Economic activities of care leavers and children of care-leavers: employment, education and training (EET) disadvantages over the life course

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Abstract

Relatively little is known about the long-term economic activities of care leavers and their attachment to the labour market, and even less about the education and employment outcomes of the children of care leavers. Guided by assumptions of life course theory, this study investigates the association between out-of-home care (OHC) experience and time spend in employment, education or training (EET) from the end of compulsory school leaving age (age 16) to mid adulthood (age 46). Drawing on a national representative cohort study, the 1970 British Cohort Study (BCS70), we identify cohort members with direct OHC experience, indirect OHC experience (those whose mothers were in care), and those with no care experience in their family. We find that cohort members with direct or indirect OHC experience acquired fewer qualifications and spent fewer months in EET than their peers without OHC experience. For those with direct OHC experience these differences remain after controlling for socio-economic family background and individual characteristics. Although the evidence suggests that the disadvantages associated with OHC experience can spill over into the second generation, the findings also show that a considerable number of cohort members with direct or indirect OHC experience returned to education between age 26 and 46, and that the majority were continuously attached to the labour market. There is thus considerable heterogeneity in development. The findings highlight the need to support education, the transition to employment and life-long learning for care leavers and their children beyond compulsory schooling and into the adult years.

Keywords

Out-of-home care; Intergeneration Transmission; Persistent Disadvantage; EET; Resilience.

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Background

Completing education, entering gainful employment, and reaching financial independence is a crucial developmental task, particularly so for individuals aging out of the care system. There is persistent evidence to suggest that care-leavers attain fewer qualifications in public examinations at age 16 than their same aged peers (Sebba & Luke, 2019; Teyhan et al., 2019; DfE 2020a, 2020b; Berridge et al., 2020; Brännström et al., 2020) and have lower educational attainment in adulthood (Cameron et al., 2018; Forsman, 2020; Parsons & Schoon, 2021, 2022). They also encounter more mental and physical health problems (Courtney et al., 2020; Murray et al., 2020) as well as problematic post-16 transitions with longer periods not being in education, employment or training (EET) compared to their peers (Harrison, 2023; Berlin et al., 2021), and in establishing themselves in the labour market (Courtney et al., 2011; Österberg et al., 2016; Cameron et al., 2018). Notably, many of the negative outcomes associated with the experience of out-of-home care (OHC) are related to the reasons of being placed into care, as those with OHC experience generally stem from relatively disadvantaged family backgrounds, born to parents with low level of education, unstable employment and mental health problems (Parsons & Schoon, 2022; Viner & Taylor, 2005). Studies following care leavers into their adult years suggest that these disadvantages persist, as indicated by low educational attainment, inconsistent labour market attachment and low income (Achdut et al., 2022; Cameron et al., 2018; Parsons et al., 2022; 2023; Sacker et al., 2022; Viner & Taylor, 2005; Xie et al., 2021). Moreover, there is first evidence to suggest that the disadvantages associated with OHC can spill over to the second generation, and that the children of care leavers are doing less well in education than their peers without parental OHC experience (Parsons et al., 2023). In addition, there is evidence of raised mental health problems among children of care leavers when they reach mid adulthood (Parsons & Schoon, 2022). There is however no previous evidence on the economic activities of children of care leavers, following their lives into the adult years. More generally, despite the many studies on the socio-economic outcomes of care leavers, there is still little evidence based on longitudinal data capturing the economic activities of care leavers, or of the children of care leavers over time.

Taking a life-course approach this study will add to the evidence base by 1) assessing the socio-economic and individual level resource factors available to care leavers and the children of care leavers; 2) mapping the economic activity trajectories of those with direct and indirect OHC experience from the end of compulsory schooling to mid-adulthood; 3) assessing the role of socio-economic and individual-level resource factors in shaping the economic activity trajectories (comprising participation in employment, education or training) over and above the experience of OHC (either directly experienced by the care leavers or indirectly by the children of care leavers); and 4) exploring the chances for those with direct or indirect OHC experience to gain relevant educational qualifications or enter a professional career. Drawing on the nationally representative 1970 British Cohort Study (BCS70) enables us to compare the experiences of cohort members with direct or indirect OHC experience, and their peers without OHC experience in a general population sample, following their lives into mid adulthood (age 46).

Participation in employment, education and training (EET)

Education and employment represent vital resources for obtaining and maintaining financial independence as well as general wellbeing. For example, in the UK attaining a ‘good grade’

General Certificate of Secondary Education (GCSE) or equivalent (NVQ2) examination pass, particularly in English Language and maths, is increasingly fundamental for accessing the widest range of possible post-16 transitions and can influence later labour market outcomes (see Dickerson et al., 2022). Indeed, those doing poorly in their GCSEs at age 16 can be scarred for many years, finding it hard to strive in the workplace (Bell & Blanchflower, 2010; Crawford et al., 2012; Ralston et al., 2016). Being in employment, in turn, can be an important means of social inclusion for all groups of populations at risk of marginalisation, in particular those with OHC experience (Arnau-Sabates & Gilligan, 2020; Berridge, 2014). However, care leavers tend to have lower educational qualifications than their peers (Sebba & Luke, 2019; Teyhan et al., 2019; DfE 2020a, 2020b; Berridge et al., 2020; Brännström et al., 2020), are less likely to be employed and more likely to experience unemployment or not being in education, employment or training (NEET) (Berlin et al., 2021; Cameron et al., 2018; Harrison et al., 2023; Kääriälä et al., 2019). There is however less evidence on the longer-term experiences in the labour market, particularly during the 4th or 5th decade of life. The few studies taking a longer-term view report an increased risk for care leavers to be economically inactive (Sacker et al., 2022; Xie et al., 2021) and to experience longer term unemployment (Brännström, Forsman et al., 2017) in comparison to general population samples.

There is however also evidence to suggest more positive outcomes regarding attachment to the labour market and a return to education during the 4th or 5th decade of life for some (Sacker et al., 2022). Notably, not all care leavers (or their children) fail to achieve. There is now increasing evidence of effective functioning among care leavers in mid adulthood (Brännström, Vinnerljung, et al., 2017; Brännström, Forsman, et al., 2017). For example, evidence from the British Office for National Statistics Longitudinal Study (LS) suggests although care leavers are less likely to participate in higher education than their peers they reengage with some form of further education during their 30s or 40s, gaining higher level qualifications (Sacker et al., 2022). Regarding employment outcomes, there is evidence from large longitudinal studies in Israel to suggest that attachment to the labour market of care leavers increases between age 21 to 34 (Achdut et al., 2022). Evidence from the Swedish Stockholm birth cohort born in 1953 suggests that the majority of men and women, including those with OHC experience, encounter no disadvantages in their transition to stable employment (Brännström, Vinnerljung, et al., 2017). There are thus considerable dynamics and heterogeneity regarding the participation in employment, education and training among those with OHC experience.

An intergenerational life course perspective

Aiming to gain a more comprehensive understanding of the long-term economic activities of care leavers (direct experience) and expanding the view to the children of care leavers (indirect experience), we take an intergenerational life-course perspective. The life course perspective emphasises the interplay of human development within multi-level contexts (Elder et al., 2015). As already mentioned, those with OHC experience generally stem from relatively disadvantaged family backgrounds (Parsons & Schoon, 2022; Viner & Taylor, 2005; Xie et al., 2021). According to life course theory, early experiences of (dis-)advantage can accumulate and can be compounded over time, leading to an accumulation of (dis)advantage over time (Dannefer, 2003). And indeed, many negative outcomes associated with OHC experience are related to the reasons of being placed into care, including experiences of socio-economic adversity (such as low levels of parental education, experience of poverty and insecure

housing) as well as the psychosocial deprivation and inconsistent caregiving associated with OHC (Achdut et al., 2022; Cote et al., 2018; Courtney et al., 2020). Within life course theory this can also be conceptualised by the principle of linked lives, i.e., the ties to significant others in one's life and across generations which form a developmental context, as well as the assumption of path dependency which emphasises that present states of experience are based on the past and are at the same time the springboard for future states (Elder et al., 2015).

