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FROM CARE TO EDUCATION AND WORK?
EDUCATION AND EMPLOYMENT TRAJECTORIES IN EARLY ADULTHOOD BY CHILDREN IN OUT-OF-HOME CARE

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ABSTRACT

Background Temporal dynamics during the early adulthood transition among children in out-of-home care is a neglected research area, leaving the possibility of coping with childhood adversity over time a poorly understood topic.

Objective To explore early adulthood education and employment trajectories among young adults who experienced out-of-home care during childhood and to examine how various care history factors predict these trajectories.

Participants We use longitudinal birth cohort data comprising individual-level information from national registers of all children born in Finland in 1987 (N = 59 476, of whom 1893 were in care).

Setting and methods We use trajectory clustering from a previous study on the 1987 birth cohort to compare trajectories between children in care and a propensity score–matched group of peers never in care. We investigated the association between care history factors and trajectories with multinomial logistic regression modeling.

Results Compared with the matched peer group, children in care were less likely to enter trajectories characterized by education and employment (38%) and more likely to enter trajectories involving early parenthood (14%) or long periods of fragmented social assistance benefit receipt and unemployment (21%). Those on early parenthood trajectories were almost exclusively women, whereas those receiving social assistance benefits and experiencing

unemployment for lengthy periods were mostly men. Entering disadvantaged trajectories was associated with, inter alia, placement as an adolescent, residential care, and aging out of care.

Conclusion The study demonstrates the relevance of examining longitudinal trajectories in children in care's early adulthood. Many young adults with care experience need support in education and employment beyond young adult age.

KEYWORDS

Child welfare, out-of-home care, education, employment, early adulthood, trajectory

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1. INTRODUCTION

Young adults who were placed in out-of-home care as children and young people (hereafter 'children in care') have high risks for low levels of education, unemployment, reliance on social assistance benefit schemes, and disability, as well as for unfavorable outcomes related to health, housing, and criminal behavior (Gypen, Vanderfaeillie, de Maeyer, Belenger, & van Holen, 2017; Kääriälä & Hiilamo 2017). A notable proportion of this population also become parents at an early age (Combs, Begun, & Rinehart, 2018; Dworsky & Gitlow, 2017). Importantly, however, young people in the proximity of aging out of care are a heterogeneous group (Stein, 2006). Approximately one half of these young people is likely to face troubling outcomes of varying degrees, characterized by the problems noted above, while the other half is relatively resilient across life domains and participates actively in education and work (Courtney, Hook, & Lee, 2012; Keller, Cusick, & Courtney, 2007;

Miller, Paschall, & Azar, 2017; Shpiegel, & Ocasio, 2015; Yates, & Grey, 2012). In other words, the transition phase into independent adulthood is a widely recognized, yet not uniform, challenge for children in care, their families, as well as for practitioners and policy makers.

Temporal progression on education and employment careers during the transition period into adulthood has been addressed in a host of studies on the general population level (e.g. Brzinsky-Fay, 2007; Buchmann & Kriesi, 2011; Haapakorva, Ristikari, & Gissler, 2017; Lorentzen et al. 2018; Salmela-Aro, Kiuru, Nurmi, & Eerola, 2011). Such an approach, which utilizes a life-course perspective and conceptualizes individual developments as trajectories, has recently gained some popularity in child welfare research (Brännström, Forsman, Vinnerljung, & Almquist, 2017; Fallesen, 2014). However, despite the extensive evidence on the problematic outcomes of out-of-home care in young adults, investigations focusing on temporal transition pathways during the transition into adulthood are not, to our knowledge, available for children in care. Considering the evidence above, however, it is obvious that temporal developments during that period among children in care and those never in care may differ. Knowledge of these temporal aspects would thus benefit policy and practice development by facilitating the identification of particularly challenging subgroups and by enabling the provision of more timely interventions. Therefore, research efforts to increase the understanding on longitudinal developments of children in care in early adulthood are necessary.

The aim of this study is to explore the education and employment trajectories of children in care and to compare the longitudinal trajectories between children in care and peers never in care by utilizing complete birth cohort data of children born in Finland in 1987. Considering that children in care are a diverse group in terms of their care experience and are likely to

benefit from targeted interventions, we also aim to investigate how various care history factors predict early adulthood trajectories.

1.1. Out-of-home care and children in care's transitions in Finland

The Finnish child welfare system is characterized by a family service orientation that prioritizes supportive and preventive work with the family, while out-of-home care is considered a "last resort" measure (Gilbert et al., 1997; Gilbert et al., 2011). Despite this orientation, the number of children in care doubled from 1990s to 2010s, and the cumulative probability that children would be placed in care at some point totaled 5.8% for children born in 1999 (Forsell, Heino, & Kuoppala, 2018). Infants (age 0) and adolescents (ages 13–16) are at the highest risk of first placement (Ristikari et al., 2018). As in many Western countries (Simkiss, Stallard, & Thorogood, 2013), risk factors for placements include parent's low socioeconomic status, single parenthood, and mental health and substance abuse problems (Kestilä et al., 2012a). In addition, emotional and behavioral problems are common, especially among adolescents entering care (Heino, Hyry, Ikäheimo, Kuronen, & Rajala, 2016). At younger ages, placements in foster families are typical, specifically when placement lasts for a long time, while among adolescents, residential care outnumbers other types of care (Ristikari et al., 2018). Placements may last from days to many years, depending on the situation of the child and family. Social workers make the decision about placements when caretakers and children over 12 years of age agree about the need for placement, which is the case for the majority of placements (Huhtanen, 2016). Contested care orders are decided in administrative court.

