ALWAYS A STEP BEHIND?

Educational and Employment Transitions among Children in Out-of-home Care

Antti Kääriälä

itla Children's Foundation

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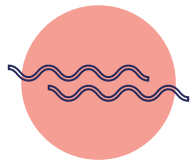

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Abstract

Children placed in out-of-home care due to child protection (from here on 'children in care') are at an increased risk of encountering various adversities in their adulthood in comparison with the general population. These include low level of education and unemployment. The aim of this thesis is to increase the understanding of the situation of children in care when they are young adults in Finland and the other Nordic countries. The study focuses on school performance, educational attainment and employment among children in care.

The dissertation contains four empirical quantitative sub-studies. The first of these is a systematic literature review of the situation of children in care as young adults in the Nordic countries. The three other sub-studies use existing nationwide register-based birth cohort data: one exploits data from Finland, Sweden and Denmark, and two use data from Finland only. These three sub-studies compare the educational attainment of children in care in these three countries, explore education and employment trajectories in early adulthood in Finland, and examine the extent to which the incidence of psychiatric and neurodevelopmental disorders diagnosed in specialized health care contribute to the poor school performance of Finnish children in care. As this thesis is based on secondary register data, it does not examine the lived experience of children in care or their own interpretations of their situation; thus meaning that the findings should not be interpreted as representing their views.

The systematic review identified twenty quantitative studies from the Nordic countries. All of these studies showed that, across the Nordic states, children in care are more likely to face different risks and hardships as young adults than the general population. Comparing the results of the countries was challenging, however, because the studies differed in design and various parameters. To facilitate comparison, the second sub-study used a comparative design and investigated the risk of early school-leaving among children in care in Finland, Sweden and Denmark. The risks of uncompleted secondary education were roughly equal in Finland and Sweden. In Denmark, the risk was slightly higher. In all three countries, those entering care as adolescents were at the highest risk of not completing secondary-level education.

The third and fourth sub-studies were based on Finnish birth cohort data. The first of these, the sub-study on education and employment trajectories, showed that 38% of children in care entered the trajectories on which individuals typically progress from studies to working life. Of the general population never having been in care, 74% were on similar trajectories. Children in care, especially boys, were more likely to enter trajectories on which periods of income support and unemployment followed each other for most of their early adulthood. In addition, in comparison with the general population, children in care, almost exclusively girls, entered trajectories that involved having children and parenting early in the transition. The fourth study showed that diagnosed psychiatric and neurodevelopmental disorders contribute to poor school performance among children in care. However, those placed as adolescents in particular had significantly poorer school performance than the general population, even after controlling for parental background and diagnosed disorders.

The results underline how the challenges of improving the inclusion of children in care are rather similar across the Nordic countries. Above all, the difficulties in educational and employment transitions among children in care are more frequent and more likely to be persistent than among the general population. These risks should be addressed more effectively, not only in preventive work and while in care, but also in child welfare's after-care services. The policy and the services provided for those placed in care during adolescence require specific attention. The results also indicate that diagnosed psychiatric and neurodevelopmental disorders are a risk factor for the educational disadvantage of children in care, suggesting that targeting these disorders may be a viable path for promoting the educational outcomes of these young people.

Tiivistelmä

Kodin ulkopuolelle sijoitetuilla lapsilla on muihin lapsiin verrattuna suurempi riski kohdata erilaisia vastoinkäymisiä aikuisuudessaan. Näihin lukeutuvat matala koulutus ja työttömyys. Tämän väitöstutkimuksen tavoitteena on lisätä ymmärrystä kodin ulkopuolelle sijoitettujen lasten tilanteesta nuorina aikuisina Suomessa ja muissa Pohjoismaissa. Tutkimus keskittyy sijoitettuna olleiden lasten koulumenestykseen, saavutettuun koulutustasoon sekä työllistymiseen.

Väitöskirja sisältää neljä eri aineistoihin perustuvaa määrällistä tutkimusta. Ensimmäinen näistä on systemaattinen kirjallisuuskatsaus, jossa tarkastellaan, miten kodin ulkopuolelle sijoitetut lapset pärjäävät nuorina aikuisina Pohjoismaissa. Kolmessa muussa tutkimuksessa käytetään olemassa olevia kansallisiin rekisteritietoihin pohjautuvia syntymäkohorttiaineistoja: yhdessä tutkimuksista käytetään aineistoja Suomesta, Ruotsista ja Tanskasta, ja kaksi muuta perustuvat suomalaisiin aineistoihin. Näissä kolmessa tutkimuksessa vertaillaan sijoitettuna olleiden lasten koulutustasoa maittain, tarkastellaan heidän varhaisen aikuisuuden koulutus- ja työelämäpolkuja Suomessa sekä selvitetään, missä määrin mielenterveyden ja neurologisten häiriöiden esiintyvyys selittää sijoitettuna olleiden suomalaisten lasten heikompaa koulumenestystä. Koska tutkimus perustuu olemassa oleviin rekisteriaineistoihin, siinä ei tarkastella sijoitettujen lasten omakohtaisia kokemuksia ja tulkintoja omasta tilanteestaan. Tuloksia tulkitessa tuleekin muistaa, että ne eivät kuvaa lasten omia näkemyksiä.

Systemaattisessa kirjallisuuskatsauksessa löytyi 20 pohjoismaista määrällistä tutkimusta. Nämä kaikki osoittivat sijoitettujen lasten kohtaavan nuorina aikuisina muita todennäköisemmin hyvinvointia haastavia riskejä ja vastoinkäymisiä. Maiden välisten tulosten vertailu oli kuitenkin hankalaa, koska tutkimukset poikkesivat toisistaan toteutustavoiltaan. Siksi väitöskirjan toisessa tutkimuksessa rakennettiin vertailukelpoinen tutkimusasetelma ja tarkasteltiin sijoitettujen lasten riskiä jäädä vaille toisen asteen koulutusta Suomessa, Ruotsissa ja Tanskassa. Matalan koulutustason riskit olivat likimain yhtä suuret Suomessa ja Ruotsissa. Tanskassa riski oli hieman suurempi. Kaikissa kolmessa maassa nuorilla, jotka sijoitettiin kodin ulkopuolelle ensimmäistä kertaa teini-ikäisinä, oli suurimmat riskit jäädä vaille toisen asteen tutkintoa.

Kolmas ja neljäs tutkimus perustuivat Suomessa syntyneiden lasten kohorttiaineistoihin. Koulutus- ja työelämäpolkujen tarkastelussa osoittautui, että sijoitetuista lapsista noin 38 prosenttia oli nuorina aikuisina poluilla, joilla tavallisesti ensin opiskeltiin ja sen jälkeen siirryttiin työelämään. Muista kuin sijoitetuista lapsista vastaavilla poluilla oli 74 prosenttia. Sijoitetuista lapsista erityisesti pojat olivat muita lapsia todennäköisemmin poluilla, joilla esiintyi vuorotellen toimeentulotuki- ja työttömyysjaksoja suurimman osan varhaisaikuisuutta. Sijoitetut tytöt puolestaan olivat todennäköisemmin poluilla, joilla lastensaanti ja hoitaminen olivat pääasiallista toimintaa jo noin kahdenkymmenen vuoden iästä alkaen. Neljännen tutkimuksen mukaan diagnosoidut psykiatriset ja neurokehitykselliset häiriöt selittävät osittain sijoitettuna olleiden lasten heikompaa koulumenestystä. Erityisesti teini-ikäisenä sijoitettujen nuorten koulumenestys jäi perhetaustan ja diagnosoitujen häiriöiden huomioimisen jälkeenkin keskimäärin selvästi heikommaksi kuin muilla nuorilla.

Tulokset korostavat, että haasteet kodin ulkopuolelle sijoitettujen lasten osallisuuden parantamisessa ovat varsin samanlaisia kaikissa Pohjoismaissa. Keskeinen tulos on, että heidän vaikeutensa opintoihin ja työelämään kiinnittymisessä ovat yleisempiä ja todennäköisemmin pitkäkestoisia kuin muilla lapsilla. Tämä tulisi huomioida nykyistä paremmin paitsi ennaltaehkäisevässä työssä ja sijoituksen aikana myös lastensuojelun jälkihuollon palveluissa. Erityisesti teini-ikäisenä sijoitetuille nuorille tarjottavien tukitoimien tulisi olla nykyistä vaikuttavampia. Tulosten mukaan diagnosoidut psykiatriset ja neurokehitykselliset häiriöt ovat riskitekijä sijoitettujen lasten heikolle koulumenestykselle. Näiden häiriöiden onnistunut hoito saattaa olla yksi keino parantaa sijoitettujen lasten kouluttautumisen edellytyksiä.

For Inari & Loviisa

Acknowledgements

When I started working on this dissertation in 2016, I had no previous work experience or knowledge of child welfare. Over the past four years, numerous people have supported my work in different roles. Without you, I could not have completed this thesis. It is my pleasure to thank you all for your participation.

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As I said, I had no previous experience of child welfare before this thesis. That's why it was especially important for me to have the chance to complete a short traineeship at Kivikko's child welfare unit in Helsinki when I started my work. Thank you Jonna Vanhanen and everyone else there for taking me with you to see your everyday work.

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And my friends, old and new, you know who you are. Thank you for all the fun and cheers over the past, present and coming years. Everything would be just flat and boring without you. Thanks especially to Pekka Pennanen and Jonas Sjöblom for friendship and sharing the joys and sorrows (mostly sorrows) of writing a thesis.

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Antti Kääriälä
Helsinki, May 2020

CONTENTS

List of original publications

This thesis is based on the following publications:

I Kääriälä, A., & Hiilamo, H. (2017). Children in out-of-home care as young adults: A systematic review of outcomes in the Nordic countries. *Children and Youth Services Review, 79*, 107–114. doi.org/10.1016/j.childyouth.2017.05.030.

II Kääriälä, A., Berlin, M., Lausten, M., Hiilamo, H., & Ristikari, T. (2018). Early school leaving by children in out-of-home care: A comparative study of three Nordic countries. *Children and Youth Services Review, 93*, 186–195. doi.org/10.1016/j.childyouth.2018.06.007.

III Kääriälä, A., Haapakorva, P., Pekkarinen, E., & Sund, R. (2019). From care to education and work? Education and employment trajectories in early adulthood by children in out-of-home care. *Child Abuse and Neglect, 98*, 104144. doi.org/10.1016/j.chiabu.2019.104144.

IV Kääriälä, A., Sund, R., & Gyllenberg, D. The Contribution of Diagnosed Psychiatric and Neurodevelopmental Disorders to Poor School Performance among Children in Out-of-home Care: A Register Study of a Complete Birth Cohort. Submitted for review.

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Abbreviations

ADHD	attention deficit hyperactivity disorder
AME	average marginal effect
CI	confidence interval
DSM	Diagnostic and Statistical Manual of Mental Disorders
GPA	grade point average
ICD-9/10	International Statistical Classification of Diseases and Related Health Problems, 9th/10th revision
ISCED	International Standard Classification of Education
LISA	Longitudinal Integration Database for Health Insurance and Social Studies
NEET	not in education, employment or training
OECD	Organization for Economic Co-operation and Development
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
SEN	special educational needs
UNESCO	United Nations Educational, Scientific and Cultural Organization

1 Introduction

For decades, research in Western countries has documented a gap between the range of early adulthood outcomes of children placed in out-of-home care by child welfare authorities (hereafter 'children in care') and their general population peers (Fernandez & Barth, 2010; Gypen et al., 2017; McDonald, Allen, Westerfelt, & Piliavin, 1996; Vinnerljung 1996a). As young adults, they are more likely to attain only a low level of education, experience unemployment, rely on social benefits as a source of income, suffer from mental health and substance abuse problems, and be sentenced for criminal behavior. Yet, children in care are a heterogeneous group (Stein, 2006). Despite the increased risk of adversities, a considerable proportion of them show resilience across most life domains in their transitions to adulthood (Courtney, Hook, & Lee, 2012; Keller, Cusick, & Courtney, 2007; Miller, Paschall, & Azar, 2017; Shpiegel, & Ocasio, 2015; Yates & Grey, 2012). Hence, the transition to adulthood is a well-known, although not uniform, challenge for children in care and their families, as well as for practitioners and policymakers.

When a child is placed in care, the authorities take over most of the responsibilities that typically belong to parents, such as ensuring accommodation, nutrition and safety. The promise of societal care is that children are provided with improved well-being and a more stable environment for individual development. However, the evidence above on adverse early adulthood outcomes raises concern that too often, this promise is not kept. This makes the long-term developments of children in care an important social policy issue. Understanding how these young people manage their later life is part of the collective responsibility for their well-being and development, and a basis for improving their situation. Furthermore, this task is crucial in the Nordic countries, the context of this study, where reducing inequalities resulting from vulnerable childhood backgrounds is an inherent aim of the welfare model. In these countries, up to 6% of children are placed in care at some point in their childhood (Fallesen, Emanuel, & Wildeman, 2014; Ristikari et al., 2018), meaning that the well-being and development of these children is beyond a marginal issue.

Situated within the life course framework and social epidemiology, this thesis uses quantitative methods to assess how children in care manage their transition to adulthood in the Nordic countries. The focus is on educational and employment transitions, which in modern society are important indicators of long-term social inclusion and adulthood socio-economic position. In the Nordic countries, researchers enjoy excellent opportunities, as they are able to utilize an invaluable data source, namely administrative registers, for the study of child welfare interventions. In this field, register-based research began to burgeon during the 2000s and 2010s, particularly in Sweden. However, several questions remain unaddressed.

The four sub-studies of this thesis set out to fill some of the gaps in the knowledge regarding the educational and employment transitions of children in care. To this end, this thesis includes a research synthesis that systematically reviews evidence on the early adulthood outcomes of out-of-home care in the Nordic countries. To gain a more precise understanding of the scale of the educational disadvantage of children in care in the region, this thesis also involves a comparative study that used existing nationwide register data from Finland, Denmark and Sweden, and estimates the educational attainment (i.e. highest completed level of education) of children in care in these countries.

The two other sub-studies used existing register data from Finland only and provide evidence of neglected topics in the field of child welfare research. The first of these explored the early adulthood school-to-work transitions of children in care. The other investigated the association between placement in care and school performance (i.e. grade point average in basic education); its specific aim being to examine the extent to which diagnosed psychiatric and neurodevelopmental disorders contribute to the association between placement in care and school performance. As summarized in the following pages of this thesis, together these four investigations provide versatile novel evidence on the life course developments of children in care.

2 Context of the study and study population: children in care in the Nordic countries

The Nordic countries form a geographical area in Northern Europe and encompass Denmark, Finland, Iceland, Norway, and Sweden, as well as their associated territories Greenland, the Faroe Islands, and the Åland Islands. Broadly speaking, the countries share similar societal and cultural traits. In terms of social policy, these countries' welfare regime is characterized by universal service provision for all inhabitants, labeled the social democratic regime by Gøsta Esping-Andersen in his famous study (Esping-Andersen, 1990). The countries have made extensive tax-funded investments to prevent the social risks related to childbearing and child well-being (Esping-Andersen, 2004): near universal provision of prenatal health care, early childhood education programs, and income transfers for families with children, as well as an inclusive educational system that is almost free of charge from basic to higher education. Together, these socially and economically make the Nordic region a relatively favorable living environment for families with children.

The Nordic countries also share a broadly similar framework with regard to social work with children, (Eydal & Kröger, 2010). In a well-known comparative study of child welfare practices, Gilbert (1997) describes child welfare in the Nordic countries as having a family service orientation. This means that child welfare services aim to build partnerships with families and implement most interventions on a voluntary basis. This is in contrast with typically Anglo-American child protection orientation, in which interventions have a more legalistic foundation and relationships between families and authorities are more conflictual. Complicating this characterization, these orientations have converged with each other since the 1990s, and recent developments in child welfare policy have witnessed a change towards a child-focused orientation across Western countries (Gilbert, Parton, & Skivenes, 2011).

In accordance with the family service orientation, the Nordic countries share an emphasis on early prevention and family preservation in child welfare interventions (Blomberg et al., 2010). Indeed, child welfare policies prioritize parents' responsibility for their children and supportive in-home services, even in the presence of quite adverse living conditions (Pösö, Skivenes, & Hestbæk, 2014). Accordingly, most children involved with child welfare services receive supportive services so that they can remain at home with their parent(s) or other caregivers. For example, in Finland, 4.5% of children aged 0 to 17 were involved with child welfare in-home services in 2018 (Kuoppala, Forsell, & Säkkinen, 2018).

Placing children in out-of-home care is thus a last-resort measure, which is only taken after in-home services have proven insufficient or unfeasible, and conditions at home or a child's own behavior severely endanger their health and development (Pösö et al., 2014). In addition to these conditions, before placing a child in care, the authorities must conclude that placement is in 'the best interest of the child'—a principle set down by the United Nations Convention on the Rights of the Child (UNCRC, 1989). In terms of responsibilities, placement in care means that child welfare authorities remove a child from home, provide alternative accommodation, and take over most of the responsibilities that normally belong to the parents. Overall, the breadth of the concept of 'care' highlights its complexity: it can be understood as a decision made by authorities and as an intervention that varies in purpose; it has a normative aim, the promotion of child's rights and interests; and its scope is ecopsychosocial, implying a change in a child's (and parents') living environment, identity and social relations (Pösö, 2016).

Despite the emphasis on prevention and in-home services, in international comparisons, the Nordic countries place considerable numbers of children into care (Gilbert, Parton, & Skivenes, 2011; Pösö et al., 2014). Moreover, over the past two decades, the percentage of children in care has increased in Finland, Norway, and

Sweden (Figure 1)[1]. In 2015, the percentage of children placed in care ranged from 1.0% in Denmark and Sweden to 1.3% and 1.4% in Norway and Finland (Nordic Social Statistical Committee Nososco, 2017). The reasons for the increase in placements are poorly understood. However, community-level evidence from Finland suggests that parental economic hardship and the high number of clients of child welfare's in-home services are related to the increasing numbers of children in care (Hiilamo, 2009; Hiilamo & Kangas, 2010).

Placements vary in length from one day to an entire childhood, depending on the situation of the family and the needs of the child. Because Nordic policies prioritize family preservation, placements are almost never permanent; children remain in the care system until reunification with the family or aging out when they turn 18. Although many children return home, some may have to re-enter care. Most children in care experience more than one placement. With regard to placement age, newborns and adolescents have the highest likelihood of first entry into care (Fallesen et al., 2014; Ristikari et al., 2018; Thoburn, 2007). Unlike in some other ju-

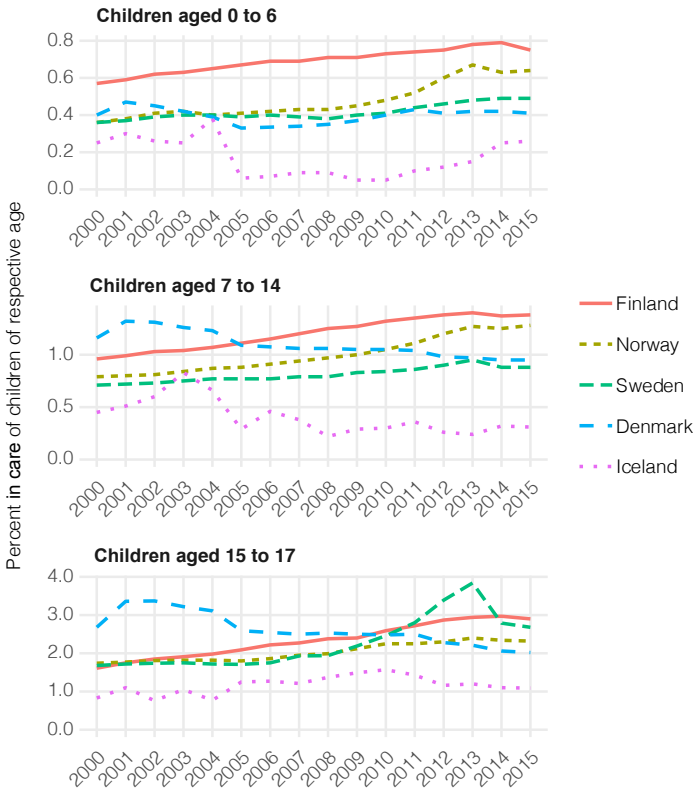


Figure 1. Children placed in out-of-home care in Finland, Norway, Sweden, Denmark, and Iceland from 2000 to 2015 (Tilasto- ja indikaattoripankki Sotkanet.fi).

