes of residence in a neighbourhood with a low to intermediate concentration of poverty (red and green segments), these patterns are less common for individuals from a deprived parental background. What this visualisation thus shows, is that individuals from an affluent background are most likely to experience upward social mobility after leaving the parental home, *even after* having resided in neighbourhoods with a higher concentration of poverty at one point in time, compared to individuals from a deprived neighbourhood background. Individuals from a deprived parental neighbourhood, are not only less likely to experience upward neighbourhood mobility, but also display a high level of lengthy or continuous residence in a deprived neighbourhood up to 12 years after leaving the parental home.

These patterns are further illustrated by the results in table 3.3, which shows the percentage of years that individuals are exposed to each of the five neighbourhood quintile types over the measurement period (by the parental neighbourhood quintile in 1999).

Table 3.3. Residence in neighbourhood quintiles (2000-2012) by parental neighbourhood quintile (1999)

Parental neighbourhood quintile in 1999	Exposure to deprived neighbourhood over the measurement period 2000-2012				
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Quintile 1	38.56	18.90	15.16	13.21	14.16
Quintile 2	22.67	30.24	17.24	14.75	15.10
Quintile 3	19.98	18.02	28.62	17.04	16.34
Quintile 4	17.72	16.30	17.47	29.13	19.38
Quintile 5	15.06	13.85	15.37	17.91	37.82

Note: Unless otherwise indicated, values are reported in percentages.

The results in table 3.3 show that individuals who come from a more affluent parental background, and thus lived in a neighbourhood with a low concentration of poverty in 1999, are most likely to spend time in similarly categorised neighbourhoods (quintile 1) during their own residential history up to 12 years after leaving the parental home (38.6% of years over the measurement period). Comparatively, individuals from a deprived parental neighbourhood (quintile 5) are least likely to reside to reside in low poverty concentration neighbourhoods (only 15.1% of years over the measurement period). The other way around, the same pattern can be identified. The results show that individuals from a deprived parental neighbourhood are most likely to reside in deprived neighbourhoods themselves after leaving the parental home during the entire measurement period (37.8% of 12 years), compared to individuals from a more affluent background (14.2% of 12 years).

The results from the sequence analyses and accompanying table show a clear relationship between the parental neighbourhood and exposure to each of the five constructed categories of poverty concentration, as well as the persistence of residence within one of

these categories in individuals' residential histories after leaving the parental home. Particularly for individuals from a deprived parental neighbourhood, exposure to poverty and lengthy residence in deprived neighbourhoods are highly prevalent throughout life. Overall, these findings strongly resemble the patterns previously identified in Sweden (Hedman et al. 2013).

3.4.2 Multivariate analyses

Table 3.4 shows the multilevel logistic regression models on the effect of the parental neighbourhood on individuals' risk of residing in deprived neighbourhoods in their own residential trajectory over the measurement period. Both the 2006 and 2012 model results indicate that the parental neighbourhood is an important predictor of their children's residential location after leaving the parental home. The parental neighbourhoods with the highest, and second-to-highest concentrations of poverty have a positive significant effect on residence in a deprived neighbourhood later in life, with the former showing the strongest effect overall. Importantly, while the deprived parental neighbourhood has a slightly stronger effect in 2006 compared to 2012, it remains the most important predictor for living in poverty concentration up to 12 years after leaving the parental home. These results thus match our expectations, and the sequence descriptives and visualisations presented above. The effects of the parental neighbourhood categories hold throughout the models after adding the relevant moderating factors and controls, including parental income. When modelling neighbourhood effects it is important to be aware of the possibility of bias due to the so-called 'reflection effect' (Manski 1993), where part of the effect of the residential context effect could be due to endogenous factors. In the design we use in this study the reflection effect is unlikely to bias our outcomes as our contextual effects consist of the parental neighbourhood, additionally controlled for parental income.

In support of our main hypothesis, the results further show that the likelihood of residence in poverty concentration is indeed lower for individuals who have attained higher education, and substantially higher for individuals belonging to an ethnic minority group. Both effects increase over time, which indicates that personal attributes and attainments indeed play an increasingly important role in determining personal neighbourhood outcomes over the life course.

Table 3.4. Multilevel logit models on living in a deprived neighbourhood (quintile 5), 6 and 12 years after leaving the parental home

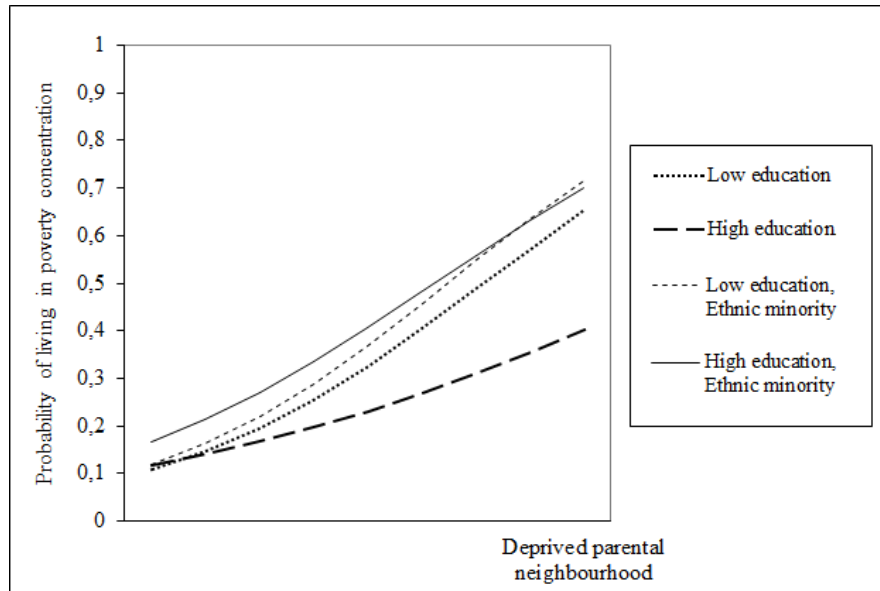
	2006						2012					
	model 1		model 2		model 3		model 1		model 2		model 3	
Parental neighbourhood Q2 (ref = Q1)	.098**	.032	.094**	.033	.098**	.033	.127***	.031	.124***	.031	.127***	.031
Parental neighbourhood Q3	.266***	.031	.264***	.032	.266***	.032	.304***	.030	.302***	.030	.303***	.030
Parental neighbourhood Q4	.620***	.031	.620***	.031	.628***	.031	.650***	.029	.649***	.029	.655***	.029
Parental neighbourhood Q5	3.197***	.030	3.626***	.032	3.591***	.033	2.785***	.029	3.199***	.030	3.187***	.031
Male	.207***	.018	.210***	.018	.208***	.018	.198***	.017	.201***	.017	.201***	.017
Single	.580***	.009	.585***	.009	.584***	.009	.540***	.007	.547***	.007	.545***	.007
Ethnic minority	.424***	.030	.424***	.030	.191***	.041	.614***	.029	.612***	.029	.308***	.038
High education (ref = low)	-.112***	.011	.301***	.013	.299***	.013	-.434***	.009	-.086***	.010	-.122***	.011
Log income (1 000 EUR)	-.036***	.005	-.037***	.005	-.036***	.005	-.157***	.004	-.161***	.004	-.158***	.004
Rent (ref = homeowner)	.418***	.009	.417***	.009	.418***	.009	.419***	.007	.415***	.007	.419***	.007
Age	-.091***	.002	-.091***	.002	-.091***	.002	-.059***	.001	-.059***	.001	-.058***	.001
Log income parents (1 000 EUR)	-.001	.017	-.004	.017	.001	.017	-.143***	.016	-.148***	.016	-.140***	.016
Parental Q5*high education			-1.377***	.024	-1.491***	.025			-1.190***	.019	-1.305***	.020
Parental Q5*ethnic minority					.340***	.063					.226***	.060
High education*ethnic minority					-.019	.051					.434***	.039
Parental Q5*high education*ethnic minority					.982***	.079					.753***	.061
_cons	-1.603***	.073	-1.725***	.074	-1.741***	.074	-1.391***	.064	-1.489***	.064	-1.515***	.064
N	119 167		119 167		119 167		119 167		119 167		119 167	
N. obs	953336		953336		953336		1668338		1668338		1668338	
Prob > chi ²	.0000		.0000		.0000		.0000		.0000		.0000	
Nagelkerke R ²	.066		.073		.074		.065		.070		.071	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

We find negative significant interaction effects between the deprived parental neighbourhood (quintile 5) and the attainment of higher education throughout the models. These results thus indicate that the negative effect of a parental neighbourhood with a high concentration of poverty on personal residential outcomes is weaker for individuals with a high education. As shown in table 3.4, the moderating effect of personal educational attainment becomes stronger over time. These results thus lends support to our expectation that positive accumulation of individual socioeconomic resources over the life course, in this case higher education, can greatly weaken and potentially discontinue intergenerational transmission of deprived neighbourhood characteristics over time. Furthermore, this effect is shown to differ depending on the individuals' ethnic background. Figure 3.3 displays the plot for the three-way interaction included from model 3 onwards, between the deprived parental neighbourhood; individuals' personal educational attainment; and whether the individual belongs to an ethnic minority. Additionally, the accompanying table V shows the three most frequent sequence patterns of our subpopulation, split up by education and ethnicity.

The graph clearly shows that the positive effect of a deprived parental neighbourhood on personal residence in an impoverished area over the measurement period, is most strongly moderated by educational attainment for individuals who do not belong to an ethnic minority group. This result is displayed in the slope of the long dashed line, which is significantly less steep than those of the other category combinations. In fact, the difference in probability of residing in a poverty neighbourhood for ethnic minorities is only very minor for the lower and higher education groups, as seen in the solid and short dashed lines. This leads us to broadly conclude that continued or lengthy residence in a deprived neighbourhood after leaving a deprived parental residential environment is common for ethnic minorities despite their accumulation of positive socioeconomic resources over time, while for others, educational attainment can ensure a move away from poverty concentration by strongly reducing the effect of the parental neighbourhood. The sequence patterns shown in the accompanying table 3.5, split up by education and ethnicity, further indicate that unremitting residence in a deprived neighbourhood is by far the most common residential pattern for all individuals in our subpopulation. It further highlights that for ethnic minority groups, regardless of educational level, the in-group percentage of those remaining in deprived neighbourhoods over time is much higher than for their native Dutch counterparts even compared to those with a lower education, reiterating our previous findings and graph.

Figure 3.3. Three-way interaction effect plot after multilevel logit regression for 2012. Interaction between the deprived parental neighbourhood, educational attainment, and whether an individual belongs to an ethnic minority group



The results in Table 3.4 further show significant effects for most controls added throughout the models. Males are shown to have a higher chance of living in a deprived neighbourhood on average compared to females. This finding may in part be explained by household behaviour, as females commonly start cohabitation and marriage earlier on in life (Statistics Netherlands 2013), and a partner subsequently results in a higher combined spendable income on housing. The fact that singles are shown to have a higher chance of living in poverty concentration supports this latter explanation. Both for individuals' own annual income and the income of their parents, the results in 2012 indicate that the higher the income the lower the risk of residing in a deprived neighbourhood after leaving the parental home. As discussed, a substantial body of literature suggests that the income of the parent is a strong predictor of the income of their children later on in life, and this process could certainly be at play in determining the type of neighbourhood one can afford to live in. Nevertheless, the effect of the deprived parental neighbourhood on individual neighbourhood outcomes holds throughout the analyses, even after adding the control for parental income. We further find that individuals' chance of living in a deprived neighbourhood declines with age, presumably

as their income grows, and that individuals in rental accommodation are more likely to experience concentrated poverty than homeowners.

Table 3.5. Descriptive statistics on the 3 most frequent quintile sequence patterns for natives and ethnic minority subgroups over the observation period 1999-2012, with low and high educational attainment

<i>Neighbourhood quintile sequence pattern</i>	<i>Frequency</i>	<i>% in-group</i>
<i>Natives low education</i>		
5 5 5 5 5 5 5 5 5 5 5 5 5 5	1 230	39.9
1 1 1 1 1 1 1 1 1 1 1 1 1 1	994	32.2
4 4 4 4 4 4 4 4 4 4 4 4 4 4	859	27.9
<i>Natives high education</i>		
5 5 5 5 5 5 5 5 5 5 5 5 5 5	635	37.5
1 1 1 1 1 1 1 1 1 1 1 1 1 1	629	37.2
2 1 1 1 1 1 1 1 1 1 1 1 1 1	428	25.3
<i>Ethnic minority low education</i>		
5 5 5 5 5 5 5 5 5 5 5 5 5 5	649	71.6
4 4 4 4 4 4 4 4 4 4 4 4 4 4	147	16.2
3 3 3 3 3 3 3 3 3 3 3 3 3 3	111	12.2
<i>Ethnic minority high education</i>		
5 5 5 5 5 5 5 5 5 5 5 5 5 5	290	73.1
4 4 4 4 4 4 4 4 4 4 4 4 4 4	57	14.4
1 1 1 1 1 1 1 1 1 1 1 1 1 1	50	12.6

Note: one element in the sequence represents one year in the measurement period. Numbers represent the quintile type; from 1 with the lowest concentration of poverty, to 5 with the highest concentration of poverty

3.5 Discussion and conclusions

In this study, we applied a life course approach to the examination of intergenerational residence patterns and neighbourhood characteristics, reinforcing previous arguments for a dynamic, long-term perspective on neighbourhood effects. In doing so, we add to the limited, but growing literature which shows that individual outcomes are not only influenced by the current residential location, but also by previous neighbourhood

experiences (Sharkey & Elwert 2011; van Ham et al. 2014; Sharkey & Faber 2014). Taking into consideration individuals' long-term residential locations, we were able to examine whether individuals' chances were impaired by where they lived over time. Does growing up in a deprived parental neighbourhood increase individual chances of residing in poverty concentration later in life? At the core of our research into these intergenerational transmission patterns, we hypothesised that individuals' educational attainment, as a personal rather than inherited resource, would become increasingly important to their personal neighbourhood outcomes over time. Higher educational attainment, could weaken, or even discontinue intergenerational residence in poverty neighbourhoods over the life course, by providing moving opportunities and access to higher income jobs, as well as housing options in more affluent neighbourhoods. Furthermore, the personal wish for a more affluent neighbourhood and its facilities may increase as education, and subsequently often income, increases over time. We anticipated that education may be a weaker mediator of an intergenerational neighbourhood effect for ethnic minorities groups compared to other Dutch inhabitants.

Both the descriptive and multivariate analyses results confirm that a deprived parental neighbourhood strongly increases an individual's chances to end up in deprived residential locations, far into adulthood. Furthermore, we find that intergenerational residence in poverty neighbourhoods is more prevalent among non-Western ethnic minority groups. The effect of the parental neighbourhood is persistently strong throughout the models, and holds even after adding relevant controls and moderators, thus overarching effects due to variation in individual and household characteristics, as well as parental income levels. Therefore, while ample literature suggests that parental income is a strong predictor of the income and outcomes of their children over the life course, and their subsequent neighbourhood selection, the parental neighbourhood *itself* also appears to play an important role in transmitting neighbourhood characteristics. Additionally, in support of our main hypothesis, the results show that individuals' attainment of higher education indeed reduces the effect of the deprived parental neighbourhood on disadvantageous residential outcomes. Furthermore, when comparing the models over time, we find that the relative importance of higher education as a personal resource becomes stronger, as does its moderation of a parental effect. Interestingly, this main result primarily holds for individuals who do not belong to an ethnic minority. For individuals from a deprived parental neighbourhood *and* an ethnic minority, the level of education has hardly any effect on their chances of residing in

poverty concentration oneself; which are higher than those of other Dutch inhabitants overall, even than those with a lower education. In line with previous research (Vartanian et al. 2007; Sharkey & Elwert 2011; van Ham et al. 2014), these findings suggest that ethnic minorities are less likely to experience improvements of their residential environment and upward social mobility, even after attaining higher education.

Due to the nature of our data, the fact that it does not include subjective observations, we are not able to further examine the precise causal mechanisms behind intergenerational transmission of deprived neighbourhood characteristics. Explanations can range from complex inter-family and societal processes such as social contagion; a limited network range due to a homogeneous composition of the deprived neighbourhood; or a collective acceptance of dysfunctional norms and values, which affect individual chances to participate in society and experience upward social mobility (for an extensive discussion see Galster 2012). However, people may also choose to live in a certain neighbourhood because they are accustomed to it, since it is similar to the one experienced during childhood. Additionally, individuals may purposely live close to their parents or in a neighbourhood that offers similar facilities and services as the parental neighbourhood (van Ham et al. 2014). For ethnic minority groups in particular, specific services for everyday life, such as supermarkets with international produce or local societies for inhabitants with a similar ethnic background, are often clustered within a small number of neighbourhoods in the larger cities in the Netherlands. The same holds for religious facilities, such as mosques, temples or synagogues. The controls in our models may not serve as sufficient proxies to cover this range of possible considerations behind a selection into a deprived residential neighbourhood after leaving the parental home. This study may thus encourage future research, using subjective observations on what may underlie causal mechanisms at play in the process of intergenerational neighbourhood continuity.

Combined, the results of this study show that intergenerational residence in poverty neighbourhoods plays an important role in determining individual residential outcomes over the life course. In this context, to our knowledge, we are the first to explicitly focus on the role of educational attainment in weakening or discontinuing such intergenerational neighbourhood patterns. As such, the results of this study strongly reinforce the contribution that longitudinal, life course research into the residential environment can make to the body of neighbourhood effects literature as well as that of

intergenerational transmission of disadvantage. The results indicate that individuals' full neighbourhood history, rather than just their current residential location, must be taken into consideration if researchers wish to draw any meaningful conclusion on whether individuals' chances are impaired by where they live.