Transitions to adulthood in the Finnish system are structured by the nation's education system, in which school-leavers at the end of compulsory basic education (typically aged 16 years) opt for general or vocational secondary education. Among children in care, vocational

secondary education aimed at working life is a significantly more common choice than secondary education that prepares them for higher education (Heino & Johnson, 2010). However, by age 23, more than half of former children in care have failed to complete either of the secondary-level tracks (Kääriälä, Berlin, Lausten, Hiilamo, & Ristikari, 2018). Although Finland's well-developed education system generally promotes labor market access (Buchman & Kriesi, 2011), educational attainment in the form of formal qualifications is important for employability (Sipilä, Kestilä, & Martikainen, 2011). Thus, children in care have an increased risk of unemployment in adulthood (Heino & Johnson, 2010; Harkko, Lehikoinen, Lehto, & Ala-Kauhaluoma, 2016). Considering the disadvantaged family background, harmful pre-care experiences, and the often-challenging context of being in care, it is unsurprising that Finnish children in care face more than just educational and employment–related disadvantages as young adults, including early parenthood and mental health problems (Kestilä, Väisänen, Paananen, Heino, & Gissler, 2012b). They also receive social assistance benefits more often and have a higher likelihood of obtaining a decision for disability pension than their peers without experience in care (Bask, Ristikari, Hautakoski, & Gissler, 2017; Harkko, Kouvonen, & Virtanen, 2016; Kestilä et al., 2012b).

2. DATA AND METHODS

2.1. Study design, participants, data sources, and education and employment trajectories as an outcome

We used individual-level data from the longitudinal 1987 Finnish Birth Cohort study (Paananen & Gissler, 2011). The study includes social, demographic, and health-related data from several nationwide administrative registers for all children born in Finland in 1987 (N = 59,476, of whom 1,893 were placed in care before turning age 18) and their parents. The follow-up data used in this study spans the period from fetal stage until the end of 2012 (i.e.

until age 25). Table 1 presents the data sources and the register-drawn information used in the study. The data from different registers were deterministically linked using unique personal identity codes assigned to all Finnish residents. The study was approved by the ethical committee in the National Institute for Health and Welfare. According to Finnish law, register-based studies do not require informed consent if the registered people are not contacted.

[TABLE 1 HERE. Figures and tables are at the end of the article.]

By taking the life-course perspective and the concept of trajectory as our theoretical standpoint, we pay attention not only to transitions but also to the order and duration of states that individuals go through in their pathways (see Brzinsky-Fey, 2014; Sackmann & Wingens, 2003). Our study builds on a study by Haapakorva and colleagues (2017) that utilized sequence analysis and hierarchical cluster analysis to explore and describe the education and employment trajectories of the entire birth cohort 1987. Haapakorva et al. (2017) followed the cohort from 2005 to 2012 (i.e. from age 18 to 25) covering education and employment–related activities of the 59,476 cohort members—including children in care—for 96 months altogether. As a result, Haapakorva et al. (2017) identified 12 early adulthood trajectory types, which showed significant heterogeneity in transitions experienced by these young adults (see Figure 1 of these trajectories drawn here for children in care).

[FIGURE 1 HERE. **Title:** State distribution plot of education and employment trajectories among children placed in out-of-home care born in Finland in 1987 (N = 1893).]

In this study, we use these general trajectories (see Figure 1) as the basis from which to investigate the outcomes of children in care. Based on the existing evidence discussed above, we expect that adverse childhood experiences and socio-economic background related to placement in care are associated with trajectories that individuals enter as young adults.

Therefore, we examine the trajectories by investigating how young adults with care experience divide into these twelve trajectories and by comparing the results with those of a matched group of peers never in care. It should be noted that these trajectories are based on adult-age education and employment activities only, and thus there is no pre-existing association between childhood characteristics and these trajectories. The extent to which such an association exists will be an empirical finding of our study.

The 12 trajectories are interesting from the perspective of studying children with care experience for at least two reasons. First, the relatively large set of 12 trajectories is able to capture highly varying developments over the transition period. Thus, these trajectories provide an opportunity to identify not only the most typical developments but less frequent ones also. This is important considering that children in care are a relatively small minority and that due to their background, they may experience trajectories less common in the general population. Second, considering the transition literature on children in care discussed above, the 12 trajectories include several substantially interesting trajectories since the trajectories are able to identify variation in terms of length of time spent in education, timing of entry into employment, and timing of engaging in parenting. In addition, the trajectories describe various pathways that show more NEET-types of developments (Not in Education, Employment, or Training).