[1] In Sweden, the percentage of children aged 15 to 17 in care increased rapidly in the 2010s, peaking in 2013. This is mostly explained by the increase in the number of asylum-seeking unaccompanied minors, who were excluded from the child welfare statistics from 2014 onward. However, even then the proportion of children in care in this age group was higher than in the 2000s.

risdictions, in the Nordic countries, adolescents who commit criminal offences enter the child welfare system instead of the criminal justice system, which partly explains the high proportion of adolescent placements in the Nordic region.

Most common placement settings include family foster care (i.e. placement within a family) and residential care (i.e. placement in a residential facility with a group of peers and trained staff). Family foster care is prioritized over residential care in policy, but in practice, the availability of types of care and the child's needs determine the type of placement. Teenagers are typically placed in residential settings with better-trained and resourced professional staff. In Denmark, Finland and Sweden the use of residential care is somewhat more common and family foster care less common than in Norway (Nordic Social Statistical Committee Nososco, 2017). The majority of the placements in the Nordic countries are executed with the consent of both the parents and the child, although involuntary placements are also legally possible (Andersen & Ebsen, 2010; Huhtanen, 2016; Socialstyrelsen, 2016).

In comparison with the general population, children in care in the Nordic countries come from more disadvantaged backgrounds. Their parents are more likely to have mental health and alcohol and substance abuse problems, to be single parents and unemployed, to have low education, and to live on social welfare (Ejrnæs, Ejrnæs, & Frederiksen, 2011; Franzén, Vinnerljung, & Hjern, 2008; Kestilä et al., 2012a). Many of these children have experienced abuse and neglect before entering care (e.g. Heino et al., 2016). In addition, compared with the general population, children in care are more likely to suffer from childhood mental health and behavioral problems (Egelund & Lausten, 2009). In particular, those placed in care during adolescence have elevated rates of behavioral and school-related problems (Heino et al., 2016; Vinnerljung, & Sallnäs, 2008).

The definition of out-of-home care in this thesis covers all children placed in care before the age of 18. This includes all placement settings (e.g. family foster care and residential care), all legal grounds for placements (children placed in care as a supportive intervention for child welfare's in-home services, emergency placements, and children taken into care voluntarily or involuntarily for any reason), as well as children who spend any length of time in care (i.e. "care experienced" children who are reunited with their parents and those who remain in the care system until aging out when they turn 18). The empirical definitions are specified in Section 7.

3 Life course perspective – key concepts

Many kinds of forces affect people's lives, meaning that human biography is an inherently multidimensional phenomenon. Consequently, when studying the course of people's lives, research cannot be limited to any one field of study; it needs to stretch across scientific boundaries. Indeed, since gaining ground in the 1960s, life course research has received wide-ranging attention across scientific fields such as sociology, psychology and epidemiology. Recently, the life course approach has also gathered increasing attention in child welfare research (Brady & Gilligan, 2018; White & Wu, 2014).

The aim of life course research is to understand how previous experiences, events, social relations and institutions, as well as historical and local circumstances affect individual development, and thus create patterns in populations (Elder et al. 2003; Elder and Shanahan 2006). Shanahan and Macmillan (2008) define the life course as "age-graded sequence of roles, opportunities, constraints, and events that shape the biography from birth to death" (for other definitions, see Alwin, 2012). In other words, the focus of life course research is on the forces that affect the individual, and how these forces shape the biography over time.

Rather than providing an explanatory theory to phenomena of interest, many authors consider life course research a perspective or conceptual framework (Alwin, 2012; Elder 2003; Mayer 2004). For explanatory purposes, life course sociologists have advanced several theoretical developments. In this thesis, I adopt an exposure to risk model (Mayer, 2009). Here the concept of risk denotes an increased probability of anticipated negative hazard (or positive opportunity) (O'Rand, 2003). In epidemiological parlance, risks are often operationalized using the concept of risk factor, which refers to measurable characteristics that correlate with and precede a specified negative outcome (Kraemer et al., 1997).

The exposure to risk model has obvious relevance in assessing the long-term outcomes of out-of-home care, because placement in care indicates, by legal definition, a presence of risk in a child's life—typically in the form of some kind of parental disadvantage, child maltreatment, or the child's own disruptive behaviors. Indeed, the purpose of child welfare interventions is to remove these risks and mitigate their effects. Despite these efforts, exposure to early adversities often has a negative impact on these children throughout their life courses, as discussed in more detail in the next section.

In social epidemiology, this kind of exposure is conceptualized as a critical or sensitive period model: exposure to adversities during critical or sensitive periods such as childhood may have long-lasting effects that are irreversible or only partially modifiable (Ben-Shlomo, & Kuh, 2002; Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003). This helps us understand why children in care are likely to face significant disadvantage even beyond their childhood. Some studies even consider placement in care an indicator of childhood adversities in an attempt to evaluate the long-term consequences of adverse childhood experiences (e.g. Fridell Lif, Brännström, Vinnerljung, & Hjern, 2016).

In addition, children in care are at risk of multiple adversities during their childhood (Turney & Wildeman, 2017). The accumulation of risk model can explain this kind of exposure, as it recognizes the additive effect of several exposures (Ben-Shlomo, & Kuh, 2002; Kuh et al., 2003). This thesis shares the premises of critical period and accumulation models in that they inform why children in care are at an elevated risk of later life adversities. By exploring various care history factors and diagnosed psychiatric disorders in particular, the thesis aims to contribute to the knowledge on how to identify children with the greatest needs in child welfare and health services.

The conceptual toolkit of life course research involves a range of concepts, of which two essential ones for this thesis are the concepts of transition and trajectory (e.g. Mayer, 2009; for a discussion on the concepts of life course framework in child welfare research, see White & Wu, 2014).

Transition is defined as a change in social, psychological or physiological state (Kuh et al., 2003). Core examples of the concept figure in the notion of the 'big five' transitions of early adulthood: completing education, entering the labor market, leaving the parental home, finding a partner, and becoming a parent (Settersten,

2007). The transitions that are experienced by the majority of the population and are tied in with generally accepted norms are sometimes referred to as normative transitions (Dewilde, 2003). Among children in care, disadvantaged family background and adverse childhood experiences increase the likelihood of unfavorable transitions. However, transitions are also opportunities for change. They may come to represent an accentuation to or a turning point from disruptive behavioral patterns or other forms of disadvantage, depending on whether or not later experiences show continuities or discontinuities with early experiences (see Rutter, 1996). For children in care, transitions are also part of the process of being removed from the parental home and, for some, reunification with their family. These service transitions are not the focus of this thesis. Instead, this thesis investigates three different education and employment transitions: graduation from compulsory basic education, attainment of secondary education, and "school-to-work" transitions.

The concept of trajectory refers to a sequence of states and the transitions between these states (Elder & Shanahan, 2006). For example, the education trajectory refers to the movement of an individual in and out or within the education system. In other words, trajectory combines separate states and transitions between them into a single unit of observation. Examining a trajectory thus provides a long-term view to dynamics and stability during an individual's life course. At the population level, observing trajectories enables the comparison of individual life course sequences and the identification of longitudinal patterns in populations. The aim of this kind of exploration is to identify substantially interesting sub-groups in the study population. This can be achieved by clustering similar trajectories into groups, as in Sub-study III. In this thesis, the concept of trajectory is applied to what is sometimes termed "school-to-work" transitions (Buchmann & Kriesi, 2011). This notion refers to the movement of young people from education to working life; hence this thesis uses the term education and employment trajectory.

After the empirical literature review presented in the following pages, Chapter 5 summarizes the life-course framework and how it is used in this thesis to study education and employment transitions among children in care.

4 Empirical evidence

4.1 OUTCOMES OF OUT-OF-HOME CARE

International research has documented a gap between the early adulthood of children in care and that of the general population in a number of life domains (Ferenandez & Barth, 2010; Gypen et al., 2017; McDonald et al., 1996; Vinnerljung, 1996a). Two earlier large-scale reviews have assessed evidence from the 1960s to the early 1990s and concluded that children in care face an elevated risk of experiencing negative outcomes across dimensions (McDonald et al., 1996; Vinnerljung, 1996a; for a review of studies in Sweden, see Vinnerljung, 1996b). More recent attempts to review international literature paint a similar overall picture (Gypen et al., 2017; see also Ferenandez & Barth, 2010). In their systematic review, Gypen et al. (2017) identified 32 studies that addressed early adulthood outcomes in education, employment, earnings, housing, mental health, substance abuse, and criminal behavior. Results across domains demonstrate that in comparison with the general population, children in care struggle in all these areas, irrespective of the child welfare orientation of the country.

The aim of this thesis is to assess how children in care manage their transitions to adulthood, with a focus on educational and employment transitions. To this end, the review below focuses on educational and labor market outcomes. With regard to education, the outcomes covered include school performance in basic education (i.e. grades, test results, etc.), and educational attainment (i.e. participation in education at different levels and highest completed degree). When reviewing the evidence from the Nordic countries, this review overlaps to some extent with the synthesis of Sub-study I.

4.1.1 Education

A systematic review by Trout and colleagues (2008) found 29 studies on the academic functioning of children in care. These studies included 36 datasets; all but one of which showed that at least one-third of children in care perform below the expected grade level. None of the reviewed studies reporting standardized test scores observed that children in care performed better than average. One-third reported average performance, and two-thirds reported low average or low performance. The review also reported high grade retention rates among children in care, ranging from 35% to 57% (see also, Scherr, 2007). Trout et al.'s (2008) review included studies from the US, but similar findings have been reported elsewhere, including Australia (AIHW, 2015), the UK (e.g. Goddard, 2000; Sebba et al., 2015) and the Nordic countries (Backe-Hansen, Madsen, Kristofersen, & Hvinden, 2014; Berlin et al., 2011; Vinnerljung & Hjern, 2011; Vinnerljung et al., 2010).

In Sweden, Berlin and colleagues (2011) used large administrative data and compared the school performance of children in long-term care and that of the general population. They found that children in care had significantly poorer school performance than their peers in the general population on average and across disciplines. The risk of having no grade points at all from basic education was six-fold in comparison with peers who had not been in care. The risk of poor performance among children in care also held after controlling for parental background. The study included children who received in-home interventions, but it did not compare these two at-risk groups directly. Indirect comparison suggested mostly similar risks of poor performance among those receiving in-home interventions and those placed in care.

In Finland, evidence on school performance is scant. However, when entering care, children in care are known to be at a risk of poor performance (Hiitola, 2008; Heino et al., 2016). In addition, one report, based on the same data as Sub-study IV, showed that children in care lag behind their peers in terms of school performance, measured as grade point average (GPA) at the end of compulsory basic education (Ristikari et al. 2018).

In terms of cognitive functioning, Goemans and colleagues (2015) found in their meta-analysis that children in care performed significantly more poorly than the general population that has not been in care. How-

ever, when children in care were compared with children who received support from social services at home, there was no difference. A study in Sweden found that after controlling for birth parent-related confounders, boys in care scored lower than their nationally adopted peers in measures of cognitive competence during the military conscription process (Vinnerljung & Hjern, 2011). However, further evidence from Sweden suggests that children in care underperform at school in relation to their cognitive abilities: when boys placed in care were compared with their peers with similar cognitive competence, they had lower grades in basic education, as well as lower chances of achieving post-secondary education (Vinnerljung et al., 2010).

In addition to studies on school performance, research has addressed the progression of children in care in the education system beyond the basic level. With regard to school performance, the findings are dismal: across the Western world, children in care are more likely to discontinue their educational career earlier than their peers who have not been in care (e.g. Courtney, Piliavin, Grogan-Kaylor, & Nesmith, 2001; Courtney et al., 2007; Gypen et al., 2017; Pecora et al., 2006; Snow, 2009; Viner & Taylor; 2005; Warburton, Warburton, Sweetman, & Hertzman, 2014). Indeed, a review by Snow (2009) concluded that children in care had poorer chances of attaining a secondary-level education than their non-care peers, and a lower likelihood of enrolling in post-secondary education.

Nordic countries are no exception to this pattern (Heino & Johnson, 2010; Kestilä, Väisänen, Paananen, Heino, & Gissler, 2012; Olsen, Egelund, & Lausten, 2011; Vinnerljung, Öman, & Gunnarson, 2005). A large-scale Swedish cohort study found that 44% of children in care had attained a secondary-level education in early adulthood compared with 60% of their general population peers who had never been in care. Of children in care, 6% had completed a post-secondary education compared with 28% of their non-care peers (Vinnerljung et al., 2005). After controlling for mother's education and birth country, as well as the child's sex, the odds of having no secondary education and no post-secondary education were six- and four-fold, respectively (Vinnerljung et al., 2005).

In Finland, a study based on the same birth cohort as Sub-studies II and III found corresponding results, with children in care having five-fold odds of having only a basic education by the age of 22 after controlling for parental background (Kestilä et al., 2012). Evidence also suggests that children in care are more likely to participate in basic and secondary education at an older age than the general population, and thus to complete their education later (Harkko et al., 2016). This supports the hypothesis that children in care may catch up with their peers over the life course. In terms of postsecondary education, Heino and Johnson (2010) observed that children in care are less likely to participate in this level of education and, consequently, less likely to obtain a post-secondary degree. Their study also showed, however, that almost half of children in care completed secondary education by the age of 24. Of these, three-quarters obtained a vocational diploma while one-fourth completed a general program (Heino & Johnson, 2010).

4.1.2 Comparing educational outcomes across countries

Because this study involves a comparison of the educational attainments of children in care in Finland, Denmark, and Sweden, the following paragraphs review the comparative evidence on the educational outcomes of children in care.

The reviewed studies above highlight that children in care experience educational disadvantage consistently across countries. However, so far, only few studies have compared the educational outcomes of children in care (Cameron et al. 2018; Jackson & Cameron, 2012; Weyts, 2004). Two of these studies found limited evidence of cross-country variation in educational pathways (Jackson & Cameron, 2012) and in school performance (Weyts, 2004), causing Weyts (2004) to call into question whether comparative studies can yield meaningful findings and interpretations with regard to educational outcomes among children in care. In an attempt to harmonize datasets across Finland, the UK, and Germany, Cameron et al. (2018) concluded that although they anticipated differences across the transition regimes, the findings in the three countries were rather similar. However, with regard to educational attainments, children in care in Finland were under-

achieving in comparison to the two other countries in terms of secondary-level attainment and, in comparison with the UK, also with regard to tertiary-level attainment. The authors warned, however, that differences in available data sources limit the comparability of their findings (Cameron et al., 2018).

Thus, based on the existing evidence, children in care experience educational disadvantage across countries, but comparing the scale of this disadvantage is difficult. The Nordic countries provide an interesting arena for comparing educational outcomes among children in care because of the common characteristics of their child welfare and education systems. Child welfare in the Nordic countries is organized largely according to similar principles to those discussed above. There are also notable similarities in terms of secondary education. After completing compulsory basic education, most students continue to secondary education (Cederberg & Hartsmar, 2013), and a significant proportion of students choose vocational education. Consequently, secondary education rates are high in all of the countries: among the 25- to 34-year-old population, 83% in Denmark and Sweden and 90% in Finland have completed secondary education, with 84% as the average across OECD countries in 2016 (OECD, 2017).

The Nordic countries also differ in terms of their education systems. In Denmark, vocational programs include a large proportion of apprenticeship-based workplace training in addition to school-based training, which is mostly used in Finland and Sweden (Cederberg & Hartsmar, 2013). It has been suggested that this affects educational outcomes: although it provides a smoother transition from school to work, apprentice-based education in Denmark results in lower educational attainment at the general population level (Albæk et al., 2015; Bäckman, Jakobsen, Lorentzen, Österbacka, & Dahl, 2011). This is likely to also lead to lower educational attainment among Danish children in care in comparison to Finland and Sweden. Furthermore, results from Norway—which has a similar apprentice-based system to Denmark—suggest that child welfare clients (not only children in care) tend to drop out from secondary education before obtaining apprenticeships, which prevents them from completing the program (Dæhlen, 2017). Danish children in care may face similar challenges, suggesting that they would be at a higher risk of low educational attainment than their peers in Sweden and Finland.

4.1.3 Employment

Because completing at least secondary education is important for employment in the modern economy, having low educational qualifications makes children in care vulnerable in labor markets. Accordingly, international research has observed that the employment rates of children in care in early adulthood remain lower and they experience more employment instability than the general population, also when compared with children from low income families (for a systematic review, see Gypen et al., 2017). However, a large proportion or even the majority of children in care gain at least some work experience as young adults (Dworsky, 2005). Moreover, studies reviewed by Gypen et al. (2017) suggest that the employment rates among children in care may improve throughout their early adulthood years. Nevertheless, their poorer employment rates are likely to persist beyond young adult age (Stewart et al., 2014), with socio-economic disadvantage extending to midlife (Brännström, Forsman, Vinnerljung, & Almquist, 2017; Brännström, Vinnerljung, Forsman, & Almquist, 2017).

Studies have also observed low employment rates among children in care in the Nordic countries (Clausen & Kristofersen, 2008; Harkko et al., 2016; Heino & Johnson, 2010; Olsen et al., 2011; Ristikari et al., 2016). For example, in their population-based register study, Harkko et al. (2016) found that as young adults, children in care in Finland were at an increased risk of being outside both education and employment. Among children in care, the employment rate was 43% at the age of 26 compared to 73% in the general population. However, when compared with the general population without a secondary-level education, children in care were more likely to participate in education and employment between the ages of 20 and 26 (Harkko et al., 2016). Harkko et al. (2016) also noted that children in care had lower income from work than the general population.

In Finland and Sweden, 10% of children in care are on disability pension in early adulthood, suggesting

that a large proportion of them are outside the workforce for health reasons (Bask, Ristikari, Hautakoski, & Gissler, 2017; Vinnerljung et al., 2015; see also Harkko, Kouvonen, & Virtanen, 2016; Kestilä et al., 2012b; Olsen et al., 2011). Disability pension is mainly granted to children in care due to mental health problems. Partly as a result of unemployment and poor health, children in care in the Nordic countries are more likely than their peers to resort to social assistance benefits as a source of income, making them a vulnerable group in economic terms (Harkko et al., 2016; Olsen et al., 2011, Kataja et al., 2014; Kestilä et al., 2012; Clausen & Kristofersen, 2008; Berlin et al., 2011; Vinnerljung & Hjern, 2011; Vinnerljung et al., 2010).