However, within life course theory there is also the assumption of turning points, an alternative way in which one can think of path dependency, where an individual coming to a road juncture, takes one or another of multiple available routes to proceed (Bernadi et al., 2019). Turning points reflect a disruption of the trajectory an individual has been on (developmental discontinuities) or what was personally or socially expected. This can be the case, for example, if an individual who has left school at an early age returns to education later on in life, as evidenced in studies on the educational experiences of care leavers (Harrison et al, 2023; Mannay et al., 2018; Sacker et al., 2022), or that some care leavers catch up with their peers in terms of their attachment to the labour market by mid adulthood (Achdut et al., 2022; Brännström et al., 2017). The assumption of turning points also takes into account that OHC experience can be traumatic for some, although it might be a positive experience for others (Courtney & Hook, 2017; Dunn et al., 2010), enabling them to move away from problematic circumstances in the family of origin. Notably, the manifestation of resilience, i.e., positive adjustment in the face of adversity or trauma, is not defined by outstanding achievements, but by meeting key developmental tasks (Masten, 2018), such as completing full-time education with relevant qualifications or avoiding long-term unemployment.

The Present Study

This study draws on the nationally representative 1970 British Cohort Study to provide new evidence on a) the economic activity trajectories of those with direct and indirect OHC experience from the end of compulsory schooling to mid-adulthood; b) the intergenerational transmission of socio-economic disadvantage associated with OHC experience; and c) the direct and indirect role of OHC experience in shaping developmental outcomes in addition and above a range of socio-economic and individual level resources.

We do this by first assessing differences in education and employment outcomes in early (age 26) and middle (age 46) adulthood to reflect attainment at key life phases, additionally looking at occupation status at age 46 and attainment of additional qualifications between age 26-46. We then take full advantage of the longitudinal economic activity data to examine issues of persistent and cumulative labour market disadvantages encountered by those with either direct or indirect OHC experience. We do this by first identifying cohort members EET status in each month over a 30-year period from January 1987 (the start of the year following the end of compulsory education at age 16) to December 2016 (age 46) to a) calculate overall EET status in each year between 1987-2016 (inclusive) and b) the total number of months spent in EET during this time (maximum 360).

Based on the assumption of cumulative disadvantage, in particular cumulative intergenerational disadvantage we hypothesise (H1a) that those with direct or indirect OHC experience are growing up in families with fewer socio-economic resources than their peers without OHC experience, i.e., their parents have lower levels of education, are less likely to own their home, live in overcrowded conditions and they are more likely to receive free school meals, a widely used indicator of childhood poverty (Ilie et al., 2017). Moreover, we assume (H1b) that those with direct or indirect OHC experience are themselves encountering more problematic economic activity histories than their peers with no OHC experience, as indicated by lower levels of educational attainment and prolonged periods of economic inactivity. However, recognising potential heterogeneity in experiences, and based on the assumption of turning points, we assume (H2) that some with direct or indirect OHC experience can succeed against the odds and meet key developmental tasks, such as gaining relevant qualifications and establishing oneself in the labour market (in particular those with higher levels of socio-economic resources).

Aiming to account for possible confounding variables regarding the association between OHC and EET experiences, we take into account indicators of family background (parental education, receipt of free school meals, housing) as well as individual characteristics, in particular sex, ethnicity, health status as well as cognitive ability (direct assessment of math and reading ability at age 10) which have shown to be associated with labour market activities of care leavers (Harrison et al, 2023). There is persistent evidence to show that girls have outperformed boys in public examinations at age 16 since 1988 (Smithers, 2014; DfE, 2020b), and that being from a non-white ethnic group in Britain in the mid-1980s was associated with lower academic attainment at school leaving, although the increasing educational attainment of boys and girls from minority ethnic groups is now well attested (Strand, 2015, 2021; DfE, 2022); see also (Harrison et al., 2023). Research has also shown that teenagers from all minority groups are now more likely to enter university than their white majority counterparts

(Crawford & Greaves 2015; UCAS, 2021) although completion rates are lower among Black students (Roberts & Bolton, 2020). Furthermore, six months after graduation, Black graduates were less likely to be in 'highly skilled employment' or further study and fewer reported to be very or fairly satisfied with their careers (HESA, 2020) which adds to the persistent body of evidence of labour market inequalities across ethnic groups (ONS 2014; Zwysen et al., 2021; Platt & Zuccotti, 2022). Given children from (certain) British minority ethnic (BME) groups also have an increased prevalence in the care system (DfE, 2021), this may compound their exclusion. However, the evidence is not conclusive given the interlinkages between ethnicity and socio-economic resources (Bywaters et al., 2017; Cenat et al., 2021; Putnam-Hornstein et al., 2013), with some studies reporting that ethnic differences in transition outcomes are the exception not the rule (Dworsky et al., 2010; Watt & Kim, 2019), or that non-white youth with care experience are more resilient during early adulthood (Shpiegel, 2016). In addition, poor health and mental wellbeing in childhood or adolescence are associated with lower academic attainment (Smith et al., 2021) and labour market participation (Egan et al., 2015; Hale & Viner, 2018; Harrison et al., 2023). We also consider the role of direct assessments of academic ability during early adolescence which predict performance in public examinations at age 16 (Parsons et al., 2023; Elliot Major & Parsons, 2022) and experience of NEET among 16-24 year olds in England (Boshoff et al., 2019).

Adopting a longitudinal approach and comparing the experiences of those with direct, indirect, or no care experience, this study will provide new evidence on how economic activity histories differ by OHC experience from the end of compulsory schooling to mid adulthood (age 46). Moreover, we assess if it is OHC experience per se, the associated socio-economic resources, or a range of individual characteristics that affect the economic activity histories in the long run. In addition, we explore possible turning points and evidence of positive adjustment in the face of adversity.

Methodology

Data

The 1970 British Cohort Study (BCS70)

We draw on data collected for the 1970 British Cohort Study (BCS70), an ongoing prospective cohort study, following the lives of more than 17,000 people born in England, Scotland and Wales in one week of 1970 (Elliott & Shepherd, 2006; http://www.cls.ucl.ac.uk/bcs70). Since the birth survey in 1970 there have been 9 follow-up surveys of the whole cohort at age 5, 10, 16, 26, 30, 34, 38, 42 and 46/48 years3. We use data from all surveys up to age 30 and age 46/48 (University of London, 2013, 2016a, 2016b, 2021, 2022a, 2022b)

Our analytic sample comprises n=12,740 cohort members for whom we have information on both their own (direct) OHC experience (collected in surveys at age 5, 10, 16 and 30) and their mothers (indirect) OHC experience (collected in the age 5 survey). In total, 610 cohort members had direct OHC experience and 430 had indirect OHC experience as their mother reported being in care as a child. Within this sample, 48 had both direct and indirect experience. Following sensitivity analyses, these are included in the direct OHC experience group, reducing the number in the indirect OHC experience group to 382. Furthermore, it is important to note that although more likely than children of mothers who had no OHC experience, the overwhelming majority of children with a mother who had OHC experience do not end up in care themselves: 11% compared to 3%.

Key Measures

Direct OHC experience

The parent / guardian (overwhelmingly the biological mother) was asked whether the cohort child had been in care in interviews carried out at child ages 5 10 and 16, and then the cohort members were themselves asked about their OHC experience retrospectively at age 30.

Indirect OHC experience

During the interview in 1975, the mother was asked about time she had spent away from her own parents. See Figure 1 for question wording and response categories.

[3] In childhood, participant consent was obtained from parents or caregivers, and later from the study members themselves. The study was originally approved by internal ethical review, but from 2000 MREC ethical approval has been sought via the regional National Health Service Research Ethics Committees (Shepherd, 2012). Although the study members are not involved with the design of the study or questionnaire content, their feedback is regularly sought, and results are disseminated on the study members website and a summary of latest findings is included when the survey team sends each member a birthday card every year.