References

- Aisenbrey, S., & Fasang, A. E. (2010). New life for old ideas: The "second wave" of sequence analysis bringing the "course" back into the life course. *Sociological Methods & Research, 38*(3), 420-462.
- Bakker, B. F., van Rooijen, J., & van Toor, L. (2014). The system of social statistical datasets of Statistics Netherlands: An integral approach to the production of register-based social statistics. *Statistical Journal of the IAOS: Journal of the International Association for Official Statistics*.
- Becker, G. S., & Tomes, N. (1979). An equilibrium theory of the distribution of income and intergenerational mobility. *The Journal of Political Economy, 87*(6), 1153-1189.
- Blanden, J., Gregg, P., & Machin, S. (2005). Intergenerational Mobility in Europe and North America. *Report supported by the Sutton Trust, Centre for Economic Performance, London School of Economics*.
- Bloome, D. (2014). Racial Inequality Trends and the Intergenerational Persistence of Income and Family Structure. *American Sociological Review, 79*(6), 1196-1225.
- Brooks-Gunn, J., Duncan, G., & Aber, J. L. (1997a). *Neighborhood poverty, volume 1: Context and consequences for children*: Russell Sage Foundation.
- Brooks-Gunn, J., Duncan, G., & Aber, J. L. (1997b). *Neighborhood Poverty, volume 2: Policy Implications in Studying Neighborhoods*: Russell Sage Foundation.
- Brzinsky-Fay, C., Kohler, U., & Luniak, M. (2006). Sequence analysis with Stata. *Stata Journal, 6*(4), 435-460.
- Buck, N. (2001). Identifying Neighbourhood Effects on Social Exclusion. *Urban Studies, 38*(12), 2251-2275.
- Clark, W. A., Deurloo, M. C., & Dieleman, F. M. (2003). Housing careers in the United States, 1968-93: Modelling the sequencing of housing states. *Urban Studies, 40*(1), 143-160.
- Clark, W. A., & Huang, Y. (2003). The life course and residential mobility in British housing markets. *Environment and Planning A, 35*(2), 323-340.
- Clark, W. A., & Ledwith, V. (2005). Mobility, housing stress and neighborhood contexts: evidence from Los Angeles. *California Center for Population Research*.
- Coulter, R., & van Ham, M. (2013). Following People Through Time: An Analysis of Individual Residential Mobility Biographies. *Housing Studies, 28*(7), 1037-1055.

- Crowder, K., & South, S. J. (2003). Neighborhood distress and school dropout: the variable significance of community context. *Social Science Research, 32*(4), 659-698.
- Crowder, K., & South, S. J. (2005). Race, class, and changing patterns of migration between poor and nonpoor neighborhoods. *American Journal of Sociology, 110*(6), 1715-1763.
- D'Addio, A. C. (2007). Intergenerational transmission of disadvantage: MOBILITY OR IMMOBILITY ACROSS GENERATIONS? *OECD Social, Employment, and Migration Working Papers, 109*.
- Dietz, R. D. (2002). The estimation of neighborhood effects in the social sciences: An interdisciplinary approach. *Social Science Research, 31*(4), 539-575.
- Durlauf, S. N. (2004). Chapter 50 Neighborhood effects. In J. V. Henderson & T. Jacques-François (Eds.), *Handbook of Regional and Urban Economics* (Vol. Volume 4, pp. 2173-2242): Elsevier.
- Dykstra, P. A., & van Wissen, L. J. (1999). Introduction: The life course approach as an interdisciplinary framework for population studies. In *Population Issues* (pp. 1-22): Springer.
- Ellen, I. G., & Turner, M. A. (1997). Does neighborhood matter? Assessing recent evidence. *Housing Policy Debate, 8*(4), 833-866.
- Feijten, P. (2005). *Life events and the housing career: A retrospective analysis of timed effects*: Eburon Delft.
- Feijten, P., Hooimeijer, P., & Mulder, C. H. (2008). Residential experience and residential environment choice over the life-course. *Urban Studies, 45*(1), 141-162.
- Feijten, P., & Mulder, C. H. (2005). Life-course experience and housing quality. *Housing Studies, 20*(4), 571-587.
- Friedrichs, J. r., & Blasius, J. r. (2003). Social norms in distressed neighbourhoods: testing the Wilson hypothesis. *Housing Studies, 18*(6), 807-826.
- Galster, G. (2002). An economic efficiency analysis of deconcentrating poverty populations. *Journal of Housing Economics, 11*(4), 303-329.
- Galster, G., Andersson, R., & Musterd, S. (2010). Who Is Affected by Neighbourhood Income Mix? Gender, Age, Family, Employment and Income Differences. *Urban Studies, 47*(14), 2915-2944.
- Galster, G., Cutsinger, J., & Lim, U. (2007). Are Neighbourhoods Self-stabilising? Exploring Endogenous Dynamics. *Urban Studies, 44*(1), 167-185.

- Galster, G. C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 23-56): Springer Netherlands.
- Geist, C., & McManus, P. A. (2008). Geographical mobility over the life course: Motivations and implications. *Population, Space and Place*, 14(4), 283-303.
- Giele, J. Z., & Elder, G. H. (1998). *Methods of life course research: Qualitative and quantitative approaches*: Sage.
- Hedman, L., Manley, D., van Ham, M., & Östh, J. (2013). Cumulative exposure to disadvantage and the intergenerational transmission of neighbourhood effects. *Journal of Economic Geography*, 15(1), 195-215.
- Helderman, A., & Mulder, C. (2007). Intergenerational transmission of homeownership: The roles of gifts and continuities in housing market characteristics. *Urban Studies*, 44(2), 231-247.
- Kunz, J., Page, M. E., & Solon, G. (2003). Are point-in-time measures of neighborhood characteristics useful proxies for children's long-run neighborhood environment? *Economics Letters*, 79(2), 231-237.
- Kurz, K. (2004). Labour market position, intergenerational transfers and homeownership: a longitudinal analysis for West German birth cohorts. *European Sociological Review*, 20(2), 141-159.
- Manley, D., van Ham, M., Bailey, N., Simpson, L., & Maclennan, D. (2013). Neighbourhood Effects or Neighbourhood Based Problems? A Policy Context. In D. Manley, M. van Ham, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects or Neighbourhood Based Problems?* (pp. 1-23): Springer Netherlands.
- Manski, C. F. (1993). Identification of endogenous social effects: The reflection problem. *The review of economic studies*, 60(3), 531-542.
- Musterd, S., Galster, G., & Andersson, R. (2012). Temporal dimensions and measurement of neighbourhood effects. *Environment and Planning A*, 44(3), 605-627.
- Overman, H. G. (2002). Neighbourhood Effects in Large and Small Neighbourhoods. *Urban Studies*, 39(1), 117-130.
- Quillian, L. (2003). How Long are Exposures to Poor Neighborhoods? The Long-Term Dynamics of Entry and Exit from Poor Neighborhoods. *Population Research and Policy Review*, 22(3), 221-249.

- Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "Neighborhood Effects": Social Processes and New Directions in Research. *Annual Review of Sociology, 28*, 443-478.
- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *AJS; American journal of sociology, 116*(6), 1934-1981.
- Sharkey, P., & Faber, J. W. (2014). Where, when, why, and for whom do residential contexts matter? Moving away from the dichotomous understanding of neighborhood effects. *Annual Review of Sociology, 40*, 559-579.
- Simpson, L., & Finney, N. (2009). Spatial patterns of internal migration: evidence for ethnic groups in Britain. *Population, Space and Place, 15*(1), 37-56.
- Simpson, L., Purdam, K., Tajar, A., Fieldhouse, E., Gavalas, V., Tranmer, M., Dorling, D. (2006). *Ethnic minority populations and the labour market: an analysis of the 1991 and 2001 Census*. Department for Work and Pensions.
- Small, M. L., & Feldman, J. (2012). Ethnographic evidence, heterogeneity, and neighbourhood effects after moving to opportunity *Neighbourhood effects research: New perspectives* (pp. 57-77): Springer.
- Solon, G. (2002). Cross-country differences in intergenerational earnings mobility. *The Journal of Economic Perspectives, 16*(3), 59-66.
- South, S. J., & Crowder, K. D. (1997). Escaping distressed neighborhoods: Individual, community, and metropolitan influences. *American Journal of Sociology, 102*(4), 1040-1084.
- Statistics Netherlands. (2013b). Huwen en partnerschapsregistratie; kerncijfers. Retrieved from <http://statline.cbs.nl>
- Van der Klaauw, B., & van Ours, J. C. (2003). From welfare to work: does the neighborhood matter? *Journal of Public Economics, 87*(5-6), 957-985.
- Van Ham, M., Hedman, L., Manley, D., Coulter, R., & Östh, J. (2014). Intergenerational transmission of neighbourhood poverty: an analysis of neighbourhood histories of individuals. *Transactions of the Institute of British Geographers, 39*(3), 402-417.
- Van Ham, M., & Manley, D. (2012). Neighbourhood effects research at a crossroads. Ten challenges for future research. *Environment and Planning A, 44*(12), 2787-2793.
- Vartanian, T. P., Walker Buck, P., & Gleason, P. (2007). Intergenerational Neighborhood-Type Mobility: Examining Differences between Blacks and Whites. *Housing Studies, 22*(5), 833-856.

Wilson, W. J. (2012 [1987]). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago: University of Chicago Press.

4 Parents and peers: parental neighbourhood- and school-level variation in individual neighbourhood outcomes over time

4.1 Introduction

There is a large body of literature on the effect of the residential environment on individual life outcomes and attainments; so-called neighbourhood effects (Ellen & Turner 1997; Sampson et al. 2002; Galster 2002, 2012; Dietz 2002; Friedrichs & Blasius 2003; Crowder & South 2003; Durlauf 2004; Wilson 2012; van Ham et al. 2014; de Vuijst et al. 2016). Particularly, poverty neighbourhoods are commonly assumed to have a negative impact on the life chances of their residents, with spatial deprivation strengthening the consequences of individual disadvantages. However, an individual's neighbourhood does not necessarily represent the main and only socio-spatial context to which they are exposed in everyday life (Kwan 2012; van Ham & Manley 2012; Wheaton & Clarke 2003). There are multiple contexts besides the residential environment, which unfold in parallel to one another, in which individuals reside and interact on a daily basis, such as their households, schools, as well as work and leisure locations (de Vuijst et al. 2017; van Ham & Tammaru 2016). These socio-spatial environments are interrelated, and can affect individual lives in numerous ways. For this reason, they cannot be overlooked in a wider discussion on the reasons behind individual deprivation, poverty, and a wide range of personal outcomes over time (Buck 2001).

The effect of a specific socio-spatial context can vary over time and over the life course. For instance, the current working environment will likely be of particular importance to current everyday interactions, perhaps more so than previous work settings. However, there is a strong belief that events in an individual's life are strongly affected by their previous experiences over time. This is a central premise to life course theory, which purports that in addition to effects arising from multiple interrelated socio-spatial contexts, these effects can *accumulate over time* (Dykstra & van Wissen 1999; Feijten 2005; Feijten et al. 2008). For example, instinctively, it makes sense to assume that the longer or more frequent the exposure to a negative situation, environment, or behavioural example, the stronger its negative effects will be on an individual (de Vuijst et al. 2017). Research has established that patterns can even be found between generations; showing a clear link between the outcomes of parents and their children over long periods of time. Socioeconomic characteristics and (dis)advantage have repeatedly been shown to transfer between generations (Blanden et al. 2005; Bloome 2014), and recently, residential neighbourhood status has been shown to follow similar patterns (Hedman et al. 2013; van Ham et al. 2014; de Vuijst et al. 2017; Sharkey & Elwert 2011). Studies from the Netherlands, Sweden, and the United States have shown that

children who grew up in deprived parental neighbourhoods are more likely to reside in similarly poor neighbourhoods as adults over their life course (ibid.).

Existing literature focusses on the intergenerational transmission of neighbourhood characteristics, without explicitly accounting for the possible effect of other socio-spatial contexts. This paper contributes to an emerging body of literature by examining the *joint* influence of the parental background, the parental neighbourhood, and a compositional measure of the secondary school environment. We focus on the neighbourhood careers of Dutch adolescents, up to 12 years after leaving the parental home. Looking at a young subpopulation at the start of our measurement period, the secondary school (high school) environment is of particular importance to their individual outcomes, as it is one of the settings where they have to spend the majority of their time, thus likely affecting views, behaviour, and even norms and values. By examining multiple socio-spatial contexts (van Ham & Tammaru 2016), we thus expand on previous research into the intergenerational transmission of neighbourhood characteristics, and follow a life course approach to understanding broader *contextual* effects on personal neighbourhood outcomes over time.

In this study we make use of longitudinal register data provided by Statistics Netherlands, which has been geo-coded at the individual level. Using these data we were able to follow a complete cohort of parental home leavers for a period of 13 years, from 1999 to 2012. After the necessary data selections, we track 18,169 young Dutch inhabitants, that attend 389 different schools and live across 10,678 different parental neighbourhoods (500x500m grids). We have complete individual neighbourhood histories available for this subpopulation, after they leave the parental home, as well as information on their school environment and core demographic and socioeconomic characteristics. We were fortunate enough to have this data on education to our disposal, especially since school-related data is commonly unequivocally scarce in the field of neighbourhood effects research (Nieuwenhuis & Hooimeijer 2016). We fit intricate cross-classified multilevel models, in order to partition the variance of both socio-spatial settings, assessing their level of influence on individual neighbourhood outcomes over time.

4.2 Theoretical background

Over their life course, individuals move through an array of overlapping socio-spatial contexts, in which they live, work, attain education, and spend leisure time (de Vuijst et al. 2017, 2016). Within all these contexts or domains, people have their day-to-day social interactions, and are additionally exposed to a wide range of constraints and freedoms that can emerge from environmental, institutional, and geographical influences (see Galster 2012 for an extensive discussion of these influences at the residential neighbourhood level). These contextual factors are believed to influence individual outcomes over time. Social interaction may, for example, fuel processes of social contagion or imitation; lead to the collective acceptance of (dys)functional norms and values; or affect individual network range due to the composition of the socio-spatial context (Tunstall & Fenton 2006; Wilson 2012; Galster 2012). On the environmental and geographical level, depending on the domain, individuals may be exposed to advantages such as beneficial support systems in the workplace, or disadvantages such as poor public services in the residential neighbourhood. Additionally, all such mechanisms can be affected by the societal structure and institutional level in which they are embedded. For example, students attending a “bad” school or university can experience social stigmatisation, which can reiterate their disadvantaged position making it increasingly hard to shed (ibid.).

While the literature does not identify a single most important causal mechanism from the list provided above, all such factors emerging from multiple socio-spatial contexts are commonly believed to be inescapably interrelated *and* to accumulate in their effect on personal outcomes over time (Dykstra & van Wissen 1999; Feijten 2005; Feijten et al. 2008). Therefore, any point in an individual’s biography must be seen as part of this broader ‘range’, if you will, of connected events, which is the central premise to life course theory (also see de Vuijst et al. 2016). As such, an individual outcomes in a particular period of life must be seen in relation to both foregoing and current experiences in a number of parallel individual careers, to do with education, the household, housing, work, and leisure. A life course study must therefore always be seen to have an intrinsically interdisciplinary focus (Elder 1994). In line with this approach, an increasing number of authors now stress that combinations and accumulations of socio-spatial settings over the life course, full dynamic individual histories, are vital to truly understand the connection between contextual factors and a given individual outcome (Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012; van Ham et al. 2014; de Vuijst et al. 2017, 2016). In this

study we take a closer look at two socio-spatial domains that can play an important role in adolescence; the residential neighbourhood, both before and after leaving the parental home, and the secondary school environment.

4.2.1 The impact of the neighbourhood

The residential neighbourhood context is believed to be related to individual (dis)advantages. Affluent residential neighbourhoods, for instance, have been shown to positively affect the social mobility of their residents, as well as their educational attainment and levels of income (van der Klaauw & van Ours 2003; Simpson et al. 2006; van Ham et al. 2014). Deprived neighbourhoods, on the other hand, were shown to negatively affect a large variety of personal outcomes, ranging from childhood achievement to delinquent behaviour (for a compilation see Ellen & Turner 1997) (Overman 2002; Galster et al. 2010; Friedrichs & Blasius 2003). Most of these studies were still unable to examine long-term individual neighbourhood experiences, often due to a lack of longitudinal geo-coded data (Sharkey & Elwert 2011; Galster 2012; van Ham et al. 2014; de Vuijst et al. 2017, 2016). Therefore, the belief in the direct influence of the neighbourhood on its inhabitants has often been based on cross-sectional measures of individuals' neighbourhood characteristics and their instant effect on current individual outcomes (de Vuijst et al. 2017, 2016; Sharkey & Elwert 2011; van Ham et al. 2014). In recent years however, as data quality has improved, researchers have increasingly been able to approach the understanding of neighbourhood effects *over time* (Hedman et al. 2013; van Ham et al. 2014; de Vuijst et al. 2017, 2016), even spanning across generations.

Previous research conducted in the Netherlands (de Vuijst et al., 2017), found that children from poor parental neighbourhoods were more likely to live in similarly poor neighbourhoods later in life, up to 13 years after leaving the parental home (ibid.). This finding was in line with research conducted in Sweden and the United States (Hedman et al. 2013; van Ham et al. 2014; Sharkey & Elwert 2011), which additionally showed that neighbourhood experiences over time had a strong cumulative effect on current individual residential outcomes. The parental neighbourhood is believed to be a predictor for their children's individual neighbourhood outcomes through a number of core transmission and inheritance mechanisms (Vartanian et al. 2007; Sharkey & Elwert 2011; van Ham et al. 2014; de Vuijst et al. 2017). First of all, a large number of studies have found parental income to affect their offspring's income, which in turn influences

socioeconomic attainment and selection into deprived neighbourhoods over time (Becker & Tomes 1979; Solon 2002; D'Addio 2007). For this reason, part of an intergenerational pattern in neighbourhood outcomes can result from this income transmission. Second of all, from a very early age, children inherit norms, values, and attitudes from their parents and the environments to which they are exposed (Galster 2012; de Vuijst et al. 2017). As norms can shape attitudes towards, among others, socioeconomic factors later in life, they can further shape individual neighbourhood histories, thus playing an important role in the intergenerational transmission of neighbourhood characteristics, independent to the income mechanism described above (Bisin & Verdier 1998) (for an extensive discussion see Galster 2012). Third of all, adult children may simply prefer similar neighbourhoods to the ones they grew up in because of a sense of familiarity, belonging, or proximity to their family (see de Vuijst et al. 2017).

4.2.2 The impact of the school environment

Education is one of the most important attainable resources over an individual's life course, which can strongly determine future schooling and career opportunities, and subsequently has the potential to positively affect income levels and upward social mobility. Previous research in the Netherlands has shown that educational attainment can in fact discontinue the intergenerational transmission of neighbourhood disadvantage (de Vuijst et al. 2017). Individuals who grew up in poor neighbourhoods, and who attained higher education, are less likely to live in concentrated poverty after leaving the parental home, compared to their counterparts with a lower education. These findings highlight the influence of educational attainment on personal outcomes over time. It is important to note that this last result primarily applied to the native Dutch individuals within the research population. For individuals from a deprived parental neighbourhood *and* a non-Western ethnic minority background, higher educational attainment did not decrease their chance of living in concentrated poverty (ibid.), which was substantially higher than that of the native Dutch. In addition to the actual education gained at secondary school, the school environment and its composition are believed to play a further contextual role in determining personal outcomes later in life.