2.2. Confounders

Based on previous research, adverse pre-placement experiences, as well as birth-familial socio-economic, demographic, and health related factors predict entry into out-of-home care and may partly explain children in care's later life developments (Gypen et al., 2017; Kalland, Sinkkonen, Gissler, Meriläinen, & Siimes, 2006; Kestilä et al., 2012a; Kääriälä & Hiilamo, 2017; Simkiss et al., 2012). Thus, to compare children in care with peers never in

care, we drew data from registers on several individual and parental confounders to find matches with similar pre-care characteristics for the care-experienced population (see Table 1).

The selected confounders include parents' education (highest parental education on a three-level scale: basic, secondary, and post-secondary), social assistance benefit receipt (either of the parents received income support, a means-tested last-resort benefit, for six months during at least one of the follow-up years), and mental health problems (either of the parents diagnosed with mental health problems in inpatient care). Additionally, we measured parents' alcohol and drug abuse problems (either of the parents received alcohol and drug–related diagnosis in inpatient care), young maternal age at a child's birth (less than 20 years), and parental death (either of the parents died). Because mother's smoking during pregnancy is a known risk factor for placement in care and for child's poorer neonatal health and later development (Kalland et al., 2006; Kestilä et al., 2012a), we also investigated child's nicotine exposure during pregnancy.

To measure parental characteristics pre-dating placement into care, we grouped the follow-up time based on the child's age at first placement for the following parental confounders: receipt of social assistance benefits (income support), diagnosis of mental health problems and alcohol and drug abuse, as well as parental death. For those placed at ages 0 to 6, we investigated parental characteristics for the birth year 1987 only. For those placed for the first time at ages 7 to 12, and 13 to 17, we used parental data from the years between 1987 and 1994, and between 1987 and 2000, respectively. We were unable to identify the fathers of a small share of the study population (1.4%) through the registers. To include also these children in the study, we used their mothers' records only in constructing the confounding variables.

2.3. Care history characteristics

Children in care are a heterogeneous group in terms of their care history. Regardless of the causal effects of the care history factors on children in care, several of them are potential predictors of future outcomes (Maclean, Taylor, & O'Donnell, 2017; O'Higgins, Sebba, & Gardner, 2017). Because understanding care history is also important in identifying what kind of service use is associated with the outcomes, we investigated several care history factors. The selected care history factors were age at first placement (first placement before age 13 or at age 13–17), time spent in care, number of placements, most typical placement type (foster family care, residential care, or other type of care), aging out of care (spent time in care at the age of 17), and receipt of after-care housing support. Child welfare's after-care housing support in Finland is one form of after-care services provided until age 21 on voluntary basis for those leaving or aging out of care.

2.4. Statistical analysis

We selected controls (those never in care) for each case (those placed in care) from the general population never placed in care with nearest neighbor propensity score matching based on propensity for placement (Austin, 2011). We used binary logistics regression modeling with the individual and parental characteristics described above to estimate the propensity for placement in care. We did exact matching on sex and then used a maximum caliper of 0.3 to select controls using propensity scores (caliper is the maximum allowable difference in propensity to be placed in care between a case and a control). For both sexes, we did the matching in three steps. First, we selected matches for those placed at ages 0 to 6. We then excluded the selected matches from the general population never in care and did the matching procedure for those placed at ages 7 to 12. Lastly, we did the matching for those placed at ages 13 to 17.

To examine and compare education and employment trajectories by children in care and peers never in care, we used cross tabulation. Utilizing a chi-squared test with a purposefully conservative significance level of 0.0005, we assessed the differences in trajectories between children in care and peers never in care. Finally, we used multinomial logistics regression modeling to estimate the association between the selected care history factors and entry into education and employment trajectories. We did the all analyses with SPSS (version 24).

3. RESULTS

3.1. Baseline characteristics

We followed all the 59 476 individuals born in Finland in 1987 up to year 2012. Of these, 1893 individuals (3.2%) were placed in care before age 18. Observing the baseline characteristics demonstrates that those placed in care were more likely to be exposed to childhood adversities and parental disadvantages than the general population never in care (Table 2). After propensity score matching, baseline characteristics in all selected covariates were almost identical between children in care and the matched group of peers never in care, which suggests the matching procedure was successful.

[TABLE 2 HERE. Figures and tables are at the end of the article.]

3.2. Education and employment trajectories

Table 3 reports how young adults placed in care as children, their matched peers not in care, as well as the total general population never in care divide into the 12 education and employment trajectory types. Young adults with care experience were less likely to enter trajectories characterized by education and employment than peers never in care. Overall, trajectories where participation in education and work are typical and relatively stable (i.e., nos. 1–4), included 38% of the care population, 62% of the matched peer group and 74% of

the total general population never in care. Specifically, in comparison with the matched peer group, those with care experience were less likely to enter one of the trajectories where participation in higher education is common (type no. 1; $p < 0.0005$) and one where stable participation in labor is typical (no. 3; $p < 0.0005$).

[TABLE 3 HERE. Figures and tables are at the end of the article.]

