

Intergenerational transmission of educational disadvantage: Educational progression of children of care leavers compared to other children in a general population sample

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Abstract

There is persistent evidence showing that care-leavers tend to have lower educational outcomes compared to their peers. There is however less knowledge if this educational disadvantage transfers to the second generation. This study adopts a developmental contextual life course approach to examine a) the extent of educational inequality of children of care-leavers from school entry to public examinations at age 16; b) the relative role of different psychosocial family resources as predictors of educational attainment; and c) the role of early school readiness assessments as predictors of later educational attainment. Drawing on data collected from families living in England at the first sweep of the nationally representative UK Millennium Cohort Study (MCS) (n=11,514), the findings suggest intergenerational transmission of educational disadvantage among children of care-leavers (n=287), which are manifest in a direct assessment of school readiness (age 3), at the Early Years Foundation Stage (EYFS) (age 5) and in General Certificate of Secondary Education (GCSE) attainment (age 16). However, once inequalities in family socio-economic background or area deprivation and housing are controlled for, children of care-leavers perform comparably in their educational progression to those whose parents had no experience of being in care (n=11,227). Moreover, the findings highlight the significance of early school readiness assessments in predicting later educational attainment for the whole sample. Findings are discussed regarding their implications for policy, in particular the need to address educational inequality for children in care, area allocation and housing that is offered to care-leavers, and the general importance of early interventions.

Key words: Children of care-leavers; educational disadvantage; early years; GCSEs

Introduction

In England there are currently around 80,000 children in local authority care, representing 0.7% of the total child population (Department for Education [DfE], 2022a), an increase compared to the year 2000. There is persistent evidence to show that children who experienced out-of-home care (OHC) are at a higher risk of low educational attainment compared to other children of the same age (O'Higgins, Sebba, & Gardner, 2017; Okpych & Courtney, 2019; Sebba & Luke, 2019; DfE, 2019a; DfE, 2019b; House of Commons Education Committee [HCEC], 2022). Accordingly, there is increasing interest among researchers and policy makers of how to improve the educational attainment of care leavers (Brannstrom, Forsman, Vinnerljung, & Almquist, 2020; Jackson & Cameron, 2012; Mannay et al., 2017; HCEC, 2022). In 2013 the UK Government published the Care Leaver Strategy (HM Government, 2013) identifying key areas where care-leavers needed better, more joined up support: education, employment, finance, health, housing, justice system and on-going support. Yet today's care-leavers continue to achieve lower grades in public examinations at age 16 (DfE, 2019a; DfE 2019b), and are more likely to have been refused admission to 'good' or 'outstanding' Ofsted rated schools (HCEC, 2022). In 2021 just 7.2% of looked-after children achieved the grade 5 'good pass' threshold in English and mathematics GCSEs, compared to 40.1% of non-looked-after children (HCEC, 2022). Regarding higher education, only 13% of care-leavers progressed to higher education by age 19 in 2019/20, compared to 43% of all other pupils (DfE, 2022b). Despite the continued concerns about the life chances of care leavers, there is little knowledge about the educational experiences of the children of care leavers, and the potential intergenerational transmission of educational disadvantage. Adopting a developmental-contextual life course approach (Schoon, 2006; Schoon, Nasim & Cook, 2021), this study aims to address this knowledge gap by examining whether the educational progression of children of parents with OHC experience differ compared to those whose parents have no OHC experience. A second aim is to assess the role of OHC experience over and above a range of psychosocial resource factors at the family level as predictor of later academic attainment. And third, we investigate the role of early school readiness assessments as predictors of later attainment for children of care leavers and a general population sample.