Figure 1: Capturing direct and indirect OHC experience

<table>
<tr>
<td>Cohort member (1975 – age 5)
Has the child ever been in any of the following situations?
• Foster parents' home
• Assessment centre
• Family group home
• Children's home</td>
<td>Cohort member (1980 – age 10)
Has the child ever been in care (voluntary or statutory), now or in the past?
• Yes – in care now
• Yes – in care in past
• No, never been in care
• Not known</td>
</tr>
<tr>
<td>Cohort member (1986 – age 16)
Has the teenager ever been subject to any of the following orders:
• Residential care
• Place of safety order</td>
<td>Cohort member (2000 – age 30)
Can I just check before the age of 17 did you spend any time living in any of these places?
• Yes, in local authority children's home
• Yes, with local authority foster parents
• Yes, in voluntary society children's home
• Yes, with voluntary society foster parents
• No</td>
</tr>
<tr>
<td colspan="2">Cohort Member Mother (1975 – age 5)
Did the mother herself, as far as she can remember, ever spend more than a short time away from her parents as a child?
• Yes – fostered / in care
• Yes – other reason
• No
• Not known</td>
</tr>
</table>

Educational Attainment

Educational Attainment was assessed by three measures: a) the age of leaving full-time education (before 16, at 16/17 or at age 18 or older); b) achieving 5+ "good grade" passes in pubic examinations including English and Maths at the end of compulsory education4; and c) the highest qualification achieved as assessed according to the National Vocational Qualification (NVQ) levels, ranging from None/NVQ1; NVQ2 (General Certificate of Secondary Education (GCSE) equivalent); NVQ3 (equivalent to A-level qualifications enabling access to university); NVQ4/5 (equivalent to degree-level qualifications or higher). Highest qualifications were assessed at age 26 and 46, as 26 was the first and age 46 the currently last wave of data collection during adulthood. We compare highest attainment at the different age points to find evidence of returning to education to gain further – or any – qualifications.

Economic activity

Main economic activity was assessed at age 26 and 46, differentiating between those who are full-time employed, in education or training, unemployed, being at home/caring for the family, and being sick or other.

[4] For this cohort a good grade pass was a grade A-C in General Certificate of Education Ordinary Level examinations or a grade 1 pass in Certificate of Secondary Education examinations. A Grade 1 CSE is broadly equivalent to a GCE O Level grade C pass. These examinations were replaced with General Certificate of Secondary Examinations in 1987.

Occupation attainment

Occupation class was identified at age 46 using the NS-SEC (Rose & O'Reilly, 1998) occupational schema. We examine access to the top NS-SEC class (class 1, comprising 1.1 and 1.2). Class 1.1 refers to large employers and higher managerial and administrative occupations such as chief executives, production managers and senior police officers, and class 1.2 to higher professional occupations, such as lawyers and doctors. Some major graduate occupations are not included in class 1, because they are subject to a relatively high degree of day-to-day managerial control. For example, schoolteachers, librarians and social workers are in class 2, 'lower managerial, administrative and professional occupations'.

Time in EET

We used the monthly economic activity history data to calculate the number of months an individual spent in paid employment, education or training (EET) over the 30 years from January at the start of the calendar year they turned 17 (1987) to December of the year they turned 46 (2016) which amounted to a total of 360 months. For each work and non-work activity, start and end dates are collected, together with whether the activity was full- or part-time (University of London, 2022c).

We focused on EET rather than paid employment to account for differences in the age an individual entered the labour market after leaving education and training. Given the different participation patterns of men and women in education and employment, all analyses are carried out for men and women separately.

Covariates

We control for a range of family socioeconomic background measures and individual characteristics that have been associated with OHC experience and academic and employment outcomes in the literature. This enables us to identify how far any labour market disadvantage is driven by disadvantaged personal characteristics, or social origins, thereby helping to establish any potential causal impact of indirect or direct OHC experience on labour market participation.

The measures of family socio-economic circumstances associated with OHC experience and education and labour market participation that are included in the modelling include: parental qualification (none or NVQ15 = 0; NVQ2+ = 1), housing tenure (home-owner = 0; rented = 1), over-crowded living conditions (<1 per room = 0; 1+ per room = 1), and whether the child received free school meals (no = 0; yes = 1).

Apart from sex (male = 0; female = 1), the individual characteristics are ethnicity (white = 0; BME = 1), standardised reading and maths test scores at age 10 (for further details see Parsons, 2014; Moulton et al., 2020), attainment in public examinations at age 16 (0 to 4 exam passes=0; 5+ 'good grade' passes including English language and maths = 1), a measure of

[5] NVQ = National Vocational Qualifications. Level 1 is equivalent to low grade GCSEs, Level 2 is equivalent to having five or more GCSEs (or Scottish equivalents) at 9-4 or A*-C.

self-reported general health status at age 10 (good = 0; poor = 1), and mental health (standardised score) at age 16 as assessed by the Malaise Inventory (Rutter et al., 1970; Rodgers et al., 1999) indicating depression and distress.

Analytic strategy

We first employ descriptive statistics to show the bivariate associations between OHC experience and outcomes at age 26 and 46 before running a series of logistic regression analyses for four key outcomes: 5+ 'good grade' examination passes at age 16; having a degree [or equivalent] by age 46; gaining any higher-level qualification by age 46 than they had at age 26; and having a professional or managerial occupation by age 46.

We estimate a series of four logistic regression models for examinations at age 16, five models for degree status at age 46 and gaining a higher level qualification at age 46 than held at age 26, six models for occupation status. The model specifications are:

Model 1: OHC experience
Model 2: M1 + family socioeconomic background
Model 3: M1 + individual characteristics
Model 4: M1 + education outcomes [degree, higher qualification and occupation status]
Model 5: M1 + time in EET [occupation status]
Final Model: M1 + all family socioeconomic background [M2] & individual characteristics [M3 or M3 & M4 or M3, M4 & M5]

From here we concentrate on time spent in EET between 1987 – 2016. We begin by establishing the degree to which direct and indirect OHC experience is associated with time in EET. We look at the proportion of men and women in EET in each year to see whether EET disadvantages associated with OHC experience are persistent over time – as might be the case if young people are 'scarred' by their direct OHC experience or if there is intergenerational transmission of trauma – or whether potential participation penalties diminish with time, at least for some, as suggested in other studies (Brännström, Vinnerljung, et al., 2017).

Given the highly skewed distribution in our outcome measure (see Supplementary Material S1), we then use quantile regression methods to compare differences in the total number of months spent in EET between ages 17 and 46 by OHC experience thereby increasing the power to detect differences in the upper and lower tails. We condition on several key individual and family socio-economic background characteristics that are associated with both OHC experience and education and labour market disadvantage. This enables us to identify to what extend EET disadvantages are associated with social origins, disadvantaged personal characteristics including lower qualifications, thereby helping to establish any potential effect of OHC experience on labour market participation and identify potential levers for policy intervention.

We then estimate a series of four quantile regression models for months spent in EET and their association with OHC experience. The model specifications are:

Model 1: OHC experience
Model 2: Model 1 + family socioeconomic background
Model 3: Model 1 + individual characteristics
Model 4: Model 1 + family socioeconomic background & individual characteristics

We compare differences at the 0.25, 0.50, and 0.75 centiles of the EET participation distributions for men and women separately.

Multiple Imputation

As in all longitudinal studies, the 1970 cohort has experienced attrition over time. Amongst our full analytic sample (n=12,740), 54% took part in 2016. Given the potential for biases arising due to differential sample attrition among those with care experience in their family (55% no OHC experience; 48% indirect OHC experience; 42% direct OHC experience), we used Multiple Imputation (MI) to deal with attrition and item non-response to restore sample representativeness, adopting a chained equations approach (White et al., 2011) under the assumption of 'missing at random' (MAR). To maximise the plausibility of the MAR assumption the most important predictors of missing data are included in our models (e.g., disadvantaged socio-economic background in childhood, poor mental health and low cognitive ability in early life) to further reduce bias and retain power (see Silverwood et al., 2021; Mostafa et al., 2021; Mostafa & Wiggins, 2015). All reported analyses are averaged across 20 replicated data sets based upon Rubin's Rule for the efficiency of estimation under a reported degree of missingness across the whole data of around 0.20 (Little & Rubin, 2014).

Results

Socio-economic family background and individual characteristics

We first examine differences in selected family background and individual characteristics by OHC experience. Table 1 shows that in comparison with the men and women with no OHC experience in their family, those with direct OHC experience were by far the most disadvantaged, but disadvantaged circumstances were also apparent in the childhoods of men and women with indirect OHC experience.

In terms of family socio-economic circumstances, compared to those with no OHC experience, a higher proportion of men and women with direct or indirect OHC experience had lower educated mothers, lived in rented and overcrowded homes, and were in receipt of free school meals in mid-childhood (in particular those with direct OHC experience).

Regarding individual-level characteristics, just 3% of the BCS70 sample were not of white British ethnicity. British Minority Ethnicity (BME) rates were higher among men and women with OHC experience and were highest at 8% among women with direct OHC experience. Health and academic inequalities were also apparent for men and women by OHC experience with average (standardised) math and reading ability being lower among those with direct or indirect OHC experience in mid-childhood (age 10), and general health at age 10 and mental health problems at age 16 being higher among those with direct or indirect OHC experience (in particular among women). Generally, those with direct OHC experience were more disadvantaged than those with indirect OHC experience, i.e., the children of care leavers.