However, the difference between children in care and matched peers not in care was statistically insignificant when observing trajectories where students received secondary level study benefit (a benefit based on parents income level) during vocational or general secondary education before entering higher education or stable employment (nos. 2 and 4). Regarding the fifth trajectory type, where young adults gained employment after initial unemployment, there was no statistically significant difference between children in care and either of the two peer groups, the matched peer group and the total general population never in care.

Young adults with care experience were more likely than peers never in care to have children in early adulthood. This is indicated by the higher share of children in care in the early parenthood trajectory (no. 6), where individuals receive childcare benefits relatively early in their twenties, indicating that they were caring for children at home. In other words, this trajectory not only refers to the birth of the child but also involves receipt of childcare benefits and thus time off from full-time education and employment. Individuals in this trajectory were almost exclusively women. Of women with care experience, 26% entered early parenthood trajectory, while corresponding figures for women without care experience were 16% in the matched group and 8% in the total general population ($p < 0.0005$ in both groups). Differences between the groups in the late parenthood trajectory (no. 7) were not statistically significant.

Next, in trajectory types eight and nine, participation in education and employment is less common. In the first of these (no. 8), unemployment alternates with employment, and in the second one (no. 9), unemployment alternates with periods of social assistance benefit receipt. Compared with the matched peer group and the total population never in care, children in care were more likely to enter these trajectories. Of the matched peer group and the total general population never in care, 8% and 3%, respectively, entered one of these trajectories, whereas the corresponding figure for young adults with care experience was 21%. In each of the three groups, the majority of young adults in these trajectories were men.

In trajectory type 10, with fragmented education, employment, and "no-data" periods, there were no statistically significant differences between children in care and those never in care; 8% of those in care were in this trajectory. Entering the "no-data" trajectory (no. 11) was more common among children in care, but after matching, the difference remained statistically significant only in men. Of men and women with care experience, 10% and 6% had very few traces in the registers used in this study, suggesting that they were not employed, registered as unemployed, or receiving any of the studied benefits or pensions. While it is possible that some were so well off that they did not need employment or benefits, this finding more likely suggests these individuals were severely excluded from education and employment. The share of expatriates in trajectory 11 ranged from 15% to 20% of the total population during the follow-up, implying that most individuals in this trajectory resided in Finland during the study period.

3.3. Care history factors as predictors of trajectories

To describe the care experiences of individuals on different trajectories, we investigated several placement factors with multinomial regression modeling (Table 4). As a reference category, we combined trajectories from one to four, that is, all of the trajectories where

participation in education and employment is most typical. We found several statistically significant associations. Placement as adolescent (ages 13–17), as opposed to first placement before adolescence, predicted entering early parenthood trajectory (no. 6), as well as all three of the fragmented employment, unemployment, and social assistance trajectories (nos. 8–10). Time spent in care was negatively associated with entering early parenthood trajectory, possibly because longest placements occur for those placed at younger ages who are less likely to have children early than those who enter care later and stay there for shorter periods. Time in care was also positively associated with entering limited data trajectory (no. 11).

[TABLE 4 HERE. Figures and tables are at the end of the article.]

A higher number of placements increased the likelihood of entering early parenthood (no. 6) and fragmented unemployment and social assistance trajectories (no. 9). In addition, compared with foster family care, residential care as the most typical type of placement was associated with entering the early parenthood trajectory and the fragmented unemployment and social assistance trajectory. Aging out of care and receiving after-care support for housing at ages 18 to 21 were both associated with entering the three fragmented employment, unemployment, and social assistance trajectories (nos. 8–10) and the limited data trajectory (no. 11). Additionally, receiving after-care housing support was more likely among those on a trajectory where individuals found employment after difficulties (no. 5).

4. DISCUSSION

This study extends the literature on outcomes of out-of-home care by exploring longitudinal trajectories during the transition to adulthood. Our findings showed that placement in care is strongly associated with temporal dynamics during the period from age 18 to 25. In addition, the results demonstrated significant heterogeneity in children in care's trajectories, particularly in terms of the extent of participation in education and employment.

While previous studies have shown that a large proportion of children in care fare relatively well in terms of participation in education and work during the transition (Courtney et al., 2012; Keller et al., 2007; Miller et al., 2017; Shpiegel, & Ocasio, 2015; Yates, & Grey, 2012), we were able to demonstrate a longitudinal version of that observation. Our results showed that 38% of children in care were on trajectories where participation in education and employment was relatively stable and showed progression from studies to working life. Reflecting the evidence from other outcome studies (Gypen, et al., 2017; Kääriälä & Hiilamo 2017), our results demonstrated that in comparison with peers with similar birth-family background but no care experience, children in care have high risks of trajectories where unemployment, reliance on social assistance benefits, and early parenthood are common.

At a more detailed level, we found that children in care were less likely to participate in higher education than peers never in care from families with similar backgrounds. Those that entered higher education did so mostly through a trajectory where their education was supported by secondary level study benefit. Receiving this benefit is based on parents' income-level and suggests that financial support from early on may play a crucial part in advancing children in care's education—albeit that is only one element in promoting a successful educational career for these young people (cf. Jackson & Cameron, 2012; Lee & Berrick, 2014; Pecora, 2012).