4.2 FACTORS ASSOCIATED WITH THE DISPARITIES BETWEEN CHILDREN IN CARE AND THE GENERAL POPULATION

Children's developmental outcomes are multifactorial, and they emerge as a result of a number of genetic and environmental factors and their interaction. Children in care are no exception to this general pattern although due to placement into care, their development is additionally affected by societal intervention. Moreover, placement into care indicates the presence of risk in a child's life, meaning that children in care are more likely to be exposed to various adversities than children in the general population (Turney & Wildeman, 2017).

One often used way of conceptualizing factors related to human development can be drawn from Urie Bronfenbrenner's ecological framework (Bronfenbrenner, 1979). Within this framework, individual development is examined as a complex interaction between the individual and four interlinked systems: the macro-, meso-, micro-, and chronosystems. Research on factors that affect the developmental outcomes among children in care has mostly concerned the individual- and micro-levels, and focused on factors related to the individual, birth family and parents, as well as involvement with the care system (O'Higgins, Sebba, & Gardner, 2017). Investigated individual characteristics include factors such as gender and mental health. Parental characteristics featured in the literature are related to, inter alia, the birth family's socioeconomic position or parental mental health. Involvement with the care system refers to care history, which includes factors such as age at entry into care and placement stability.

The following sections provide a brief review of the factors relevant to this thesis. These include characteristics related to parents, care history and childhood mental health. It is important to note that the evidence reviewed does not provide a comprehensive view of the factors associated with the long-term outcomes of children in care. As a result, several important factors that may contribute to long-term outcomes in education or other domains but are beyond the scope of this thesis are not covered, including a positive relationship with peers and carers, a supportive school environment, and experience of educational and employment transitions (e.g. Strolin-Goltzman, Woodhouse, Suter, & Werrbach, 2016).

4.2.1 Parental factors

In explaining poor outcomes of care, some have questioned whether the care system is able to provide quality care (Jackson & Martin, 1998; Pösö et al., 2014). Indeed, the evidence discussed above highlights the concern over the relationship between being in care and long-term outcomes. Nevertheless, reviews that explore the impact of being in care on a range of outcomes have shown that the findings on the effect of out-of-home care are actually somewhat mixed. Studies show limited evidence of improved outcomes and some evidence of worse outcomes (Forrester, Goodman, Cocker, Binnie, & Jensch, 2009; Maclean, Sims, O'Donnell, & Gilbert, 2016; Maluccio & Fein, 1985; O'Higgins, Sebba, & Luke, 2015). In their two recent reviews, Maclean et al. (2016) and O'Higgins et al. (2015) suggest that adverse outcomes among children in care mostly, if not even entirely, result from selection bias: children exposed to most adversities are placed in care, while those with fewer and less demanding needs remain at home. Thus, factors predating entry into care are likely to explain a large part of the disparity between children in care and the general population.

An important source of disadvantage among children in care is their birth-family background. Studies on the general population have shown a robust association between parents' socioeconomic position and

children's adulthood socioeconomic outcomes, such as educational attainment, earnings and labor market position (e.g. Almquist, 2016; Bowles & Gintis, 2002; Duncan, Kalil, & Ziol-Guest, 2013; Sirniö, 2016). Parents from higher socioeconomic strata may provide advantages for their children via, for example, their economic resources (e.g. financial support for education), social networks (i.e. connections in labor markets), family culture (e.g. positive attitudes to education), and genetic predispositions (i.e. characteristics that are favorable in education and labor markets). Children in care generally come from families with low socioeconomic positions (e.g. Franzén et al., 2008; Kestilä et al., 2012a), which is likely to affect them in the same way as it affects children in the general population—specifically in cases in which a child spends a notable proportion of their childhood with the family before placement in care or after reunification with the family. Some have therefore argued, justifiably, that the birth family's socioeconomic background must be considered when assessing the long-term outcomes of children in care, including those related to education (Berridge, 2012).

However, socioeconomic position alone is an incomplete explanation for the disparities caused by family characteristics predating entry into care. Indeed, children in care are at a higher risk of adulthood disadvantage, regardless of their parents' socioeconomic position (Kataja et al., 2014). Specifically, the reasons for which children are taken into care are an important part of a more complete picture. These include a range of adverse childhood experiences, such as parent's mental health and substance abuse problems, parental death, and various forms of maltreatment, to which children in care are disproportionally exposed (Kestilä et al., 2012; Khoo, Skoog, & Dalin, 2012; Turney & Wildeman, 2017). Indeed, existing evidence indicates clear associations between adverse childhood experiences and long-term disadvantage (Almquist, 2016; Fantuzzo & Perlman, 2007; Fridell Lif et al., 2016; Pears, Kim, & Fisher, 2008; Stone, 2007). Thus, as expected, studies that take into account a range of birth family factors, including socioeconomic factors, as well as parent's mental health and substance abuse problems, note that these explain a significant part of the gap between children in care and their peers (e.g. Berlin et al., 2011; Kestilä et al., 2012b).

4.2.2 Care history factors

One important approach to examining the workings of the care system is the investigation of how children's care histories are associated with long-term outcomes. Exploring these associations is significant, regardless of their causal impact, because understanding care history and its linkages with long-term developments help identify how children are involved with the care system, thus informing service provision.

This thesis examines several care history factors that previous research has identified as potentially relevant indicators of long-term outcomes. In addition to research literature, the selection of these factors is motivated by practical reasons, namely the availability of data, as the Finnish Child Welfare Register used in Sub-studies II–IV determines the information available in this kind of register-based investigation. Next, I discuss the following care history factors and how they are potentially related to long-term outcomes: age at entry into care, length of time in care, placement instability, and placement type.

Age at first entry into care

Age at entry into care varies between birth and 18. In the Nordic countries, newborns and adolescents have the highest likelihood of first placement (Fallesen et al., 2014; Ristikari et al., 2018). Several studies report that those entering into care in adolescence face a higher risk of long-term adversities than those placed at a younger age (e.g. Heino & Johnson, 2010; Kestilä et al., 2012b; Vinnerljung et al., 2005), although evidence on this is somewhat mixed (O'Higgins et al., 2017; Olsen et al., 2011). Mixed findings may result if background characteristics other than age at entry are controlled for. In other words, age at placement is not necessarily related to outcomes independent of other factors. Specifically, it is likely that the adverse outcomes among adolescents placed in care are attributable in part to child-related issues, such as emotional and behavioral problems, which are more common in this group (Delfabbro, Barber, & Cooper, 2002; Heino et al., 2016; Sempik et al., 2008). Those who enter into care at younger ages do so mostly due to parental issues and maltreat-

ment. Accordingly, one explanation for poorer outcomes is that child welfare interventions are more effective in removing risks related to parents and an adverse environment, and less effective in mitigating the problems related to the child, which tend to follow the child into care (Rowe et al., 1989; as cited in Jackson & Martin, 1998). Another related explanation emphasizes that among those that enter care as adolescents, childhood adversities have had more time to accumulate than among early entrants (O'Higgins et al., 2017), making their impact resistant to interventions.

Time spent in care

Time spent in care ranges from one day to the full 18 years of childhood, reflecting the highly varying responsibility that society assumes over the lives of children in care. Length of time in care correlates with educational outcomes in some studies (Maclean, Taylor, & O'Donnell; 2017; O'Higgins et al., 2017; Ringle, Ingram, & Thompson, 2010) but the association is more likely explained by other factors (O'Higgins et al., 2017). Longer time spent in care suggests that reunification with the family is not possible or that it fails and the child has to return to care, implying more severe difficulties in the family or with the child. Time spent in care is also linked to age at first placement for the obvious reason that children who enter care at a later age have less time to spend in care than those placed at younger ages.

Placement instability

Placement instability refers to experiencing multiple placements while in long-term care, or due to failed reunification(s), causing disruptions in a child's life (Fallesen, 2014). It is common to experience more than one placement, because at entry into care, children often spend some time in at least one short-term placement to assess their needs. This should not be equated with placement instability. Placement instability is often measured as the number of placements that a child experiences. It correlates with poorer long-term outcomes (e.g. Newton, Litrownik, & Landsverk, 2000; Rubin, O'Reilly, Luan, & Localio, 2007; Vinnerljung et al., 2005), but the association is more likely explained by other factors (Maclean, Taylor, & O'Donnell, 2017, O'Higgins et al., 2017). Greater behavioral problems at entry into care predict placement instability (Newton et al., 2000; Rubin et al., 2007; Oosterman, Schuengel, Slot, Bullens, & Doreleijers, 2007), suggesting that instability results partly from failure to find a suitable type of placement for a child. Nevertheless, regarding education, placement instability may have negative effects if placement changes cause school mobility (see Mehana & Reynolds, 2004), or occur at critical times, such as before exam time (Sebba et al., 2015).

Placement type

Placement type refers to the type of settings in which the child lives when placed in care. These involve a continuum of intensive and restrictive care services (Huefner, James, Ringle, Thompson, & Daly, 2010). At one end of the spectrum are family-based settings, in which the child is placed within a family, either through kinship or non-relatives. At the other end are several types of residential care facilities, in which children are placed with a group of peers and professional staff. In between is family-style group care with family-style settings and live-in workers. Foster family care is preferred over residential care, but children's needs should be taken into account when deciding on the type of placement. Children placed in residential care have on average more severe individual problems, such as emotional, behavioral and school-related problems, as well as a higher number of previous placements (Leloux-Opmeer, Kuiper, Swaab, & Scholte, 2016). Although studies on the long-term outcomes of residential care are scarce (Knorth, Harder, Zandberg, & Kendrick, 2008), some studies have found that placement in residential care, in comparison with foster care, is associated with a higher risk of educational disadvantage and low employment (e.g. Heino & Johnson, 2010; Maclean et al., 2017). Considering the increased prevalence of individual problems among those placed in residential care, it is likely that these explain a significant part of the disparities between children from different types of care.

4.2.3 Mental and behavioral disorders

Mental and behavioral disorders (hereafter, mental disorders, unless otherwise specified) comprise a diverse range of conditions that are characterized by abnormal psychological and behavioral functioning, often causing significant harm, distress or impairment (Bolton, 2008). The onset of mental disorders is often in childhood or adolescence (Kessler, Amminger, Aguilar, Gaxiola, Alonso, Lee, & Ustun, 2007). Common mental disorders in children and adolescents include depression and anxiety disorders, attention deficit hyperactivity disorder (ADHD) and conduct disorders (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015). Two standard manuals are used for the description, classification and diagnosis of these disorders: the International Classification of Diseases (ICD-10) and the Diagnostic and Statistical Manual of Mental Disorders (DSM). This thesis uses the diagnostic classes from ICD-10 and relies on specialized health care registers as data sources for diagnosed disorders.

Mental disorders have no specific single cause; they are the result of several interacting factors (Bolton, 2008). These factors may be related to genetics, developmental neurobiology, early experience, social context, personal attitudes, or current life circumstances and events. Psychosocial risk factors include low socioeconomic position, family dissolution, parents' mental health, and substance abuse problems, as well as parents' criminal behavior (Paananen, Ristikari, Merikukka, & Gissler, 2013), which are all common childhood characteristics for those placed in care. Other risk factors include experiences of abuse and neglect and dysfunctional interaction with parents (Fryers & Brugha, 2013), also common among children in care. The risk factors of mental disorders for children in care can be broadly considered as five interacting groups: genetic factors, physical traumata (e.g. fetal alcohol syndrome, physical abuse), pre-care factors (e.g. chaotic home environment), experiences while in care (e.g. disruptions in placements), and experiences after leaving care (e.g. limited social support) (Rutter, 2000).

In the epidemiology of mental disorders among children and adolescents, it is characteristic that prevalence rates vary significantly throughout the childhood years and between genders. For instance, ADHD rates decrease from childhood through adolescence, whereas the rates of depression and substance use disorders increase (Costello, Copeland, & Angold, 2011). Among boys, conduct and oppositional disorders, ADHD, and autism spectrum disorders are more common during elementary school age than among girls, whereas among girls, depression and anxiety disorders are more typical in adolescence than among boys (Rutter, Caspi, & Moffitt, 2003).

Children in care are significantly more likely to suffer from mental disorders than children in the general population (e.g. Burns et al., 2004; doReis, Zito, Safer, & Soeken, 2001; Egelund & Lausten, 2009; Farmer, Burns, Chapman, Phillips, Angold, & Costello, 2001; Ford, Vostanis, Meltzer, & Goodman, 2007; Halfon, Berkowitz, & Klee, 1992; Tarren-Sweeney & Vetere, 2013). A meta-analysis of prevalence rates reported that nearly half of children in care met the criteria for a current mental disorder (Bronsard et al., 2016), which is nearly four times the rate in the general population (Polanczyk et al., 2015). The most common disorders among children in care were conduct and oppositional disorders (27%), while other common disorders included anxiety and depression disorders (18%) and ADHD (11%) (Bronsard et al., 2016). Children in care also exhibit high rates of complex symptoms indicated by comorbid disorders (Jozefiak, Kayed, Rimehaug, Wormdal, Brubakk, & Wichstrøm, 2016).

In the Nordic countries, a Danish register-based study reported that 20% of children in care were diagnosed with any disorder by the age of 11, whereas the proportion of individuals with a diagnosis was 3% in the general population (Egelund & Lausten, 2009). Children who received in-home child welfare interventions had a similar probability of diagnosis to children in care (21%). Research has documented high proportions of mental disorders also in Finland among those entering care and those in care (Heino et al., 2016; Kiuru & Metteri, 2014), specifically among those placed in reform schools (Manninen, 2013).

Mental disorders contribute to poorer life-course outcomes in multiple domains. According to several

reviews, the association between mental disorders and poorer educational outcomes is substantial on the general population level (Esch et al., 2014; Hale et al., 2015; Melkevik, Nilsen, Evensen, Reneflot, & Mykletun, 2016; Suhrcke and de Paz Nieves 2011). Findings suggest that externalizing disorders (e.g. conduct disorders and ADHD) are more harmful for educational outcomes than internalizing disorders (e.g. depression and anxiety) (Esch et al., 2014; Melkevik et al. 2016). The association between mental disorders and poor school performance is likely to be bidirectional, meaning that poor mental health contributes to poorer performance at school and vice versa (Esch et al., 2014).

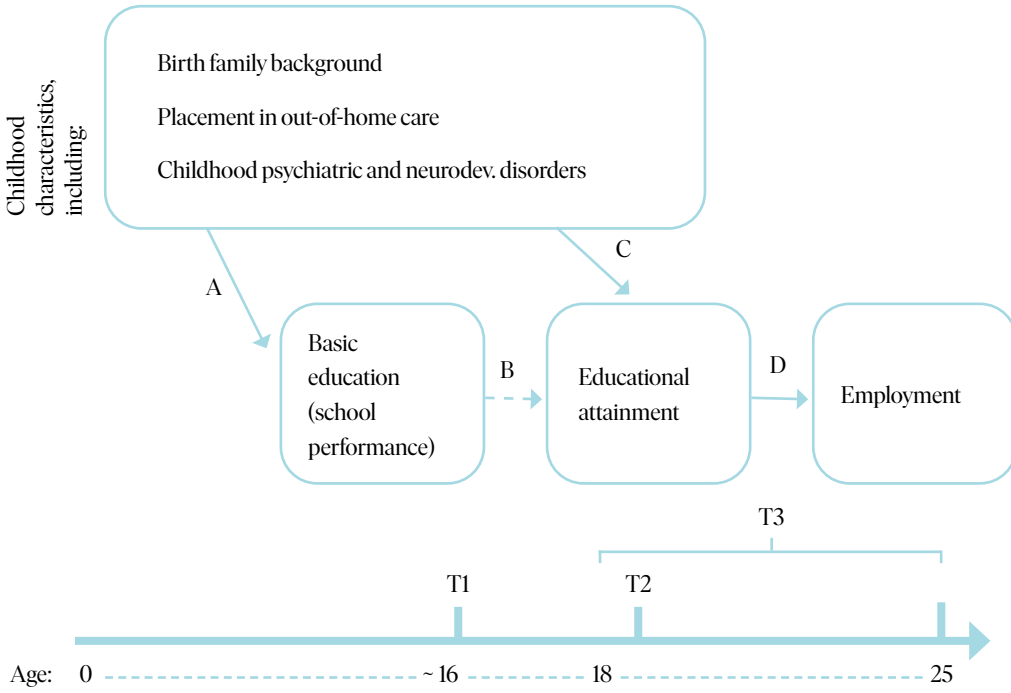
Among children in care, findings on the association between mental disorders and education are similar. A recent systematic review explored the evidence on the educational outcomes of children in foster care (O'Higgins et al., 2017). The review identified twelve studies reporting on mental and behavioral disorders. The findings regarding behavioral disorders suggest that these disorders place children in care at risk of poor educational outcomes. However, the findings were somewhat mixed, possibly because of confounding effects or limited variance in samples. Regarding mental disorders other than behavioral problems, the review found only five studies. Four of these found that poor mental health and well-being predicted poorer educational outcomes, and one found no significant results. In addition, the review concluded that special education needs (SEN) predict poorer educational outcomes; this finding is important because SEN are correlated with some mental disorders, such as learning disorders and autism spectrum disorders, which may partly explain the association between SEN and poorer school performance.

The findings of the review concern family foster care only (O'Higgins et al., 2017). However, it is presumable that mental and behavioral disorders are similarly harmful to the education of those in residential care. Although explicit evidence in residential settings is scant, some studies of residential care have indeed found that mental and behavioral disorders are also associated with poorer educational outcomes in this type of care (González-García, Lázaro-Visa, Santos, del Valle, & Bravo, 2017; Schelble, Franks, & Miller, 2010). Furthermore, many children are placed in residential care specifically because of disruptive behavior, and it is likely that these behavioral issues are just as detrimental to the education of these young people as they are to other children. Indeed, it has been observed that those placed in (any kind of) care because of behavioral problems are at elevated risk of adverse long-term outcomes (Vinnerljung, & Sallnäs, 2008).

However, the directionality of the association between mental disorders and educational outcomes among children in care is not clear. It is possible that problems at school and poor academic achievements also contribute to mental and behavioral disorders, and not only vice versa (Romano, Babchishin, Marquis, & Fréchette, 2015).

5 Summary of the conceptual framework and identified gaps in knowledge

This thesis is situated within the life course framework and social epidemiology. The life course model suggests that events and circumstances from early age may have long-term impacts on individual biographies. Figure 2 presents the life course model of education and employment transitions among children in out-of-home care in the context of this thesis. The model suggests, based on the reviewed evidence, that childhood characteristics (birth family background, placement in care, childhood psychiatric disorders) are related to school performance (i.e. success in basic education; arrow A), educational attainment (i.e. highest completed education; arrow C), and school-to-work transitions in early adulthood (i.e. pathway from education to employment, arrow D). Overall, the model suggests a pathway from childhood characteristics to success in basic education, which again is linked with educational attainment and further career (i.e. through A, B and D to employment; arrow B is marked here as a dashed line as this thesis does not directly address this linkage). Early adulthood in this thesis is defined as the period from age 18 and 25.



T1 = Transition from basic education to secondary education (Sub-study IV)
T2 = Completion of secondary education (Sub-study II)
T3 = Transition to adulthood (Sub-study I); school-to-work transitions (Sub-study III)

Figure 2. Life-course model for investigating education and employment transitions among children in out-of-home care.