Table 1: Selected family background and individual characteristics by OHC experience

	MEN			**WOMEN**		
	No OHC	**Indirect OHC**	**Direct OHC**	**No OHC**	**Indirect OHC**	**Direct OHC**
Family Background						
Mother NVQ2+ quals	.29	.19	.20	.29	.18	.21
Rented home	.43	.58	.68	.42	.49	.65
Overcrowded home	.39	.52	.57	.38	.44	.51
Free school meals	.14	.24	.39	.14	.23	.32
Individual Characteristics						
British Minority Ethnic	.03	.05	.05	.03	.05	.08
Std Reading score (10) (mean)	-.03	-.35	-.60	.10	-.08	-.42
Std Maths score (10) (mean)	.09	-.25	-.48	-.01	-.21	-.58
Poor health (10)	.29	.36	.45	.25	.33	.40
Std Malaise (16) (mean)	-.20	-.06	.04	.19	.33	.42
N(100%)	*6078*	*190*	*336*	*5670*	*192*	*274*

Post-16 transitions into early adulthood (age 26)

In the mid-1980s, around half of all students in England left full-time education at the end of compulsory education (age 16) with around 1 in 4 attaining today's benchmark of 5+ good grade passes in public examinations (Bolton, 2012). Table 2 shows very comparable figures for our sample of cohort members, although a lower proportion – around 1 in 5 – achieved 5+ good grade passes as our measure was more restrictive as it included English language and mathematics results. Just over a quarter went on to participate in tertiary (post-18) education and 1 in 5 men and women went on to gain a degree (or equivalent) or higher qualification by age 26.

Gaining 5+ good grade passes in examinations at the end of (then) compulsory education was lower among men with indirect (12%) and men and women with direct OHC experience (9% and 12% respectively), and Table 2 shows that participation in post-16 education was lower for teenagers with direct or indirect OHC experience, particularly males, with tertiary education being least likely for men with direct OHC experience. Supplementary logistic regression analyses assessing who acquired five or more good grade public examination passes at the end of compulsory education (age 16, GCSE-level equivalents) suggests that men and women with direct OHC experience and men with indirect OHC experience were less likely to do so compared to their peers with no OHC experience. Yet, once we control for family socio-economic resources the differences are no longer significant, highlighting the crucial role of socio-economic disadvantage in shaping educational outcomes over and above OHC experience (see S2: Supplementary Tables S1-S2).

In Table 2 we see that by age 26, more than 4 in 10 men with indirect or direct OHC experience and women with direct OHC experience had either no or only low level (NVQ1) qualifications compared to around a third of men and women with no OHC experience (32% and 28% respectively), and fewer men with indirect (12%) and fewer men and women with direct OHC experience (7% and 12% respectively) had gained a degree [or equivalent] or higher. However, women with indirect OHC experience were as likely as their peers with no OHC experience to have achieved a degree level qualification (19%).

In terms of economic activity status at age 26, Table 2 shows that a lower proportion of men and women with indirect or direct OHC experience were employed compared to those with no OHC experience, and those with direct OHC experience being the most disadvantaged. For men the proportions of being in employment by age 26 were 80%, 74% and 64%; for women, 72%, 62% and 50%.

Table 2: Age left full-time education, qualifications and economic activity status in early (26) and mid (46) adulthood by OHC status (%)

	MEN			WOMEN		
	No OHC	**Indirect OHC**	**Direct OHC**	**No OHC**	**Indirect OHC**	**Direct OHC**
	Teenage outcomes					
5+ A-C grade exams (16)	.19	.12	.09	.20	.20	.12
Age left FT education						
<=16	47	60	56	41	49	49
16+	25	20	27	31	28	28
18+	28	19	17	28	23	23
	Age 26 outcomes					
Highest Qualification						
No/NVQ1	32	46	48	28	34	43
NVQ2	33	34	32	38	36	34
NVQ3	14	8	12	14	11	11
NVQ4+	20	12	7	20	19	12
Economic Activity						
Employed	80	74	64	70	62	50
Edu/Train	9	11	14	8	9	13
Unemployed	7	11	12	6	7	12
Home-Care	1	0	3	10	15	14
Sick/Other	3	4	7	6	8	11
	Age 46 outcomes					
Highest Qualification						
No/NVQ1	23	37	45	22	29	38
NVQ2	24	28	24	25	23	24
NVQ3	20	16	17	18	18	16
NVQ4+	32	20	15	35	30	22
Economic Activity						
Employed	86	80	71	78	74	65
Edu/Train	4	6	8	6	6	7
Unemployed	5	6	8	5	7	8
Home-Care	1	2	2	5	5	7
Sick/Other	4	6	10	6	7	11
Prof/Man occupation	19	15	8	12	11	5
N(100%)	*6078*	*190*	*336*	*5670*	*192*	*274*

Middle adulthood (age 46)

Table 2 also shows that by age 46, many men and women in all three OHC groups had attained higher level qualifications than they had at age 26. However, those with no or low-level qualifications were the least likely to have moved up the qualification ladder, as proportions with no or low-level qualifications remained very similar to proportions at age 26. Among men, although lower than their peers with no OHC experience, it is very encouraging to see that 20% with indirect OHC experience and 15% with direct OHC experience now had a degree level [or higher] qualification. Among women, the rates of those with a degree level qualification increased to 22% for those with direct OHC experience and to 30% for those with indirect OHC experience which compares favourably to the 35% among their peers with no OHC experienced. In supplementary logistic regression analyses assessing who had a degree by age 46 (see S2: Supplementary Tables S3-S4), we found that men and women with direct OHC experience, and men with indirect OHC experience were less likely than those with no OHC experience to have a degree by age 46. For those with direct OHC experience, the association with having a degree or not was attenuated for women after taking into account their individual characteristics and for men when family and individual characteristics were accounted for. Among men with indirect OHC experience, family socio-economic differences drove the association. Given the literature has shown that many with care-experience return to education at later ages (Harrison, 2023; Sacker et al., 2022), we also ran logistic regression models examining gaining any higher-level qualification by age 46 than they had at age 26 (see S2: Supplementary Tables S5-S6). These results suggest that those with direct or indirect OHC experience were no less likely to obtain a higher-level qualification by age 46 than those with no OHC experience, even before controlling for family socio-economic resources and individual characteristics, highlighting the importance of providing opportunities for OHC experienced families to return to education later in life to improve their educational and associated socio-economic outcomes for both care leavers and their children.

Economic activity disadvantage is most apparent among men and women with direct OHC experience. Men and women with indirect OHC experience are also less active than those with no OHC experience, yet not to the same extend as those with direct OHC experience. Among men, the percentage of those in employment is 86% for those with no OHC experience, 80% among those with indirect OHC experience and 71% among those with direct OHC experience. Among women the comparable figures are 78%, 74% and 65% respectively. A further supplementary analysis assessing who had a professional or managerial occupation at age 46, showed that men and women with direct OHC experience were less likely but those with indirect OHC experience were no less likely to be in such a top job at age 46 than those with no OHC experience. The association with direct OHC experience was attenuated for women when their individual characteristics were accounted for – essentially their maths and reading skills in childhood – whereas for men it was the time they had spent in EET that mattered (see S2: Supplementary Tables S7-S8).

At two age-points twenty years apart, we have seen that men and women with indirect or direct OHC experience are disadvantaged in the labour market. We expand this picture by making full use of the economic activity history data to assess what each cohort member spent most

time doing in any one year6 between 1987 and 2016 inclusive. We show the percentage of men and women in EET in each year by OHC status (Figure 2) and then calculate the total number of months spent in EET out of the maximum 360 months available over the 30-year period.

Figures 2 shows that the labour market disadvantage is apparent in each year between 1987 to 2016 for men and women with both direct and indirect OHC experience. The 'gaps' in the percentage spending most time in EET in each year start early and persist at a fairly consistent level over time, most notably among men and women with direct OHC experience compared to those with no OHC experience. More generally, there are considerable gender differences in economic activity, with men being more active than women, in particular after age 25.

[6] Economic activity status can differ within an individual year. The status attributed to an individual cohort member was decided by the highest number of months spent in one category in any one year (EET or NEET). If an equal number of months had been spent in EET or NEET, an EET status was recorded.