Many mechanisms in the residential neighbourhood, to which transmission or inheritance of neighbourhood characteristics are often attributed, also translate to the school environment and its potential effect on individual outcomes over time. The secondary

school that adolescents attend is often an important basis of their everyday interactions with peers. Much like the residential environment (Galster 2012; de Vuijst et al. 2017), the school environment can thus be seen as a social platform where young individuals are exposed to behavioural examples and social norms, as well as a multitude of values and attitudes of other pupils. All these factors can subsequently shape future choices and outcomes in life. Peers can serve as role models by providing examples to others, not only on behavioural norms and standards, but also on bigger transitions in the life course. While some behaviours are commonly deemed more susceptible to peer influences than others, for instance students' educational aspirations and outcomes (see for example Berndt & Ladd, 1989; Hallinan & Williams 1990), a dominant notion in research on role model effects emphasises the importance of direct exposure to behavioural examples. It has long been put forward that the mere occurrence of an event or behaviour in a social environment makes it more likely for this behaviour to be transferred to others (ibid.). The role model mechanism, to which peer influence are often attributed, is thus largely in line with our previous discussion on potential effects arising through interaction processes such as social contagion or imitation (see Galster 2012; de Vuijst et al. 2017). We strongly believe these peer processes to be among the core driving contextual factors that can determine personal outcomes over time. Subsequently, leaving these processes out of consideration in models on contextual effects could result in an incomplete or exaggerated representation of the relative importance of the residential environment in determining individual outcomes life. In this study, therefore, we examine how individual neighbourhood trajectories develop after leaving the parental home, given the impact of the parental background, the parental neighbourhood, *and* the composition of the secondary school environment.

4.3 Data

In this study, we used administrative register data provided by Statistics Netherlands, compiled into the longitudinal System of Social statistical Datasets (SSD hereafter) in a Remote Access facility. The SSD is an integrated database comprised of various surveys and registers, which contain core demographic, socio-economic and consistent geographical observations on the entire Dutch population tracked from 1995 to 2014. Using the SSD, we could thus distinguish this information for individuals in our selected subpopulation, and we could additionally access the characteristics of their parents and further family members (Bakker et al. 2014). All available registers are linked at the

individual level, which allowed us to examine individual neighbourhood outcomes over time. Since 1999, the quality of the SSD registers increased in terms of the available number of socio-economic and demographic observations (de Vuijst et al. 2017). For the most recent years, not all registers have been released in full for public use. For these reasons, the measurement period for this study ranged from 1999 to 2012. We thus followed individuals for a period of 14 years.

In this study, we made a number of population selections. To establish our subpopulation, we selected individuals from four different birth cohorts; born within 1980 to 1983. We thus restricted the selection to individuals aged 16 to 19 in 1999. Further requirements entailed that individuals were not missing information on parental characteristics or residential location, or had died or emigrated during the measurement period. They further had to have full demographic, socioeconomic and residential information available at the individual level, and were required to be school-going and living with their parents in 1999. The individuals had to have left the parental home in 2000, starting their individual neighbourhood trajectory (ibid.). We used one year of geographical observations to define the subpopulation's neighbourhood experiences before leaving the parental home, namely 1999. As previous research has shown neighbourhood characteristics to be highly correlated throughout childhood, we do not expect this selection to have produced bias in representing the childhood neighbourhood experience at large (Vartanian et al. 2007; Kunz et al. 2003; Manley et al. 2013; de Vuijst et al. 2017, 2016). Lastly, if the individual and their partner (registered partnership or marriage) were both present in our subpopulation, one of them was dropped at random, so as to avoid dependencies between person-records. We subsequently reorganised the data into person-year format. Table 4.1 provides an overview of core descriptive statistics at the individual-level for our subpopulation, which consisted of 18 169 young Dutch inhabitants (N).

In practice, we expect that pupils will typically attend schools that are in close proximity to their parental home. When looking at a basic summary of the number of schools per neighbourhood in our data, we see that while in one neighbourhood pupils go to 9 different schools, in 22.54% of neighbourhoods they go to only one, see table 4.2. When taking a closer look at the schools per neighbourhood however, we did find that in those neighbourhoods in which young inhabitants go to more than one school, the majority still

attend the same school, resulting in a higher overlap between young neighbours and fellow pupils in practice than the 22.54% might suggest.

Table 4.1. Descriptive statistics of anchor population in 1999 (in the parental home), 2000 (having left the parental home), 2006, and 2012

	1999	2000	2006	2012
<i>Age Mean (Std. dev.)</i>	17.97 (.86)	18.97 (.86)	24.97 (.86)	30.97 (.86)
Share Males	38.65	38.65	38.65	38.65
Ethnic background				
Dutch	86.28	86.28	86.28	86.28
Moroccan	1.23	1.23	1.23	1.23
Turkish	1.34	1.34	1.34	1.34
Surinamese	1.38	1.38	1.38	1.38
Antillean/Aruban	.56	.56	.56	.56
Other non-western	2.26	2.26	2.26	2.26
Other western	6.95	6.95	6.95	6.95
Share students ^a	-	97.44	24.10	1.68
Level of education ^a				
Low	-	67.70	22.50	9.93
High	-	32.30	77.50	90.07
Level of secondary school education				
Mavo/vmbo/havo	40.51	40.51	40.51	40.51
Vwo/Atheneum/Gymnasium	59.49	59.49	59.49	59.49
Share with children	.02	.11	3.59	35.91
Share single household ^b	-	65.29	42.61	25.33
Share primary income from benefits	23.65	2.22	8.08	10.68
Share primary income from work	76.35	97.78	91.92	89.32
Income (1 000 EUR) <i>Mean (Std. dev.)</i>	3.38 (5.38)	8.17 (6.94)	22.01 (13.70)	40.43 (24.25)
Housing tenure ^{c,d}				
Homeowner	80.77	49.17	44.88	62.00
Rent	19.21	50.78	54.67	37.48
Residential location				
4 biggest municipalities	6.57	23.88	30.83	35.53
35 following biggest municipalities	22.65	60.05	42.13	32.59
Other municipality	70.79	16.07	27.04	31.87
N	18 169	18 169	18 169	18 169

Note: unless otherwise indicated, values are reported in percentages. As some variables contain missing or unknown values, not all values will sum up to 100%

^a All anchors were required to be in secondary school in 1999

^b All anchors were registered as “children within the parental home” in 1999, the ‘single household’ category was therefore not applicable for this year

^c The homeowner category refers to the record of the building in the national housing registers, not the individual residing in it. Therefore, the homeowner category may include individuals who rent from a landlord/lady who did not officially declare their property to be let out to tenants

^d The housing tenure in 1999 refers to the parental home

Table 4.2. School-neighbourhood connection: percentage of pupils by number of parental neighbourhoods at t⁰ (1999)

	%
Neighbourhood sends young inhabitants to 1 school	22.54
Neighbourhood sends young inhabitants to 2 schools	16.67
Neighbourhood sends young inhabitants to 3 schools	13.61
Neighbourhood sends young inhabitants to 4 schools	10.49
Neighbourhood sends young inhabitants to 5 schools	9.13
Neighbourhood sends young inhabitants to 6 schools	7.20
Neighbourhood sends young inhabitants to 7 schools	6.37
Neighbourhood sends young inhabitants to 8 schools	4.65
Neighbourhood sends young inhabitants to 9 schools	3.15

Note: unless otherwise indicated, values are reported in percentages. As Statistics Netherlands did not allow us to include neighbourhoods that send their young inhabitants to 10 schools or more (to avoid the possibility of exposing specific residential locations and its inhabitants), not all values will sum up to 100%

The SSD provides geographical information on the individual level, most of which is highly consistent over time. We had access to multiple spatial levels differing in size. Standard Dutch administrative units, such as postal code areas, are commonly relatively large and instable over time, which makes them less likely to reflect their inhabitants' perceived neighbourhood environment. We therefore selected 500x500 meter grid cells to define the neighbourhood boundaries in this study. The Netherlands is comprised of 34 094 inhabited 500x500 meter grid cells which contain 496 inhabitants on average (de Vuijst et al. 2017). Grids allow us to compare equally-sized, small spatial units throughout the Netherlands, the boundaries lines of which are constant over time. We argue that these grids are a suitable spatial scale at which to examine individual neighbourhood histories. Our subpopulation attended 389 different schools and lived across 10,678 different parental neighbourhoods (grids).

In our focus on neighbourhood outcomes over time, we constructed a scale to depict the concentration of poverty within a residential neighbourhood, i.e. within the grid, which served as one of our parental neighbourhood-level variables. Using economic data on the entire Dutch population, we constructed income-quintiles¹. Quintile 1 contained all inhabitants who fell within the higher 20 percent of incomes, while quintile 5 contained those who were among the lowest 20 percent of incomes. We subsequently constructed

¹ Personal income was defined as the sum of income from a variety of sources, consisting of wages, benefits, and student scholarships (see de Vuijst et al. 2017)

neighbourhood-quintiles, in order to define poverty concentrations based on the share of low-income neighbours (ibid.). Neighbourhoods in neighbourhood quintile 1 have the lowest concentration of poverty, while those in the quintile 5 have the highest concentration of poverty; deprived neighbourhoods hereafter. This latter neighbourhood quintile is used throughout the analyses as the parental neighbourhood predictor variable ‘concentration of lowest incomes’². In addition to the concentration of lowest incomes, we included a measure for the ‘share of ethnic minorities’ in the parental neighbourhood as an additional neighbourhood-level predictor variable.

Using a similar method, we created a compositional measure of the secondary school environment of our subpopulation in 1999, the year before leaving the parental home. Using the previously constructed income-quintiles, we created school-quintiles, in which schools in quintile 1 have a low concentration of peers from low income parents, whereas schools in quintile 5 have a high concentration of these pupils. The fifth quintile was again used to depict the highest concentration within the models.

Additionally, as a school-level predictor variable, we included a measure indicating the educational level the pupils were enrolled in. In the Dutch educational system, the majority of schools offer several levels of education, ranging from low/middle (VMBO/MAVO/HAVO) to high (VWO). Nevertheless, the Dutch registers do not contain information on contact frequency between individuals or subjective measures on experiences in the school environment. By creating a measure for pupils’ educational level, essentially a smaller unit within the school environment, we aim to capture the fellow pupils that individuals are likely in regular contact with, due to the fact that they will share courses and social events. In doing so, we hope to approach a peer influence mechanism which can be at play in the school environment, and which can affect later outcomes in life.

4.3.1 Analytic strategy

Recent research from the Netherlands, Sweden, and the United States has shown that individuals who grew up in deprived parental neighbourhoods experienced long-term exposure to similar neighbourhoods over their life course (van Ham et al. 2014; Hedman

² While we of course appreciate the arbitrary nature of this income quintile categorisation, it eased examination and interpretation of neighbourhood-level outcomes in the scope of this study

et al. 2013; Sharkey & Elwert 2011; de Vuijst et al. 2017). In this study, we used cross-classified multilevel models in order to examine how individual neighbourhood outcomes are likely to develop after leaving the parental home, given the parental background, the parental neighbourhood, and the composition of the secondary school. We argue that cross-classified models are suitable as individuals in our data were nested in specific parental neighbourhood/school environment combinations. Therefore, they were hierarchically classified on more than one dimension (Fielding & Goldstein 2006). Using the cross-classified models, we were able to partition the variance of both spatial settings, in order to assess their relative importance to individual neighbourhood outcomes over time. The dependent variable in these models was the probability of residing in a deprived neighbourhood over time after leaving the parental home (also see de Vuijst et al. 2017).

The cross-classified model can be seen as a constrained three-level model, with pupils (level 1) nested in parental neighbourhoods (level 2) nested in a single artificial super cluster (level 3) (Leckie 2013). This single artificial super cluster represents the single education authority in the Netherlands encompassing all schools in the data. The 389 different schools in our data, result in a 389 by 389 variance-covariance matrix. Entering the schools into the models by means of the single cluster simply sets all variances to equal, and all covariances to zero (hence, constrained model), providing us with a single random part parameter; or between-school variance component (ibid.). We fitted the cross-classified models in five steps. In models 1 and 2 (the null or empty models), we only included the intercept, neighbourhood random effects (model 1), and school random effects (model 2). We thus split the total variance in residing in concentrated poverty over time into separate variance components over the levels in the models. In model 3, we added individual level predictor variables, and further adjusted for individual background characteristics, which will briefly be discussed below. In model 4, we added the parental neighbourhood level predictor variable 'concentration of lowest incomes', as previously discussed. And finally, in model 5, we added the school level predictor variable 'share peers from low income parents', as well as a measure indicating the educational level the pupils were enrolled in at secondary school, ranging from low to high.

Cross-classified models, as specified above, assume school and neighbourhood effects to be additive by default. However, even after controlling for neighbourhood main effects, the effect that a school environment may have on its pupils' outcomes later in life can differ for pupils from different parental neighbourhoods: as the effects of secondary

schools and parental neighbourhoods on individual neighbourhood outcomes might interact (Leckie 2013). For this reason, in order to relax this additive random effects assumption, we included a random school-by-parental neighbourhood interaction classification in all our models, allowing for school and parental neighbourhood effects to be potentially non-additive (interaction parameters not reported/discussed).

We adjusted for a selection of individual, household, and school characteristics, described in table 4.1 (among others) above, which were included from model 3 onwards. Individual annual income is included as a core socio-economic observation. We further included the individual's gender; their age; whether they were single; homeownership/rent; and whether they belonged to one of the main ethnic minority groups in the Netherlands (Moroccans, Turks, Surinamese, and Antilleans/Arubans). We also adjusted for the income of the parental household, in 1999. All variables included were centred around their mean. Due to restrictions on the Remote Access server-capacity of Statistics Netherlands, all models were run (repeatedly) on a random sample of 25% of our subpopulation (N = 4,542).

4.4 Results

Table 4.3 shows the results from the cross-classified multilevel models on the individual probability of residing in poverty concentration after leaving the parental home halfway through the measurement period, in 2006. In model 2, we see a simple decomposition of the total variance in individual neighbourhood outcomes into separate school and parental neighbourhood variance components, respectively estimated at .120 and .189. In comparison to model 1 (empty model not shown), we find that the addition of the school-level variance component only moderately affects the variation in neighbourhood outcomes at the parental neighbourhood level, thus far showing distinct effects of both spatial settings on individual neighbourhood outcomes after leaving the parental home.

In model 3 we find that after adding personal level predictor variables, the between-school variance in individual neighbourhood outcomes is reduced to .060 and is no longer significant, while the between-parental neighbourhood variance is now .138. These results indicate that these individual measures have substantial explanatory power in determining neighbourhood outcomes over time, as one would expect, and further

highlight that there are large disparities between the individuals in our subpopulation at the start of their individual residential neighbourhood history.

Table 4.3. Cross-classified multilevel model on individual chance of residing in poverty concentration/ deprived residential neighbourhood after leaving the parental home (2006)

	(2)		(3)		(4)		(5)	
	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>
Male			.473***	.073	.462***	.071	.450***	.072
Single			.460***	.073	.451***	.072	.446***	.072
Age			-.120**	.044	-.118**	.043	-.110**	.044
Ethnic minorities			.422***	.134	.364**	.144	.370**	.143
Rent			.485***	.074	.481***	.073	.478***	.073
Income (1000 EUR)			-.286***	.046	-.280***	.045	-.275***	.045
Income parents (t ⁰)			-.213***	.070	-.185**	.070	-.187**	.069
Parental neighbh. Characteristics								
Concentration lowest incomes					.289***	.070	.288***	.070
Concentration ethnic minorities					.003	.004	.004	.004
School characteristics								
peers poor							-.017	.013
parents Educational level Middle/high							-.092	.083
_cons	-1.194***	.081	-1.140***	.069	-1.119***	.070	-1.091***	.070
Random-effects parameters								
	Est.	SE	Est.	SE	Est.	SE	Est.	SE
Between-school	.120	.055	.060	.033	.061	.034	.052	.032
Between-neighbh.	.189	.073	.138	.074	.022	.105	.019	.106
<i>N</i>	4 542		4 542		4 542		4 542	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Looking at the fixed part parameter estimates, the effects of the personal characteristics on neighbourhood outcomes are in line with those found in previous studies. In particular, individuals whose parental income levels are higher are less likely to reside in deprived neighbourhoods in their own residential trajectory as adults. Compared to the estimates found in null model 2, the combined effect of the personal characteristics, and parental characteristics in model 3 (as well as the neighbourhood exposure that took place over the measurement period) explains 27% ($-.27 = (.138 - .189) / .189$) of parental neighbourhood variance in individual neighbourhood outcomes over time. The school variance is no longer significant after this extension of the model. When separately assessing the personal characteristics, we find that the predominant decrease in school level variance was due to the addition of ethnicity, income, and parental income to the model. This suggests grouping of children from specific ethnic and parental backgrounds into similar school environments. A large percentage of variance in individual neighbourhood outcomes at the level of the parental neighbourhood has yet to be specified.

In model 4 we find that the parental neighbourhood-level predictor variable “concentration of the lowest incomes” further reduces the between-parental neighbourhood variance in individual residential outcomes from .138 to .022, and it is no longer significant. This result indicates that at the parental neighbourhood level, poverty concentration is a core explanatory factor in determining children’s neighbourhood outcomes after leaving the parental home. This finding reaffirms previous results in the Netherlands, and demonstrates once more the importance of parental neighbourhood deprivation in explaining individual neighbourhood outcomes, even after controlling for personal characteristics and parental income. This result thus re-emphasises the importance of exposure to neighbourhood deprivation *over time*, even spanning across generations, on personal outcomes. The remaining school-level variance also moderately decreases in comparison to model 3 after adding the neighbourhood level predictor variables, however it is important to keep in mind that it was no longer significant after the addition of the personal characteristics. In other words, while some variance in individual neighbourhood outcomes attributed to the level of the secondary school may be explained by the concentration of low incomes in the parental neighbourhood, we cannot say with enough confidence that there is a definite link. Since there is a substantial percentage of parental neighbourhoods in which children attend one particular school, as shown in table II and its accompanying discussion above, any additional decrease of the

school-level variance in model 4 is likely due to this overlap. We did not find a significant result for the share of ethnic minorities in the parental neighbourhood.