Because of the vulnerability of children in care, we expected them to be more likely than peers never in care to enter a trajectory where individuals have difficulties at the beginning of the career but find employment later on (i.e. trajectory no. 5). This pattern could be expected based on existing evidence (Gypen et al., 2017). Our findings, however, did not support this assumption. Instead, the propensity for this kind of trajectory was similar in children in care

and peers never in care. If such a pattern exists, a longer follow-up time than up to age 25 may be required to detect it.

More importantly, as noted above, we found that children in care were likely to enter trajectories where spells of unemployment and income support benefit continued throughout the early adulthood follow-up from age 18 to 25 without signs of increased participation. This implies that promoting participation in education and employment is currently failing for many transitioning children in care. This finding is concerning because the existing evidence suggests that these trajectories are likely to continue after early adulthood. A Nordic study on the general population level demonstrated that early instable and NEET trajectories showed no improvement by age 30 (Lorentzen et al., 2018). Moreover, regarding children in care, their elevated risk for socio-economic disadvantages is likely to extend up to midlife (Brännström et al., 2017). To improve children in care's long-term adulthood outcomes, strengthening their support and improving their employment at the beginning of the transition may be thus beneficial for entering a more positive trajectory (Courtney & Hook, 2017; Stewart, Kum, Barth, & Duncan, 2014). However, as they often experience multiple types of disadvantages at this time, including mental health problems, and a lack of financial resources and social support, children in care may need flexibility and time to navigate their transitions; this needs to be considered when planning services for them.

Our results also point to significant gender differences in transitions. Boys in care had particularly elevated risks to enter NEET-types of trajectories, whereas girls in care had an increased likelihood for early parenthood. This result is likely to reflect the findings that early family formation and specifically girls' increased teenage parenting is more likely among children in care than the general population (e.g. Dworsky & Courtney 2010; Vinnerljung, Franzén, & Danielsson, 2007). In this study, we were able to show how this is reflected in

girls in care's participation in education and employment during the transition period. It should be noted, however, that while girls in care are more likely to take the full-time parenting responsibilities indicated by the receipt of parental benefits, boys in care might support their families and offspring with income from work or social assistance benefits; that is just not visible in our data.

It remains to be seen how young women in early parenthood trajectories will advance in their educational and working careers beyond the age of 25. Among children aging out of care, early parenthood has been associated with lower employment (Dworsky & Gitlow, 2017), which raises concerns regarding careers of girls in care who engage in parenting early in their transitions. Moreover, on the general population level in the Nordic countries and particularly in Finland, having children during the transition phase is associated with exclusion from education and employment up to age 30 (Lorentzen et al., 2018). Taking these considerations into account, it is likely that while boys in care are more likely to enter NEET-types of trajectories, girls in care's disadvantage in terms of education and employment is channeled to some extent through early parenthood trajectory.

An implication for research is that we need a better understanding on the factors that promote girls in care's long-term parenthood trajectories; there may be multiple and complex reasons to these, including difficulties to access childcare support as well as poor educational and employment prospects. From a practical perspective, our findings suggest that attention should be given not only to family planning for children in care but also to services facilitating the participation in education and employment for those that have children and spend time with them at home at an early age.

We also showed that several care history factors predict education and employment trajectories, which facilitates the targeting of services for those most likely in need of

stronger support. Results suggested that higher age at entry into care, placement instability (higher number of placements), and residential care are associated with entering trajectories that involve early parenthood, social assistance benefit reliance, and unemployment. Additionally, being in care and aging out from there when coming of age, as well as receiving support for housing from child welfare's after-care services, were related to entering trajectories involving unemployment, social assistance benefit receipt, and exclusion from education and work-related activities and benefits altogether. This suggests that while these young people are, indeed, at an increased risk of adversities, they are also currently more likely to be receiving child welfare's services.

Current child welfare legislation in Finland provides after-care services until age 21 and emphasizes support for housing and financial support. Other services, such as psychosocial support, are conditional on individual client plan. The provision of services varies across municipalities, which are responsible for organizing them. These services in the current form, however, seems to lead to increased participation in education and employment for too few of those individuals receiving them, which calls for attention, as suggested above, to strengthening early transition support. This could involve embracing closer cooperation between after-care services and education and employment services, as suggested by a recent government report on after-care service reform (Sosiaali- ja terveysministeriö, 2019). Additionally, services need to be able tackle several factors that harm the chances of transitioning children in care to participate in education and employment; this kind of support includes, for example, coaching skills to manage everyday life and finances, as well as support for overcoming mental health problems and addictions. From the beginning of 2020, the eligibility for after-care services in Finland rises to the age of 25, rendering the considerations on reforming after-care services very topical in the country.