Figure 2: Percentage of men and women in EET in each year between January 1987 – December 2016 by OHC experience

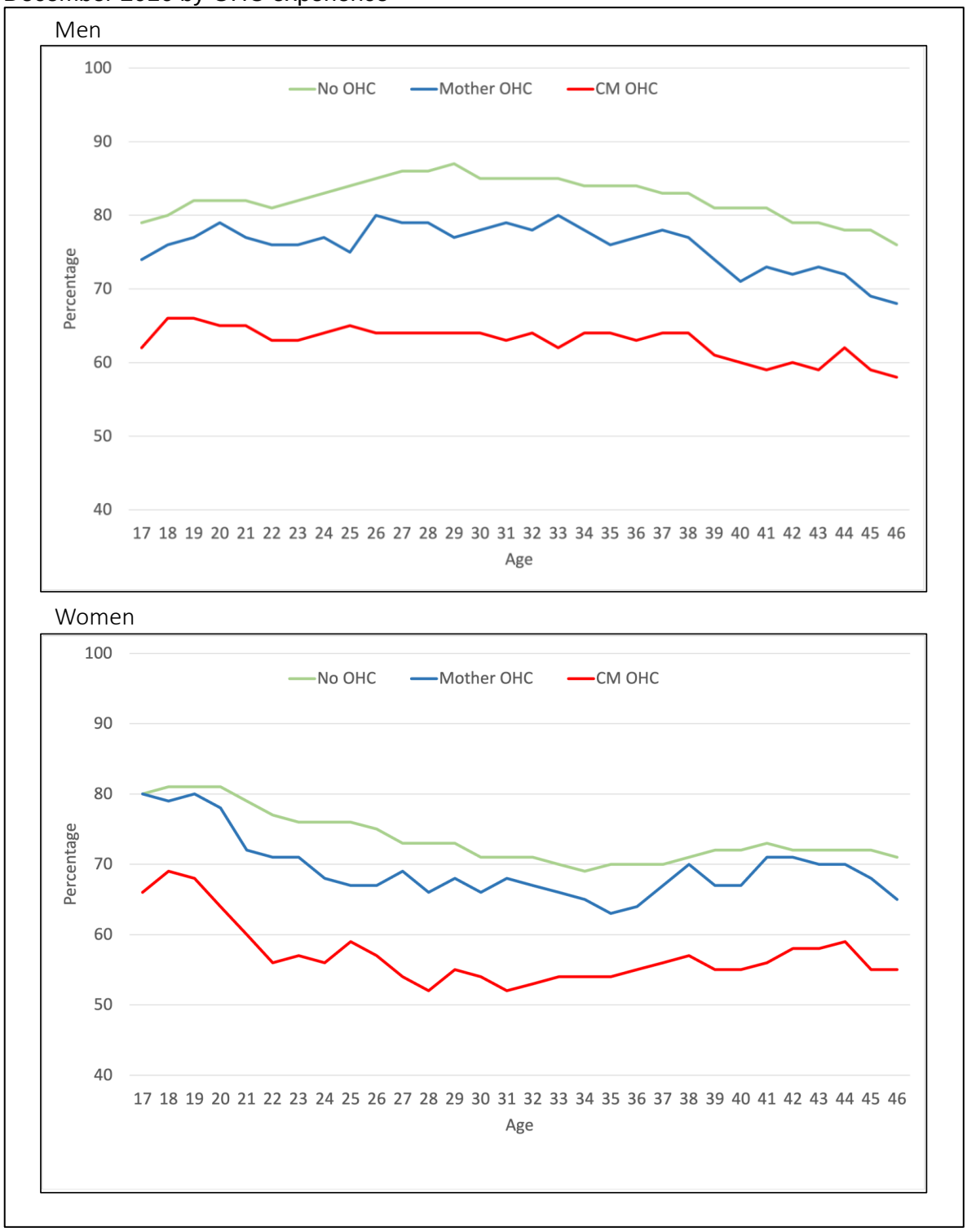


Table 3 shows the months spent in EET by OHC experience for men and women separately and across the time in EET distribution, differentiating between the overall mean, the bottom tail of the distribution (P25) characterised by the least time spend in EET, the middle (P50) and the top quantile (P75). It is apparent that time spent in EET declines across OHC groups, and that this is the case for both men and women. Looking over the 30-year period, men with no OHC experience had spent on average, 323 months out of the available 360 months in

EET, compared to 307 months for men with indirect OHC experience and 274 months for men with direct OHC experience. This equates to 90%, 85% and 75% of available time being spent in EET respectively. Women had spent less time than men in EET in all three OHC groups, but very similar differences between groups were observed as for men. On average, women with no OHC experience spent 288 months in EET, reducing to 273 for those with indirect OHC experience and further to 242 months for those with direct OHC experience. In terms of total available time, this amounts to 80%, 76% and 67% respectively.

Put more explicitly, over this 30-year period, compared to those with no OHC experience men and women with direct OHC experience spent around four years less time in EET (49 and 46 months respectively) and men and women with indirect OHC experience spend in excess of one year less time in EET (16 and 15 months respectively). Differences were most apparent at the bottom end of the distribution (P25) and closest at the top end (P75), particularly between the no OHC and indirect OHC groups.

Table 3: Mean months in EET across percentiles by OHC experience and sex

	MEN					**WOMEN**				
	Mean	**SD**	**P25**	**P50**	**P75**	**Mean**	**SD**	**P25**	**P50**	**P75**
No OHC	323	56.7	312	347	360	288	78.5	246	314	349
Indirect OHC	307	67.9	284	335	358	273	86.8	226	300	346
Direct OHC	274	91.6	235	303	348	242	95.2	169	260	327
Total	321	60.3	308	346	360	285	80.2	242	312	349

Regression analyses

Table 4 shows the independent association between OHC experience and time spent in EET between ages 17 and 46 for men and women. We present the four models described above and capture the effects of indirect and direct OHC experience, relative to no OHC experience, at the quartiles of the EET distribution. Among men, those with direct OHC experience at the bottom quartile (P25) of the EET distribution spend 76 months less time in EET than those who had no OHC experience (Model 1). Even when conditioning on the range of individual and family background variables the differential remains at 46 months (Model 4). For men with direct OHC experience in the middle of the employment distribution (P50) months lost reduces to 45 (Model 1) and 33 (Model 4) and falls further to 12 months (Model 1) and 10 months (Model 4) at the 75th percentile of the EET months distribution.

For men with indirect OHC experience, differences in time spent in EET relative to men with no OHC experience, are much smaller but remain significantly lower among those at the bottom quartile (28 months in Model 1; 13 months in Model 4) and middle quartile (13 months in Model 1; 8 months in Model 4) of the EET distribution. For men with indirect OHC experience at the 75th percentile, the difference is a non-significant two months in all models. For women, a very similar pattern emerges among those with direct OHC experience across the EET distribution as we found for men, but for women with indirect OHC experience we see evidence of resilience as months spent in EET are not significantly lower than for women with no OHC experience in any models across the EET distribution.

Table 4: Months spent in EET between 17 and 46 by OHC experience

MEN					
	Ref cat: No OHC	**Model 1**	**Model 2**	**Model 3**	**Model 4**
P25	Indirect OHC	-27.75* (10.9)	-18.601 (10.0)	-18.531 (10.7)	-12.74 (9.8)
	Direct OHC	-76.35*** (8.0)	-57.55*** (8.7)	-56.36*** (8.7)	-46.30*** (9.3)
P50	Indirect OHC	-12.95** (3.7)	-9.90* (4.3)	-9.55* (4.5)	-7.521 (4.4)
	Direct OHC	-45.35*** (4.5)	-36.4*** (5.1)	-37.68*** (5.0)	-32.51*** (5.0)
P75	Indirect OHC	-2.25 (1.9)	-2.00 (2.0)	-2.23 (2.2)	-2.00 (2.1)
	Direct OHC	-11.95*** (1.1)	-9.85*** (1.9)	-11.82*** (1.4)	-9.85*** (1.9)
	N (100%)	6604	6604	6604	6604
WOMEN					
	Ref cat: No OHC	**Model 1**	**Model 2**	**Model 3**	**Model 4**
P25	Indirect OHC	-19.30 (12.9)	-11.55 (12.7)	-8.95 (12.7)	-4.5 (11.9)
	Direct OHC	-76.20*** (11.1)	-52.77*** (10.2)	-46.84*** (10.1)	-40.10*** (11.2)
P50	Indirect OHC	-14.65 (9.6)	-8.55 (9.3)	-8.42 (8.3)	-6.85 (8.6)
	Direct OHC	-56.05*** (8.3)	-44.55*** (8.9)	-38.08*** (7.6)	-35.79*** (7.9)
P75	Indirect OHC	-4.35 (3.0)	-5.03 (3.9)	-2.66 (3.7)	-3.62 (4.07)
	Direct OHC	-23.82*** (3.8)	-19.73*** (5.0)	-19.72*** (4.4)	-16.63** (4.7)
	N (100%)	6136	6136	6136	6136

Notes: P25, P50, and P75 = percentile distribution. Ref Cat = No OHC experience. Standard error in parentheses. Significance: ***p<0.001 **p<0.01 *p<0.05 1 p<0.1

In terms of differences between those with indirect and direct OHC experience, we also found these to be statistically significantly different from one another in all models across the EET distribution for both men and women.