Existing international evidence is consistent in that children in care represent a disadvantaged group in terms of long-term educational and employment outcomes when compared with the general population. However, there are still a number of gaps in the literature regarding these outcomes. First, reviews on the outcomes of out-of-home care are internationally scarce, and none have been conducted so far in the Nordic countries. Therefore, Sub-study I addresses the transition to adulthood (T3) and investigates by means of systematic review how the overall outcomes compare between children in care and the general population in the Nordic countries.

The results from the systematic review showed how difficult it is to assess the early adulthood transitions between countries because studies differ in design and several parameters, such as outcome definitions and follow-up periods. Moreover, comparative evidence on the outcomes of out-of-home care is internationally scarce. Hence, Sub-study II presents a comparative study on the association between placement in care and educational attainment (T2) in Finland, Denmark and Sweden.

The review of Sub-study I and a further review of the international literature showed a paucity of evidence on the temporal trajectories of children in care during the early adulthood transitions (T3, school-to-work transitions). Yet a host of studies have conducted this kind of research among the general population (e.g. Brzinsky-Fay, 2007; Buchmann & Kriesi, 2011; Haapakorva, Ristikari, & Gissler, 2017; Lorentzen et al. 2018; Salmela-Aro, Kiuru, Nurmi, & Eerola, 2011). Using Finnish data, Sub-study III set out to fill this gap in the literature and to explore the early adulthood education and employment trajectories of children in care.

Lastly, existing evidence suggests a robust association between placement in care and poor school performance. The concern is that poor school performance causes significant harm for the further education, career prospects and overall life opportunities of children in care (arrow B). It is furthermore likely that psychiatric and neurodevelopmental disorders, which are common among children in care, play a significant role in their educational disadvantage. However, evidence is scant and mostly based on small-scale studies. Population-based estimates are lacking. Thus, Sub-study IV investigates the association between placement in care and school performance at the end of basic education (T1) in Finland and assesses the contribution of diagnosed psychiatric and neurodevelopmental disorders to the poorer school performance of children in care.

6 Aims of the study

Set in the contexts of the Nordic countries and Finland, the overall aim of this study was to further our understanding of the life course outcomes of out-of-home care. To do so, this study seeks to identify and synthesize existing evidence on the outcomes of out-of-home care within the region and to expand the literature on educational and employment transitions and their predictors.

Along the same lines of decades of Nordic and international research, the research synthesis included in this thesis demonstrated a gap with regard to a number of early adulthood outcomes between children in care and their peers. To better articulate the scale of this social problem, this study utilizes longitudinal register-based data from Finland, Sweden, and Denmark and provides a comparative perspective of the educational attainment of children in care.

In addition, by utilizing similar data from Finland only, this study has two other focused aims. First, it explores a topic that has been neglected in child welfare research thus far: temporal dynamics during transition to adulthood. Second, this thesis examines school performance—a significant determinant for later life outcomes—and explores the extent to which diagnosed psychiatric and neurodevelopmental disorders contribute to the poor school performance of children in care.

This study adds to the growing literature on the outcomes of out-of-home care in Finland and, with its comparative perspective, expands the existing evidence-base in the Nordic countries, while also contributing to research beyond the region. A crosscutting objective is to address how care history factors (age at entry, length of time in care, etc.) are associated with long-term outcomes. Ultimately, the aim is to inform policy and practice development in child welfare.

The aims of the study are addressed by answering the following four specific questions:

1. How do the developmental outcomes of children in care compare with those of the general population peers who have never been in care in the Nordic countries, specifically in terms of school performance, educational attainment and early adulthood school-to-work transitions? (Sub-studies I, II, III, & IV)
2. To what extent does the educational attainment of children in care differ between Finland, Denmark and Sweden? (Sub-study II)
3. How are various care history factors (age at entry, length of time in care, type of placement, etc.) associated with school performance, educational attainment and school-to-work transitions? (Sub-studies II, III, & IV)
4. To what extent do diagnosed psychiatric and neurodevelopmental disorders contribute to the association between placement in care and poor school performance in Finland? (Sub-study IV)

Section 9.1 summarizes the findings of the study by answering these questions.

7 Materials and methods

7.1 DATA SOURCES, STUDY POPULATIONS AND STUDY DESIGNS

This thesis includes four empirical quantitative studies. One of them is a research synthesis on the early adulthood outcomes of out-of-home care, and is based on a systematic review of the literature; Section 7.3 below presents the methodology used in the literature review. The three other sub-studies analyze the educational and employment outcomes of care and are based on longitudinal data from several social, demographic and health-related registers in the Nordic countries of Finland, Denmark and Sweden. Sub-study II examines educational attainment in Finland, Denmark and Sweden using data from complete national cohorts born in 1987. Sub-study III, investigating early adulthood education and employment trajectories, uses the same 1987 birth cohort data from Finland only. Lastly, Sub-study IV examines school performance as an outcome, and is based on the data of a complete Finnish national birth cohort born ten years later, the 1997 birth cohort.

Data from different registers were linked deterministically using the personal identity codes assigned to all residents in the study countries. For pseudonymization, the researchers removed the identity codes from the datasets used. Research permits were acquired from the register holders in each country. According to the legislation of the study countries, register-based studies do not require informed consent, and researchers are not allowed to contact the registered individuals. Table 1 below summarizes the data and methods used in Sub-studies I–IV.

In Sub-studies II–IV, predictor data on placements in care in Finland were drawn from the Child Welfare Register maintained by the Finnish Institute for Health and Welfare, THL. In Denmark and Sweden (studied in Sub-study II), the corresponding data sources were the Register on Children and Youth in Out-of-home Care, maintained by Statistics Denmark, and the Swedish Child Welfare Intervention Register of the National Board of Health and Welfare. These registers contain records on all the out-of-home care placements implemented in these countries, including information on the beginning and ending dates of all types of placements such as family foster care and residential group care.

The outcome data on educational attainment in Sub-study II were derived from the Education Registers in Finland and Denmark held by Statistics Finland and Statistics Denmark. In Sweden, this data come from the Longitudinal Integration Database for Health Insurance and Social Studies (LISA) administered by Statistics Sweden. Sub-study III used early adulthood education and employment trajectories as the outcome of the study. The data on these trajectories were drawn from several Finnish registers involving information on cohort members' employment, receipt of study and social assistance benefits, parental benefits, and pensions, as well as other benefits. The data sources are reported in Haapakorva et al. (2017), and further description of the trajectories is provided below. Sub-study IV drew outcome data on school performance (GPA) from the Joint Application Register held by the Finnish National Board of Education. In addition to child-related data, Sub-studies II–IV involved covariate data on cohort members' parents, derived from several administrative sources of the study countries[2].

In Sub-study II, the study population comprised all individuals born in Finland, Denmark and Sweden in 1987. We excluded the population that died and emigrated before turning 18 in order to include only those who were able to complete a secondary-level education. The final samples included 55,995 individuals for Den-

[2] Denmark: Statistics Denmark (Danish Population Register, Danish Education Register, Danish Register on Income and Social Assistance, Danish Psychiatric Register); Finland: Finnish Institute for Health and Welfare, THL (Medical Birth Register, Social Assistance Register, Hospital Discharge Register), Statistics Finland (Education Register), Finnish Population Register Centre (Finnish Population Register); Sweden: Statistics Sweden (Swedish Population Register, Multi-Generation Register, Longitudinal Integration Database for Health Insurance and Social Studies—LISA), National Board of Health and Welfare (National Patient Register).

Table 1. Data, measures, and methods of Sub-studies I–IV.

	Research question	Data sources	Study population	N total (N in care)
Sub-study I	Outcomes of out-of-home care in the Nordic countries	EBSCO's Psychology/Sociology databases and ProQuest's Social and Behavioral Sciences databases	Children in care in the Nordic countries and non-care comparison group	n.a.
Sub-study II	Educational attainment of children in care in Finland, Denmark, and Sweden	Administrative registers	Danish, Finnish, and Swedish birth cohorts 1987	Denmark 55,995 (3056) Finland 58,855 (1884) Sweden 100,152 (3209)
Sub-study III	Education and employment trajectories and association between care history and these trajectories	Administrative registers	Finnish birth cohort 1987	59,476 (1893)
Sub-study IV	The extent to which diagnosed mental disorders explain the association between out-of-home care and poor school performance	Administrative registers	Finnish birth cohort 1997	56,121 (2628)

[1]PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009)

mark (of whom 3056 had been placed in care), 58,855 for Finland (of whom 1884 were in care), and 100,152 for Sweden (of whom 3209 were in care). To measure educational attainment, we followed up the cohort members until the end of 2010, when they turned 23, and compared the attainment of those in care with those never in care. To control for heterogeneity in placement experiences, we included not only all children in care in the analysis, but also four mutually exclusive subgroups: those who entered short-, medium-, and long-term care before their teens, and those who entered care as teenagers. We were unable to merge the datasets from each study country into a single data file because of legislative restrictions on data management. Therefore, each country team prepared and analyzed their respective data, and we compiled the findings from each country for comparison.

The study population of Sub-study III comprised all people born in Finland in 1987 (N = 59,476, of whom 1893 were placed in care before turning age 18). The cohort was followed from the fetal stage until the end of 2012. The outcomes of the study were education and employment trajectories. The follow-up data for these trajectories covered the years from 2005 to 2012, meaning that the trajectories tracked cohort members' education and employment-related activities from the age of 18 to 25. We compared the trajectories that the children in care entered with those of their peers in the general population who had never been in care. In

Follow-up years	Outcome	Main independent variables	Covariates	Methods
n.a.	Social, economic, demographic, and health outcomes in early adulthood	Out-of-home care	n.a.	Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines[1]
1987–2010	Educational attainment at age 23	Out-of-home care (placement age and length of placement)	Child's sex; mother's education, receipt of social assistance benefit, mental health problems, and alcohol and drug abuse problems	Binary logistic regression modeling (results presented as average marginal effects)
1987–2012	Education and employment trajectories from age 18 to 25	Out-of-home care Various placement characteristics	Child's sex and nicotine exposure during pregnancy; parents' education, receipt of social assitance benefit, mental health problems, alcohol and drug abuse problems, and death; mother's age at birth	Propensity score matching (exact matching on sex), chi-squared test, multinomial logistic regression modeling
1997–2013	School performance at the end of basic education (i.e. age 16)	Out-of-home care (placement age) Diagnosed psychiatric and neurodevelopmental disorders	Child's sex and nicotine exposure during pregnancy; parents' education and receipt of social assistance benefit; mother's age at birth	Linear regression modeling

addition to investigating and comparing the trajectories, we explored the association between several care history factors and the types of trajectories that children in care entered.

In Sub-study IV, the study population consisted of all people born in 1997 in Finland. This study investigated the association between placement into care and school performance, with the aim of assessing the extent to which diagnosed psychiatric and neurodevelopmental disorders contribute to the association between placement in care and education. We excluded those who emigrated or died before registering their grade points. In addition, we excluded those who had no recorded grade points in the register. The final number of participants was 56,121 of whom 2628 had been in out-of-home care. The follow-up period spanned from the fetal stage until the typical ending date of basic education, which for the 1997 cohort was 1 June 2013. For this period, we investigated placements into care and covariate data, including diagnosed psychiatric and neurodevelopmental disorders. Besides running the analysis for all the individuals placed in care, we divided the children in care into three groups based on their age at first entry into care: those placed before school age (ages 0–6), those placed during elementary school age (ages 7–12), and those placed as adolescents (ages 13–16). The rationale was that the dynamics between entry into care, school performance and incidence of disorders may differ according to age at entry into care.

7.2 MEASURES

7.2.1 Care history factors

Sub-studies II–IV used placement in care as a binary variable (no/yes). This category included all children who were placed in care before a specific age. This involved all placement settings, all legal grounds for placements, and any length of time spent in care (i.e. one day – 18 years). Sub-studies II and III measured whether a person had experienced placement in any type of out-of-home care before turning 18. Sub-study IV investigated placement data from birth to the end of basic education.

In addition to children in care as a group, several care history factors were assessed. These were age at entry into care, length of time in care, type of placement, number of placements, experience of aging out of care, and receiving after-care support.

Age at entry into care and length of time in care

Children in care were divided into mutually exclusive subgroups in Sub-studies II and IV. In Sub-study II, these groups were based on the combination of age at entry into care and length of time in care. The subgroups consisted of those who entered care before teenage (before the age of 13), divided into three groups by the length of time in care (short-, medium-, and long-term care, i.e. less than 1 year, 1–5 years, and at least 5 years, respectively), as well as those placed as adolescents (at least 13 years of age). We did not use length of time in care to divide those placed as teenagers into two groups because our preliminary analysis showed no difference in educational attainment among adolescents in short- and medium-term care. This resulted in a five-category variable (never in care/entry into care before the age of 13 for short-term/entry into care before the age of 13 for medium-term/entry into care before the age of 13 for long-term/entry into care at the age of 13 or later).

In Sub-study IV, mutually exclusive subgroups were based on age at entry into care. The groups consisted of those placed at the age of 0 to 6; those placed at the age of 7 to 12; and those placed at the age of 13 to 16 (at the end of the follow up on 1 June 2013, the cohort members were either 16 or 15, depending on their date of birth). This resulted in a four-category variable (never in care/entry into care before school age/entry into care at elementary school age/entry into care at teenage).

Sub-study III used age at entry into care as a binary variable divided into those who were placed before the age of 13 and those who were placed when they were at least 13. In addition, Sub-study III investigated length of time in care as a continuous variable.

Type of placement, number of placements, aging out of care, after-care support

In addition to age at entry and length of time in care, Sub-study III explored type of placement, number of placements, experience of aging out of care, and receiving support from after-care as predictors of employment and education trajectories. Type of placement was a three-category variable based on the most typical type of placement an individual experienced (foster family/residential care/other type of care). The most typical type here meant that length of time in the particular type of placement was longer than in other types of placement. Number of placements was used as a proxy for placement stability, and was measured on a continuous scale.

Aging out of care was measured as a binary variable (no/yes). Here it refers to being in care at the age of 17. In other words, the aim of this measure was to capture whether an individual was in care prior to exiting care due to the age of maturity. Lastly, after-care support was measured as a binary variable (no/yes). Receiving after-care support here refers to receiving after-care housing support. This is provided in Finland up to the age of 21 to those who exit or age out of care and need support for housing arrangements. Receiving after-care is voluntary. Thus, not everyone entitled to after-care support actually receives it. The availability of housing may also affect provision.

7.2.2 Socioeconomic, demographic and health-related factors

Sub-study IV used children's diagnoses of psychiatric and neurodevelopmental disorders as independent variables. For the measurement of diagnoses, we investigated inpatient and outpatient specialized health care records from the time of birth until the end of basic education. We used both primary and secondary diagnoses. We examined diagnoses for eight diagnostic classes separately, resulting in eight respective dummy variables (no/yes). Hence, each person could be diagnosed with several of these diagnostic classes. The investigated diagnostic classes were substance-related disorders (ICD-10 codes F10–F19), psychotic and bipolar disorders (F20–F31), depression and anxiety disorders (F32–F34, F38, F39, F40, F41 excluding F41.2, F93, F94), ADHD (F90), learning, speech and coordination disorders (F80–F83), autism spectrum disorders (F84), conduct and oppositional disorders (F91, F92), and eating disorders (F50).

Several parental background characteristics were used as control variables or matching variables in Sub-studies II–IV. In Sub-study II, the comparative investigation, we used mother-related data and measured mother's educational attainment, receipt of social assistance benefits, mental health problems, and alcohol and drug abuse issues. Mother's educational attainment was measured in three categories: 1) compulsory level (no ISCED [UNESCO's International Standard Classification of Education] level 3), 2) secondary education (ISCED level 3 and 4), and 3) post-secondary education (ISCED level 5 or higher). We also included a fourth category, missing, for mothers who had no information on educational attainment in the registers. As a measure of social assistance benefits, we investigated whether the birth mother received social assistance for six months over two consecutive years from 1990 to 2004 (Swedish social assistance data were not available in 1987–1989, only from 1990 onwards). Mother's mental health problems and alcohol and drug abuse were each dummies that indicated whether the mother had received these kinds of diagnoses in inpatient hospital care during the period 1987 to 2004[3].

In Sub-study III, we used both mothers' and fathers' characteristics to find matched peers for children in care. The selected confounders included parents' education, social assistance benefit receipt, mental health problems, alcohol and drug abuse problems, parental death, young maternal age at child's birth, and mother's smoking during pregnancy. Parental education was measured as highest parental education on the same three-level scale as in Sub-study II. Parents' receipt of social assistance benefit indicated whether at least one of the parents received this kind of benefit for at least six months during one of the follow-up years. Similarly, parental mental health problems and alcohol and drug abuse problems both indicated whether at least one of the parents received these kinds of diagnoses in inpatient hospital care during one of the follow-up years (same ICD-9 and -10 diagnostic classes used as in Sub-study II). Parental death indicated whether at least one of the parents died during the follow-up. Young maternal age was a dummy, defined as the mother's age being less than 20 at the time of the child's birth. Lastly, mother's smoking during pregnancy indicated whether the mother smoked during gestational age (no/yes/not reported).

To ensure that in the matching procedure in Sub-study III we measured characteristics that pre-dated entry into care, we used data from the time before the first entry into care. Therefore, we used three follow-up periods for the following confounders: receipt of social assistance benefits (income support), diagnosis of mental health problems and alcohol and drug abuse, and parental death. Those who were placed at the age of 0 to 6, and their matched peer group, were followed for the birth year 1987 only. For those placed for the first time at the age of 7–12, and 13–17, as well as their matched peers, we used parental data from the years between 1987 and 1994, and between 1987 and 2000, respectively.

In Sub-study IV, we controlled for parental education, receipt of social assistance benefit, young maternal

[3] International Statistical Classification of Diseases and Related Health Problems 9th and 10th revisions (ICD-9 and -10) diagnosis from inpatient hospital care from 1987 to 2004. Mental health problems are defined by ICD-9 codes 293–302, 306–309, 311–316 and ICD-10 codes F20–F69, F80–F99. Alcohol and drug abuse are defined by ICD-9 codes 291–292, 303–304, 3050, 3059, 980 and ICD-10 codes F10–F19.

age at child's birth, and maternal smoking during pregnancy. The variable definitions were the same as those in Sub-study III, with two exceptions. First, parental social assistance benefits were followed up until the year of first placement, or until the year when basic education typically ended for those who were never in care (i.e. until 2013). Second, maternal smoking during pregnancy was defined as a binary dummy variable (no/yes). In Sub-studies III and IV, we were unable to identify fathers for small shares of the children through the registers (1.4% and 0.9% respectively). However, as we wanted to include these children in the studies, we used only maternal data for constructing their confounding variables.

In addition to the confounding variables defined above, Sub-studies II and IV controlled for the sex of the children. Sub-study III used sex as a direct matching variable.