In the final model 5 we included the full range of controls and predictor variables at the parental, individual, parental neighbourhood, and the secondary school level on the individual chance of residing in a deprived neighbourhood after leaving the parental home. Both the share of peers with low income parents, and the educational level of the student's class, do not show any further significant results. An LR test between model 5 and 4 does show that the two added school-level predictors slightly improve the fit of the model. Additionally, the inclusion of the school-level variables very marginally reduces remaining variance at both the between-school variance in individual neighbourhood outcomes and the between-parental neighbourhood variance. Extensions to these school-level predictors, such as the share of students from an ethnic minority background, did not show additional significant results (analyses not shown). The results for the full models in years towards the end of the measurement period (available upon request) show a very similar pattern to those in 2006, suggesting a long-lasting effect of the quality of the parental neighbourhood.

4.5 Discussion and conclusions

In this study, we focussed on the neighbourhood outcomes of Dutch adolescents after leaving the parental home. We examined the joint influence of the parental background (parental income), the parental neighbourhood, and a compositional measure of the school environment: multiple factors and socio-spatial contexts that may influence individual chances of residing in poverty concentration. In doing so, we contribute to the literature in two distinct ways. First of all, we add to the small, but growing, body of literature that takes a dynamic, long-term perspective to neighbourhood effects. These studies show that individual residential outcomes are not only influenced by the current residential environment but by neighbourhood experiences *over time*, even spanning across generations (Sharkey & Elwert 2011; Hedman et al. 2013; van Ham et al. 2014; Sharkey & Faber 2014; de Vuijst et al. 2017). We too find that poverty concentration in the parental neighbourhood increases individual chances of residing in similarly poor neighbourhoods later in life, even after controlling for parental income *and* taking into consideration the influence of the secondary school environment. Second of all, firmly inspired by life course theory, we add to the literature by assessing multiple socio-spatial

contexts and their specific level of influence on neighbourhood outcomes over time. During adolescence, the parental neighbourhood and the school environment are likely to be among the dominant socio-spatial contexts in which individuals spend a large proportion of their time.

We argue that leaving these possible other socio-spatial contexts out of consideration in models on neighbourhood effects could lead to a misspecification and overestimation of the importance of the residential environment in shaping individual outcomes in life. By adding the school environment into previously established models on the intergenerational transmission of neighbourhood characteristics, we found that *both* spatial settings explain variance in the neighbourhood outcomes of young individuals in the analyses. Furthermore, by adding in this additional socio-spatial context, we did improve the explanatory power of the models. Our main results showed that, on the one hand, the effect of the parental neighbourhood on individual neighbourhood outcomes was explained by a quality measure of the parental residential environment; its poverty concentration. The effect of the school environment, on the other hand, was in fact explained by a number of personal characteristics of the research population, namely their ethnicity, parental income, and personal income as adults later in life. This latter finding strongly suggested that individuals from specific ethnic and parental backgrounds were grouped within the same school environments.

Using the longitudinal register data from the Netherlands, we had access to some information on the composition of the school environment as an important additional socio-spatial context. We did not however find a significant effect for the concentration of peers with low income parents, or the pupils' educational level. It is important to keep in mind that when using this type of register data, affecting the interpretation of the mechanisms behind both a parental neighbourhood and a school effect, there is no information on subjective observations, for instance on contact regularity or frequency, or the transmission of norms and values between peers or between parents and children. For this reason, the added predictors and controls in our models may not serve as sufficient proxies to cover certain types of complex intra-family and intra-peer mechanisms behind individual neighbourhood outcomes over time. We hope that this study will encourage future research using subjective observations on these possible underlying mechanisms at play, in order to extend the modelling strategy.

Combined, the results from this study show that there is variation in individual neighbourhood outcomes after leaving the parental home at both the parental neighbourhood and the school level, controlling for parental income and individual characteristics. Poverty concentration is shown to be at the heart of the effect of the parental neighbourhood, reconfirming that intergenerational residence in deprived neighbourhoods strongly, and negatively affects individual neighbourhood outcomes over the life course. Personal characteristics of the research population are at the heart of the effect of the school environment, which suggest grouping into schools based on ethnic and parental income background. In this context, to our knowledge, we are the first to additionally assess certain compositional measures of the school environment, explicitly highlighting the importance of assessing the separate impact of this socio-spatial context within one comprehensive modelling framework. Therefore, the results of this study reinforce previous findings on intergenerational neighbourhood patterns, and further support a distinct life course perspective which encourages the examination of neighbourhood effects over time *and* the need to examine additional, parallel socio-spatial contexts which make up contextual effects on individual outcomes at large.

References

- Bakker, B. F., van Rooijen, J., & van Toor, L. (2014). The system of social statistical datasets of Statistics Netherlands: An integral approach to the production of register-based social statistics. *Statistical Journal of the IAOS: Journal of the International Association for Official Statistics*.
- Becker, G. S., & Tomes, N. (1979). An equilibrium theory of the distribution of income and intergenerational mobility. *The Journal of Political Economy*, 87(6), 1153-1189.
- Berndt, T. J., & Ladd, G. W. (1989). *Peer relationships in child development*: John Wiley & Sons.
- Bisin, A., & Verdier, T. (1998). On the cultural transmission of preferences for social status. *Journal of Public Economics*, 70(1), 75-97.
- Blanden, J., Gregg, P., & Machin, S. (2005). Intergenerational Mobility in Europe and North America. *Report supported by the Sutton Trust, Centre for Economic Performance, London School of Economics*.
- Bloome, D. (2014). Racial inequality trends and the intergenerational persistence of income and family structure. *American Sociological Review*, 79(6), 1196-1225.
- Buck, N. (2001). Identifying Neighbourhood Effects on Social Exclusion. *Urban Studies*, 38(12), 2251-2275.
- Crowder, K., & South, S. J. (2003). Neighborhood distress and school dropout: the variable significance of community context. *Social Science Research*, 32(4), 659-698. doi:[http://dx.doi.org/10.1016/S0049-089X\(03\)00035-8](http://dx.doi.org/10.1016/S0049-089X(03)00035-8)
- D'Addio, A. C. (2007). Intergenerational transmission of disadvantage: MOBILITY OR IMMOBILITY ACROSS GENERATIONS? *OECD Social, Employment, and Migration Working Papers*, 109.
- De Vuijst, E., van Ham, M., & Kleinhans, R. (2016). A life course approach to understanding neighbourhood effects, *IZA Discussion paper No 10276*, Bonn, Institute for the Study of Labor.
- De Vuijst, E., van Ham, M., & Kleinhans, R. (2017). The moderating effect of higher education on the intergenerational transmission of neighbourhood characteristics, *Environment and Planning A*, Vol. 49(9), 2135-2154.
- Dietz, R. D. (2002). The estimation of neighborhood effects in the social sciences: An interdisciplinary approach. *Social Science Research*, 31(4), 539-575.

- Durlauf, S. N. (2004). Chapter 50 Neighborhood effects. In J. V. Henderson & T. Jacques-François (Eds.), *Handbook of Regional and Urban Economics* (Vol. Volume 4, pp. 2173-2242): Elsevier.
- Dykstra, P. A., & van Wissen, L. J. (1999). Introduction: The life course approach as an interdisciplinary framework for population studies. In *Population Issues* (pp. 1-22): Springer.
- Ellen, I. G., & Turner, M. A. (1997). Does neighborhood matter? Assessing recent evidence. *Housing Policy Debate*, 8(4), 833-866.
- Feijten, P. (2005). *Life events and the housing career: A retrospective analysis of timed effects*: Eburon Delft.
- Feijten, P., Hooimeijer, P., & Mulder, C. H. (2008). Residential experience and residential environment choice over the life-course. *Urban Studies*, 45(1), 141-162.
- Fielding, A., & Goldstein, H. (2006). Cross-classified and multiple membership structures in multilevel models: An introduction and review.
- Friedrichs, J. r., & Blasius, J. r. (2003). Social norms in distressed neighbourhoods: testing the Wilson hypothesis. *Housing Studies*, 18(6), 807-826.
- Galster, G. (2002). An economic efficiency analysis of deconcentrating poverty populations. *Journal of Housing Economics*, 11(4), 303-329.
- Galster, G., Andersson, R., & Musterd, S. (2010). Who Is Affected by Neighbourhood Income Mix? Gender, Age, Family, Employment and Income Differences. *Urban Studies*, 47(14), 2915-2944.
- Galster, G. C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 23-56): Springer Netherlands.
- Hallinan, M. T., & Williams, R. A. (1990). Students' characteristics and the peer-influence process. *Sociology of education*, 122-132.
- Hedman, L., Manley, D., van Ham, M., & Östh, J. (2013). Cumulative exposure to disadvantage and the intergenerational transmission of neighbourhood effects. *Journal of Economic Geography*, 15(1), 195-215.
- Kunz, J., Page, M. E., & Solon, G. (2003). Are point-in-time measures of neighborhood characteristics useful proxies for children's long-run neighborhood environment? *Economics Letters*, 79(2), 231-237.
- Kwan, M.-P. (2012). The uncertain geographic context problem. *Annals of the Association of American Geographers*, 102(5), 958-968.

- Leckie, G. (2013). Cross-Classified Multilevel Models-Concepts. LEMMA VLE Module 12, 1-60.
- Manley, D., van Ham, M., Bailey, N., Simpson, L., & Maclennan, D. (2013). Neighbourhood Effects or Neighbourhood Based Problems? A Policy Context. In D. Manley, M. van Ham, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects or Neighbourhood Based Problems?* (pp. 1-23): Springer Netherlands.
- Musterd, S., Galster, G., & Andersson, R. (2012). Temporal dimensions and measurement of neighbourhood effects. *Environment and Planning A*, 44(3), 605-627.
- Nieuwenhuis, J., & Hooimeijer, P. (2016). The association between neighbourhoods and educational achievement, a systematic review and meta-analysis. *Journal of Housing and the Built Environment*, 31(2), 321-347.
- Overman, H. G. (2002). Neighbourhood Effects in Large and Small Neighbourhoods. *Urban Studies*, 39(1), 117-130.
- Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "Neighborhood Effects": Social Processes and New Directions in Research. *Annual Review of Sociology*, 28, 443-478.
- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *AJS; American journal of sociology*, 116(6), 1934-1981.
- Sharkey, P., & Faber, J. W. (2014). Where, when, why, and for whom do residential contexts matter? Moving away from the dichotomous understanding of neighborhood effects. *Annual Review of Sociology*, 40, 559-579.
- Simpson, L., Purdam, K., Tajar, A., Fieldhouse, E., Gavalas, V., Tranmer, M., Dorling, D. (2006). *Ethnic minority populations and the labour market: an analysis of the 1991 and 2001 Census*. Department for Work and Pensions.
- Solon, G. (2002). Cross-country differences in intergenerational earnings mobility. *The Journal of Economic Perspectives*, 16(3), 59-66.
- Tunstall, R., & Fenton, A. (2006). *In the Mix, a Review of Mixed Income, Mixed Tenure and Mixed Communities: What do we know*. Housing Corporation, Joseph Rowntree Foundation & English Partnerships.
- Van der Klaauw, B., & van Ours, J. C. (2003). From welfare to work: does the neighborhood matter? *Journal of Public Economics*, 87(5-6), 957-985.

- Van Ham, M., Hedman, L., Manley, D., Coulter, R., & Östh, J. (2014). Intergenerational transmission of neighbourhood poverty: an analysis of neighbourhood histories of individuals. *Transactions of the Institute of British Geographers*, 39(3), 402-417.
- Van Ham, M., & Manley, D. (2012). Neighbourhood effects research at a crossroads. Ten challenges for future research. *Environment and Planning A*, 44(12), 2787-2793.
- Van Ham, M., & Tammaru, T. (2016). New perspectives on ethnic segregation over time and space. A domains approach. *Urban Geography*, 37(7), 953-962.
- Vartanian, T. P., Walker Buck, P., & Gleason, P. (2007). Intergenerational Neighborhood-Type Mobility: Examining Differences between Blacks and Whites. *Housing Studies*, 22(5), 833-856.
- Wheaton, B., & Clarke, P. (2003). Space Meets Time: Integrating Temporal and Contextual Influences on Mental Health in Early Adulthood. *American Sociological Review*, 68(5), 680-706.
- Wilson, W. J. (2012 [1987]). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago: University of Chicago Press.

5 Educational attainment and
neighbourhood outcomes:
differences between highly-
educated natives and non-
Western ethnic minorities in the
Netherlands

5.1 Introduction

Characteristics of the residential neighbourhood have repeatedly been argued to amplify the consequences of individual advantage and disadvantage. Exposure to an affluent neighbourhood, for example, was shown to positively affect educational and income levels, as well as social mobility patterns later in life (Van der Klaauw & van Ours 2003; Simpson et al. 2006; Van Ham et al. 2014). Exposure to deprived neighbourhoods, on the other hand, has been argued to negatively affect, for instance, childhood achievement, transition rates from welfare to work, and delinquency (for a compilation see Ellen & Turner 1996; Overman 2002; Galster et al. 2010; Friedrichs & Blasius 2003). One shortcoming of many studies into neighbourhood effects is that they were unable to examine *long-term* individual neighbourhood experiences due to a lack of longitudinal geo-coded data (Sharkey & Elwert 2011; Galster 2012; de Vuijst et al. 2017, 2016). An increasing number of authors now stress that information on the combination and accumulation of residential experiences over the life course - full dynamic neighbourhood histories – is vital to truly understand the connection between the neighbourhood and individual outcomes (Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012; Van Ham et al. 2014; de Vuijst et al. 2017). For this reason, more and more studies now take an explicit life course approach to understanding neighbourhood effects over time (Hedman et al. 2013; Van Ham et al. 2014; de Vuijst et al. 2017, 2016)

In previous research in the Netherlands, De Vuijst et al. (2017) found that for children who grew up in deprived neighbourhoods, the deprived parental neighbourhood remained a strong predictor for their neighbourhood trajectories in adulthood, up to 13 years after leaving the parental home. Children who grew up in poor neighbourhoods were found to be more likely to live in similarly poor neighbourhoods later in life (*ibid.*), in line with research conducted in Sweden and the United States (Hedman et al. 2013; Van Ham et al. 2014; Sharkey & Elwert 2011). Furthermore, the study showed that for those growing up in deprived neighbourhoods, obtaining a higher level of education could reduce the effect of the parental neighbourhood later in life; breaking intergenerational patterns. However, this effect of education was only found for the native Dutch population. In other words, the neighbourhood outcomes of highly educated native Dutch individuals have a weaker association to their parental neighbourhood characteristics than those of other ethnic groups. For individuals from a deprived parental neighbourhood *and* a non-Western ethnic minority background, a higher level of education did not decrease the chance of living in poverty concentration later in life: their likelihood to live in poverty

concentration remained substantially higher than that of native Dutch inhabitants overall, including those with a lower education (de Vuijst et al. 2017).

This study extends the work of De Vuijst et al. (2017), and uses the same longitudinal register data provided by Statistics Netherlands, to get more insight in the underlying causes of these differential effects of education for ethnic groups. We focus on the following research question: To what extent are ethnic differences in the moderation of intergenerational neighbourhood patterns through higher educational attainment determined by income (1), intergenerational income transmission (2), and neighbourhood preferences (3)? This paper will thus provide an in-depth analysis of the income trajectories of different highly-educated ethnic groups and relate these trajectories to the characteristics of their parental neighbourhood.

Our analytical strategy consists of a number of steps. First, we investigate the income differences within the highly-educated research population from deprived parental neighbourhoods along the lines of their ethnicity. Higher average incomes for the native Dutch in this subgroup, compared to non-Western ethnic minorities, could in part explain why ethnic minorities are less likely to experience socio-spatial mobility over time. Second, we run multilevel models on the intergenerational transmission of income, by ethnicity and education. It is well-known that poverty transmits between generations (Blanden et al. 2005; Bloome 2014), and the neighbourhood can be seen as a spatial dimension to such intergenerational transmission patterns (de Vuijst et al. 2017). Historically, ethnic minorities have had lower incomes than the native population in the Netherlands. As income can be a strong determinant of individual residential outcomes, a stronger intergenerational income continuity for highly-educated non-Western ethnic minority groups, compared to their Dutch counterparts, may substantially determine their residential location. Finally, following an explanation opted by de Vuijst et al. (2017), we consider whether ethnic minority groups are more likely to end up in poorer neighbourhoods because they choose similar residential neighbourhood to the ones they grew up in, and because they want to live close to family. This element of choice could be related to the presence of certain shops, local societies, religious services and other amenities that cater for the needs of ethnic minorities and are often clustered within a small number of relatively poor neighbourhoods in the largest Dutch cities. These services and facilities are important in everyday life, and high concentrations of fellow inhabitants with a similar ethnic background can create a feeling of social inclusion, as well as a buffer

against discrimination (Coenen et al. 2016). Therefore, highly-educated ethnic minorities may in part choose to remain in these neighbourhoods after leaving the parental home, regardless of their educational attainment and subsequent options, partly due to a sense of belonging. In order to further examine this possibility, we investigate subjective observations on neighbourhood experiences collected in the Netherlands' Housing Survey 2012 (Statistics Netherlands 2012). This survey gathered information about the housing situation of the Dutch population, with a sample taken from all Dutch residents 18-years and up, for whom address information was available (N = 69,330). Additionally, we investigate the presence of direct family members in the living environment of both highly-educated native Dutch and ethnic minority groups. By examining the three possible explanations listed above, we aim to shed more light on the differences in moderation of a parental effect on individual neighbourhood outcomes between highly-educated native Dutch and non-Western ethnic minority groups.

5.2 Theoretical background

There are large lingering differences in the socio-economic outcomes of the non-Western ethnic minority population and the native Dutch population in the Netherlands. Reports from Statistics Netherlands reveal that for the largest ethnic minority groups, notably Turks, Moroccans, Surinamese and Antilleans, outcomes on education, income, housing, and even health, are considerably worse compared to Dutch natives (Lucassen & Penninx 1997). These patterns have been in place ever since the large immigrant influx from the abovementioned countries and states from the 1960s onwards (ibid.). Historically, ethnic differences in income have been most pronounced as new migrants were often part of sourced foreign labour migration schemes initiated by the Dutch government, actively seeking workers for lower income manual labour in large national companies (ibid.). Family migration and reunification followed over the next 15 to 20 years. Due to the need for affordable housing after immigration, large groups of ethnic minorities became clustered in poor residential neighbourhoods in the bigger Dutch cities. As such, the housing outcomes of migrant workers reflected their income divergence compared to the native Dutch. Over the following decades, up to recent years, lasting lower incomes for non-Western ethnic minority groups in the Netherlands were mostly accredited to lower levels of education and language barriers among first generation migrants, trickling down through the generations; with offspring experiencing low education and income as adults over the life course.