4.1. Strengths and limitations

Our study has several notable strengths. First, the study utilizes complete nationwide birth-cohort data collected from administrative registers, which allow a comparison of children in care with peers never in care and a reliable follow-up for the whole period for all cohort members, including those in care. Next, the data on education- and employment-related activities is uniquely rich and the data set is large, enabling us to identify multiple types of longitudinal trajectories, including relatively rare ones, many of which have evident and substantially interesting interpretations regarding children in care's early adulthood. Lastly, we were able to compare children in care with a peer group matched by several important pre-care individual and parental characteristics.

The limitations of the study include the following. First, our data set fails to include all the relevant information regarding children's pre-care characteristics, two specifically relevant ones being reason for care entry and potential experiences of abuse and neglect. Therefore, the matched group of peers never in care might differ from children in care by their pre-treatment characteristics. However, we used a regression model with multiple covariates that are known risk factors for placement in care to compute the propensity scores used in selecting the controls. Thus, while acknowledging the limitation resulting from the unobserved pre-care characteristics, excluding them is likely to have a limited impact on the propensity scores. Second, the Finnish child welfare register excludes placements for individuals who were placed only before 1991 and not beyond. Thus, we have no placement data on those cohort members who were in short term care before that year. However, while worth noting, this limitation has a limited effect on the overall results because these individuals are a small minority in the total in-care population.

4.2. Conclusion

This study is, to our knowledge, the first one to utilize large-scale data in examining children in care's early adulthood trajectories. It thus expands previous research that has focused on the general population by examining relative differences between children in care and their matched peers to enter different trajectories. Since the long-term outcomes of children in care are not identical across countries (Kääriälä et al., 2018), similar investigations elsewhere would be beneficial to increase the understanding on how these patterns may vary across countries.

Finally, we have demonstrated that on a population level, placement in out-of-home care in childhood is significantly associated with transitions and temporal trajectories that individuals go through in early adulthood. On the one hand, a large proportion of children in care participate in education and employment in a relatively stable manner over the transition period; on the other hand, a large proportion of them experience instability and exclusion regarding education and employment in a persistent manner throughout the transitional phase and, presumably, even beyond that. Thus, rather than an abrupt change from dependence to independence after coming of age, the transitional phase of these young adults should be seen as a gradual, long-term process involving various interdependencies with the welfare system (cf. Cameron et al. 2018). Therefore, efforts to promote children in care's participation in education and employment should continue tirelessly for as long as needed and provide individual support flexibly on a needs basis. To prevent permanent exclusion from education and employment, many young adults with care experience need strong support longer into adulthood than often perceived.

LITERATURE

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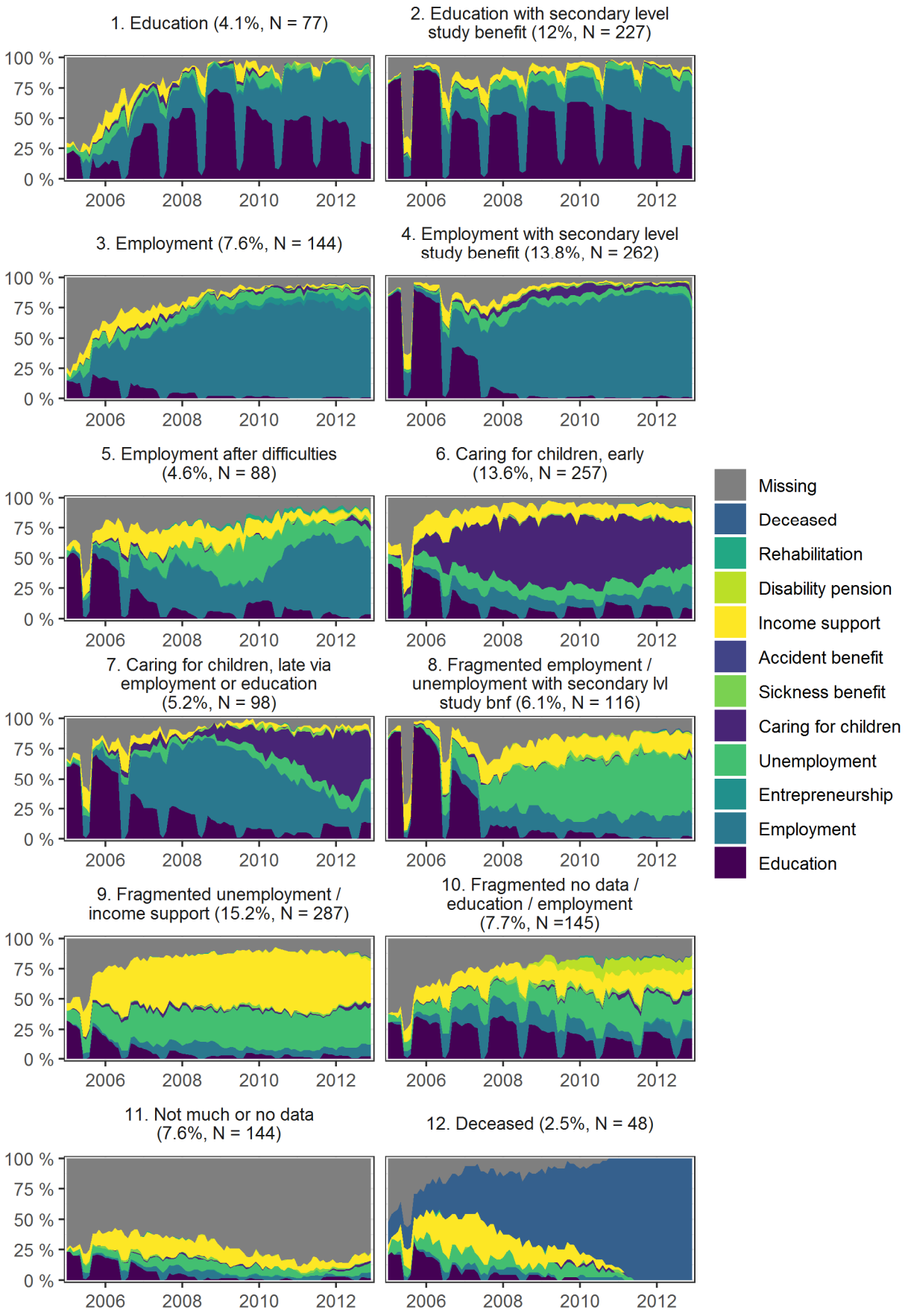