As this section shows, several of the independent variables in this thesis are binary. Because of the known limitations related to the use of binary measures, such as loss of information and statistical power (e.g. Fitzsimons, 2008; MacCallum, Zhang, Preacher, & Rucker, 2002; Royston, Altman, & Sauerbrei, 2006.), a few critical issues are worth noting. The main independent variable used in Sub-studies II–IV is placement in care, which is a dichotomy in the sense that a child is either placed in care or not. Hence, this measure can be used to find children who have experienced any placement in out-of-home care. However, the care histories of children in care are significantly heterogeneous. Therefore, the binary variable of out-of-home care is a rather crude measure of out-of-home care—and even more so, of the situation and needs of the child. To gain a more nuanced view of placements in care, in Sub-studies II and III, the children in care were divided into subgroups as presented above, and Sub-study IV investigated several care history factors. Similar critical concerns can be raised with regard to the binary confounders included in Sub-studies II–IV. However, although using binary variables as confounders may affect some statistical properties of the model, such as the coefficient of determination, the effects of using binary variables on the strength of the association of interest is likely to be limited.

7.2.3 Education and employment outcomes

Educational attainment (Sub-study II)

We compared the attainment of secondary education in Finland, Denmark and Sweden using the classification of UNESCO's International Standard Classification of Education (ISCED). We measured the attainment of secondary education by defining the lack of secondary education as not having completed ISCED level-three education by the end of 2010, when the study population born in 1987 turned 23 (UNESCO Institute for Statistics (UIS), 2012). This definition includes those who have not completed compulsory basic education and those who have completed compulsory education, but no more than that. In addition, it includes those who have entered secondary education, but not completed a program of study.

Education and employment trajectories (Sub-study III)

Figure 3 presents the education and employment trajectories of three fictitious individuals A, B and C, born in 1987, as the cohort studied in Sub-study III. These trajectories describe these individuals' education and employment-related activities over the period of 96 months from 2005 to 2012, that is, their transition to adulthood from the age of 18 to 25. For some, such as individual A, the transition from education to employment was straightforward and smooth. For the others, the period involved turbulence and several transitions that interacted with each other. Individual B's transition from school to work, for instance, was disrupted in 2006 when she became unemployed after a short period of work. She was registered as unemployed for some time before she started to receive social assistance. After some time, she disappeared from the registers altogether. For person C, engaging in parenting discontinued his education for almost four years, after which he began working.

In this thesis, the trajectories of Haapakorva and colleagues (2017) form the basis of our investigations of the outcomes of children in care. Haapakorva et al. (2017) utilized sequence analysis and hierarchical cluster

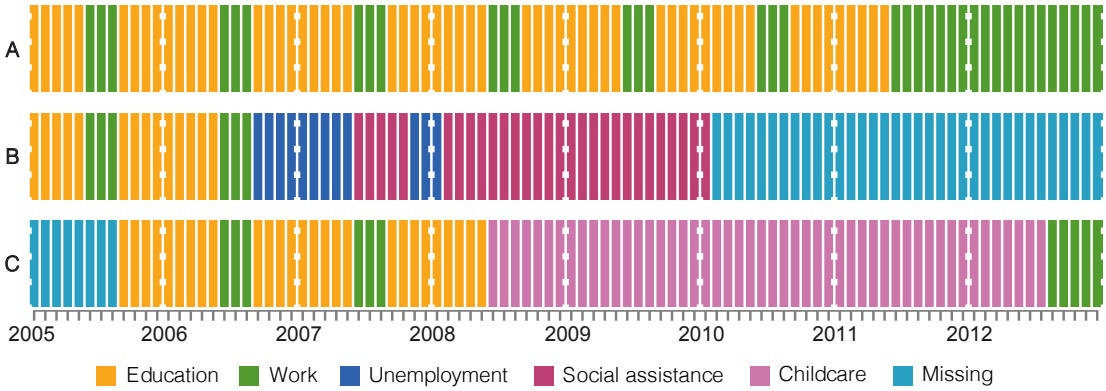


Figure 3. Education and employment trajectories of fictitious individuals A, B and C born in 1987, over 96 months from 2005 to 2012.

analysis to explore and describe the education and employment trajectories of the entire 1987 birth cohort (i.e. including children in care). The study utilized uniquely rich administrative data including information on the cohort members' employment, receipt of study and social assistance benefits, parental benefits, and pensions, as well as other benefits. The study followed the cohort from 2005 to 2012 (i.e. from age 18 to 25), covering education and employment-related activities for 96 months altogether. As a result, Haapakorva et al. (2017) identified 12 early adulthood trajectory types.

This thesis expands on Haapakorva et al. (2017) by investigating how children in care are divided into these 12 trajectory clusters and by comparing the results with those of a matched group of peers who had never been in care. The typology of the 12 trajectories is fruitful for examining children with care experience for at least two reasons. First, the relatively large set of trajectory types enables the capturing of significant heterogeneity in transitions. In other words, they describe not only the most typical developments but also the less frequent ones. This is important because children in care are a small minority who may experience transitions that are less common in the general population.

Second, the typology of the trajectories had several substantially interesting transitional patterns. To start with, Haapakorva et al. (2017) identified four trajectory types in which individuals mostly studied or worked throughout the follow-up period. Among the general population, these trajectories were the most common. Considering the evidence discussed in the previous chapter, it is less likely that children in care enter these stable education and employment trajectories than their peers who have never been in care, but differences may also exist in how children in care are divided into these types of trajectories. Next, Haapakorva et al. (2017) identified one trajectory that captured those who gained employment after initial difficulties during the global recession that started in 2008. Because of the vulnerability of children in care, they may be more likely to have difficulties at the beginning of their career and to suffer the consequences of economic fluctuations, and thus experience this type of trajectory. In general, children in care are more likely to gain employment later in their transitions than the general population (Gypen et al. 2017; Harkko et al., 2016), which would also suggest that they are more likely to enter this kind of "early difficulties" trajectory than their non-care peers.

Haapakorva et al. (2017) also identified two separate parenthood trajectories, early and late, which enable the investigation of how parenting patterns differ between children in care and peers who have never been in care and how this influences participation in education and employment. Moving on, three different trajectories describe the experiences of those with more NEET (Not in Education, Employment, or Training)

types of developments, in which unemployment and receiving social assistance benefits (last-resort income support) are common outcomes. This enabled comparison of the prevalence and type of these more adverse trajectories between children in care and those who have never been in care. Finally, one trajectory included those who had very limited data in the registers ("no-data" trajectory). This kind of trajectory is likely to suggest serious exclusion from education and employment, as discussed in more detail in the results section. The twelfth identified trajectory comprised those cohort members who died before the end of 2012; but this is not the focus of this thesis.

School performance (Sub-study IV)

As a measure of school performance in Sub-study IV, we used the GPA from the final year of compulsory basic education. The GPA is the arithmetic mean of compulsory theoretical subjects. It is measured on a continuous scale from 4 to 10 (i.e. from lowest to highest possible grade). In the main analysis of the Sub-study presented in this thesis, we used the z-score-scaled standardized GPA[4]. Unstandardized results are provided in the supplementary material in the original article.

7.3 METHODS FOR SYSTEMATIC REVIEW

Search strategy

To conduct the systematic review of Sub-study I, we followed the method recommendations presented in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009). We conducted searches in February 2016 and searched EBSCO's Psychology/Sociology Databases and ProQuest's Social and Behavioral Sciences databases[5]. Because we wanted to include a broad range of studies, we included reports by governmental and independent research agencies along with peer-reviewed articles. We included relevant studies that were published in English or one of the major Nordic languages. We limited the search to studies published between 1 January 2000 and 22 February 2016. When conducting the search, we first manually scrutinized the reference lists of the studies we already knew. We then scrutinized the reference lists of the eligible studies to find any other relevant studies. Finally, to ensure the inclusion of all relevant studies, we contacted experts in each Nordic country studied. We also tried to identify studies in Iceland, but this effort did not lead to any results that met the inclusion criteria.

Inclusion criteria and study selection

The aim of the systematic review was to synthesize evidence on the early adulthood outcomes of out-of-home care in the Nordic countries. We set the inclusion criteria accordingly. We included studies that reported any outcome of out-of-home care beginning at the age of 18 or later and compared a population with experience in care with a population that had never been in care during their childhood or adolescence. We included studies that investigated populations born in 1965 or later in Denmark, Finland, Norway, or Sweden, and employed quantitative methodologies. We excluded studies that did not meet all the inclusion criteria.

The selection process had two stages. We first manually scrutinized the titles and abstracts of the studies found in the manual searches and electronic database searches. We then assessed the full text of the identified publications to identify studies for inclusion. In some cases, fulfillment of the inclusion criteria was unclear; in these cases, we made the final decision after a discussion.

Data extraction, synthesis, and analysis

[4] Standardized GPA = (unstandardized GPA – mean [unstandardized GPA]) / standard deviation [unstandardized GPA].

[5] The following search terms were used: ("foster children" OR "foster care" OR "looked after" OR "looked-after" OR "out of home care" OR "out-of-home care" OR "out of home placement" OR "out-of-home placement" OR "residential care" OR "state care" OR "public care" OR "kinship care") in keyword and title AND ("Denmark" OR "Finland" OR "Norway" OR "Sweden") in all fields.

To assess the evidence from the eligible studies, we formulated a narrative synthesis. We were unable to conduct a meta-analysis because the included studies were too heterogeneous. To facilitate the synthesis, we extracted relevant information from each eligible study on study design, populations, methods, outcomes, and the main findings. In synthesizing the findings, we first grouped the outcomes into thematic categories. In each outcome category, we examined the significance and direction of the effect in the individual studies and the consistency of the evidence across the studies. We did not evaluate possible bias in the studies since the included studies were all register-based cohort studies and thus had corresponding risks of bias; however, we considered the strengths and limitations of these kinds of studies in the discussion section.

The results of the systematic review, including the number of eligible studies and their parameters, are presented below in Section 8.

7.4 STATISTICAL METHODS

In Sub-study II, we estimated the country-specific risks of the lack of secondary education among children in care. We estimated the effects using binary logistic regression modeling. We conducted each country analysis separately because legislative restrictions prohibited us from constructing a single dataset. Therefore, we collated the analyses from each country for comparison. The results were presented as AME because unlike odds ratios, which are the most typical way to present results from binary logistic regression, AME estimates are comparable across countries (Mood, 2010). Mood (2010) has argued that odds ratios from separate logistic regression models (e.g. from different countries) are not comparable because results from different models may be on different scales. The analysis involved two models. Model I presented the crude association between placement in care and lack of secondary education. Model II controlled for the child's sex and four birth-mother-related confounders: education, receipt of social assistance, mental health problems, and alcohol and substance abuse. The Danish results were estimated using Stata version 14 and the margins command. For Sweden and Finland, we used R for Windows (versions 3.3.2 and 3.4.2 respectively) with the mfx package's mfx command. To ensure similar computations between the two programs, we also ran the analysis for Finland with Stata (version 14.2) and found corresponding results.

In Sub-study III, we compared the education and employment trajectories of children in care with those of a propensity-score matched group of peers who had never been in care. To select controls (those who had never been in care) for each case (those placed in care), we used nearest neighbor propensity score matching (Austin, 2011). Using logistics regression modeling, we estimated the propensity for placement into care using the following background characteristics: parents' education, receipt of social assistance benefit, mental health problems, alcohol and drug abuse problems, parental death, young maternal age at child's birth, and mother's smoking during pregnancy. We first performed exact matching on sex. Then we used a maximum caliper of 0.3 to select controls for each case (caliper is the maximum allowable difference in propensity to be placed in care between a case and a control). To take into account that children can be placed in care at varying ages, the matching procedure involved three steps. First, we selected matches for those placed at the age of 0 to 6, next for those placed at the age of 7 to 12, and lastly for those placed at the age of 13 to 17. After step one and step two, we excluded selected peers from the general population who had never been in care, so that none of the peers could be selected twice for the control group.

To compare the type of trajectories that the children in care and the matched non-care peers experienced in Sub-study III, we used cross tabulation and chi-squared test. Because the analysis involved 72 statistical tests (i.e. each type of trajectory tested in the children in care and the matched/non-matched peer groups for both sexes combined and for boys and girls separately), we used a purposefully conservative significance level of 0.0005. In addition to these analyses, we estimated the association between a number of care history factors and the 12 types of education and employment trajectories. We used multinomial logistic regression analysis to test these associations. The selected care history factors were age at entry into care, length of time in care,

type of placement, number of placements, experience of aging out of care, and receiving after-care support. All the analyses were conducted using SPSS (version 24).

Finally, in Sub-study IV, we estimated the effect of being in care on school performance using linear regression modeling and standardized GPA as the outcome variable. The modeling aimed to estimate the confounding effects of the birth family's sociodemographic background and diagnosed psychiatric and neurodevelopmental disorders. To this end, the analysis involved three models. Model I established associations controlled for sex. Model II additionally controlled for parental background (parent's highest education level, receipt of social assistance benefit, mother's age at child's birth, and mother's smoking during pregnancy). Lastly, Model III further included separate dummies of each of the investigated diagnostic classes of psychiatric and neurodevelopmental disorders (substance-related disorders; psychotic and bipolar disorders; depression and anxiety disorders; ADHD; learning, speech and coordination disorders; autism spectrum disorders; conduct and oppositional disorders; and eating disorders). Sub-study IV also involved some additional and sensitivity analyses. The purposes of these analyses were to test gender differences, sensitivity to reporting issues of diagnostic data in some hospital districts, and the robustness of the results to the type of curriculum according to which pupils studied in basic education. The results of these additional and sensitivity analyses were not substantially different from the results of the main analysis. Therefore, the focus of this summary section is on the main analysis. An interested reader can find a detailed explanation and the results of the sensitivity checks in the original article. The analysis was conducted using R for Windows (version 3.5.1).

7.5 ETHICAL APPROVAL

The ethical committee of the Finnish Institute for Health and Welfare in Finland has given ethical approval for the Finnish Birth Cohort Studies. The register holders of the national registers used in this study have granted research permission to the author of this thesis, as mandated by Finnish legislation. The co-authors from Sweden and Denmark have similar approvals and permissions from their respective countries.

8 Results

8.1 EARLY ADULTHOOD OUTCOMES OF OUT-OF-HOME CARE IN THE NORDIC COUNTRIES (SUB-STUDY I)

This study was a systematic review, which examined quantitative evidence on the early adulthood social, economic, demographic, and health-related outcomes of children in care and compared it with that on the general population who have not been in care. Because the objective of the review was to gain an overall picture of the early adulthood conditions of children in care in the Nordic countries, we set no restrictions to the types of outcomes but accepted all outcomes for the synthesis.

We identified 333 studies through our searches. After assessing the titles and abstracts of these studies, we selected 33 studies for full-text assessment, of which 15 studies fulfilled our inclusion criteria. We identified five additional studies by screening the references of the eligible studies and by contacting experts in the Nordic countries. As a result, a total of 20 studies met our inclusion criteria.

The eligible studies included twelve publications from Sweden, five from Finland, two from Norway, and one from Denmark (Table 2). All of the studies were observational register-based cohort studies, meaning that the evidence relied on officially recorded information collected primarily for administrative purposes. We were unable to calculate the exact size of the total sample because some cohorts overlapped, but we estimated that the total population covered exceeded two million. Individual sample sizes ranged from around 5000 to over a million individuals. The comparison group in all the included studies comprised the study cohort's entire general population who had never been in care or a sample or a matched group of them. The studies mostly utilized methods typical in the field, with the two most common methods being cox proportional hazards and binary logistic regression modelling.

The findings of the review are presented in the form of narrative synthesis; due to the heterogeneity and small number of eligible studies on each outcome, conducting a meta-analysis was inappropriate. In the synthesis, we identified nine main outcome categories: educational challenges (with 10 studies investigating this outcome), self-supporting problems (9 studies), mental health problems (6 studies), criminality (6 studies), suicidal behavior (6 studies), teenage parenthood (5 studies), mortality (4 studies), alcohol and substance use (4 studies), and disability pension (2 studies). Of the eligible studies, seven investigated only one of the outcomes, and the others examined two to six of them.

The overall result of the synthesis was that placement in care in childhood was significantly associated with negative outcomes in young adulthood in each outcome category, consistently across the studies. This result held true even after controlling for birth parents' various socio-economic, demographic and mental health-related factors. Several Swedish studies identified poor school performance as a particular risk factor for adverse outcomes. These outcomes included disability pension, drug and alcohol abuse, criminal behavior, welfare dependency, and girls' teenage parenthood (Berlin et al., 2011; Brännström et al., 2016; Vinnerljung et al., 2010; Vinnerljung et al., 2015). Those placed as teenagers were at a particular risk of low educational attainment (Kestilä et al., 2012; Vinnerljung et al., 2005; with somewhat mixed findings in Olsen et al., 2011), mental health problems (Kestilä et al., 2012; Olsen et al., 2011; Vinnerljung & Hjern, 2014) and teenage parenthood (Brännström et al., 2016; Kestilä et al., 2012; Vinnerljung et al., 2007). Those experiencing placement instability were also at an increased risk of low educational attainment (Vinnerljung et al., 2005). Men were at a particular risk of mental health problems (Kestilä et al., 2012; Vinnerljung & Hjern, 2014). These risk factors (poor school performance, teenage placement, gender) were not addressed in all of the included studies, and some studies focused on only a specific subpopulation of children in care.

Table 2. Characteristics of the included studies and summary of the identified outcome categories.

Reference	Country [1]	Study population (N [2])	Investigated outcomes
Backe-Hansen et al. (2014)	NO	Child welfare population 1990–2010 and a comparison sample (150 000)	Educational challenges
Berlin et al. (2011)	SE	Birth cohorts 1972–1981 (900 000)	Educational challenges; self-supporting problems; criminality; suicidal behavior; alcohol and drug use
Brännström et al. (2016)	SE	Birth cohorts (females) 1973–1989 (700 000)	Teenage parenthood
Clausen & Kristofersen (2008)	NO	Child welfare population 1990–2005 and a comparison sample (100 000)	Educational challenges; self-supporting problems
Heino & Johnson (2010)	FI	Birth cohorts 1982–1991 (650 000)	Educational challenges; self-supporting problems; teenage parenthood
Hjern et al. (2004)	SE	Birth cohorts 1973–1982 (950 000)	Suicidal behavior; mortality
Kalland et al. (2001)	FI	All children in care in 1991–1997 (13 371)	Mortality
Kataja et al. (2014)	FI	Birth cohort 1987 (60 069)	Educational challenges; self-supporting problems; mental health problems
Kestilä et al. (2012b)	FI	Birth cohort 1987 (60 069)	Educational challenges; self-supporting problems; mental health problems; criminality; teenage parenthood
Manninen et al. (2015)	FI	Residential school sample and matched controls (5201)	Mortality
Olsen et al. (2011)	DE	Birth cohorts 1980–1982 (150 000)	Educational challenges; self-supporting problems; mental health problems; criminality; disablility pension
Vinnerljung et al. (2010)	SE	Birth cohorts 1972–1981 (940 000)	Educational challenges; self-supporting problems; criminality; suicidal behavior; teenage parenthood; alcohol and drug
Vinnerljung et al. (2015)	SE	Birth cohorts 1973–1978 (500 000)	Self-supporting problems; mental health problems; criminality; suicidal behavior; alcohol and drug use; disability pension
Vinnerljung et al. (2007)	SE	Birth cohorts 1972–1983 (1 150 000)	Teenage parenthood
Vinnerljung & Hjern (2011)	SE	Birth cohorts 1972–1981 (900 000)	Educational challenges; self-supporting problems
Vinnerljung & Hjern (2014)	SE	Birth cohorts 1973–1981 (750 000)	Mental health problems
Vinnerljung et al. (2006)	SE	Birth cohorts 1972–1982 (950 000)	Mental health problems; suicidal behavior
Vinnerljung & Ribe (2001)	SE	Birth cohorts 1969–1976 (total N not available, 13 100 foster children)	Suicidal behavior; mortality
Vinnerljung et al. (2005)	SE	Birth cohorts 1972–1979 (750 000)	Educational challenges
von Borczykowski et al. (2013)	SE	Birth cohorts 1973–1985 (950 000)	Criminality; alcohol and drug use

[1] DE = Denmark, FI = Finland, NO = Norway, SE = Sweden.