Poverty is known to be transferable between generations, and the literature stresses the lack of upward social mobility for individuals from a poor parental background (Blanden et al. 2005; Bloome 2014). Recent studies suggest that housing and neighbourhood outcomes over the life course can be seen as a spatial dimension or translation of such intergenerational transmission patterns (de Vuijst et al. 2017). The authors found that for native Dutch children from deprived parental neighbourhoods, obtaining a higher education increased the chance of moving to a better neighbourhood later in life. For ethnic minority children, such an effect of education on socio-spatial mobility was not found, and their likelihood to reside in a deprived neighbourhood remained substantially higher than that of native Dutch inhabitants overall, even than those with a lower education (ibid.). Interestingly, for highly-educated ethnic minorities, traditional explanations of lingering ethnic inequality do not apply as they experience less advantageous neighbourhood outcomes compared to their native Dutch counterparts.

5.2.1 Income and the intergenerational transmission of poverty

The intergenerational transmission of neighbourhood characteristics and the intergenerational transmission of poverty are likely to be strongly interconnected - and may in many cases be directly translatable (Becker & Tomes 2002; Solon 2002; D'Addio 2007; de Vuijst et al. 2017). After all, income is a strong determinant of individual residential outcomes. Additionally, a recent OECD rapport shows a strong negative significant effect of growing up in a deprived parental neighbourhood on individual income over time (van Ham et al. 2016). In this study, we focus on two specific income-related factors as a possible explanation of ethnic differences in neighbourhood outcomes for highly-educated individuals. First, the differences in neighbourhood outcomes for higher educated natives and non-western ethnic minorities might be partly explained by differences in their earnings. Second, if there are ethnic differences in the income-levels of both highly-educated groups, one has to consider both intragenerational and intergenerational factors that could determine this divergence. On the one hand, there may be personal factors that shape opportunities in job and income attainment that are different for individuals from different ethnic groups. For instance, individuals from a non-Western ethnic minority may experience specific problems in entering the labour market that do not apply to their native Dutch counterparts, such as implicit or explicit discrimination or cultural bias, or fewer highly-educated/connected ties that may help in

the job seeking progress. This can therefore result in income-divergence between ethnic groups with a similar level of education. It is also likely that there are other intergenerational factors which lead to lower incomes of non-Western ethnic minorities compared to their Dutch counterparts (see Galster 2012 for an extensive discussion) (de Vuijst et al. 2017). From a very young age, children are socialised into adhering parental norms and values, as well as the cultural and social norms of the individuals and environments their parents are involved with on a daily basis (ibid.). In other words, an individual's early attitudes towards customs and social processes will largely be the same or highly similar to those of their parents, and people they additionally are exposed to through their parents. Over time, these norms and values will naturally keep developing, but parental convictions can continue to have consequences for individual outcomes over the life course; strongly determining attitudes towards full-time versus part-time employment, the importance of career development, family-formation patterns and timing, and further socioeconomic factors, thus shaping outcomes in these areas of life (Bisin & Verdier 1998; Galster 2012). For relatively small ethnic minority groups within a larger 'host'-society, the maintenance of cultural traits, customs, and values between generations is likely to be stronger, or deemed more important, than between generations of the native population. Therefore, as the intergenerational transmission of poverty is likely to be strongly connected to the transmission of neighbourhood outcomes, the intergenerational component may be more pronounced to non-Western ethnic minorities from a deprived parental neighbourhood compared to native Dutch from a similar residential and family background.

5.2.2 Neighbourhood preference and selection

In addition to possible income- and parent-related determinants of individual residential outcomes over time, neighbourhood preferences are also likely play an important role in defining neighbourhood outcomes for highly-educated non-Western ethnic minorities. Previous studies on neighbourhood outcomes (see for example Vartanian et al. 2007; Sharkey & Elwert 2011; Van Ham et al. 2014) often did not investigate neighbourhood selection processes due to a lack of data. We argue however, that neighbourhood choice *needs* to be explicitly considered before drawing any conclusions on differences in neighbourhood outcomes between ethnic groups. Previous studies examining intergenerational neighbourhood outcomes, have predominantly attributed their results to parent-to-child inheritance mechanisms, as discussed above (ibid.). Additionally,

children have repeatedly been shown to prefer similar types of accommodation to their parents with regard to homeownership, which subsequently affects their choice of neighbourhoods throughout life (Kunz et al. 2003; Helderma & Mulder 2007; Feijten et al. 2008). However, while these diverse transmissions mechanisms undoubtedly play an important role in determining individual neighbourhood outcomes over time, individuals may also prefer similar types of neighbourhoods to those of their parents because the composition and facilities are familiar to them, or because they want to be close to family members, regardless of educational attainment. After the initial arrival of migrants to poorer inner-city neighbourhoods, non-Western ethnic minorities established themselves and their families in local communities, which soon offered services and facilities for everyday life that could not be found in other neighbourhoods, such as stores with international produce, local societies, and religious facilities. Therefore, a strong positive association to the parental neighbourhood could be a reason for staying in this neighbourhood, or a similar one, despite gaining a higher education after leaving the parental home (and thus likely having the option to move). This would be an alternative explanation for the often heard argument that ethnic minorities live concentrated because they have no alternative options. In other words, higher educational attainment may not result in moving to a more affluent neighbourhood partly because people choose to live in a neighbourhood similar to where they grew up.

In addition to a strong positive association to the parental neighbourhood for non-Western ethnic minorities, there is the possibility of a negative association; in which case individuals do choose to live in a specific setting, that resembles their ethnic background, but not for positive reasons: i.e. a choice without feasible/comfortable alternatives. Research in Flanders, Belgium has recently shown that 'ethnic enclaves' in large inner-city regions can serve as a buffer against discrimination experienced outside of that residential setting (Coenen et al. 2016). As previously discussed, it is likely that highly-educated non-Western ethnic minorities continue to experience certain difficulties that do not apply to their native Dutch counterparts, for instance facing possible implicit or explicit discrimination or cultural bias when entering the labour market, or perhaps having fewer ties that can help in looking for a job. Should this be the case, educational attainment gives everyone the same opportunities in theory but certainly not in practice. These difficulties can in turn lead to a feeling of social alienation from the majority groups in society, or society at large, and a neighbourhood with a high percentage of individuals

from a similar ethnic background can help shield its residents from these negative experiences.

5.3 Analytic strategy

In the current study, we examine a number of potential explanations for differences between ethnic groups in the moderation of intergenerational neighbourhood effects through higher educational attainment. We compare the average incomes of highly-educated natives and non-western ethnic minorities from deprived parental neighbourhoods. Following on, in order to investigate the degree of intergenerational continuity of income for both groups, we run multilevel models on the parent-to-child transmission of income, and examine the strength of the association. Finally, we analyse the outcomes of a selection of questions from the WoON-survey, in which information on neighbourhood experiences were collected for a large Dutch subgroup. We focus on questions regarding dwelling and neighbourhood satisfaction, as well as a sense of belonging in the residential environment. We subsequently investigate the presence of family members in the same residential area for both ethnic groups, to get more insight in the role of the proximity of family in neighbourhood choice.

5.3.1 Register data

We use administrative microdata from the System of Social statistical Datasets (SSD hereafter), provided by Statistics Netherlands. The SSD is an integrated, longitudinal database of numerous surveys and registers, and contains core demographic, socio-economic and geographic observations on the entire population of the Netherlands (Bakker et al. 2014). Data for this study were available from 1999 to 2012, which enabled us to track individuals over a 14-year period. There was almost no attrition (as we did not use a sample), but excluded individuals who died or emigrated during the measurement period. We selected individuals aged 16 to 25 in 1999, for whom we had full demographic, socioeconomic and residential information, who lived with their parents in 1999, and had left the parental home in the following year (2000). If this selection included both partners in a household (registered partnership or marriage), i.e. if both fitted the selection

Table 5.1. Personal and residential descriptive statistics of the highly-educated native Dutch population from a deprived parental neighbourhood (2000, 2006, and 2012)

	2000	2006	2012
Age Mean (Std. dev.)	21.02 (2.57)	27.01 (2.57)	33.01(2.57)
Share Males	42.07	42.07	42.07
Share students	59.99	11.71	.85
Share with children	1.30	20.33	55.47
Share primary income from benefits	5.16	8.03	11.59
Share primary income from work	94.84	91.97	88.41
Share fulltime work male ^a	-	62.17	78.25
Share fulltime work female	-	48.97	50.47
Income fulltime male (1 000 EUR)	-	29.08 (19.48)	49.59 (26.05)
Income fulltime female (1 000 EUR)	-	26.49 (11.35)	41.81 (17.04)
Income parttime male (1 000 EUR)	-	20.02 (11.69)	36.73 (23.81)
Income parttime female (1 000 EUR)	-	19.46 (10.36)	25.11 (14.69)
Average parttime hours male	-	.40 (.24)	.48 (.24)
Average parttime hours female	-	.49 (.22)	.59 (.19)
Housing tenure ^b			
Homeowner	45.17	55.79	70.33
Rent	54.81	43.92	29.37
Residential location			
4 biggest municipalities	18.33	20.83	21.25
35 following biggest municipalities	46.29	36.25	30.85
Other municipalities	35.38	42.93	47.90
Neighbourhood quintile 1	14.27	18.64	25.01
Neighbourhood quintile 2	13.73	18.00	19.64
Neighbourhood quintile 3	14.77	19.45	19.16
Neighbourhood quintile 4	17.48	19.64	18.75
Neighbourhood quintile 5	39.75	24.27	17.44
N	10 389	10 389	10 389

Note: unless otherwise indicated, values are reported in percentages. As some variables contain missing or unknown values, not all values will sum up to 100%

^a Data on working hours available from 2001 onwards

^b The homeowner category refers to the record of the building in the national housing registers, not the individual residing in it. Therefore, the homeowner category may include individuals who rent from a landlord/lady who did not officially declare their property to be let out to tenants

criteria described above, we dropped one of them at random. This selection resulted in a database with 119,167 Dutch residents with a total of 1,668,338 person-years over the 14-year study. Out of this group, we were particularly interested in individuals with a higher educational attainment from a deprived parental

Table 5.2. Personal and residential descriptive statistics of the highly-educated non-western ethnic minority population from a deprived parental neighbourhood (2000, 2006, and 2012)

	2000	2006	2012
Age Mean (Std. dev.)	19.79(2.34)	25.78 (2.33)	31.78 (2.33)
Share Males	44.04	44.04	44.04
Ethnic background			
Moroccan	29.80	29.80	29.80
Turkish	32.66	32.66	32.66
Surinamese	15.50	15.50	15.50
Antillean/Aruban	3.46	3.46	3.46
Other non-western	18.58	18.58	18.58
Share students	67.95	16.11	1.92
Share with children	3.02	21.06	50.30
Share primary income from benefits	10.39	18.14	27.49
Share primary income from work	89.61	81.86	72.51
Share fulltime work male ^a	-	50.75	67.50
Share fulltime work female	-	44.83	57.23
Income fulltime male (1 000 EUR)	-	26.42 (12.39)	40.83 (22.91)
Income fulltime female (1 000 EUR)	-	24.53 (11.59)	37.51 (17.23)
Income parttime male (1 000 EUR)	-	20.72 (12.58)	32.09 (23.95)
Income parttime female (1 000 EUR)	-	19.99 (11.02)	25.42 (16.24)
Average parttime hours male	-	.39 (.23)	.47 (.25)
Average parttime hours female	-	.44 (.23)	.52 (.22)
Housing tenure ^b			
Homeowner	19.79	30.18	40.90
Rent	80.21	69.71	58.77
Residential location			
4 biggest municipalities	43.50	43.24	43.92
35 following biggest municipalities	32.34	32.24	30.30
Other municipalities	24.16	24.52	25.78
Neighbourhood quintile 1	8.19	8.74	13.52
Neighbourhood quintile 2	10.78	9.46	10.28
Neighbourhood quintile 3	11.76	14.35	12.04
Neighbourhood quintile 4	17.59	18.53	17.81
Neighbourhood quintile 5	51.68	48.93	46.34
N	1 819	1 819	1 819

Note: unless otherwise indicated, values are reported in percentages. As some variables contain missing or unknown values, not all values will sum up to 100%

^aData on working hours available from 2001 onwards

^bThe homeowner category refers to the record of the building in the national housing registers, not the individual residing in it. Therefore, the homeowner category may include individuals who rent from a landlord/lady who did not officially declare their property to be let out to tenants

neighbourhood. Tables 5.1 and 5.2 provide an overview of the descriptive statistics of this highly-educated group, both for the native Dutch (N = 10,389) and non-western ethnic minority individuals (N = 1,819) in 2000 (having left the parental home), 2006, and 2012³. We additionally show a number of residential descriptives.

Neighbourhoods are operationalised using 500x500 meter grids. The Netherlands consist of 34,094 inhabited 500x500 meter grid cells containing 496 inhabitants on average. Grids are smaller than most standard Dutch administrative units, such as postal code areas, and are more likely to approximate peoples' perceived neighbourhood boundaries and day-to-day neighbourhood environment than larger areas/scales. The advantage of grids is that their boundaries are constant over time and their size comparable over the Netherlands. Neighbourhood socio-economic status is measured by the concentration of poverty within the grid, based on personal income; defined as the sum of income from wages, benefits, and student scholarships/loans. Neighbourhoods in the first income quintile have the lowest concentration of poverty, while those in the fifth quintile have the highest concentration of poverty. Following on, we refer to neighbourhoods in the latter category as deprived or poverty neighbourhoods.

5.3.2 Survey data

The Netherlands' Housing Survey 2012 (WoON hereafter) gathered unique information on the housing situation of the Dutch population, collecting information on housing desires and needs (Statistics Netherlands 2012). Core topics included the composition of the household and partner information, as well as assessments of the dwelling and neighbourhood, housings costs, and residential moves. The survey draws a sample from all non-institutionalised Dutch individuals aged 18 and up that were registered with their municipality. From this group a sample was taken with a nationwide coverage of municipalities, and individual responses were gathered via the internet, telephone interviews, or personal interviews. All available data were linked to the Dutch register data at the individual-, household-, and address-level, which enabled a further link to basic registration/demographic characteristics (*ibid.*). A correction was applied to control for differences between the sample and the population, and a weighting factor was used

³ For descriptives on the entire data subgroup (N=119,167) see the original study de Vuijst et al. 2017

based on age, gender, ethnic background, region, household income, value immovable property and survey period (ibid).

5.3.2.1 Selected survey questions

In this study we are primarily interested in assessments of neighbourhoods by both highly-educated native Dutch and ethnic minority individuals who grew up in deprived neighbourhoods. Any differences in the experience of poverty neighbourhoods between these two groups can shed light on whether there could be an element of choice to the fact that ethnic minority groups are more likely to live in similar residential neighbourhood to the ones they grew up in, regardless of their level of education. We selected two main questions from the WoON-survey that focussed on the dwelling, and the living environment/neighbourhood of the individual household: 1. 'How happy are you with your current home/dwelling?', and 2. 'How happy are you with your current living environment/neighbourhood?'. Respondents were asked to select one of five possible answers: 1. Very happy, 2. Happy, 3. Not happy, but not unhappy either, 4. Unhappy, or 5. Very unhappy.

We additionally examined the outcomes on a number of statements on the residential neighbourhood, which respondents were asked to score in accordance with their agreement with the statement in question, coded: 1. Completely agree, 2. Agree, 3. Not agree, but not disagree either, 4. Disagree, or 5. Completely disagree. The statements included: 'The buildings in this neighbourhood are appealing', 'I am emotionally attached to this neighbourhood', 'I live in a nice neighbourhood with a strong community spirit', and 'I would move out of this neighbourhood if given the chance'.

Due to the fact that WoON consists of a sample, though be it a large one, there is only very limited overlap with the subpopulation we drew from the register data. For this reason, we take into consideration the full survey sample, and examine the experiences of individuals from different ethnic backgrounds, residing across neighbourhoods with different levels of poverty concentrations (same quintile definition applied). We compare the outcomes of individuals closest in age to our register data subgroup to those of older respondents in order to check for any obvious differences that may occur between age-groups. As the WoON does not include questions on parental neighbourhood characteristics, the discussion of these results concerns the current neighbourhood

experiences of native Dutch and ethnic minority individuals; in either a deprived or more affluent neighbourhood; with a high educational attainment.

5.4 Results

5.4.1 Descriptive results

Previously found ethnic differences between the neighbourhood outcomes of highly-educated individuals from poor parental neighbourhoods (de Vuijst et al. 2017) could be related to differential income trajectories over time. In table 5.1, we clearly see that there are still large differences in socioeconomic outcomes between the highly educated native Dutch and those with a non-Western ethnic minority background. Average full-time and part-time incomes over time are much lower for ethnic minorities than they are for their native Dutch counterparts, and particularly prevalent among males. Regardless the fact that ethnic minorities are on average two years older than the native Dutch during the measurement period this divergence is evident and could be due to a multitude of factors, ranging from different choices or options when it comes to the number of employment hours and differences in family formation patterns, to serious difficulties in job attainment or discrimination in work recruitment. These findings are in line with overall national statistics on the income position of ethnic minority groups in the Netherlands, thus suggesting that obtaining a higher education does not necessarily break the income gap between ethnic groups (Statline 2016). For both highly-educated groups, the differences in income between males and females, the latter continuing to earn less across the board, are most pronounced for the native Dutch, both in full-time and part-time occupation. For the women, the part-time income differences between ethnic groups appear to be the lowest.

Over time, we find that the percentage of individuals with a primary income from benefits is substantially higher for ethnic minority groups compared to their native Dutch counterparts: 27.5% compared to 11.6% in 2012. There could be a number of reasons for this. First, we find that in this highly-educated subgroup, individuals from ethnic minority groups have their first child at the average age of 26 compared to 29 for the native Dutch. This is in line with previous research which shows that on average individuals, particularly women, from an ethnic minority background display more traditional family formation patterns, earlier on in life. This transition into parenthood is naturally accompanied by

child benefits provisions, and new parents, again mothers in particular, increasingly enter into part-time work thus further affecting income levels (ibid.). Second, the sum of benefits includes income from temporary unemployment benefits. Therefore, these percentages could additionally reflect potential difficulties in entering or staying active in the labour market for individuals from highly-educated non-Western ethnic minority groups compared to their Dutch counterparts.