Discussion

Equipping young people with the resources and skills to manage in life after leaving care is a long-term process. Completing education with relevant qualifications and establishing oneself in the labour market are key developmental milestones that enable independent living. This study is the first to examine the socio-economic resources and economic activities of both care leavers and children of care leavers into the adult years. Using a large longitudinal national representative cohort study, we found that those with direct and indirect OHC experience stem from relatively disadvantaged family background, and that education and employment disadvantages persist into middle adulthood (age 46) for men and women with direct OHC experience, as well as for those with indirect OHC experience, i.e., the children of care leavers. That is, the disadvantages associated with OHC experience continue into the adult years and can affect the second generation as well. Yet, we also could establish evidence of resilience, as a considerable number of care leavers and children of care leavers successfully completed their education and were economically active between the ages 16 to 46 years.

Maybe unsurprisingly we find that those with those with direct OHC experience, as well as those with indirect OHC experience – the children of care leavers – have fewer socio-economic resources than their peers without OHC experience, confirming the assumption of cumulative disadvantage H1a, which can continue into the second generation. More care leavers, as well as the children of care leavers were born into families with less educated parents, experienced poverty and overcrowded housing in rented accommodation. They also report lower levels of general physical and mental health than their peers and show lower levels of math and reading performance by age 10. As adults themselves they are less likely to obtain higher level qualifications and encounter more problematic economic activity histories between age 16 to 46 as indicated by less time in EET. The findings thus confirm the assumption of lifelong disadvantage (H1b) and developmental continuity for both those with direct and indirect OHC experience, although the risks are particularly high among those with direct OHC experience. Differences in EET appear early and persist over time, indicating cumulative disadvantage and potential lifelong scarring effects. The findings are in line with previous research on care leavers, highlighting the continued disadvantage care leavers experience during early and mid-adulthood in terms of academic attainment (Brännström et al., 2020) and employment (Brännström et al., 2017; Sacker et al., 2022, Xie & Batty, 2021). Thus, the risk of poor developmental outcomes extending into mid adulthood among those with direct OHC experience appears to be consistent across different cultural contexts.

Moreover, our findings provide new evidence on the children of care leavers expanding the focus into the second generation. Recent research based on the younger Millennium Cohort Study has shown that fewer teenagers with indirect OHC experience go on to gain good grade examination passes at the end of Year 11 (age 15 or 16), or to aspire to attend university, although differences were attenuated after controlling for measures of family socio-economic disadvantage (Parsons et al., 2022, 2023). The present study, based on a different and older sample, has shown that the disadvantages associated with OHC experience do indeed spill over into the second generation, are manifest during childhood and extend into the adult years. However, differences regarding educational attainment and EET participation are smaller for those with indirect than for those with direct OHC experience. In addition, for women with

indirect OHC experience time spend in EET was not significantly lower than among women with no OHC experience suggesting potential gender differences in response to maternal OHC experience as well as levelling-up processes in the second generation.

The findings highlight that there is considerable heterogeneity in economic activity among those with either direct or indirect OHC experience. While there is an increased risk of low attainment and less attachment to the labour market, in particular among those with direct OHC experience, the majority of men and women with indirect or direct OHC experience have obtained NVQ2 or higher qualifications and are in EET in both early and middle adulthood. The findings thus confirm the assumption of turning points (H2) or developmental discontinuity, which is also evident in other studies conducted in the UK (Sacker et al., 2022) and in different cultural contexts (Achdut et al., 2022; Brännström, Forsman, et al., 2017; Brännström, Vinnerljung, et al., 2017). Our findings suggest that many adults, including those with indirect and direct OHC experience, continue to gain qualifications into mid-adulthood (see also Sacker et al., 2022) highlighting the need for policies to support education, including the return to education at later ages, especially for disadvantaged families, including those with OHC experience. Moreover, regarding economic activity the use of quantile regression in our study revealed that it is in particular those with the lowest EET participation who suffer most, and those with the highest EET participation the least. Compared to those with no OHC experience, men and women with direct OHC experience at the bottom end of the EET distribution spend more than six years less time in EET while women at the top of the distribution spend two years less and men one year less. Even when individual and family background characteristics are taken into account, participation remains significantly lower – around three-four years for men and women at the bottom and middle of the EET distribution and one year for those at the top of the distribution. These findings emphasise the need for policies to promote participation in education and employment among care leavers, in particular after the completion of compulsory education and ideally extending into the adult years.

Strengths and Limitations

In interpreting these findings, a number of limitations have to be considered. The study included a retrospective question on the cohort members mothers OHC experience during her own childhood, together with questions on whether the cohort child has experienced OHC during their childhood. This has provided a rare opportunity to examine the adult outcomes of a relatively large number of care leavers (direct OHC) as well as children of care leavers (indirect OHC) in a general population sample and compare their experience against those with no OHC experience in the family. However, our sample with direct or indirect OHC experience may be relatively well-adjusted and functional compared to those with OHC experience known to social services. After all, many of those with direct OHC experience have agreed to be part of the 1970 cohort study in adulthood and the children of mothers with OHC experience did grow up in a family setting. Both they and their mothers have also agreed to be part of the study, although we do not know how many of the mothers who participated in the original birth survey but not in the age 5 follow-up, had OHC experience. However, we do know that OHC experience is associated with non-participation in longitudinal surveys (see earlier Multiple Imputation section).

It also needs to be acknowledged that data are derived from an observational longitudinal study and bias due to unmeasured confounding cannot be ruled out. As in any longitudinal survey, missing data due to attrition are unavoidable. We employed multiple imputation, augmenting our models with auxiliary variables in the imputation phase to maximize the plausibility of the MAR assumption and restore sample representativeness, but bias due to a non-ignorable missing data generating mechanism cannot be ruled out. More generally, our study was limited by the available data and due to the relatively small sample size of care leavers or the children of care leavers we could not conduct more detailed subgroup analysis, yet we were able to control for family background and individual-level characteristics. A further limitation of this research is that it is based on those born in Britain in 1970 or close to these years and that different labour market conditions experienced by men and women in different age cohorts may modify the findings. It is however reassuring that our findings are in line with evidence from other countries (Achdut, et al., 2022; Brännström et al.,2017, 2020), at least regarding the evidence on those with direct OHC experience.

Notwithstanding these limitations, this research provides valuable evidence regarding the assumption of both continuity and discontinuity of disadvantage associated with the experience of OHC, and potential spill-over effects into the second generation. In addition, the prospective longitudinal design and the consideration of monthly activity data from the end of compulsory schooling to mid adulthood provide a better understanding of the temporal dynamics of education and employment activities.

Conclusion

This study is one of the first to examine the education and employment disadvantages associated with direct and indirect OHC into middle adulthood in a large population sample over thirty years. The findings add to the growing body of evidence on the long shadow of direct OHC experience during childhood, which persists into the fifth decade of life. While the direct experience of OHC is a strong marker for disadvantaged outcomes into mid-adulthood, there is also evidence to suggest discontinuity of disadvantage or potential turning points associated with doing better than expected, in particular among the children of care leavers, and especially for women. Policies aiming to support care leavers in their transition to independence need to focus on providing support for education and employment participation beyond the end of compulsory schooling, including support for return to education during the adult years for both care leavers and their children.