[2] N reported exactly if N < 100 000 and to lower 50 000 if N > 100 000.

8.2 EARLY SCHOOL-LEAVING BY CHILDREN IN CARE FROM A COMPARATIVE NORDIC PERSPECTIVE (SUB-STUDY II)

The studies included in the systematic review presented in the previous section did not allow comparison of the outcomes of out-of-home care between the Nordic countries because existing studies differ in parameters such as study populations and outcome definitions. In this study, we examined the association between placement in care and lack of secondary education across the Nordic countries of Finland, Denmark and Sweden. The results showed that, in comparison with their peers who had never been in care, in each country, children in care were at a significantly higher risk of not completing secondary education (Figure 4). Depending on the country, 57% to 76% of children in care had not completed secondary education by the age of 23. The corresponding figures for those who had never been in care ranged from 14% to 24%. Finnish children, both the in-care population and the non-care population, were the most likely to complete their education. Their Danish peers were the least likely to finish their education. The Swedish results fell in the middle of these.

We also investigated four mutually exclusive subgroups of children in care. The descriptive findings suggested that the variation in the level of early school-leaving among the subgroups showed a similar pattern in all three countries (not tested for statistical significance). The least likely subgroup to complete secondary education were those placed at teenage. The strongest performing group were children placed at the age of 0 to 12 into short term care (less than a year in total). The second and third best performers were those placed before teenage in long-term care (at least five years) and those placed before teenage in medium duration care (at least a year but less than five years), respectively. In Denmark, each of the four subgroups were less likely to complete secondary education than in Finland and Sweden.

We also computed the AME of early school-leaving using binary logistic regression modeling (Figure 5). AME present the predicted difference between those in care and those who have never been in care in percentage points. Children in care in Finland and Sweden were in a similar manner more likely not to complete secondary education than children who had never been in care. In Denmark, the risk of low education among children in care was even higher. The AMEs varied from 0.52 in Denmark (95% CI 0.50–0.53) to 0.44 in Sweden (95% CI 0.42–0.46) and 0.43 in Finland (95% CI 0.41–0.45). Controlling for sex and birth-mother's socio-economic and health-related background attenuated but did not eliminate the effects. After controlling for background, the AMEs ranged from 0.39 in Denmark (95% CI 0.38–0.41) to 0.24 in Sweden (95% CI 0.22–0.26) and 0.27 in Finland (95% CI 0.25–0.29).

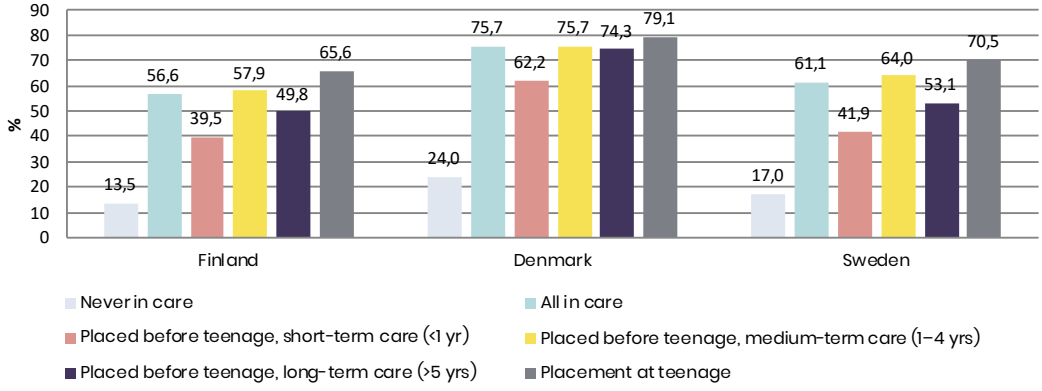


Figure 4. Proportion of children who had not completed secondary education in Denmark, Finland, and Sweden.

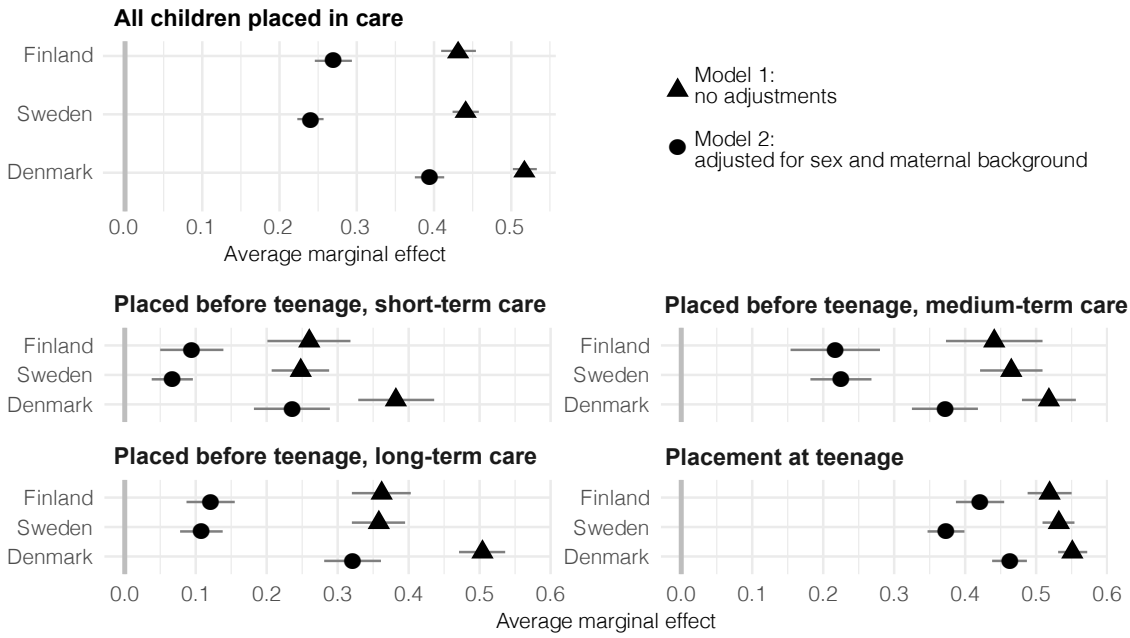


Figure 5. Average marginal effects with 95% confidence intervals for lack of secondary education among children in out-of-home care by age 23 by country.

Of the four subgroups, those placed as teenagers were at the highest risk of early school-leaving, with adjusted AMEs ranging from 0.37 in Sweden to 0.46 in Denmark. The AMEs for those placed at the age of 0 to 12 in Finland and Sweden ranged from 0.07 to 0.23, depending on the time spent in care. In Denmark, the effects varied between 0.24 and 0.37, demonstrating the highest risk of the three countries. The three subgroups placed in care at the age of 0 to 12 in each country showed a distinct pattern: those in short-term and long-term care (<1 year and >5 years) were more likely to complete their education than those in medium-term care (1–5 years).

8.3 EDUCATION AND EMPLOYMENT TRAJECTORIES OF CHILDREN IN CARE (SUB-STUDY III)

In this study, we explored the early adulthood education and employment trajectories of children in care, compared them with those of their peers who had never been in care, and examined the association between the trajectories and several care history factors. We followed the 1987 Finnish birth cohort from birth to 2012 and used a previous study by Haapakorva and colleagues (2017) as a basis from which to investigate cohort members' education and employment-related activities over the period 2005 to 2012 (i.e. from age 18 to 25). To compare the trajectories of children in care and those who had been never in care, we used a propensity score-matched comparison group selected from the general population who had never been in care. The well-balanced covariates between the children in care and the controls suggested a successful matching procedure.

Figure 6 shows how young adults placed in care as children, their matched peers who had never been in care, as well as the total non-care population were divided into 12 education and employment trajectory types. Those with care experience were less likely to enter the trajectories characterized by relatively stable participation in education and employment (i.e., nos. 1–4). Overall, these trajectories included 38% of the care population, 62% of the matched peer group and 74% of the total general population who had never been in care.

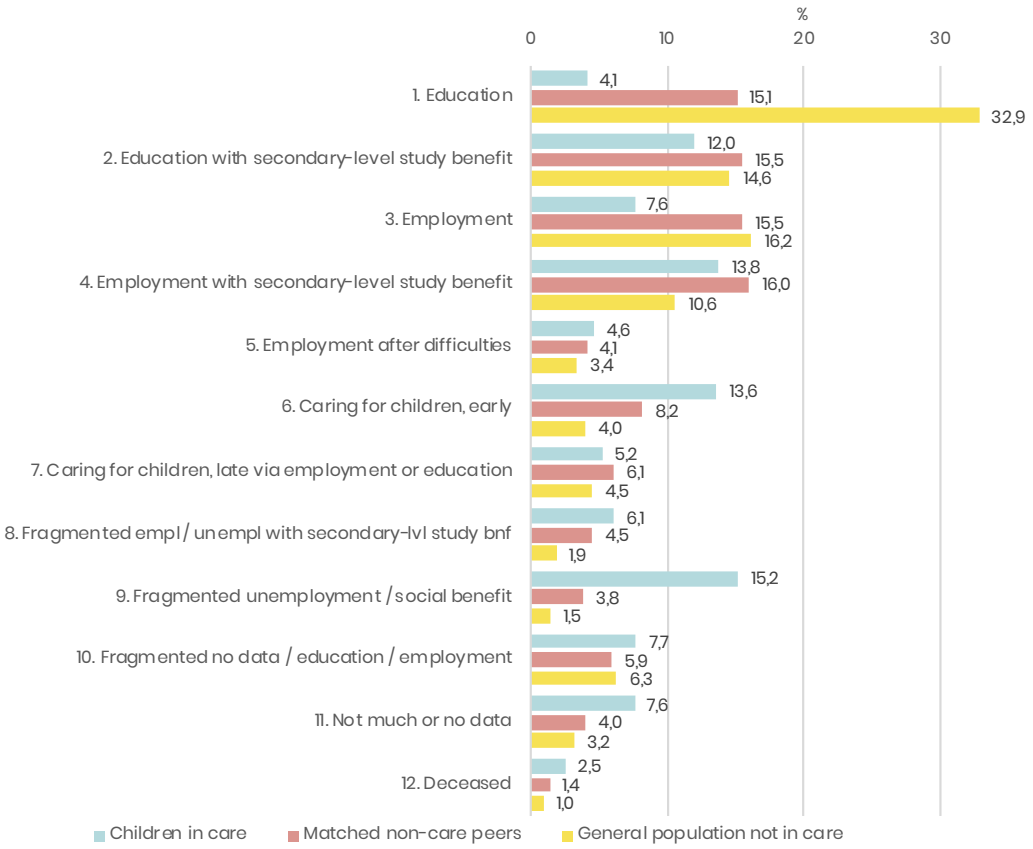


Figure 6. Frequency distributions of education and employment trajectories among children in care (N = 1983), matched non-care peers (N = 1983), and the total general population who had never been in care (N = 57,583).

When compared with the matched peer group, children in care were significantly less likely to enter one of the trajectories in which participation in higher education was common (type no. 1; $p < 0.0005$) or one in which stable and early participation in labor was typical (no. 3; $p < 0.0005$).

We found no statistically significant difference between children in care and their matched peers when observing the trajectories in which students received secondary-level study benefit during vocational or general secondary education before entering higher education or stable employment (nos. 2 and 4). Regarding the fifth trajectory type, in which young adults gained employment after initial unemployment, there was no statistically significant difference between children in care and either of the non-care peer groups.

In trajectories six and seven, the individuals received childcare benefits, indicating that they were caring for their children at home. These two trajectories included very few men. The children with care experience were more likely than their peers who had never been in care to enter one of these two – the early parenthood trajectory (no. 6), in which the individuals received childcare benefits relatively early in their twenties. Of women with care experience, 26% entered this trajectory. Of women without care experience, 16% in the matched group and 8% in the total general population were in this trajectory ($p < 0.0005$ in both groups). Regarding the late parenthood trajectory (no. 7), we found no statistically significant differences between the groups.

Trajectory types eight and nine involved more NEET types of development. In trajectory type eight, unemployment alternated with employment, and in type nine, unemployment alternated with periods of receiving social assistance benefit. Compared with their non-care peers, children in care were more likely to enter these

Table 3. Odds ratios and 95% confidence intervals of care history factors for entering trajectories 5–12 from multinomial logistic regression modeling (N = 1893).

	Odds ratio (95% confidence intervals)			
	Reference [a]	5. Employment after difficulties	6. Caring for children, early	7. Caring for children, late via employment or education
First placement as adolescent (ref. first placement age <13)	1.0 (ref.)	1.13 (0.71–1.79)	**1.70 (1.25–2.31)**	0.87 (0.56–1.34)
Time in care, 10 years	1.0 (ref.)	1.18 (0.78–1.80)	**0.58 (0.41–0.81)**	1.13 (0.76–1.69)
Number of placements	1.0 (ref.)	1.05 (0.94–1.17)	**1.08 (1.01–1.17)**	0.97 (0.86–1.10)
Typical placement type (ref. foster family care)				
Residential care	1.0 (ref.)	1.54 (0.94–2.52)	**1.62 (1.14–2.29)**	0.89 (0.57–1.39)
Other type of care	1.0 (ref.)	0.67 (0.23–2.01)	1.37 (0.78–2.41)	0.58 (0.23–1.44)
Aging out of care (ref. not in care aged >17)	1.0 (ref.)	1.48 (0.94–2.31)	1.14 (0.84–1.54)	1.06 (0.69–1.63)
After-care housing support (ref. no such support)	1.0 (ref.)	**1.68 (1.06–2.66)**	0.94 (0.68–1.31)	0.87 (0.54–1.41)

Note: Models for each care history factor were adjusted for sex. Bolded odds ratios are statistically significant ($p < .05$). M = mean; SD = standard deviation.

[a] Reference group includes trajectories from one to four combined, i.e. 1. Education; 2. Education with secondary level study benefit; 3. Employment; 4. Employment with secondary level study benefit.

trajectories. Of young adults with care experience, 21% entered one of these trajectories. Of the matched peer group and the total general population never in care, the corresponding figures were 8% and 3%, respectively. The young adults in these trajectories were mostly men. Of men with care experience, 21% were in trajectory nine, meaning barely any participation in education and employment during the follow-up period. The results regarding trajectory type ten, with fragmented education, employment and "no-data" periods, were statistically insignificant.

Regarding the "no-data" trajectory (no. 11), the findings were statistically significant with both sexes combined and, after matching, among men. Of children with care experience, 8% were in the no-data trajectory, meaning that they had very few traces in the registers used in this study. This indicates that they were not employed, registered as unemployed, or receiving any of the studied benefits or pensions. This finding suggests that these individuals were completely excluded from education and employment.

Examination of placement characteristics using multinomial regression modeling demonstrated several statistically significant associations (Table 3). We combined trajectories one to four, that is, all of the trajectories in which participation in education and employment was most typical, into a reference category. To highlight some interesting findings, entering the early childcare trajectory (no. 6) was positively associated with being first placed as an adolescent (OR 1.70, 95% CI 1.25–2.31), number of placements (OR 1.08, 95% CI 1.01–1.17), and residential care as the most typical type of placement (OR 1.62, 95% CI 1.14–2.29); it was also

8. Fragmented employment / unemployment with secondary lvl study bnf	9. Fragmented unemployment / social benefit	10. Fragmented no data / education / employment	11. Not much or no data	12. Deceased
1.98	**2.53**	**1.70**	0.80	**2.87**
(1.34–2.97)	**(1.90–3.37)**	**(1.81–2.44)**	(0.55–1.18)	**(1.56–5.26)**
1.09	0.76	1.16	**1.74**	1.00
(0.74–1.60)	(0.56–1.02)	(0.83–1.63)	**(1.27–2.38)**	(0.60–1.80)
1.00	**1.14**	0.97	1.09	1.07
(0.89–1.11)	**(1.07–1.21)**	(0.88–1.08)	(1.00–1.18)	(0.93–1.23)
1.43	**2.26**	1.03	1.09	**2.48**
(0.92–2.24)	**(1.62–3.15)**	(0.70–1.51)	(0.74–1.60)	**(1.17–5.28)**
1.45	**2.04**	1.05	0.83	2.43
(0.69–3.06)	**(1.20–3.47)**	(0.54–2.04)	(0.40–1.74)	(0.78–7.56)
2.11	**2.10**	**1.51**	**2.45**	**2.12**
(1.40–3.19)	**(1.78–2.80)**	**(1.05–2.16)**	**(1.67–3.59)**	**(1.15–3.91)**
1.63	**1.47**	**1.49**	**2.46**	1.54
(1.08–2.50)	**(1.09–1.96)**	**(1.03–2.17)**	**(1.71–3.55)**	(0.84–2.84)

negatively associated with time spent in care (OR 0.58, 95% CI 0.41–0.81).

Entering the fragmented unemployment and social assistance trajectory (no. 9) was positively associated with placement as an adolescent (OR 1.70, 95% CI 1.25–2.31), and residential care and "other" type of care as the most typical types of placement (OR 2.26, 95% CI 1.62–3.15; OR 2.04, 95% CI 1.20–3.47). This trajectory was also associated with aging out of care (OR 2.10, 95% CI 1.78–2.80) and receiving after-care support for housing at the age of 18 to 21 (OR 1.47, 95% CI 1.09–1.96). In fact, aging out of care and receiving after-care support for housing were both associated with entering all three of the fragmented employment, unemployment, and social assistance trajectories (nos. 8–10) and the limited data trajectory (no. 11).

8.4 POOR SCHOOL PERFORMANCE AMONG CHILDREN IN CARE: THE CONTRIBUTION OF DIAGNOSED PSYCHIATRIC AND NEURODEVELOPMENTAL DISORDERS (SUB-STUDY IV)

Table 4 presents the sociodemographic background factors, diagnosed psychiatric and neurodevelopmental disorders, and mean GPAs of the study population by placement history. In comparison with their peers who had never been in care, those in care had on average lower GPAs, and those placed as adolescents (ages 13–16) had the lowest GPAs. In addition, children in care were more frequently diagnosed with psychiatric and neurodevelopmental disorders than their peers who had never been in care. The most common diagnostic

classes among children in care were depression and anxiety disorders; conduct and oppositional disorders; and learning, speech, and coordination disorders. Of children in care, those placed before school age had the lowest incidence rates across all the diagnostic classes, with the exception of learning, speech, and coordination disorders (not shown in table). Observation of the parental sociodemographic background factors revealed that the children in care came from more disadvantaged families than their peers who had never been in care, and that the most elevated parental disadvantage was among those placed before school age (not shown in table).