Fig 1. State distribution plot of education and employment trajectories among children placed in out-of-home care born in Finland in 1987 (N = 1893).

Table 1. Data sources and data drawn from registers.

Register holder and register	Data drawn
National Institute for Health and Welfare, THL	
Social Assistance Register	Parents' receipt of social assistance benefit (means-tested last-resort income benefit)
Hospital Discharge Register	Parents' diagnoses of mental health and substance abuse problems in inpatient care[a]
Child Welfare Register	Information on placements in out-of-home care from
Medical Birth Register	Child's sex
	Child's nicotine exposure during pregnancy
	Mother's age at child's birth
Statistics Finland	
Education Register	Parents' educational attainment in 2008
The Finnish Population Register Centre	
The Finnish Population Register	Parents' deaths

[a] Mental health problems are defined by the *International Statistical Classification of Diseases and Related Health Problems,* 9th and 10th revisions (ICD-9 and -10) as 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.

Table 2. Baseline characteristics.

	Follow up 1987						Follow up 1987–1994						Follow up 1987–2000					
	Children in care placement age <7		Matched non-care peers		General population never in care		Children in care placement age 7–12		Matched non-care peers		General population never in care		Children in care placement age 13–17		Matched non-care peers		General population never in care	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
Child characteristics																		
Sex																		
Boys	53,0	293	53,0	293	51,2	29500	59,4	268	59,4	268	51,2	29207	42,1	374	42,1	374	51,1	28939
Girls	47,0	260	47,0	260	48,8	28083	40,6	183	40,6	183	48,8	27823	57,9	515	57,9	515	48,9	27640
Nicotine exposure during pregnancy																		
Yes	57,5	318	55,7	308	14,0	8049	47,0	212	46,6	210	13,6	7741	37,0	329	36,7	326	13,3	7531
No	38,5	213	40,1	222	82,7	47598	48,1	217	49,4	223	83,1	47376	59,2	526	60,0	533	83,3	47153
Not reported	4,0	22	4,2	23	3,4	1936	4,9	22	4,0	18	3,4	1913	3,8	34	3,4	30	3,3	1895
Parental characteristics																		
Highest parental education																		
Basic	35,8	198	35,4	196	6,4	3661	26,6	120	25,7	116	6,1	3465	16,8	149	16,2	144	5,9	3349
Secondary	54,8	303	55,2	305	42,7	24562	57,9	261	58,3	263	42,5	24257	57,7	513	58,0	516	42,4	23994
Post-secondary	9,4	52	9,4	52	51,0	29360	15,5	70	16,0	72	51,4	29308	25,5	227	25,8	229	51,7	29236
Social assistance benefit receipt	42,1	233	42,0	232	2,7	1533	61,6	278	61,2	276	10,2	5796	57,5	511	56,8	505	14,8	8366
Mental health problems	7,2	40	6,9	38	0,4	237	15,5	70	14,4	65	2,5	1444	14,7	131	14,6	130	4,6	2610
Alcohol or drug abuse	2,7	15	1,4	8	0,1	51	12,6	57	11,8	53	1,3	722	10,9	97	10,6	94	2,5	1442
Mother under 20 years of age at birth	13,0	72	13,4	74	2,9	1683	11,1	50	10,6	48	2,8	1609	11,5	102	10,8	96	2,8	1561
Parental death	0,5	3	0,4	2	0,1	42	4,4	20	3,5	16	1,1	646	8,7	77	8,3	74	2,6	1474
Total	100,0	553	100,0	553	100,0	57583	100,0	451	100,0	451	100,0	57030	100,0	889	100,0	889	100,0	56579

Note: Parent's social assistance benefit receipt, mental health problems, alcohol and drug abuse problems, and mortality were followed up for three separate baselines, depending on the age at first placement: for year 1987 for those placed for the first time at ages 0–6; from 1987 to 1994 for those placed for the first time at ages 7–12, and from 1987 to 2000 for the first time at ages 13–17. Those selected to the matched peer group in earlier years were excluded from the general population never in care in the later years.