With regard to the residential descriptives, we see that large percentages of highly-educated non-western ethnic minorities reside in the 4 biggest municipalities in the Netherlands (Amsterdam, Rotterdam, Den Haag, Utrecht). Furthermore, for these individuals, the percentages that reside in a quintile 5 neighbourhood, i.e. a deprived or concentrated poverty neighbourhood, are substantially higher than those for the highly-educated native Dutch: 46% compared to 17% in 2012. This is further reflected in the homeownership figures, which are higher for the native Dutch over the measurement period, likely due to the fact that the relatively poorer Dutch urban neighbourhoods are dominated by rented dwellings (75% of which is social rent in total (Statline 2014)). This subsequently entails that non-western ethnic minorities who are indeed concentrated in these poorer urban regions will commonly have less access to the privately owned housing stock.

Assessing these differences between both highly-educated groups over time, income divergence could be seen as a strong driving factor behind differences in residential outcomes, and thus potentially behind differences of educational attainment as a moderator of intergenerational neighbourhood patterns. It can simply be stated that a lower income leads to fewer options when it comes to one's residential location and therefore a higher probability to live in a deprived neighbourhood. However, in order to assess the relative importance of the income difference among the highly-educated, in determining neighbourhood outcomes over time, we have to try to differentiate between elements of necessity and choice.

5.4.2 Multilevel models

Besides the direct effect of individual income on the probability to live in a deprived neighbourhood, there might also be intergenerational effects. It is widely recognised that

poverty can be transferred across generations, and that socioeconomic outcomes can be transferred from parent to child over time, far into adulthood.

Table 5.3. Multilevel models on intergenerational income transmission in the Netherlands after leaving the parental home (1999-2012), split up by ethnicity and education

	Native Dutch				Non-western ethnic minority			
	Low education		High education		Low education		High education	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Income par (1000 EUR)	.055***	.002	.060***	.002	.122***	.007	.107***	.008
Male	.432***	.005	.167***	.004	.059***	.014	.087***	.015
Single	.138***	.002	.206***	.002	.163***	.006	.225***	.007
Student	-.881***	.004	-.698***	.003	-.618***	.009	-.462***	.009
Age	.038***	.000	.080***	.000	.052***	.001	.088***	.001
Parental ngh Q2	-.002	.008	-.005	.007	.015	.030	-.034	.029
Parental ngh Q3	-.024**	.008	.009	.007	.036	.030	-.023	.029
Parental ngh Q4	-.026***	.008	.007	.007	-.020	.028	-.049	.028
Parental ngh Q5	-.077***	.008	-.015*	.007	-.026	.026	-.054*	.026
Parental ngh in G4	-.067***	.010	-.061***	.010	-.027	-.027	-.038*	.018
Parental ngh in G25	-.042***	.006	-.029***	.005	-.031	-.031	-.051**	.020
_cons	1.511***	.011	.629***	.012	.884***	.038	.241***	.043
Random effects parameters								
sd(_cons)	.527		.408		.646		.509	
sd(Residual)	.601		.642		.822		.784	
N	50 501		46 620		8 847		5 310	
N. obs	707 014		652 680		123 858		74 340	
Prob > chi ²	.0000		.0000		.0000		.0000	
Nagelkerke R ²	.202		.384		.126		.255	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5.3 shows a multilevel mixed-effects linear regression model of individual income in the Netherlands up to 13 years after leaving the parental home. The results show that the income of children overall increases with the income of their parents over time. These results are in line with sociological literature which has shown that individuals born to poor parents often experience less socio-economic mobility throughout life in comparison to those from higher socio-economic classes (Blanden et al. 2005; Bloome 2014). Similarly, we find a significant negative effect of growing up in a deprived parental neighbourhood on individual income over time, which is strongest overall for native Dutch children with a lower education.

When comparing the outcomes between the groups, we find that the effect of parental income on the income of their offspring is stronger for children from a non-Western ethnic minority background, as opposed to their native Dutch counterparts. Within the former group, there are only moderate differences between the two levels of educational attainment, although the results show the highest coefficient on parental income for lower educated non-Western ethnic minorities. As stated, ethnic minorities have historically had lower incomes than the native population in the Netherlands, and income can be a strong determinant of individual residential outcomes. Therefore, a stronger intergenerational income continuity for highly-educated non-Western ethnic minority groups, compared to their Dutch counterparts, may substantially determine their residential location.

5.4.3 Survey results

The third potential explanation for previously found individual differences in moderation of intergenerational neighbourhood effects through higher educational attainment, focusses on the possibility that ethnic minority groups may be more likely to select similar residential neighbourhood to the ones they grew up in, compared to the native Dutch. We investigate this by analysing subjective observations on neighbourhood experiences from the WoON-survey, and by investigating the presence of family members in the direct residential neighbourhood for both ethnic groups.

Our results do not show striking differences between native Dutch and non-Western minorities living in concentrated poverty areas. The level of contentment with the neighbourhood is generally high; over 80% for both groups, as is the rating of emotional

attachment; 75% and over. Roughly 50% of individuals within each group thinks there is a strong community spirit within their residential neighbourhood, and rates of moving desires (if moving is possible) are similar; 27% for ethnic minorities, compared to 24% for native Dutch. Ethnic minorities are less content on average (68%) than the native Dutch (89%) with their current home/dwelling within deprived neighbourhoods. While the latter result may suggest different standards in rating the dwelling, further descriptives on our register data, and the national register data, clearly show segregated living environments, i.e. the deprived neighbourhoods in which ethnic minorities reside are not the same deprived neighbourhood in which the native Dutch reside. The same is true for more affluent neighbourhoods and their residents. We find that non-Western ethnic minorities who do not live in concentrated poverty still reside in neighbourhoods with substantially higher numbers of ethnic minorities and with a lower average neighbourhood-income compared to the native Dutch. Therefore, the results on contentment with the dwelling may indicate that ethnic minorities in poverty neighbourhoods are grouped within those neighbourhoods where the building standards are lower than those predominantly consisting of native Dutch.

As stated, the differences between the native Dutch and non-Western ethnic minorities residing in concentrated poverty areas are not resounding. However, when we compare results for these groups with their counterparts (same ethnic background) in other non-deprived neighbourhoods, we do see certain differences. For the native Dutch, the level of contentment with the dwelling and the neighbourhood is even higher for individuals outside of concentrated poverty than it is for those within deprived neighbourhoods, 92% and 86% respectively. We furthermore see that individuals in more affluent neighbourhoods have a lower inclination to move if given the chance, only 11%, compared to 24% in deprived neighbourhoods. Finally, one of the biggest differences can be observed in the residents' emotional attachment to their neighbourhood. In concentrated poverty areas, the rates of attachment are substantially higher than those in more affluent residential neighbourhoods: 78% compared to 60%. This is however not further reflected in the outcomes on the survey question concerning community spirit, which only 49% of native Dutch individuals explicitly experienced, regardless of whether the neighbourhood was deprived or not.

For non-Western ethnic minorities, the within-group differences for those in deprived and more affluent neighbourhoods are surprisingly similar to those of the native Dutch. The

level of contentment with the dwelling is higher for the latter group than it is for the former; 73% compared to 68%, and the inclination to move is slightly lower; 23% versus 27%. Roughly 50% of individuals perceive a strong community spirit in the neighbourhood, regardless of the level of neighbourhood deprivation, and strongly comparable to the native Dutch; the level of emotional attachment is much higher in deprived neighbourhood than it is in more affluent neighbourhoods. The one clear discernible exception to these similarities between the native Dutch and non-Western ethnic minority research population is that the level of contentment with the neighbourhood is lower for non-western ethnic minorities in affluent neighbourhoods compared to those in deprived neighbourhood. For the native Dutch, all ratings of contentment were higher in more affluent neighbourhoods.

Individuals from either ethnic background category with a high educational attainment showed the same patterns with regard to neighbourhood and dwelling experiences, as discussed above on the entire research population within WoON. Additionally, splitting up the sample in age categories, those closest in age to our subpopulation from the Dutch register data, did not yield substantially different results to individuals of other subgroups. One minor difference could be discerned with the subgroup of older individuals, aged 50 and up, who scored slightly higher on levels of emotional attachment and rated community spirit. We further examined the non-Western ethnic minority respondents in accordance to their specific ethnic backgrounds, i.e. Moroccan, Turkish, Antillean/Aruban, and Surinamese, but found no considerable differences between these groups with regard to the contentment with their dwelling and residential neighbourhood, nor any of the other included survey questions.

A final analysis on the register data focusses on the presence of family members in the neighbourhood. The results show that highly-educated ethnic minorities from a deprived parental neighbourhood live in close proximity to their parents (within the same postcode area), slightly more often than their native Dutch counterparts: 18% compared to 15% in 2012. Combined however with the survey results showing a lower level of neighbourhood contentment for non-western ethnic minorities in affluent neighbourhoods compared to those in deprived neighbourhoods, this result does suggest an element of choice in neighbourhood selection.

5.5 Discussion

This study investigated three potential pathways which might contribute to our understanding of the fact that higher educated non-western ethnic minorities in the Netherlands are less likely to break through the intergenerational transmission of living in poverty neighbourhoods than natives.

Taking into consideration individuals' residential locations and socioeconomic outcomes over time, we were able to determine that highly-educated non-Western ethnic minorities from a deprived parental neighbourhood still have a substantially lower spendable income than highly-educated native Dutch from a similar background. While some of these differences were accounted for by the higher percentages of part-time work among the former, those working fulltime still had a substantially lower average income compared to the latter. This outcome could in part explain why ethnic minorities are less likely to experience improvement of their residential environment over time. Additionally, we found that there is stronger intergenerational income continuity for highly-educated non-Western ethnic minorities, compared to the native Dutch, which may also explain why they experience less upward mobility in their neighbourhood environment than others, despite attaining higher education. The neighbourhood, in that sense, can be seen as the spatial dimension to intergenerational poverty transmission patterns, which suggest great difficulty in upward mobility for individuals who grew up in poverty (Blanden et al. 2005; Bloome 2014). These findings could lead to the conclusion that higher educational attainment in one generation does not seem to break through years and years of disadvantage. However, as we pointed out in this study, elements of choice could also play a role in determining ethnic differences in neighbourhood outcomes.

By analysing subjective assessments of neighbourhood experiences gathered in the Netherlands' Housing Survey, and investigating whether there are direct family members in the residential environment, we explored if there might be elements of choice with regard to living in deprived neighbourhoods for non-Western ethnic minorities. We found no large differences in the assessment of poor neighbourhoods between native Dutch and non-Western minorities; the level of contentment with the neighbourhood is generally high. Furthermore, between different types of neighbourhoods, the rates of emotional attachment for both groups are notably higher in concentrated poverty areas than they are in more affluent residential neighbourhoods. However, we did find that the level of

contentment and attachment with the neighbourhood is lower for non-Western ethnic minorities in *affluent* neighbourhoods compared to non-Western ethnic minorities in deprived neighbourhoods. This is a clear difference compared to the results of the native Dutch, where all ratings of contentment were higher in more affluent neighbourhoods.

Combined, the fact that native Dutch and non-Western ethnic minorities do not commonly reside in the same deprived neighbourhoods; the stronger emotional attachment of the latter group to their poorer neighbourhood environments; the fact that non-Western ethnic minorities *outside* of concentrated poverty still reside in neighbourhoods with substantially higher numbers of ethnic minorities; and the fact that presence of family members in the same residential area is more common for ethnic minorities, do suggest an element of choice with regard to the neighbourhood selection of higher educated ethnic minorities. If there is indeed a preference for a neighbourhood composition that reflects one's ethnic background, and neighbourhoods with high concentrations of non-Western ethnic minorities continue to be among the poorest in the Netherlands, this can be an important explanation for the fact that the likelihood for young non-Western ethnic minorities to reside in a deprived neighbourhood after leaving the parental home is substantially higher than that of native Dutch inhabitants, regardless of educational attainment level.

Due to the nature of our data, we are not able to fully examine all possible mechanisms behind intergenerational transmission of neighbourhood characteristics and residential patterns over time. In addition to the parent-to-child transfer of income-levels, explanations can range from complex processes such as social contagion; affected network ranges due to the composition of concentrated poverty areas; or a collective acceptance of certain norms and values which affect individual chances to participate in society and experience upward social mobility (for an extensive discussion see Galster 2012) (de Vuijst et al. 2017). Furthermore, while the additional survey data used in this study has definite benefits in comparison to past research, we continue to face some limitations with regard to both the income and neighbourhood selection explanations of the moderating power of education in breaking intergenerational neighbourhood patterns for non-Western ethnic minorities. For instance, an alternative explanation regarding the prevalent lower average income-levels for highly-educated non-Western ethnic minorities compared to native Dutch, could be that while both higher professional (HBO) and higher vocational (WO) education-levels are classed as 'higher education' in

our accessible Dutch register data, non-Western ethnic minorities are overrepresented in the former while native Dutch are overrepresented in the latter (Statline 2017a, 2017b). Therefore, the types of higher educational attainment between these two groups are not necessarily the same, inevitably steering both groups in different labour market directions. While higher professional education is certainly not always associated with lower-income job opportunities, quite the contrary in some fields, it is still a possible factor to consider. Another limitation is that with our design we cannot investigate the effects of discrimination, which likely plays an important role both in defining income-levels between ethnic groups in the Netherlands and in the possible neighbourhood selection of the individuals in this group. Therefore, the question remains whether individuals prefer a neighbourhood setting with more individuals from a similar ethnic background because they feel connected to them? Despite its level of neighbourhood deprivation. Or whether individuals prefer a neighbourhood setting with more individuals from a similar ethnic background because they feel connected to them, *but not* to other areas and groups in Dutch society: creating a buffer against negative sentiment outside of their respective ethnic groups? Future research into the possible role of everyday discrimination in determining residential location is needed to shed more light on this possibility, even though its role will be incredibly difficult to specify; likely differing per ethnic group, and even per individual within them. At any rate, it is positive that the levels of contentment and emotional attachment to the neighbourhood are generally high for highly-educated non-Western ethnic minorities in deprived neighbourhoods. Combined, to conclude, the results of this study show that there are multiple possible explanations behind lingering differences in neighbourhood outcomes for highly-educated individuals in the Netherlands along ethnicity lines. Additionally, the results reinforce the contribution that research on neighbourhood satisfaction and possible neighbourhood selection can make to the discussion on continuity of disadvantage over the life course.

References

- Bakker, B. F., van Rooijen, J., & van Toor, L. (2014). The system of social statistical datasets of Statistics Netherlands: An integral approach to the production of register-based social statistics. *Statistical Journal of the IAOS: Journal of the International Association for Official Statistics*.
- Becker, G. S., & Tomes, N. (1979). An equilibrium theory of the distribution of income and intergenerational mobility. *The Journal of Political Economy*, 87(6), 1153-1189.
- Bisin, A., & Verdier, T. (1998). On the cultural transmission of preferences for social status. *Journal of Public Economics*, 70(1), 75-97.
- Blanden, J., Gregg, P., & Machin, S. (2005). Intergenerational Mobility in Europe and North America. *Report supported by the Sutton Trust, Centre for Economic Performance, London School of Economics*.
- Bloome, D. (2014). Racial Inequality Trends and the Intergenerational Persistence of Income and Family Structure. *American Sociological Review*, 79(6), 1196-1225.
- Coenen, A., Verhaeghe, P.-P., & Van de Putte, B. (2016). *Ethnic minority households and residential segregation: how important is the household composition to understand where minorities live?* Paper presented at the Dag van de Sociologie.
- D'Addio, A. C. (2007). Intergenerational transmission of disadvantage: MOBILITY OR IMMOBILITY ACROSS GENERATIONS? *OECD Social, Employment, and Migration Working Papers*, 109.
- De Vuijst, E., & van Ham, M. (2017). Parents and Peers: parental neighbourhood- and school-level variation in individual neighbourhood outcomes over time, *IZA Discussion paper* No. 10526, Bonn, Institute for the Study of Labor.
- De Vuijst, E., van Ham, M., & Kleinmans, R. (2016). A life course approach to understanding neighbourhood effects, *IZA Discussion paper* No 10276, Bonn, Institute for the Study of Labor.
- De Vuijst, E., van Ham, M., & Kleinmans, R. (2017). The moderating effect of higher education on the intergenerational transmission of neighbourhood characteristics, *Environment and Planning A*, Vol. 49(9), 2135-2154.
- Ellen, I. G., & Turner, M. A. (1997). Does neighborhood matter? Assessing recent evidence. *Housing Policy Debate*, 8(4), 833-866.
- Feijten, P., Hooimeijer, P., & Mulder, C. H. (2008). Residential experience and residential environment choice over the life-course. *Urban Studies*, 45(1), 141-162.

- Friedrichs, J. r., & Blasius, J. r. (2003). Social norms in distressed neighbourhoods: testing the Wilson hypothesis. *Housing Studies*, 18(6), 807-826.
- Galster, G., Andersson, R., & Musterd, S. (2010). Who Is Affected by Neighbourhood Income Mix? Gender, Age, Family, Employment and Income Differences. *Urban Studies*, 47(14), 2915-2944.
- Galster, G. C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 23-56): Springer Netherlands.
- Hedman, L., Manley, D., van Ham, M., & Östh, J. (2013). Cumulative exposure to disadvantage and the intergenerational transmission of neighbourhood effects. *Journal of Economic Geography*, 15(1), 195-215.
- Helderman, A., & Mulder, C. (2007). Intergenerational transmission of homeownership: The roles of gifts and continuities in housing market characteristics. *Urban Studies*, 44(2), 231-247.
- Kunz, J., Page, M. E., & Solon, G. (2003). Are point-in-time measures of neighborhood characteristics useful proxies for children's long-run neighborhood environment? *Economics Letters*, 79(2), 231-237.
- Lucassen, J., & Penninx, R. (1997). *Newcomers: Immigrants and Their Descendants in the Netherlands 1550-1995*: Transaction Publishers.
- Musterd, S., Galster, G., & Andersson, R. (2012). Temporal dimensions and measurement of neighbourhood effects. *Environment and Planning A*, 44(3), 605-627.
- Overman, H. G. (2002). Neighbourhood Effects in Large and Small Neighbourhoods. *Urban Studies*, 39(1), 117-130.
- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *AJS; American journal of sociology*, 116(6), 1934-1981.
- Simpson, L., Purdam, K., Tajar, A., Fieldhouse, E., Gavalas, V., Tranmer, M., Dorling, D. (2006). *Ethnic minority populations and the labour market: an analysis of the 1991 and 2001 Census*. Department for Work and Pensions.
- Solon, G. (2002). Cross-country differences in intergenerational earnings mobility. *The Journal of Economic Perspectives*, 16(3), 59-66.