The results of the linear regression modeling showed that placement in care was associated with lower GPAs by 0.77 points (95% CI -0.80, -0.73) in the model adjusted for sex (Figure 7). The effect sizes were attenuated but not eliminated when adjusted for parental sociodemographic background (model 2; β = -0.38; 95% CI -0.41, -0.34) and when further adjusted for diagnosed psychiatric and neurodevelopmental disorders (model 3; β = -0.24 95% CI -0.28, -0.20). Thus, compared to Model 2, which controlled for parental confounders, adjusting further for diagnosed disorders reduced the effect sizes by 37%.

Observation of the effect sizes among children in care by age at first placement revealed considerable differences. Although placement in care was associated with lower GPAs for all age groups, effect sizes increased

Table 4. Frequency distributions of childhood background factors at ages 0–16 and mean of standardized grade point average by history of out-of-home care.

	Never in care N = 53,493	Ever in care N = 2628
	%	%
Sex		
Boys	50,8	49,2
Girls	49,2	50,8
Highest parental education		
Basic level	2,8	15,3
Secondary level	36,5	58,6
Post-secondary	60,7	26,1
Receipt of parental social assistance benefit	16,2	64,9
Maternal age at birth less than 20 years	2,2	7,3
Maternal smoking during pregnancy	13,4	40,4
Psychiatric and neurodevelopmental disorders [1]		
Substance-related disorders	0,3	4,5
Psychotic and bipolar disorders	0,2	3,1
Depression and anxiety disorders	4,4	31,5
ADHD	1,9	11,8
Learning, speech, and coordination disorders	5,1	14,8
Autism spectrum disorders	0,8	3,6
Conduct and oppositional disorders	1,2	23,4
Eating disorders	0,7	2,2
	mean	mean
Grade point average (standardized)	0,04	-0,72

[1] Each person may be recorded for several of the diagnosed disorders.

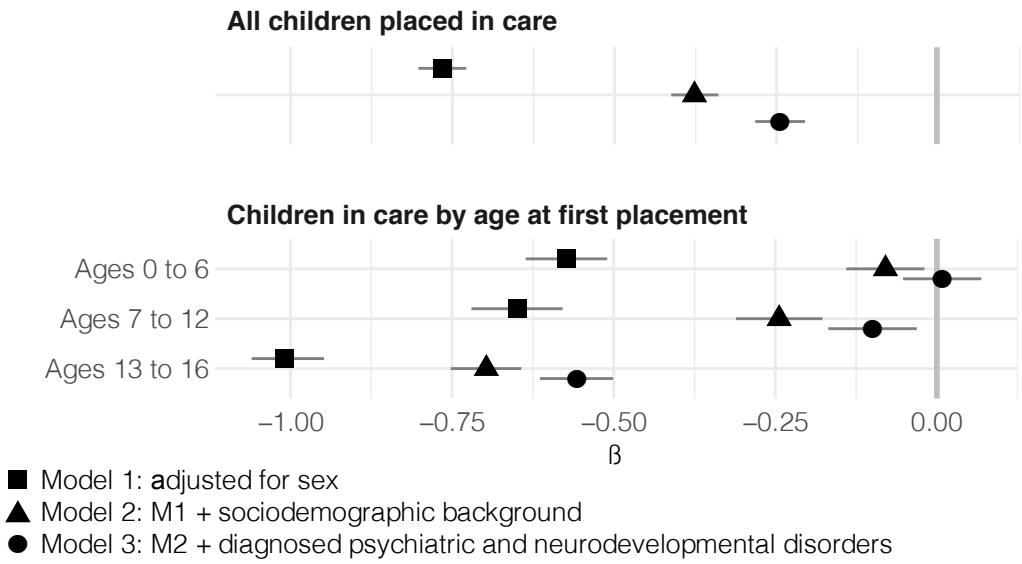


Figure 7. Regression coefficients (β) and 95% confidence intervals of placement in out-of-home care with standardized grade point average as the dependent variable (N = 56,121). Sociodemographic background variables: highest parental education, parental social assistance, maternal age under 20 at birth, and child's nicotine exposure during pregnancy. Diagnosed psychiatric and neurodevelopmental disorders: substance-related disorders; psychotic and bipolar disorders; depression and anxiety disorders; ADHD; learning, speech, and coordination disorders; autism spectrum disorders; conduct and oppositional disorders; and eating disorders.

with age (Model 1). The negative association between placement in care and GPA was weakest for those placed before school age (ages 0–6) and strongest for those placed as adolescents (ages 13–16), whereas those placed at elementary school age fell in the middle of these. Adjusting for parental background factors and diagnosed disorders (Model 3) eliminated the significant effects on those placed before school age (β = 0.01 points; 95% CI -0.05, 0.07). Placement at elementary school age (β = -0.10; 95% CI -0.17, -0.03) and placement in adolescence (β = -0.56; 95% CI -0.61, -0.50) were associated with lower GPA, even after adjusting for all background factors.

9 Discussion

9.1 SUMMARY OF THE MAIN FINDINGS

This thesis includes four empirical sub-studies, which assessed how children in out-of-home care manage their transitions to adulthood. The aim was to extend our understanding of educational and employment transitions and their predictors in particular. To this end, this thesis involves a systematic review of the early adulthood outcomes of out-of-home care in the Nordic countries, and three other sub-studies: one that utilized longitudinal birth cohort data from several Nordic countries and two that used similar data from Finland only. The main finding of the thesis is that children in care are at a higher risk of adversities during the transition to adulthood than the general population who have never been in care. This section summarizes the main findings of the thesis by answering the questions posed in Section 6, Aims.

1. How do the developmental outcomes of children in care compare with those of their general population peers who have never been in care in the Nordic countries, specifically in terms of school performance, educational attainment, and early adulthood school-to-work transitions? (Sub-studies I, II, III, & IV)

Children in care in the Nordic countries are at an increased risk of struggling with their transitions into adulthood in comparison with their general population peers. They are at risk of poorer school performance, lower educational attainment and unemployment. In addition, they are at an elevated risk of reliance on social assistance, mental health problems, criminality, teenage parenthood, mortality, suicidal behavior, alcohol and drug use, and disability pension. These findings hold even after adjusting for various birth parents' socio-economic, demographic and mental health–related factors. Despite these overall results, it is important to note that a significant proportion of children in care also succeed in their transitions.

Regarding school-to-work transitions, children in care were less likely to enter trajectories characterized by stable participation in education and employment at the age of 18 to 25 in comparison to a matched group of peers who had never been in care. Accordingly, children in care, and especially boys in care, were more likely to enter trajectories involving long periods of fragmented receipt of social assistance benefits and unemployment. Girls in care were more likely to enter early parenthood trajectories in which they cared for children from around the age of 20 onwards.

2. To what extent does the educational attainment of children in care differ between Finland, Denmark and Sweden? (Sub-study II)

Children in care were very likely to not complete secondary education in all of the three countries. Depending on the country, 57% to 76% of children in care did not complete secondary education by the age of 23. They were most likely to complete their education in Finland and least likely in Denmark. The Swedish results fell in the middle of these two. When compared with the general population who had never been in care, children in care were at a similar excess risk of low attainment in Finland and Sweden, also when they were investigated according to subgroups based on age at entry into care and length of time in care. In Denmark, the risks were somewhat higher.

3. How are various care history factors associated with school performance, educational attainment and school-to-work transitions? (Sub-studies II, III, & IV)

Age at entry into care was associated with school performance, educational attainment, and school-to-work transitions. The findings from indirect comparisons of models suggest that those placed as adolescents are at a higher risk of poor school performance and low educational attainment than those placed before adolescence. The findings regarding adolescent placement and low educational attainment were the same in Fin-

land, Sweden and Denmark. In addition, regarding school-to-work transitions, those placed as adolescents were more likely to enter trajectories that involve early parenthood, reliance on social assistance benefits and unemployment.

The length of time in care was related to educational attainment among those placed before adolescence in a similar manner in Finland, Sweden and Denmark: those in short- and long-term care were at a lower risk of low educational attainment than those in medium-term care.

In addition to age at entry into care and length of time in care, several placement factors were associated with school-to-work transitions. Placement instability and residential care were associated with entering trajectories that involve early parenthood, reliance on social assistance benefit, and unemployment. In addition, exiting care when turning 18, as well as receiving after-care support for housing, were related to entering trajectories involving unemployment, receipt of social assistance benefit, and exclusion from education and work-related activities and benefits altogether.

4. To what extent do diagnosed psychiatric and neurodevelopmental disorders contribute to the association between placement in care and poor school performance in Finland? (Sub-study IV)

On the total population level, diagnosed psychiatric and neurodevelopmental disorders contributed to the association between placement in care and poor school performance. Examination of the children in care in three groups according to their age at entry into care revealed some significant differences between the age groups. In all three age groups studied—those placed before school age, those placed at elementary school age, and those placed as adolescents—diagnosed disorders explained part of the association between placement in care and school performance. However, those placed as teenagers had significantly poorer school performance, even after controlling for parental confounders and psychiatric and neurodevelopmental disorders. Among those placed before school age, the difference between children in care and the non-care population was entirely explained when parental background and diagnosed disorders were taken into account. The results for those placed during elementary school age fell between these two groups.

9.2 DISCUSSION OF THE RESULTS AND CONTRIBUTIONS TO KNOWLEDGE

This thesis provides insights and adds to the child welfare literature on transitioning children in care by making several novel contributions. It includes the first systematic review on the outcomes of care in the Nordic countries, the first comparative national population study on educational outcomes, the first study on early adulthood school-to-work transitions, and the first population-based estimates of the contribution of diagnosed psychiatric disorders to school performance. In addition to these, the thesis extends the evidence base on the association between care history factors and education and employment outcomes. Next, I discuss these contributions in the light of previous research.

First, as said, to my knowledge, Sub-study I is the first systematic review of the outcomes of out-of-home care in the Nordic countries. Similar reviews have previously been carried out in other geographical regions, like the US (McDonald et al., 1996) and Sweden only (Vinnerljung, 1996b), as well as internationally (Gypen et al., 2017; Vinnerljung, 1996a; see also Ferenandez & Barth, 2010). The research synthesis of Sub-study I confirmed the findings of these reviews: in comparison with the general population with no experience of being in care, children in care are at a pronounced risk of adversities across life domains during the transition to adulthood. This will surprise no one with some knowledge of the field. Indeed, the literature covered at the beginning of this thesis strongly suggests that children in care are exposed to various forms of disadvantage even before entering care, which may have a lasting effect on their life opportunities. However, it is important to note that Nordic welfare states are no exception to the international pattern, even though these countries generally enjoy high levels of child-wellbeing (e.g. UNICEF, 2013). Despite the widely acclaimed Nordic welfare state, its inclusive education system, and the overarching aims of reducing inequality, the Nordic model fails to

promote successful transitions for many young adults with vulnerable childhood backgrounds. The findings of the review thus support the claim that children in care are a high-risk group for adversities, regardless of the child welfare orientation of the country (Gilbert, 1997; Gypen et al., 2017). This highlights the challenges that child welfare systems across the world share with regard to these children's well-being and development. The other three sub-studies of this thesis give further weight to these notions.

Compared to international research, studies from the Nordic countries provide reliable population-based evidence, as they rely on administrative data that are free of the typical limitations that plague child welfare research; below I consider the implications of this kind of research in more detail. Since we conducted the literature searches for the systematic review, a number of similar studies have been published in the region, showing that knowledge is rapidly gathering on this topic. An unsystematic search of publications demonstrates that, like the studies included in the systematic review, a large body of the research comes from Sweden (Almquist et al., 2018; Almquist & Brännström, 2019; Brännström, Vinnerljung, Forsman, & Almquist, 2017; Brännström, Forsman, Vinnerljung, & Almquist, 2017; Gao, Brännström, & Almquist, 2016; Liu, Vinnerljung, Östberg, Gauffin, Juarez, Cnattingius, & Hjern, 2018). However, in addition to the sub-studies of this thesis, more evidence has also started to accumulate in Finland (Bask, Ristikari, Hautakoski, & Gissler, 2017; Côté, Orri, Marttila, & Ristikari, 2018; Harkko et al., 2016; Harkko et al., 2018; Lallukka et al., 2019; Paananen, Surakka, Kainulainen, Ristikari, & Gissler, 2019). Confirming the general conclusion of the systematic review, all of these cited studies document associations between out-of-home care and long-term socioeconomic and health-related disadvantage.

Second, Sub-study II extends the Nordic literature identified in Sub-study I by providing a comparative perspective on educational transitions by children in care—the first one ever to utilize complete population-based cohort data. The findings highlighted, most importantly, that concerns regarding the transitions of children in care are very similar across the Nordic countries. Moreover, we identified a similar pattern of variation in Finland, Denmark and Sweden across the educational attainments of the studied subgroups based on age at entry and length of time in care. However, unlike some previous comparative attempts (Jackson & Cameron, 2012; Weyts, 2004), our study also found some differences in between the transitions in the countries: children in care performed more poorly in Denmark than in Finland and Sweden. I argue that this difference results from the apprentice-based vocational education used in Denmark, which leads to lower graduation rates also on the general population level (Albæk et al., 2015; Bäckman et al., 2011).

Nevertheless, looking at only educational outcomes gives a limited picture of the transition to adulthood. That is to say, even if Danish children in care have lower educational attainments, they may not be any worse off than their peers in Finland and Sweden because the transition regime in the country seems to be more favorable to employment. Specifically, it has been argued that apprentice-based vocational education leads to smoother labor market transitions (Albæk et al., 2015; Bäckman et al., 2011). Our further comparative investigation in fact demonstrates that in Denmark, children in care are at a similar risk of being NEET as those in Sweden, and at a lower risk than those in Finland (Berlin, Kääriälä, Lausten, Andersson, & Brännström).

These results regarding employment are also connected to the third contribution of the thesis, which is to show how placement in care is associated with temporal trajectories during the transition to adulthood (Sub-study III). A host of previous studies have addressed temporal progression in education and employment careers on the general population level (Brzinsky-Fay, 2007; Buchmann & Kriesi, 2011; Haapakorva et al., 2017; Lorentzen et al. 2018; Salmela-Aro et al., 2011). Regarding children in care, a similar approach has been utilized to investigate foster care careers in childhood (Fallesen, 2014), as well as socioeconomic and health-related disadvantage in midlife (Brännström, Forsman, Vinnerljung, & Almquist, 2017). Longitudinal investigations of early adulthood have been lacking so far.

This is thus the first study to focus on early adulthood education and employment trajectories among children in care. The findings demonstrated, as expected, that placement in care is strongly associated with temporal dynamics during the age of 18 to 25. The results also demonstrated significant heterogeneity in the

extent of the participation in education and employment of children in care. To start with, a large proportion of them seem to participate in education and employment in a relatively stable manner and progress from studies to working life over the transition period. This finding resembles those of a number of American studies exploring how children aging out of care fare across life domains (Courtney et al., 2012; Keller et al., 2007; Miller et al., 2017; Shpiegel, & Ocasio, 2015; Yates & Grey, 2012). These studies generally conclude that approximately half of children in care are relatively resilient across domains. This thesis demonstrates a longitudinal version of this observation, and unlike the cited studies, uses a general population-based comparison group to highlight the specific nature of the transitions of in-care populations. The American studies found that the other half of children aging out of care struggle with different challenges to varying extents, including low education and employment, as well as early parenthood, poor mental functioning or criminal behavior. Similarly, in Sub-study III, a large proportion of children in care experienced instability and exclusion in education and employment; and longitudinal exploration revealed that some experienced these in a persistent manner throughout the transitional phase.

The results of Sub-study III give little support for the notion that the situation of children in care improves relative to that of the general population after early transition difficulties (e.g. Gypen, et al., 2017). Those who are to participate in education and employment do so already at the beginning of their transitions, although it is possible that children in care complete their education or enter the labor market at somewhat later ages, as suggested by some studies (e.g. Harkko et al., 2016). However, catching up later on seems to be an exception for those who have no connection whatsoever to education or employment already at the beginning of the transition period. Although the conclusions are limited as this study's follow-up period ends at the age of 25, an obvious concern is that these trajectories continue after early adulthood. One Nordic study has shown that on the general population level, early instable and NEET trajectories show limited, if any improvement before the age of 30 (Lorentzen et al., 2018). Thus, as suggested by a Swedish study (Brännström, Vinnerljung, Forsman, & Almquist, 2017; Brännström, Forsman, Vinnerljung, & Almquist, 2017), among children in care, early adulthood socio-economic disadvantages are likely to continue beyond the transitional period.

Our results also indicated significant gender differences in the trajectories. Children in care of both genders were rather equally likely to experience trajectories in which participation in education and employment was stable and progressed from education to employment—though girls in these normative trajectories tended to study longer, while boys entered the labor market at an earlier age. The more significant gender difference was, however, that among boys in care, NEET types of trajectories were especially common, whereas girls in care had an increased likelihood of entering trajectories that involved engaging in parenting early in the transition. This increased likelihood among girls in care is in line with previous research that has found that children in care are more likely to have children at an early age than the general population (e.g. Dworsky & Courtney 2010). Specifically, a Swedish study found that early parenthood is more elevated among girls in care than boys in care (Vinnerljung et al., 2007). It should be noted, however, that our data on parenting are based on receiving parental benefits. It is thus possible that boys in care also have children and that they play a significant role in the lives of their children; this is just not visible from our data because boys in care rarely receive parental benefits.

One explanation for this gender difference is that the disadvantages of girls in care in terms of education and employment is partly channeled through early parenthood trajectories. According to some, the disadvantaged backgrounds from which most young parents come are significant in explaining the adverse outcomes related to early parenting (Coley & Chase-Lansdale, 1998; Geronimus, 1991; Geronimus, Korenman, & Hillemeier, 1994). The high proportion of early parenthood trajectories among girls in care compared to boys in care may then thus merely reflect women's role as primary care-givers to children. Consistent with this explanation, early parenthood among care-experienced young people has been associated with poorer employment (Dworsky & Gitlow, 2017). This finding on increased unemployment by Dworsky and Gitlow (2017) also raises concern regarding the further careers of girls in care who engage in parenting early in their

transitions. Indeed, in the general population in the Nordic countries and particularly in Finland, having children during the transition phase is associated with exclusion from education and employment up to the age of 30 (Lorentzen et al., 2018). This result may also reflect how early parenthood hampers participation in education, thus disturbing the accumulation of human capital, which is important for employment (Becker, 1993). However, for some transitioning girls in care, becoming a parent may come to represent a turning point from previous adversities if their identity as a mother arouses the sense of a new beginning (Aparicio, Pecukonis, & O'Neale, 2015).

The fourth contribution of this thesis is to extend the literature on school performance and to show population-based estimates of how psychiatric diagnoses in specialized health care are related to poorer school performance among children in care. The findings support existing evidence suggesting that mental and behavioral disorders are related poorer educational outcomes among children in care (González-García et al., 2017; O'Higgins et al., 2017; Romano et al., 2015; Schelble et al., 2010). It should be noted, however, that the findings of this study concern disorders that are in a clinical range and are being treated in specialized health services; this has implications which are further discussed below.

The results also complement existing evidence that shows that poor school performance is associated with long-term socioeconomic and health-related disadvantage among children in care (Berlin et al., 2011; Bränsström et al., 2016; Forsman et al., 2016). They suggest that educational disadvantage among children in care is to a considerable extent a result of their poorer mental health. Those placed before school age in particular, and those placed during elementary school years to a significant extent, had close to corresponding school performance after controlling for diagnosed psychiatric and neurodevelopmental disorders. Those placed during teenage, however, still had significantly poorer school performance than their general population peers even after controlling for parental background and diagnosed disorders, which raises concerns regarding these young people's education, as discussed in more detail below.