Data availability statement

The 1970 British Cohort Study (BCS70) follows the lives of more than 17 000 people born in England, Scotland and Wales in a single week of 1970. Over the course of cohort members' lives, the BCS70 has broadened from a strictly medical focus at birth to collect information on health, physical, educational and social development, and economic circumstances among other factors. The BCS70 is conducted by the Centre for Longitudinal Studies (CLS). See https://beta.ukdataservice.ac.uk/datacatalogue/series/series?id=200001.

Acknowledgments

We wish to thank the numerous team members involved with BCS70 including interviewers, technicians, researchers, administrators, managers and health professionals. Most of all we wish to thank the BCS70 cohort members for their continued and invaluable contribution to the study over the past fifty years.

Supplementary Material

S1: Distribution of EET Variable

Figure S1: Kdensity Plots for men: time in EET by OHC experience

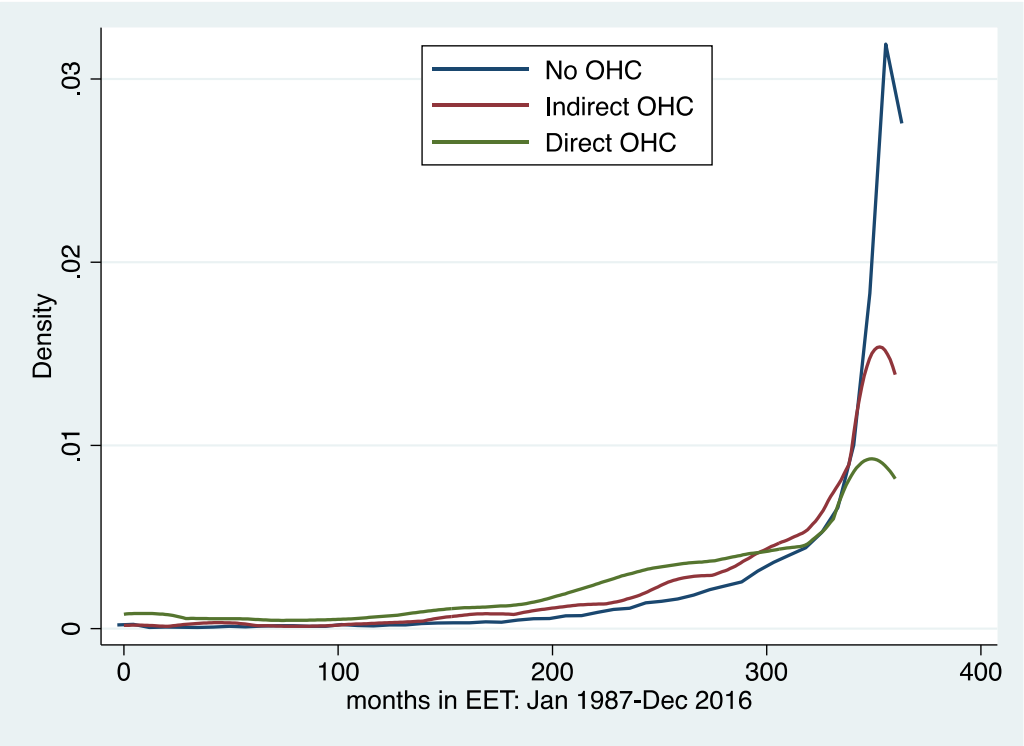
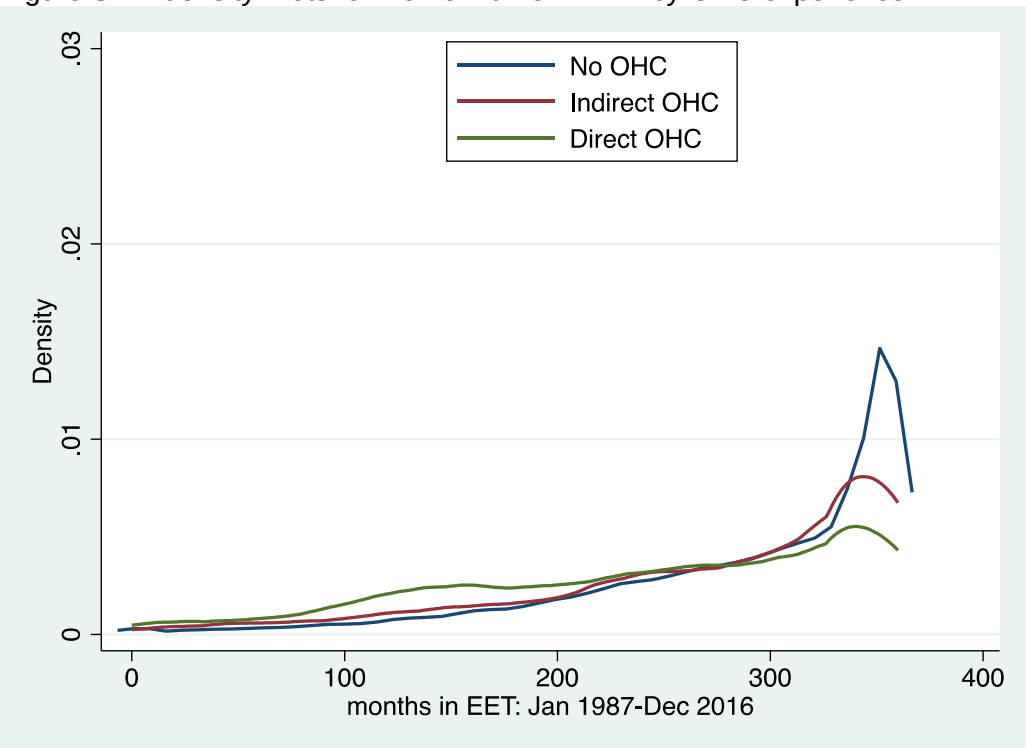


Figure S2: Kdensity Plots for women: time in EET by OHC experience



S2: Supplementary Tables

Table S2.1: Men gaining 5+ good grade passes in public examinations at age 16 by OHC experience

	M1	M2	M3	M4
OHC Experience				
Indirect OHC	0.59*	0.79	0.79	0.90
	(0.15)	(0.22)	(0.22)	(0.26)
Direct OHC	0.43**	0.64	0.75	0.88
	(0.11)	(0.17)	(0.21)	(0.25)
Family Background				
Mother NVQ2+		2.80***		1.79***
		(0.22)		(0.15)
Overcrowded Home		0.68***		0.76**
		(0.06)		(0.07)
Rented Home		0.60***		0.80*
		(0.05)		(0.08)
FSM		0.54***		0.69*
		(0.08)		(0.10)
Individual [childhood]				
BME			2.16**	2.28**
			(0.58)	(0.61)
Health problem (10)			0.98	0.96
			(0.09)	(0.09)
Std: Reading (10)			1.72***	1.58***
			(0.13)	(0.12)
Std: Maths (10)			2.36***	2.17***
			(0.17)	(0.16)
R2	.00	.09	.19	.21
N	6604	6604	6604	6604

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S2.2: Women gaining 5+ good grade passes in public examinations at age 16 by OHC experience

	M1	M2	M3	M4
OHC Experience				
Indirect OHC	0.98	1.24	1.31	1.42
	(0.20)	(0.27)	(0.32)	(0.35)
Direct OHC	0.54**	0.75	0.93	1.03
	(0.12)	(0.18)	(0.25)	(0.29)
Family Background				
Mother NVQ2+		3.09***		1.97***
		(0.23)		(0.16)
Overcrowded Home		0.57***		0.67***
		(0.05)		(0.07)
Rented Home		0.50***		0.64***
		(0.05)		(0.06)
FSM		0.65**		0.83
		(0.09)		(0.13)
Individual [childhood]				
BME			1.43	1.68
			(0.41)	(0.50)
Health problem (10)			0.93	0.93
			(0.09)	(0.09)
Std: Reading (10)			2.03***	1.78***
			(0.15)	(0.14)
Std: Maths (10)			2.30***	2.12***
			(0.17)	(0.16)
R2	.00	.11	.20	.23
N	6136	6136	6136	6136

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S2.3: Men with a degree (or higher) by age 46 by OHC experience