- Statistics Netherlands. (2012). WoonOnderzoek Nederland (WoON) 2012. Vragenlijst module Woningmarkt CAPI/CATI, versie 3.4. *Centraal bureau voor de Statistiek, Den Haag.*
- Statline. (2014). Woningvoorraad naar eigendom; regio, 2006-2012. *Centraal bureau voor de Statistiek, Den Haag.*
- Statline. (2016). Gemiddeld inkomen van personen naar persoonskenmerken en regio. . *Centraal bureau voor de Statistiek, Den Haag.*
- Statline. (2017a). Hoger beroepsonderwijs; gemiddelde studieduur gediplomeerden, studierichting; 2012/'13. *Centraal bureau voor de Statistiek, Den Haag.*
- Statline. (2017b). Wetenschappelijk onderwijs; gemiddelde studieduur gediplomeerden, studierichting; 2012/'13. *Centraal bureau voor de Statistiek, Den Haag.*
- Van der Klaauw, B., & van Ours, J. C. (2003). From welfare to work: does the neighborhood matter? *Journal of Public Economics*, 87(5–6), 957-985.
- Van Ham, M., Hedman, L., Manley, D., Coulter, R., & Östh, J. (2014). Intergenerational transmission of neighbourhood poverty: an analysis of neighbourhood histories of individuals. *Transactions of the Institute of British Geographers*, 39(3), 402-417.
- Van Ham, M., Tammaru, T., de Vuijst, E., & Zwiers, M. (2016). Spatial segregation and socio-economic mobility in European cities, *IZA Discussion paper* No. 10277, Bonn, Institute for the Study of Labor. (Written for the OECD report Making Cities Work for all: Data and Actions for Inclusive Growth, OECD Publishing, Paris, DOI: 10.1787/9789264263260-en)
- Vartanian, T. P., Walker Buck, P., & Gleason, P. (2007). Intergenerational Neighborhood-Type Mobility: Examining Differences between Blacks and Whites. *Housing Studies*, 22(5), 833-856.

6 Conclusions: a life course approach to neighbourhood effects

6.1 Introduction

Over the past decades, many studies have examined the role of the residential environment in the lives of its inhabitants, approaching the overarching question: does the neighbourhood affect individual outcomes in life, and if so, how and for whom? Indeed, the outcomes of many neighbourhood effects studies do suggest such effects, on all manner of personal outcomes ranging from socioeconomic attainment to individual wellbeing and health (Overman 2002; Brooks-Gunn 1997a,b; Galster et al. 2007; Crowder & South 2003; Sharkey & Elwert 2011). Neighbourhood poverty in particular was shown to affect the income of neighbourhood residents as well as their moving behaviour and social mobility. Additionally, individuals residing in concentrated poverty neighbourhoods showed higher rates of social exclusion, lower transition rates from welfare to work, and more deviant and/or delinquent behaviour (Van der Klaauw & Ours 2003; Sampson et al. 2006; Buck 2001; Galster et al. 2007; 2010; Friedrichs & Blasius 2003; de Vuijst et al. 2017). However, the outcomes of these studies have been criticised with regard to both the relative impact of the neighbourhood they claim to reveal as well as the causal mechanisms they attribute their effects to (Small & Feldman 2011; van Ham et al. 2014; Sampson et al. 2002; de Vuijst et al. 2017).

Questions arose on whether these studies could truly show that concentrated disadvantage leads to individual disadvantage, or whether they simply reiterated that poor individuals also tend to live in concentrated poverty areas because they do not have the means, opportunities, or wish to live somewhere else (Cheshire 2007; de Vuijst & van Ham 2017a, 2017b). Additionally, critique arose on many studies' use of predominantly cross-sectional data, which cannot capture experiences over time, cumulative effects, or patterns between generations. It was increasingly emphasised that in order to examine whether individuals' chances in life are truly impaired by where they live, research would need to look beyond the current residential location in an aim to thoroughly assess neighbourhood experiences *over time* (Quillian 2003; Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012; Hedman et al. 2013; van Ham et al. 2014).

This book started from the idea that the life course approach can be used as both a theoretical and methodological starting point to examine neighbourhood effects (see also Manley & van Ham 2012; Sampson et al. 2002; Small & Feldman 2012). Using this approach, conducting longitudinal research into the neighbourhood context as well as further contextual settings, researchers can examine *how* neighbourhood experiences are

embedded in experiences and careers over an individual life course (Feijten 2005; Aisenbrey & Fasang 2010; Geist & McManus 2008; van Ham et al. 2014). The discussion of the core premises of this approach formed an integral part of this book. The aim of this book was to gain more insight into a number of potential neighbourhood- and wider contextual effects over the life course. We examined the role of intergenerational neighbourhood influences, as well as school-composition effects in the Netherlands, and how they affect individual income and chances of residence in poor neighbourhoods after leaving the parental home. We further assessed differences in the influence of the parental neighbourhood environment between individuals with different levels of education, as well as between native Dutch and non-Western ethnic minority groups, and looked at their perception of their respective neighbourhood settings.

6.2 Book chapters and research questions

The chapters in this book were comprised of four separate but related studies, each with their own research question. All questions in these chapters were addressed using either register or survey data on the Netherlands. The remainder of this concluding chapter 6 is structured as follows. First, the main findings of the four chapters are summarised. Section 6.3 then presents an overall reflection and discussion of the research findings, and the additions that this book has made to the literature. Section 6.4 focusses on some limitations of this book. Finally, section 6.5 sets out some directions for further research.

Chapter 2 presented the theoretical framework and conceptual model underlying this book, showing how the life course approach can be used to better understand and study the temporal dimensions of neighbourhood effects. It focussed on the question: *To what extent do various elements of time play a role in neighbourhood effects theories, and how can we help integrate these elements into current research?* It further made suggestions for future research.

Chapter 3 focussed on the intergenerational transmission of disadvantageous neighbourhood characteristics, and the influence of higher educational attainment in moderating this association over time. It posed the question: *To what extent does higher educational attainment affect the intergenerational transmission of residing in poverty neighbourhoods over the life course?*

Chapter 4 examined the joint influence of multiple socio-spatial settings on individual neighbourhood trajectories, addressing the question: *To what extent are individual neighbourhood outcomes affected by parental income, the parental neighbourhood, and school-context characteristics after leaving the parental home?*

Finally, chapter 5 presented a number of possible explanations for ethnic differences in the moderating effect of higher education on the intergenerational transmission of neighbourhood characteristics. It posed the question: *To what extent are ethnic differences in the moderating effect of higher education on intergenerational spatial inequality determined by income, intergenerational income transmission, and neighbourhood selection?*

6.2.1 Chapter 2: The life course approach as a framework for the study of neighbourhood effects

Many neighbourhood effects theories, on individual outcomes such as employment, health, and education, implicitly or explicitly stress the importance of studying neighbourhood effects from a life course perspective. For example, long-term exposure to neighbourhood characteristics is often assumed to have a stronger effect on residents than short-term exposure. However, possible temporal dimensions - such as lagged effects, duration effects, or intergenerational effects - received only limited attention in the empirical literature in the past, partly because of a lack of suitable data. Many studies of neighbourhood effects previously relied on cross-sectional data, or short spans of longitudinal data, while acknowledging that such data are inadequate to fully address the temporal dimensions of neighbourhood effects.

Presently, the increasing availability of geo-coded longitudinal individual-level data allows for more research into time effects in neighbourhood effects research. In this chapter we discussed the life course approach as an overarching theoretical framework to better understand and study the temporal dimensions of neighbourhood effects. By discussing a variety of research examples on the application of a life course approach in neighbourhood effects research, we focussed on ways in which to incorporate this approach into future research, and integrate various elements of time in neighbourhood effects theories. Indeed, the increasing number of neighbourhood effects studies that *have* focused on spatial effects over time, have clearly illustrated the benefit of

conducting thorough longitudinal research (de Vuijst et al. 2017; van Ham et al. 2014; Hedman et al. 2013; Vartanian et al. 2007; Sharkey 2008; Sharkey & Elwert 2011; Sharkey & Faber 2014). It enables researchers to examine *how* neighbourhood experiences are embedded in broader individual biographies over time (Feijten 2005; Aisenbrey & Fasang 2010; de Vuijst et al. 2017; Geist & McManus 2008; van Ham et al. 2014). Additionally, a life course approach captures experiences in parallel careers (such as education, household, housing, work, and leisure) within multiple socio-spatial contexts over time, and assesses their relative importance to individual outcomes in life. The practical incorporation of life course insights into the study of neighbourhood effects thus also stresses the multi-disciplinary nature of neighbourhood effects research; bringing together separate bodies of literature. In this chapter, these experiences and contexts are captured in one comprehensive and illustrative conceptual model, making it easier for the reader to think about, and explicitly incorporate time when looking at neighbourhood effects.

6.2.2 Chapter 3: The moderating effect of higher education on the intergenerational transmission of residing in poverty neighbourhoods

It is well-known that socioeconomic outcomes and (dis)advantage over the life course can be transmitted from parent to child. Sociological literature has stressed the continuity of poverty patterns across generations, suggesting great difficulty in upward social mobility throughout life for those born in the lowest social classes (Blanden et al. 2005; Bloome 2014). The neighbourhood, however, as a potential spatial dimension to such intergenerational transmission patterns, has largely been left out of consideration. A number of studies that did examine parent-to-child transfer of disadvantageous neighbourhood characteristics, conducted on Swedish and United States' national data (Vartanian et al. 2007; Sharkey & Elwert 2011; Hedman et al. 2013; van Ham et al. 2014), show that even in adulthood parental neighbourhood characteristics are a strong predictor for the neighbourhood history of their children and for the length of their exposure to deprived neighbourhoods over the life course. Furthermore, for ethnic minority groups, these patterns were stronger than for majority groups (ibid.).

In this study, we examined the extent to which growing up in a deprived neighbourhood influences the neighbourhood histories of adults in the Netherlands. This chapter further contributes to the literature by examining to what extent higher education, as an

important personal resource attained over time, can break the link between parental neighbourhood disadvantage and the neighbourhood experiences of children as adults up to 12 years after leaving the parental home. We used longitudinal register data from the Netherlands to study a complete cohort of parental home leavers, covering 119,167 individuals who were followed from 1999 to 2012.

Using sequence analyses as a visualisation method, and multilevel logit models, we demonstrated that children who lived in deprived neighbourhoods with their parents are more likely to live in similarly poor neighbourhoods later in life than children who grew up in more affluent neighbourhoods. The results additionally show that for native Dutch, intergenerational neighbourhood patterns of disadvantage can be discontinued when individuals attain higher education over time. For individuals from a deprived parental neighbourhood *and* an ethnic minority, respectively Moroccans, Turks, Surinamese and Antilleans in the Netherlands, level of education has hardly any effect on their chances of residing in poverty concentration. These chances are higher than those of other Dutch inhabitants overall, even than those with a lower education.

6.2.3 Chapter 4: Parents and peers: parental neighbourhood- and school-level variation in individual neighbourhood outcomes over time

Previous research conducted in chapter 3 of this book found that children from poor parental neighbourhoods were more likely to live in similarly poor neighbourhoods later in life, up to 12 years after leaving the parental home (ibid.). This finding was in line with research conducted in Sweden and the United States (Hedman et al. 2013; van Ham et al. 2014; Sharkey & Elwert 2011), which additionally showed that neighbourhood experiences over time had a strong cumulative effect on current individual residential outcomes. However, over their life course, individuals move through multiple overlapping socio-spatial contexts in addition to the residential neighbourhood, in which they work, attain education, and spend leisure time (also see chapter 2 and 3). In all these contexts, people have their day-to-day social interactions, and are exposed to a wide range of constraints and opportunities that can emerge from environmental, institutional, and geographical influences (see Galster 2012 for an extensive discussion of the mechanisms behind these influences at the residential neighbourhood level). All these factors are believed to influence individual outcomes, some more than others at any given time. For children and adolescents, for example, the school environment can be especially

important in determining their individual choices, chances and outcomes. Leaving these additional contexts out of consideration in models on neighbourhood effects could lead to a misspecification of the relevance of the residential environment in determining individual outcomes.

We examined the joint influence of the parental background, the parental neighbourhood, and a compositional measure of the school environment (share of peers from poor parents, and educational level), on individual neighbourhood trajectories. We used Dutch register data to study a complete cohort of adolescents from 1999 to 2012, fitting cross-classified multilevel models in order to partition the variance of schools and parental neighbourhoods over time.

The results in this chapter showed that parental neighbourhood quality strongly determines children's residential outcomes later in life. The variation in individual neighbourhood outcomes at the secondary school-level is however explained by the ethnicity, parental income and personal income of the research population. These findings therefore suggest that the grouping of children from particular backgrounds into specific school environments in fact constitutes the school effect on their future residential outcomes.

6.2.4 Chapter 5: Educational attainment and neighbourhood outcomes: differences between highly-educated natives and non-Western ethnic minorities in the Netherlands

In the Netherlands, obtaining a higher education increases the chance to move to a better neighbourhood for native Dutch adults who grew up in a deprived parental neighbourhood, as was shown in chapter 3 of this book. For non-Western ethnic minorities, respectively Moroccans, Turks, Surinamese and Antilleans, education does not have this positive effect on socio-spatial mobility. For individuals in the latter group, higher education hardly had any effect on their chance of living in poverty concentration after leaving the parental home; which was higher than that of the native Dutch overall, even than those with a lower education. The current chapter 5 examined potential explanations for these ethnic differences in the relationship between educational attainment and neighbourhood outcomes over time.

We used longitudinal register data from the Netherlands to study a complete cohort of parental home leavers who attained a higher education by the end of the measurement period (1999 to 2012). We supplemented this data with subjective observations on neighbourhood experiences collected in the Netherlands' Housing Survey 2012 (Statistics Netherlands 2012): the WoON. This survey gathered information about the housing situation, moving desires, neighbourhood perceptions and experiences of the Dutch population, with a large sample taken from all Dutch residents 18-years and up, for whom address information was available (N = 69,330).

We examined differences in income trajectories for highly-educated native Dutch and non-Western ethnic minorities; investigated the strength of intergenerational transmission of income for both groups; and assessed individual neighbourhood experiences and neighbourhood contentment. The results in this chapter showed that the highly-educated native Dutch in the subpopulation have a substantially higher average income over time compared to the non-Western ethnic minorities, especially among men. Additionally, the native Dutch have a weaker association to the income of their parents compared to the non-Western ethnic minorities. For ethnic minorities, the results show that the level of contentment with the neighbourhood is highest in deprived neighbourhoods compared to more affluent residential environments. Additionally, they reside in close proximity to their parents more often than the native Dutch, both suggesting an element of choice in neighbourhood selection.

6.3 Reflections

This book contributed to the literature on neighbourhood effects in a number of ways. First of all, it specifically assessed and reviewed ways in which to practically incorporate life course insights into the study of neighbourhood effects, and provided a comprehensive conceptual model on its central premises. Following on, second of all, we added to the limited, but growing literature that shows that individual neighbourhood outcomes are not only influenced by the current residential location, but also by previous neighbourhood experiences (Sharkey & Elwert 2011; van Ham et al. 2014; Sharkey & Faber 2014). These findings, in chapter 3 of this book, were in line with previous research into parent-to-child transfer of disadvantageous neighbourhood characteristics in Sweden and the United States (Hedman et al. 2013; Sharkey & Elwert 2011; Sharkey & Faber 2014). Taking into consideration individuals' residential locations after leaving the

parental home, we additionally found that individuals' educational attainment becomes increasingly important to their personal neighbourhood outcomes over time. In this context, to our knowledge, we were the first to explicitly focus on the role of educational attainment in weakening or discontinuing such intergenerational neighbourhood patterns, and the ethnic differences therein. We consider this to be one of the core contributions of this book to the literature on neighbourhood effects.

Firmly inspired by life course theory, third of all, we added to the literature by assessing a number of socio-spatial contexts and their specific level of influence on neighbourhood outcomes over time. By adding the secondary school environment into previously established models on the intergenerational transmission of neighbourhood characteristics, we found that both spatial settings explained variance in the neighbourhood outcomes of young individuals, both composed of associations with different characteristics: poverty concentration at the level of the parental neighbourhood; and individual ethnicity, income, and parental income at the level of the school environment.

Fourth of all, and finally, by combining register and large-scale survey data on the experience of the residential environment, we reiterated the contribution that research on neighbourhood satisfaction and possible neighbourhood selection can make to the discussion on continuity of disadvantage over the life course, and the ethnic differences therein. Following on from our research in chapter 3, we found that highly-educated non-Western ethnic minorities from a deprived parental neighbourhood still have a substantially lower income than their native Dutch counterparts; that they face stronger intergenerational income continuity; and that their level of contentment with and attachment to the neighbourhood is higher in deprived versus more affluent neighbourhoods. The latter result would appear counterintuitive and likely suggests that there are elements of the deprived neighbourhood that increase the attachment to this residential setting and outweigh the 'benefits' of living of a more affluent residential environment. These elements could for instance include the want of proximity to peers from the same ethnic background or to family, or personal experience with discrimination elsewhere in society. Further research will have to examine the precise factors at play in this contentment rating.

As stated, one of the main contributions of this book to the literature on neighbourhood effects was the examination of individual higher education - an important personal resource - and its moderation of the intergenerational transmission of neighbourhood poverty; the strength of which substantially differs per ethnic group. For non-Western ethnic minorities, higher education does not result in an increased likelihood of breaking through parent-to-child patterns of neighbourhood disadvantage over time, as opposed to highly-educated native Dutch. There are a number of important factors to take into consideration when further assessing this finding and its potential implications, which will be discussed in detail below.

First of all, there may be an element of choice involved in the continued residence of highly-educated non-Western ethnic minorities in concentrated poverty areas, a discussion of which formed an important part of this book. Neighbourhood, family, emotional and cultural attachment may all play a role in residents' considerations of their preferred residential location, as discussed in chapter 5 and ¶6.2.4. The ability to *freely* choose a neighbourhood setting based on any or all of these factors is highly important. Second of all, however, there is the possibility that these long-term residence patterns result from a *lack* of freedom, due to individuals' and ethnic groups' alienation from wider society, or discrimination outside of neighbourhoods with higher concentrations of ethnic minorities – which to today are commonly the more deprived areas in the larger Dutch cities. In such cases, all the forms of attachment to the neighbourhood still play a role, but due to negative associations with other residential environments and inhabitants. Third of all, we also find that the share of non-Western ethnic minorities that attain a higher versus lower education is still much lower than the in-group share of highly-educated native Dutch. Additionally, we see that the average income of ethnic minorities is still much lower than that of the latter, both in part-time and fulltime employment. As such, highly-educated non-Western ethnic minorities still hold a certain special status: both within their respective ethnic groups *and* within the labour market at large. As a result, one might say that this position can make it very difficult to freely translate educational resources into socio-economic and residential gains. This is another potential reason behind a higher likelihood for non-Western ethnic minorities to reside in concentrated poverty areas after leaving the parental home, despite attaining a higher education. While social policies have aimed to improve the attainment of higher education throughout society for years, and throughout groups of diverse social and ethnic backgrounds, it may simply take more time – perhaps even more generations - for these measures to result in

larger in-group shares of highly-educated ethnic minorities, and thus for the potential effects of higher education for individuals within these ethnic groups to manifest themselves.