Understanding educational inequalities in context and over time

Guided by assumptions of multi-level influences on human development (Bronfenbrenner, 1989) and their temporal dimensions (Elder & Shanahan, 2007), this study takes a developmental-contextual life course approach (Schoon, 2006;

Schoon, Nasim & Cook, 2021), recognising that care leavers tend to have a high risk of exposure to adverse psychosocial circumstances across their life course, i.e., risks encountered in their family of origin and their own experiences. This can comprise low-levels of educational qualifications (Forsman, 2020; O'Higgins et al., 2017; Sebba et al., 2015), but also unemployment and a more disadvantaged socio-economic position (Boddy, Bakketeig and Østergaard, 2020; Buehler, Orme, Post, & Patterson, 2000; Naccarato, Brophy, & Courtney, 2010; Cameron *et al.*, 2018; Osterberg, Gustafsson, & Vinnerljung, 2016), unstable relationships and earlier family formation (Botchway, Quigley, & Gray, 2014; Roberts, Meakings, Forrester, Smith, & Shelton, 2017; Svoboda, Shaw, Barth, & Bright, 2012), and poorer mental and physical health (Cheung & Buchanan, 1997; Martin, Ford, Goodman, Meltzer, & Logan, 2014; Murray, Lacey, Maughan, & Sacker, 2020; Rees & Stein, 2016; Stein & Dumaret, 2011). Recent research by Parsons and Schoon (2021) drawing on the nationally representative UK Millennium Cohort Study (MCS) has shown that these risk factors are indeed experienced by higher proportions of mothers with OHC experience than mothers without OHC experience, which in turn, puts their children at an increased risk of low educational attainment.

Aiming to gain a better understanding of the intergenerational transmission of risk, this study examines whether children of care leavers perform less well educationally than their peers whose parent(s) did not experience OHC. Moreover, we ask whether it is the parental experience of OHC *per se* or the additional potential psychosocial risk factors that are detrimental to the educational attainment of the children of care leavers. Adopting a multi-dimensional conceptualization of risks and unpacking their differential influences, we assess the relative and independent contributions of OHC experience versus other psychosocial risk factors that are associated with OHC experience but also with educational attainment. In our analysis we differentiate between the OHC experience itself, socio-economic status, housing and area disadvantage, family status, and maternal health during the first year of a child's life. Taking a developmental perspective, these risks are assessed during early childhood (at age 9 months) to tap into the challenges faced by care leavers who become mothers and to gauge the potentially long shadow of these early risk exposures. Regarding later educational outcomes of the children of care leavers, we consider crucial benchmarks of educational attainment at the start of primary education, based on the direct assessment of 'school-readiness' at age 3 and teacher ratings of the Early Years Foundation Stage (EYFS) at age 5. We also assess inequalities at the completion of secondary education based on the attainment of 5+ grade 4 or higher General Certificate of Secondary Education (GCSE) examination passes at age 16 and if early indicators of school readiness can predict reaching this academic milestone.

Psychosocial resources and educational disadvantage

The underlying processes of intergenerational transmission of educational disadvantage associated with OHC experience are not yet well understood. Most often intergenerational research of care leavers is focused on the increased risk of children of care leavers being placed in OHC themselves (Fong, 2017; Foster, Beadnell, & Pecora, 2015; Mertz & Andersen, 2016; Wall-Wieler, Almquist, Liu, Vinnerljung, & Hjern, 2018), and there is little research on the educational experiences or educational trajectories of the children of care leavers. Potential mechanisms in the process of intergenerational transmission of educational inequality among the children of care leavers, include the lack of psychosocial resources (e.g., low levels of parental education, exposure to poverty, less effective social networks, disadvantaged neighbourhoods, and maternal mental illness) – the same factors that are associated with OHC experience and which prevent parents from effectively investing in and supporting the education of their children (Conger, Conger, & Martin, 2010; DiPrete & Eirich, 2006).