All in all, this thesis has demonstrated how closely related mental health, education and employment are to each other in the lives of children in care. The focus of this thesis has been on the empirical observations of educational and employment outcomes, while the systemic properties of education, labor markets and health care have received less attention. Therefore, generalizations outside Finland and the Nordic region should be made with caution. However, as the international evidence reviewed in the background section suggests, children in care also face similar challenges in other countries. It is thus likely that the novel approaches and evidence provided by this thesis has relevance even outside the countries covered and can be used to inspire research on topics as suggested below in the implications section.

Lastly, the thesis allows for a commentary on how care histories are associated with early adulthood transitions. In particular, the results of Sub-studies II–IV suggest that first entry into care as a teenager is associated with the most elevated probability of disadvantage, regardless of the (education and employment) outcome in question, and across the Nordic countries. This finding confirms the results of several previous studies from the Nordic countries and beyond (e.g. Vinnerljung et al., 2005), and adds weight to concerns related to placing teenagers in care.

This thesis also links care history factors to education and employment trajectories, mostly demonstrating results that could be expected, based on previous research. Along with placement as an adolescent, the findings show that being in residential care (versus family foster care) and placement instability are related to entering disadvantaged trajectories. In addition to these, being in care just before turning 18, as well as receiving support from child welfare's after-care services, were associated with trajectories involving unemployment, receiving social assistance benefit, and exclusion from education and work-related activities and benefits altogether. This suggests that within the in-care population, those who enter adulthood from care and receive support for becoming independent are at a particular risk of disadvantage.

It should be noted, however, that the associations between care history factors and any outcome may be

spurious, which would mean that these associations are not causal but only correlational. Even if this is the case, and these care history factors are not per se the causes of later life outcomes, they bear important implications for policy and practice, as discussed next in more detail.

9.3 IMPLICATIONS OF THE STUDY

9.3.1 Implications for research

The findings of this thesis have a number of implications for child welfare research, policy and practice. The first implications for research follow from what this thesis has shown: in the Nordic countries, a consistent body of evidence shows that there is a gap between the educational and employment transitions, as well as other early adulthood outcomes, of children in care and the general population. These findings are in line with decades of previous research that document gaps between children in care and the general population. Following from this conclusion, there is hardly anything to learn in the near future from research that merely documents this gap—regardless of the outcome in question. That said, studies that focus on specific sub-populations, such as those placed as teenagers, or studies that address adulthood developmental dynamics, such as Sub-study III, may still bring new insights into the early adulthood outcomes of children in care. Moreover, as the bulk of research comes from Sweden, other Nordic countries would benefit from stronger research efforts in this area. Nevertheless, the focus should generally move on to other areas, such as identifying the particular risk and protective factors, exploring the mechanisms that explain later life developments, and examining the effectiveness of interventions. This thesis has taken a step in this direction by investigating the contribution of psychiatric disorders to the educational disadvantage of children in care.

Second, a particular strength of this thesis is that it demonstrated the potential of comparative research that exploits data sources unique to the Nordic region, namely administrative registers, in the study of child welfare outcomes. Sub-study II, along with the literature review of Sub-study I, showed that children in care experience rather similar developments across the Nordic region during the transition to adulthood. This supports the argument that the findings on the transitions of children in care are broadly generalizable within the region. Yet, at the same time, the differences in the educational outcomes of Denmark compared to those of Finland and Sweden noted in Sub-study II remind us of the need to be sensitive to the context and local arrangements when generalizing the results from one country to another. Generalizing the results outside the Nordic region requires somewhat more caution, although the overall situation of the in-care population does not seem so different across the Western world.

Third, this thesis showed that children in care differ significantly in how their out-of-home care histories predict life course outcomes. This reminds us that when studying children in care, we should somehow address their heterogeneity with regard to care history. This can be achieved by dividing children in care into sub-groups, as in Sub-studies II and IV; by investigating the associations between care history factors and later outcomes, as in Sub-study III, or by focusing on a particular group of children in care, as often done in other studies in the field. Yet, the findings of this thesis present an 'aerial view' of children in out-of-home care, since even these more specific care histories are described on a rather crude level, hiding notable heterogeneity. Therefore, future studies in this area would benefit from more focused definitions of care. This would imply the use of larger data than was presently available.

Fourth, the poor outcomes among those placed as adolescents require more attention from researchers. All four sub-studies in this thesis demonstrated that these young people are at the highest risk of adverse transitions. Moreover, those placed as adolescents make up the largest group placed in care in the Nordic countries, as well as in some other jurisdictions (e.g. Ubbesen, Gilbert, & Thoburn, 2015). However, there is very limited consensus on the factors that explain the developmental outcomes of children in care, for example, those related to education (O'Higgins et al., 2017). Moreover, research has mostly focused on younger children in care, leaving understanding of adolescents rather limited. The dearth of studies that would explicitly focus on those

placed as teenagers suggests that more efforts should be invested to understand their developments.

Fifth, the findings of this study encourage research to place more emphasis on understanding the educational outcomes of children in care. As said above, knowledge is still rather limited on the factors that harm or promote the academic achievements of children in care. This thesis suggests that psychiatric and neurodevelopmental disorders are an important part of the explanation. Yet, because the mechanisms and directionalities of the effects are not clear, improved understanding is required of the pathways between educational outcomes and mental disorders (see Romano et al., 2015). Even more importantly, the findings of this thesis discourage simplistic claims that poor school performance per se is an explanation for adverse long-term outcomes. Rather, poor school performance is the result of several interacting factors, some of which seem to be connected to mental health, as suggested by Sub-study IV. Interventions that aim to improve the educational and other long-term outcomes of children in care require targeting the correct risk and protective factors (Ferrer-Wreder, Stattin, Lorente, Tubman, & Adamsson, 2003; Fraser, Richman, Galinsky, & Day, 2009). Therefore, the factors associated with educational failure and success need more attention in child welfare research (O'Higgins et al., 2017; Stone, 2007). As proposed above, a better understanding of the factors related to educational outcomes among those placed as teenagers is imperative. Based on Sub-study IV, it seems likely that in this group, the psychiatric disorders explicitly known to the service system only provide a partial explanation.

Finally, Sub-study III showed the relevance of investigating longitudinal trajectories during the early adulthood transition. Similar research in other countries would be beneficial to improve our understanding of these trajectories; generalizations of the results of this thesis to other countries should be made with caution because of the data-driven approach used in Sub-study III. An additional implication for research stems from the observation that these trajectories revealed significant gender differences in transitions: boys in care were at particularly elevated risks of NEET types of trajectories, whereas girls in care were more likely to enter early parenting trajectories. This raises questions that require further investigation. What are the long-term consequences of these early adulthood gender differences? Will parenting trajectories promote integration into education and employment later among girls in care in comparison to boys in care, or do those parenting trajectories increase the likelihood of long-term disadvantage, as suggested by some studies (Dworsky & Gitlow, 2017; Lorentzen et al., 2018)? Do girls in care receive appropriate support to participate in education and enter labor markets when they are caring for their children? How common is it for boys in care to have children in Finland, and what is their role in bringing up their children?

9.3.2 Implications for policy and practice

The findings of this thesis show that children in care are at a high risk of poor educational outcomes and failed transitions in early adulthood, and broadly confirm decades of international evidence. First I must emphasize that these results do not suggest that being in care is harmful for children, and therefore should not be used as arguments against the care system or placements of individual children. I feel this needs to be said because I often hear these comments when presenting my work. Rather, the findings reflect childhood disadvantage pre-dating entry into care, and the tremendous challenge that the care system faces when seeking to compensate for children's past and present adversities.

The main implication for child welfare policy is that it should improve educational outcomes and the chances of social inclusion. Success in education and transition to adulthood can significantly promote the long-term life opportunities of young people. Conversely, leaving children in care without proper education in a modern economy in which the majority of peers have notably higher qualifications is the same as failing to keep the promise that child welfare interventions promote the best interest of the child. In other words, improving the long-term impact of child welfare interventions should be among the core targets of child welfare policymakers and service providers. The key question is how to make out-of-home care better.

Next, the findings on persistent instability and exclusion in terms of education and employment may inform child welfare policies of the provision of after-care services. In particular, assuming that children in care

will enter normative transitions will fail a significant number of these young people taking their first steps into independent adulthood. Until 2019, the Child Welfare Act in Finland has entitled after-care services until the age of 21, which is clearly too early for a large proportion of transitioning children in care. For many of them, transition to adulthood is a longer process, and involves various interdependencies with the welfare system. Children in care need time, flexibility and individualized support to navigate their transitions. In addition, educational and employment needs should be considered for those who are caring for their own children in young adulthood. As children in care are less likely to receive social and financial support from their parents than their peers in the general population, those caring for children may experience significant barriers to participating in education and employment.

As of the beginning of 2020, after-care services in Finland have extended from the age of 21 to 25, thus providing an opportunity to rethink the way after-care is provided. However, it is unlikely that merely extending the eligibility age is sufficient for improved outcomes. A similar reform in Denmark at the beginning of the 2000s had no positive long-term effects on education and employment (Andersen, 2019). Therefore, it is likely that a broader reform will be required to support the education and employment of the transition to adulthood among children in care, as also suggested by a recent government report (Sosiaali- ja terveysministeriö, 2019).

The findings on adverse educational and employment transitions among those placed as adolescents are of paramount importance for child welfare policy and practice. As discussed, teenagers have the highest probability of being placed in care in the Nordic countries, as well as in some other countries. Furthermore, their proportion has increased in several Nordic states. It seems, however, that placement as adolescent is too late for some to provide significant benefits in education or in any other domain. By teenage, these young people have slipped too far from the primary integrative institutions of family and school. However, this is no excuse to neglect service development for adolescents placed in care; on the contrary, more should be invested in reforming these services. Specifically, the increase in teenage placements suggests that in-home interventions in their current form are inadequate to prevent adversities among adolescents. This calls for promoting prevention that targets the predictors of adolescent risk behavior, such as criminal behavior, alcohol and drug abuse, and school-related problems.

The results also indicate that psychiatric and neurodevelopmental disorders diagnosed in specialized health services significantly contribute to the educational disadvantage of children in care. This suggests that treating mental health effectively has the potential to positively affect educational outcomes among children in care, which in turn is likely to benefit their later life developments in many domains. However, challenges remain, as findings from other studies suggest that not all of these children's mental health needs are appropriately met (Minnis, Everett, Pelosi, Dunn, & Knapp, 2006; Petrenko, Culhane, Garrido, & Taussig, 2011), and even if they are, the effects of the treatment may remain limited (Bellamy, Gopalan, & Traube, 2010).

Lastly, as shown by this thesis and many other Nordic studies, administrative registers are an invaluable data source for child welfare research. At their best, register-based studies may inform policy and practice, with the ultimate aim of improving the service system and the well-being of children and families. However, for now, nationwide registers on child welfare include rather approximate information and are restricted to simple placement records. While this data in combination with other registers are an extraordinary data source as such, a more nuanced view could be provided by including more detailed information on child welfare and social services, such as information on the use of in-home interventions and on what happens in the care system. These data already exist, but are scattered in local registers in a form that is not readily accessible. A solution would be to improve the collection and availability of this data for research purposes. In fact, at present it seems that this recommendation will be realized to at least some extent in Finland, as the Finnish Institute for Health and Welfare is planning to set up a register on in-home child welfare services. Similar efforts in other Nordic counties are worth consideration if they are not already under preparation or implementation.

9.4 METHODOLOGICAL CONSIDERATIONS

The accessibility of nationwide registers for research purposes has been a tremendous advantage in the Nordic countries for a long time. The several typical strengths of this kind of research apply to this thesis. These include a large number of observations, population- and nationwide coverage, long follow-up periods, and the possibility to study rare exposures and outcomes (see Sund, Gissler, Hakulinen, & Rosén, 2014), as well as a lack of several sources of bias, including non-response bias, attrition bias and self-report bias. Child welfare is a prime example of a research topic in which participants are hard to reach, hard to survey, and prone to dropping out from follow up. Hence, the benefits of administrative data for longitudinal research when studying children in care are evident.

As with any kind of research, this thesis has some limitations. First, the use of register-based data is regulated by legislation. This itself is not a limitation as such, as legislation makes the use of register data possible for researchers. However, in Sub-study II, the comparative study, we were not able to combine data from the study countries into a single dataset due to legislative restrictions on data management. Instead, we conducted the analyses separately for each country and only then combined the results for comparison. On a positive note however, our study demonstrated that it is possible to conduct comparative register-based research in the Nordic region on this topic under the current legal framework. I hope similar efforts will continue in future.

Second, a limitation related to the typology on education and employment trajectories in Sub-study III is that these trajectories were constructed using a data-driven method. While uniquely rich and detailed, the typology of the trajectories was therefore not replicable with any other dataset than the one used in this study, highlighting the explorative nature of Sub-study III. Therefore, investigations using other kinds of datasets could complement the analysis conducted in this thesis. Similar studies in other countries would be beneficial for testing the local applicability of this kind of approach.

Third, the measurement of psychiatric disorders in Sub-study IV relies on specialized health care registers. This means that the study does not capture those who are only treated in primary care and those who receive no treatment at all despite mental health problems. The most severe disorders are thus likely to be diagnosed, but the less severe are less likely to be included. Hence, Sub-study IV speaks to the question on how disorders diagnosed in specialized services explain the systematic variation in school performance between children in care and the general population, which may underestimate the total confounding effect of mental health problems.

In addition to the limitations mentioned above, the reader should bear in mind that this thesis is an observational study. Rather than a limitation, this is more a characteristic of this thesis. Nevertheless, the implication of this is that the findings of this thesis should not be interpreted as a description of the impact of out-of-home care. Instead, the findings describe the association between out-of-home care and a number of long-term outcomes, specifically those that concern educational and employment transitions. As discussed above, these results, even if not indicative of the impact of out-of-home care, provide meaningful material for assessing the life course developments of children in care and child welfare policy and practice.

Lastly, the most important independent variable in this thesis—placement in out-of-home care—needs to be briefly discussed. From the perspective of measurement, placement in care is a rather unambiguous concept, since records of all placements (e.g. starting and ending dates, type of decision, type of care) are collected into national child welfare registers. Thus, in addition to theoretical understanding, availability and reliability of register data are the most important requirements for constructing measures of care history. With regard to these, at least three points need to be mentioned.

First, this thesis provides a rather broad view of its study population: it includes all children placed in care. This means that the findings mask significant heterogeneity. To address this, in Sub-study II and IV, children in care were divided into sub-groups based on their care history characteristics (age at entry, length of time in care). Sub-study III also investigated several care history characteristics. However, in Sub-study II, the comparative study, it was not possible to investigate placement settings due to data restrictions. In addition, the

thesis leaves several care-related factors unaddressed, such as reasons for care entries, children's subjective experiences, and the relationships between children and carers. These are mostly unavoidable limitations in register-based secondary analysis, and need to be addressed via other research methods, qualitative approaches and primary data. Hence, the contribution of register-based research is best appreciated while bearing these limitations in mind as well as its unique strengths.

Second, the Finnish Child Welfare Register begins from 1991, meaning that the data on placements in Finland are complete from only that year onwards. For those who were in care before that year and not beyond, the register has no placement records. For those that were in care during that year or later, placement data from before 1991 has been supplemented. Therefore, Sub-studies II and III, which utilize the Finnish Birth Cohort 1987 do not include all the individuals who were placed in that cohort. However, this limitation affects only a small share of the placements (i.e. those cohort members who were in care before 1991 and not beyond), and thus has no great effect on the overall results.

The third point is that the Danish child welfare register includes health-related placements in addition to child welfare placements, and distinguishing between these two is not possible. The Danish results are thus likely to be confounded by health-related problems. Therefore, the comparison of Denmark to Finland and Sweden in Sub-study II warrants caution and requires further investigation.

10 Conclusion

This thesis aims to increase the understanding of the life course outcomes of out-of-home care in Finland and the other Nordic countries. Specifically, it examines education and employment transitions among children with experience of being in care. The four sub-studies included in this summary present a multifaceted account of the topic by synthesizing existing Nordic evidence on the long-term outcomes of out-of-home care and providing a comparative account of the educational outcomes of children in care in Finland, Denmark and Sweden. By focusing on Finland only, the thesis explores the early adulthood dynamics of the school-to-work transitions of children in care and examines the association between placement in care and school performance in basic education.

The results are based on nationwide register data. Confirming with the previous evidence, they show that in comparison with the general population, children in care in the Nordic countries face elevated risks of various adversities during the transition to adulthood, including risks of poor school performance, low educational attainment, and long-term exclusion and instability in their education and working careers. More importantly, the similarity of the findings across the Nordic states highlight that the challenges of improving the inclusion of children in care are shared. The results of the comparative study support the argument that the findings on the outcomes of out-of-home care are rather generalizable from one Nordic country to another. Moreover, international evidence suggests that children in care experience similar adversities across the Western world, meaning that the findings of this thesis are not unique to the Nordic region. However, generalizing the findings outside the Nordics should be done with caution and by taking local arrangements into consideration.

The title of this thesis asked whether children in care as a group are a step behind their peers. The overall findings suggest the answer is yes, on average. A point to note, however, is that averages hide significant variation. Indeed, the findings also remind us of the heterogeneity of these young people's life course developments. For example, a large proportion of them do attain at least secondary-level education in early adulthood, and a large proportion of them do participate actively in education and employment. In this sense, the answer is no, not all children in care are a step behind. It is necessary to emphasize that although adverse childhood experiences indicated by placement in care may increase the risk of long-term disadvantage, these experiences do not determine the biographies of these young people. Instead, the issue concerns probabilities—and how to modify these probabilities to ensure a more inclusive future for children in care.

Before my final words, I must remind the reader that this thesis does not directly address the impact of out-of-home care, and thus the findings do not suggest that out-of-home care is harmful for children. Instead, the findings describe a continuum from childhood adversities to adulthood disadvantage that the child welfare system has been unable to prevent. This does not mean, however, that we should not be concerned about the disadvantage among children in care and aim for better outcomes. I also wish to note that this thesis is based on secondary register data. This implies that it does not address the lived experience of children in care, and thus the findings do not represent their voice. Therefore, the disadvantage that this thesis points out may differ from how children in care view their childhood experiences and early adulthood transitions. For this reason, their subjective experiences need to be addressed through other approaches.

To achieve stronger supportive and preventive measures, this thesis suggests some specific targets. All four sub-studies indicated that placement in care as an adolescent is associated with pronounced risks of adversities. In addition, exclusion and instability in education and working careers were related to placement instability, placement in residential care, as well as aging out of care and receiving after-care services. The findings also suggested that diagnosed psychiatric disorders contribute to the educational disadvantage among children in care. Thus, in addition to children in care as a group, those with aforementioned care histories and those with psychiatric disorders require specific attention in child welfare policy and service development.

In summary, this thesis demonstrates significant concerns related to the long-term outcomes of out-of-home care in the Nordic countries, including poor educational and labor market outcomes and a high risk of long-term exclusion from early education and working careers. The findings reflect and complement prior evidence. Improving the ability to compensate for childhood adversity and build a better tomorrow remains a priority in child welfare policy and practice.

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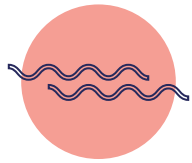

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