In addition to the educational careers among different ethnic groups, and their potential effects on intergenerational disadvantage in years to come, this book has emphasised that individual life chances and outcomes can be affected by a wide range of mechanisms that create and maintain disadvantage, that can span across core life careers and multiple socio-spatial contexts. Direct residential and income characteristics, transferred from parent to child, are only two possible aspects of the challenge of individual neighbourhood and overall disadvantage. Therefore, policies designed to predominantly tackle educational differences between ethnic groups do not address all of the relevant underlying mechanisms behind this problem. They do however address one key concern, as the research in this book has shown. We strongly believe that it is vital to continue research on long-time disadvantage throughout multiple life careers and socio-spatial contexts in order to further distinguish between choice and necessity in individual outcomes, and to truly zoom in on the most vulnerable groups within western societies. Only then will policymakers be able to target those individuals that are most at need of aid, and be able to pinpoint the areas in life that have the strongest effects on individuals' chances of reaching and staying in a disadvantaged position; both in the neighbourhood and throughout society.

6.4 Challenges and limitations

In this book, we had access to a wealth of highly-advanced register and large-scale survey data in the Netherlands, which enabled us to follow the neighbourhood outcomes of individuals over a 14-year period and assess their neighbourhood experiences. Despite the fact that these data were exceptionally suitable for the examination of socio-spatial settings over time, and the research opportunities this provided, we also faced a number of limitations, that are discussed and summarised below.

6.4.1 Methodological challenges

In the introduction of this book, as reiterated above in ¶6.1, we discussed two main methodological challenges to neighbourhood effects literature that have been

emphasised in the scientific field over the past decades: the possibility of an underestimation of neighbourhood selection effects (Durlauf 2004; van Ham & Manley 2012; Bolster et al. 2007; van Ham et al. 2012; Oreopoulos 2003), and the lack of research into neighbourhood experiences *over time*, parallel to further life careers and contexts, conducting longitudinal research (Quillian 2003; Sharkey & Elwert 2011; Musterd et al. 2012; Galster 2012; Hedman et al. 2013; van Ham et al. 2014). In this book, we expanded on the potential benefits of implementing a life course approach in the study of neighbourhood effects, as a starting point to address some of these lingering concerns (chapter 2), placing the temporal context at the heart of research. We adopted a multi-disciplinary stance in assessing the relative impact of the residential environment over the life course using longitudinal research designs: moving away from point-in-time measures on neighbourhood effects and individual outcomes, as well as the sole focus on the residential environment. Furthermore, we looked at information on individual neighbourhood experiences as a potential indicator of neighbourhood choice, an element of neighbourhood selection. In doing so, in relation to the two core criticisms discussed above we aimed to expand the examination of the *relative* importance of the neighbourhood to individual neighbourhood outcomes.

While having conducted longitudinal research throughout this book, there is still a wide range of possible time effects that have received limited attention in the literature and in this book (for instance lagged effects, duration effects). These potential effects are illustrated in the conceptual model provided in chapter 2 of this book. Nonetheless, these are important when adopting a life course framework to the study of neighbourhood effects. Expanding our research designs to encompass these elements will not be an easy task, but an interesting challenge for future research to say the least.

It remains undeniably difficult if not impossible for researchers to entirely avoid selection bias in their models on neighbourhood effects, and it is therefore always important to explicitly take this option into consideration in the interpretation of current and future findings, as well as directions for future research. Nevertheless, one can always strive to reduce it and to expand modelling strategies in research on neighbourhood and wider contextual effects, for instance by using longer spans of longitudinal data, fitting more specific fixed effects models, propensity score matching, modelling neighbourhood choice and so forth. The fact that we had access to information on individual neighbourhood

histories, which allowed for the assessment of neighbourhood effects over time, was a step in the right direction.

6.4.2 Data-related challenges

In addition to certain lingering methodological challenges, there were certain data limitations we faced in the process of this book. They can be summarised as follows:

-Causal mechanisms. Due to the nature of the Dutch national register data, used throughout this book, we were not able to further examine the precise causal mechanisms behind intergenerational or peer-to-peer transmission of deprived neighbourhood characteristics. As the registers do not contain information on preferences and experiences, explanations such as inter-family and societal processes such as social contagion; a limited network range; or a collective acceptance of dysfunctional norms in the neighbourhood, cannot be assessed. These possible explanations are nonetheless commonly believed to affect individual chances to fully participate in society and experience upward social mobility (see Galster 2012).

-Education and school data. More specific but related to the previous challenge, we had access to limited information on the composition of the school environment as an important additional socio-spatial context to the residential neighbourhood, using the Dutch register data. In chapter 4 in particular, this affected the interpretation of the mechanisms behind both a parental neighbourhood and a school effect, as we did not have information on for instance on contact regularity or frequency, or the transmission of norms/values between peers or between parents and children, again: subjective measures. While we added predictors and controls in the models of this fourth chapter, they may not serve as sufficient proxies to cover certain types of complex intra-family and intra-peer mechanisms behind individual neighbourhood outcomes over time.

In chapter 5, we faced a further limitation with the available education data, as the distinction between different types of higher education within the data remained difficult and sometimes impossible. One alternative explanation for the lower average income-levels for highly-educated non-Western ethnic minorities compared to native Dutch, could be that both groups attained different types of higher education. Both higher professional (HBO) and higher vocational (WO) education-levels are classed as 'higher

education' in our accessible Dutch register data. However, both ethnic groups are not represented equally in each education type: native Dutch are overrepresented among WO graduates while ethnic minorities are overrepresented among HBO graduates. As a result, this could steer individuals in different labour market directions (Statline 2017a, 2017b). Since the time of writing chapter 3 and 5 of this book, we were very pleased to hear that the access to these specified higher education data will soon improve for researchers outside of Statistics Netherlands, using the Remote Access facilities.

-Survey data. While the SSD registers and the WoON-survey formed an interesting combination and offered further opportunities to the research in this book, we still faced certain limitations. Although the sample is large and representative on both the individual- and municipality-level, the overlap with the register data selections used in this study was somewhat limited. Additionally, with the selected register and survey data in chapter 5, we could not examine the personal experience of, or possible effects of discrimination, which likely plays a highly important role both in defining income-levels between ethnic groups in the Netherlands and in the possible neighbourhood choice/selection of individuals from ethnic minority backgrounds. We now know that highly-educated non-Western ethnic minorities are more content on average in deprived versus more affluent neighbourhoods, and they live close to family members more often. However, we do not know whether they genuinely prefer these neighbourhood settings over others, and why, or whether the neighbourhood serves as a buffer against negative sentiment outside of their respective ethnic groups and residential settings.

6.5 Directions for future research

This book assessed ways in which to integrate various elements of time into the field of neighbourhood effects research, and discussed persistent intergenerational neighbourhood and income patterns in the Netherlands among different ethnic groups. It further examined the level of influence on the neighbourhood outcomes of a young cohort over time from more than one socio-spatial context, the parental neighbourhood and the school environment. In doing so, this book highlighted possible explanations for ethnic differences in the importance of education in breaking intergenerational neighbourhood trends, and reinforced the contribution that longitudinal, life course research into the broader personal environment can make to the body of neighbourhood

effects literature, as well as to that of intergenerational transmission of disadvantage. This final section will put forward some directions for further research.

We encourage the reader to apply a dynamic spatial-temporal research design in the study of neighbourhood effects, as illustrated in the conceptual model presented in chapter 2. Alongside the residential setting – both parental and personal – and the secondary school environment, more attention needs to be paid to individual experiences in parallel housing, household, labour market and leisure careers, assessing their relative impact on individual outcomes. Following that aim, research can take into consideration further characteristics of the dwelling (such as tenure) and their potential effect on residents, as well as household characteristics - such as the type of union (if any) and the household composition. Within individual labour market careers, the impact of workplace composition and colleague characteristics can be assessed, granted that data will become available at that level. In the Netherlands, at the time of writing this book, workplace characteristics were hard to distinguish in the national data, as individuals working for a firm were automatically registered at the headquarters rather than their particular chain. For this reason, valuable information on workplace location and composition was lost. An expansion of this data element would greatly benefit research into individual experiences in their labour market careers. As discussed in ¶6.4.2, a further specification of the register data on higher education would yield similar benefits to researchers. Both for labour market and educational careers, therefore, these data expansions would enable research into the relative impact of these experiences as part of broad contextual effects on individual outcomes. We strongly believe that by using a life course framework when expanding the study of neighbourhood effects as described above, researchers can gain valuable insights into patterns and trends in all these careers over time, and bring together these separate bodies of literature, in addition to firmly integrating the temporal dimension into the study of neighbourhood effects.

It is important to gain more knowledge and data on the possible causal mechanisms behind intergenerational neighbourhood transmission processes; contact frequency and impact between parents and children as well as between peers; and possible considerations and opportunities behind a selection into a deprived residential neighbourhood after leaving the parental home. Additionally, research into the possible role of everyday discrimination in determining residential locations is needed, even though its role will be undeniably difficult to specify; likely differing per ethnic group, and

even per individual within them. This book may thus encourage future qualitative research using subjective observations on what may underlie these factors, which ought to be the starting point in further examination of the mechanisms behind lingering individual disadvantage. This type of research would have the potential to make vital contributions to the literature, and can subsequently greatly enrich future quantitative work and modelling strategies. In practice, this will require large-scale expansion of available national geo-coded data, and an increase in the combination of the register data with large additional data sources. Finally, more comparative international studies on the effect of the neighbourhood, as well as further life careers and socio-spatial contexts, could greatly benefit this field of research.

References

- Aisenbrey, S., & Fasang, A. E. (2010). New life for old ideas: The "second wave" of sequence analysis bringing the "course" back into the life course. *Sociological Methods & Research*, 38(3), 420-462.
- Atkinson, R., & Kintrea, K. (2001). Disentangling Area Effects: Evidence from Deprived and Non-deprived Neighbourhoods. *Urban Studies*, 38(12), 2277-2298.
- Blanden, J., Gregg, P., & Machin, S. (2005). Intergenerational Mobility in Europe and North America. *Report supported by the Sutton Trust, Centre for Economic Performance, London School of Economics*.
- Bloome, D. (2014). Racial Inequality Trends and the Intergenerational Persistence of Income and Family Structure. *American Sociological Review*, 79(6), 1196-1225.
- Bolster, A., Burgess, S., Johnston, R., Jones, K., Propper, C., & Sarker, R. (2007). Neighbourhoods, households and income dynamics: a semi-parametric investigation of neighbourhood effects. *Journal of Economic Geography*, 7(1), 1-38.
- Brooks-Gunn, J., Duncan, G., & Aber, J. L. (1997a). *Neighborhood poverty, volume 1: Context and consequences for children*: Russell Sage Foundation.
- Brooks-Gunn, J., Duncan, G., & Aber, J. L. (1997b). *Neighborhood Poverty, volume 2: Policy Implications in Studying Neighborhoods*: Russell Sage Foundation.
- Buck, N. (2001). Identifying Neighbourhood Effects on Social Exclusion. *Urban Studies*, 38(12), 2251-2275.
- Cheshire, P. (2007). *Segregated neighbourhoods and mixed communities: a critical analysis*: Joseph Rowntree Foundation.
- Crowder, K., & South, S. J. (2003). Neighborhood distress and school dropout: the variable significance of community context. *Social Science Research*, 32(4), 659-698.
- De Vuijst, E., & van Ham, M. (2017a). Educational Attainment and Neighbourhood Outcomes: Differences between Highly-Educated Natives and Non-Western Ethnic Minorities in the Netherlands. *IZA Discussion paper No. 10999*, Bonn, Institute for the Study of Labor.
- De Vuijst, E., & van Ham, M. (2017b). Parents and Peers: parental neighbourhood- and school-level variation in individual neighbourhood outcomes over time, *IZA Discussion paper No. 10526*, Bonn, Institute for the Study of Labor.

- De Vuijst, E., van Ham, M., & Kleinhans, R. (2016). A life course approach to understanding neighbourhood effects, *IZA Discussion paper* No 10276, Bonn, Institute for the Study of Labor.
- De Vuijst, E., van Ham, M., & Kleinhans, R. (2017). The moderating effect of higher education on the intergenerational transmission of neighbourhood characteristics, *Environment and Planning A*, Vol. 49(9), 2135-2154.
- Dietz, R. D. (2002). The estimation of neighborhood effects in the social sciences: An interdisciplinary approach. *Social Science Research*, 31(4), 539-575.
- Durlauf, S. N. (2004). Chapter 50: Neighborhood effects. In J. V. Henderson & T. Jacques-François (Eds.), *Handbook of Regional and Urban Economics* (Vol. Volume 4, pp. 2173-2242): Elsevier.
- Ellen, I. G., & Turner, M. A. (1997). Does neighborhood matter? Assessing recent evidence. *Housing Policy Debate*, 8(4), 833-866.
- Feijten, P. (2005). *Life events and the housing career: A retrospective analysis of timed effects*: Eburon Delft.
- Friedrichs, J. r., & Blasius, J. r. (2003). Social norms in distressed neighbourhoods: testing the Wilson hypothesis. *Housing Studies*, 18(6), 807-826.
- Galster, G. (2002). An economic efficiency analysis of deconcentrating poverty populations. *Journal of Housing Economics*, 11(4), 303-329.
- Galster, G., Andersson, R., & Musterd, S. (2010). Who Is Affected by Neighbourhood Income Mix? Gender, Age, Family, Employment and Income Differences. *Urban Studies*, 47(14), 2915-2944.
- Galster, G., Cutsinger, J., & Lim, U. (2007). Are Neighbourhoods Self-stabilising? Exploring Endogenous Dynamics. *Urban Studies*, 44(1), 167-185.
- Galster, G. C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 23-56): Springer Netherlands.
- Galster, G. C. (2012). The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 23-56): Springer Netherlands.
- Geist, C., & McManus, P. A. (2008). Geographical mobility over the life course: Motivations and implications. *Population, Space and Place*, 14(4), 283-303.

- Hedman, L., Manley, D., van Ham, M., & Östh, J. (2013). Cumulative exposure to disadvantage and the intergenerational transmission of neighbourhood effects. *Journal of Economic Geography*, 15(1), 195-215.
- Musterd, S., Galster, G., & Andersson, R. (2012). Temporal dimensions and measurement of neighbourhood effects. *Environment and Planning A*, 44(3), 605-627.
- Oreopoulos, P. (2003). The long-run consequences of living in a poor neighborhood. *The quarterly journal of economics*, 118(4), 1533-1575.
- Overman, H. G. (2002). Neighbourhood Effects in Large and Small Neighbourhoods. *Urban Studies*, 39(1), 117-130.
- Quillian, L. (2003). How Long are Exposures to Poor Neighborhoods? The Long-Term Dynamics of Entry and Exit from Poor Neighborhoods. *Population Research and Policy Review*, 22(3), 221-249. doi:10.1023/a:1026077008571
- Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "Neighborhood Effects": Social Processes and New Directions in Research. *Annual Review of Sociology*, 28, 443-478.
- Sharkey, P. (2008). The Intergenerational Transmission of Context¹. *American Journal of Sociology*, 113(4), 931-969.
- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *AJS; American journal of sociology*, 116(6), 1934-1981.
- Sharkey, P., & Faber, J. W. (2014). Where, when, why, and for whom do residential contexts matter? Moving away from the dichotomous understanding of neighborhood effects. *Annual Review of Sociology*, 40, 559-579.
- Simpson, L., Purdam, K., Tajar, A., Fieldhouse, E., Gavalas, V., Tranmer, M., Dorling, D. (2006). *Ethnic minority populations and the labour market: an analysis of the 1991 and 2001 Census*. Department for Work and Pensions.
- Small, M. L., & Feldman, J. (2012). Ethnographic evidence, heterogeneity, and neighbourhood effects after moving to opportunity. In *Neighbourhood effects research: New perspectives* (pp. 57-77): Springer.
- Statistics Netherlands (2012). WoonOnderzoek Nederland (WoON) 2012. Vragenlijst module Woningmarkt CAPI/CATI, versie 3.4. *Centraal bureau voor de Statistiek, Den Haag*.
- Statline. (2017a). Hoger beroepsonderwijs; gemiddelde studieduur gediplomeerden, studierichting; 2012/'13. *Centraal bureau voor de Statistiek, Den Haag*.

- Statline. (2017b). Wetenschappelijk onderwijs; gemiddelde studieduur gediplomeerden, studierichting; 2012/'13. *Centraal bureau voor de Statistiek, Den Haag*.
- Van der Klaauw, B., & van Ours, J. C. (2003). From welfare to work: does the neighborhood matter? *Journal of Public Economics*, 87(5–6), 957-985.
- Van Ham, M., Hedman, L., Manley, D., Coulter, R., & Östh, J. (2014). Intergenerational transmission of neighbourhood poverty: an analysis of neighbourhood histories of individuals. *Transactions of the Institute of British Geographers*, 39(3), 402-417.
- Van Ham, M., & Manley, D. (2012). Neighbourhood effects research at a crossroads. Ten challenges for future research. *Environment and Planning A*, 44(12), 2787-2793.
- Van Ham, M., Manley, D., Bailey, N., Simpson, L., & Maclennan, D. (2012). Neighbourhood Effects Research: New Perspectives. In M. van Ham, D. Manley, N. Bailey, L. Simpson, & D. Maclennan (Eds.), *Neighbourhood Effects Research: New Perspectives* (pp. 1-21): Springer Netherlands.
- Van Ham, M., & Tammaru, T. (2016). New perspectives on ethnic segregation over time and space. A domains approach. *Urban Geography*, 37(7), 953-962.
- Vartanian, T. P., Walker Buck, P., & Gleason, P. (2007). Intergenerational Neighborhood-Type Mobility: Examining Differences between Blacks and Whites. *Housing Studies*, 22(5), 833-856.
- Wilson, W. J. (2012 [1987]). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago: University of Chicago Press.