	M1	M2	M3	M4
OHC Experience				
Indirect OHC	0.52**	0.65	0.69	0.74
	(0.11)	(0.14)	(0.17)	(0.18)
Direct OHC	0.37***	0.51***	0.55**	0.62*
	(0.07)	(0.10)	(0.11)	(0.12)
Family Background				
Mother NVQ2+		2.15***		1.15
		(0.15)		(0.10)
Overcrowded Home		0.78**		0.92
		(0.06)		(0.08)
Rented Home		0.56***		0.75***
		(0.04)		(0.06)
FSM		0.60***		0.73*
		(0.08)		(0.10)
Individual				
BME			1.04	1.07
			(0.23)	(0.24)
Health problem (10)			0.94	0.94
			(0.08)	(0.08)
Std: Malaise (16)			0.96	0.97
			(0.05)	(0.05)
Std: Reading (10)			1.34***	1.30***
			(0.10)	(0.09)
Std: Maths (10)			1.28***	1.24**
			(0.09)	(0.09)
5+ A-C exam passes (16)			1.59***	1.53***
			(0.16)	(0.16)
Age Left Education				
Post-16			1.70***	1.63***
			(0.17)	(0.17)
Post-18			5.66***	5.18***
			(0.51)	(0.49)
R2	.01	.07	.19	.20
N	6604	6604	6604	6604

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S2.4: Women with a degree (or higher) by age 46 by OHC experience

	M1	M2	M3	M4
OHC Experience				
Indirect OHC	0.75	0.89	0.87	0.91
	(0.14)	(0.17)	(0.18)	(0.19)
Direct OHC	0.52***	0.68*	0.71	0.77
	(0.09)	(0.12)	(0.14)	(0.15)
Family Background				
Mother NVQ2+		2.37***		1.28**
		(0.17)		(0.11)
Overcrowded Home		0.75***		0.91
		(0.06)		(0.08)
Rented Home		0.57***		0.80**
		(0.04)		(0.06)
FSM		0.61***		0.69**
		(0.06)		(0.08)
Individual				
BME			0.79	0.84
			(0.19)	(0.20)
Health problem (10)			0.96	0.97
			(0.08)	(0.08)
Std: Malaise (16)			0.97	0.98
			(0.05)	(0.05)
Std: Reading (10)			1.36***	1.30***
			(0.08)	(0.08)
Std: Maths (10)			1.24***	1.21***
			(0.07)	(0.07)
5+ A-C exam passes (16)			1.54***	1.44***
			(0.16)	(0.15)
Age Left Education				
Post-16			2.21***	2.12***
			(0.21)	(0.21)
Post-18			7.42***	6.77***
			(0.79)	(0.74)
R2	.00	.07	.20	.20
N	6136	6136	6136	6136

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S2.5: Men who gained a higher qualification between age 26-46 by OHC experience

	M1	M2	M3	M4
OHC Experience				
Indirect OHC	0.81	0.76	0.72	0.72
	(0.16)	(0.15)	(0.14)	(0.15)
Direct OHC	0.75	0.71	0.63*	0.66*
	(0.13)	(0.13)	(0.12)	(0.13)
Family Background				
Mother NVQ2+		0.60***		0.80**
		(0.04)		(0.06)
Overcrowded Home		1.06		1.00
		(0.08)		(0.08)
Rented Home		1.07		0.93
		(0.08)		(0.07)
FSM		0.90		0.84
		(0.09)		(0.08)
Individual				
BME			0.84	0.82
			(0.23)	(0.23)
Health problem (10)			1.01	1.02
			(0.09)	(0.09)
Std: Malaise (16)			0.99	0.99
			(0.05)	(0.05)
Std: Reading (10)			0.98	0.98
			(0.07)	(0.07)
Std: Maths (10)			0.98	0.98
			(0.06)	(0.06)
5+ A-C exam passes (16)			0.56***	0.57***
			(0.06)	(0.06)
Age Left Education				
Post-16			0.95	0.96
			(0.08)	(0.08)
Post-18			0.39***	0.40***
			(0.03)	(0.04)
R2	.00	.01	.04	.05
N	6604	6604	6604	6604

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S2.6: Women who gained a higher qualification between age 26-46 by OHC experience

	M1	M2	M3	M4
OHC Experience				
Indirect OHC	0.97	0.93	0.93	0.94
	(0.21)	(0.20)	(0.21)	(0.22)
Direct OHC	0.79	0.76	0.71*	0.73
	(0.12)	(0.12)	(0.11)	(0.12)
Family Background				
Mother NVQ2+		0.67***		0.89
		(0.05)		(0.07)
Overcrowded Home		1.07		1.01
		(0.08)		(0.08)
Rented Home		1.08		0.92
		(0.07)		(0.06)
FSM		0.93		0.89
		(0.09)		(0.09)
Individual				
BME			0.96	0.95
			(0.17)	(0.17)
Health problem (10)			1.02	1.03
			(0.08)	(0.08)
Std: Malaise (16)			1.00	1.01
			(0.05)	(0.05)
Std: Reading (10)			1.02	1.02
			(0.06)	(0.06)
Std: Maths (10)			0.94	0.94
			(0.05)	(0.05)
5+ A-C exam passes (16)			0.62***	0.62***
			(0.06)	(0.06)
Age Left Education				
Post-16			1.17*	1.18*
			(0.09)	(0.09)
Post-18			0.43***	0.43***
			(0.04)	(0.04)
R2	.00	.01	.04	.04
N	6136	6136	6136	6136

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S2.7: Men in a Professional or Managerial occupation at age 46 by OHC experience

	M1	M2	M3	M4	M5
OHC Experience					
Indirect OHC	0.79	0.99	1.09	0.96	1.29
	(0.19)	(0.25)	(0.29)	(0.25)	(0.35)
Direct OHC	0.39***	0.54*	0.61	0.61	0.89
	(0.10)	(0.14)	(0.17)	(0.16)	(0.25)
Family Background					
Mother NVQ2+		1.89***			1.14
		(0.16)			(0.11)
Overcrowded Home		0.72***			0.84
		(0.07)			(0.09)
Rented Home		0.64***			0.87
		(0.06)			(0.09)
FSM		0.59**			0.87
		(0.11)			(0.17)
Individual					
BME			1.32		1.59
			(0.32)		(0.44)
Health problem (10)			0.87		0.91
			(0.08)		(0.09)
Std: Malaise (16)			0.89		0.95
			(0.06)		(0.06)
Std: Reading (10)			1.42***		1.36***
			(0.11)		(0.11)
Std: Maths (10)			1.26***		1.16*
			(0.08)		(0.08)
5+ A-C exam passes (16)			1.52***		1.51***
			(0.15)		(0.16)
Age Left Education					
Post-16			1.40**		1.32*
			(0.16)		(0.16)
Post-18			2.34***		2.23***
			(0.28)		(0.28)
Time in EET					
2nd quartile				6.52***	5.04***
				(2.36)	(1.81)
3rd quartile				16.58***	11.60***
				(6.07)	(4.26)
Top quartile				19.06***	13.70***
				(6.99)	(5.02)
R2	.00	.05	.09	.11	.17
N	6604	6604	6604	6604	6604

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S2.8: Women in a Professional or Managerial occupation at age 46 by OHC experience

	M1	M2	M3	M4	M5
OHC Experience					
Indirect OHC	0.85	0.96	0.98	0.96	1.03
	(0.25)	(0.29)	(0.29)	(0.30)	(0.33)
Direct OHC	0.35**	0.44*	0.48	0.51	0.62
	(0.13)	(0.17)	(0.19)	(0.20)	(0.26)
Family Background					
Mother NVQ2+		1.64***			1.00
		(0.19)			(0.12)
Overcrowded Home		0.74*			0.89
		(0.10)			(0.12)
Rented Home		0.64***			0.90
		(0.07)			(0.11)
FSM		0.67*			0.95
		(0.11)			(0.16)
Individual					
BME			1.38		1.59
			(0.40)		(0.47)
Health problem (10)			0.93		0.98
			(0.13)		(0.15)
Std: Malaise (16)			0.96		1.02
			(0.05)		(0.06)
Std: Reading (10)			1.35**		1.28*
			(0.12)		(0.13)
Std: Maths (10)			1.34***		1.25*
			(0.11)		(0.11)
5+ A-C exam passes (16)			1.40**		1.35*
			(0.17)		(0.16)
Age Left Education					
Post-16			1.31*		1.19
			(0.16)		(0.15)
Post-18			2.06***		1.84***
			(0.28)		(0.26)
Time in EET					
2nd quartile				4.12***	3.36***
				(0.77)	(0.64)
3rd quartile				8.15***	5.97***
				(1.63)	(1.23)
Top quartile				12.88***	9.77***
				(2.33)	(1.85)
R2	.00	.04	.09	.10	.16
N	6136	6136	6136	6136	6136

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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