Table 3. Frequency distributions of education and employment trajectories among children in care, matched non-care peers, and the total general population never in care, %.

	Both sexes			Men			Women		
	Children in care	Matched non-care peers	General population not in care	Children in care	Matched non-care peers	General population not in care	Children in care	Matched non-care peers	General population not in care
1. Education	4,1	15,1*	32,9*	2,9	12,2*	29,4*	5,2	18,0*	36,5*
2. Education with secondary level study benefit	12,0	15,5	14,6	9,7	11,6	10,9	14,2	19,3	18,4
3. Employment	7,6	15,5*	16,2*	10,3	22,5*	23,5*	5,0	8,7	8,4*
4. Employment with secondary level study benefit	13,8	16,0	10,6*	15,5	19,1	13,3	12,2	12,8	7,8*
5. Employment after difficulties	4,6	4,1	3,4	6,3	6,0	4,4	3,0	2,3	2,2
6. Caring for children, early	13,6	8,2*	4,0*	0,4	0,0	0,0*	26,4	16,2*	8,2*
7. Caring for children, late via employment or education	5,2	6,1	4,5	1,9	2,7	1,1	8,4	9,4	8,0
8. Fragmented empl / unempl with secondary lvl study bnf	6,1	4,5	1,9*	9,6	7,4	2,7*	2,7	1,8	1,1*
9. Fragmented unemployment / social benefit	15,2	3,8*	1,5*	20,5	4,8*	2,0*	9,9	2,8*	1,0*
10. Fragmented no data / education / employment	7,7	5,9	6,3	9,0	7,0	7,3	6,4	4,8	5,3
11. Not much or no data	7,6	4,0*	3,2*	9,7	4,6*	4,0*	5,5	3,3	2,5*
12. Deceased	2,5	1,4	1,0*	4,1	2,2	1,2*	1,0	0,6	0,7
N	1893	1893	57 583	935	935	29 500	958	958	28 083

Note: χ^2 test was performed separately between children in care and each of the two peer populations, matched non-care peers and the general population never in care.
* $p < .0005$

Table 4. Odds ratios and 95% confidence intervals of care history factors for entering trajectories 5–12 from multinomial logistic regression modeling (N = 1893).

	N	%	*M* (SD)	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	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
First placement as adolescent (ref. first placement age <13)	889	47.0	–	1.0 (ref.)	1.13 (0.71–1.79)	**1.70 (1.25–2.31)**	0.87 (0.56–1.34)	**1.98 (1.34–2.97)**	**2.53 (1.90–3.37)**	**1.70 (1.81–2.44)**	0.80 (0.55–1.18)	**2.87 (1.56–5.26)**
Time in care, 10 years	–	–	0.42 (0.51)	1.0 (ref.)	1.18 (0.78–1.80)	**0.58 (0.41–0.81)**	1.13 (0.76–1.69)	1.09 (0.74–1.60)	0.76 (0.56–1.02)	1.16 (0.83–1.63)	**1.74 (1.27–2.38)**	1.00 (0.60–1.80)
Number of placements	–	–	2.5 (2.1)	1.0 (ref.)	1.05 (0.94–1.17)	**1.08 (1.01–1.17)**	0.97 (0.86–1.10)	1.00 (0.89–1.11)	**1.14 (1.07–1.21)**	0.97 (0.88–1.08)	1.09 (1.00–1.18)	1.07 (0.93–1.23)
Typical placement type (ref. foster family care)												
Residential care	1147	60.6	–	1.0 (ref.)	1.54 (0.94–2.52)	**1.62 (1.14–2.29)**	0.89 (0.57–1.39)	1.43 (0.92–2.24)	**2.26 (1.62–3.15)**	1.03 (0.70–1.51)	1.09 (0.74–1.60)	**2.48 (1.17–5.28)**
Other type of care	165	8.7	–	1.0 (ref.)	0.67 (0.23–2.01)	1.37 (0.78–2.41)	0.58 (0.23–1.44)	1.45 (0.69–3.06)	**2.04 (1.20–3.47)**	1.05 (0.54–2.04)	0.83 (0.40–1.74)	2.43 (0.78–7.56)
Aging out of care (ref. not in care aged >17)	1061	56.0	–	1.0 (ref.)	1.48 (0.94–2.31)	1.14 (0.84–1.54)	1.06 (0.69–1.63)	**2.11 (1.40–3.19)**	**2.10 (1.78–2.80)**	**1.51 (1.05–2.16)**	**2.45 (1.67–3.59)**	**2.12 (1.15–3.91)**
After-care housing support (ref. no such support)	630	33.3	–	1.0 (ref.)	**1.68 (1.06–2.66)**	0.94 (0.68–1.31)	0.87 (0.54–1.41)	**1.63 (1.08–2.50)**	**1.47 (1.09–1.96)**	**1.49 (1.03–2.17)**	**2.46 (1.71–3.55)**	1.54 (0.84–2.84)

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.