The social gradient in cognitive and academic achievements over the lifecourse is well established (Halsey et al., 1980; Sullivan et al., 2014), and a child's development and education attainment are strongly linked to their family's socio-economic status (SES), broadly defined (e.g. Blanden, Gregg, & Macmillan, 2007; Feinstein, 2003; Heckman & Masterov, 2007; Gregg & Macmillan, 2009; Erola, Jalonen, & Lehti, 2016; Schoon, Nasim, & Cook, 2021). For example, children whose parents have no or few formal qualifications are far less likely to attain good grade GCSEs at age 16 in England (Sammons et al., 2014), and there is a gap in GCSE attainment in England by eligibility for free school meals (Sutherland et al., 2015; DfE, 2022c). Disadvantaged neighbourhoods (Sammons et al., 2014), poor housing and overcrowding in the home are also related to lower academic attainment (Goux & Maurin, 2003; Schoon, 2020) and children growing up in a workless household have poorer early academic outcomes and make less progress between age three and five than those living in working households (Parsons, Schoon & Vignoles, 2014). In addition, there is evidence to suggest that care leavers tend to encounter a more problematic transition into the labour market (e.g. Boddy, Bakketeig and Østergaard, 2020; Cameron *et al.*, 2018; Mann-Veder and Goyette, 2019), and are facing the risks of homelessness or poor housing (Briheim-Crookall *et al.*, 2020; Davison and Burris, 2014; Foley, 2021), which in turn can impact on the lives of their children.

Indicators of SES measured by parental education, social class, employment status or income are generally interlinked, and are also associated with a range of family structure measures (e.g., family status [lone parenthood] and family size) and parental mental health, which in turn influence child cognitive and academic outcomes. For example, single-parent families, on average, experience more

economic deprivation and are more likely to exhibit depressive symptoms (Osborn et al., 1984; Kiernan & Huerta, 2008; Rouse, Choi, Riser, & Beecher, 2020; Roy & Raver, 2014). This highlights the multiple and interlinked challenges faced by disadvantaged families and their children. Serious risk emanates from the accumulation of risk factors throughout the life course (Conger et al., 2010; Evans, Li, & Whipple, 2013; Schoon, 2020). Most previous research has considered the influence of distinct groups of risk factors (such as parental education, social class, income, or mental health), or have used cumulative risk scores across such factors to assess the role of psychosocial resource factors in shaping educational inequalities (Bukodi & Goldthorpe, 2013; Pensiero & Schoon, 2019), although there is yet little research on the children of care leavers. In this study we will consider the relative and independent influence of a range of psychosocial resource factors available to parents with OHC experience on the educational progression of their children.

Educational Progression

There is persistent evidence of the large impact of early-life learning on subsequent education and lifetime wellbeing (Heckman, 2006; Nores & Barnett, 2010; Richter et al., 2017; Johnson & Jackson, 2019; Schoon et al., 2021) and it is generally recognised that the foundations for later development are established in the early years. To gain a comprehensive understanding of the educational progression of children of care leavers it is thus important to adopt a longitudinal perspective and to consider their attainment in the early years as well as later outcomes. Regarding early competences, this study focuses on indicators of school readiness, broadly defined as a set of skills possessed by a child at the start of formal education that are critical for later academic attainment (Carlton & Winsler, 1999; Aiona, 2005; Snow, 2006).

School readiness is generally conceptualized as a multi-dimensional construct. Yet, while some argue that educators should focus primarily on academic abilities at school entry (e.g. Barbarin et al., 2008; Claessens, Duncan, & Engel, 2009; Claessens & Engel, 2013; Duncan et al., 2007), others note the additional importance of behavioural and motor skills (e.g. Grissmer, Grimm, Aiyer, Murrah, & Steele, 2010; Pagani et al., 2010) as predictors of later educational performance. Bridging these different assumptions is a more holistic approach, focusing on both academic and broader developmental skills (Darling-Hammond & Cook-Harvey, 2018; Diamond, 2010).

There is growing evidence from longitudinal population-level studies to suggest that children performing above average across multiple domains in the early years also performed particularly well in later academic assessments. This includes evidence

from the US Early Childhood Longitudinal Study (Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006; Pan, Trang, Love, & Templin, 2019), the Quebec's Longitudinal Study of Child Development (Forget-Dubois et al., 2007), administrative data from Australia (Brinkman et al., 2013) and England (Atkinson et al., 2022; Treadaway, 2019). Most of this evidence is based on assessments made by teachers around age 5 or 6. For example, the Canadian study uses teacher ratings of kindergarten children (mean age 73.8 months) as assessed by the Early Development Inventory (Forget-Dubois et al., 2007). The Australian study uses the Australian Early Development Index (AEDI) collected at age 5 (Brinkman et al., 2013), and the English study is based on the Early Years Foundation Stage (EYFS) profile completed at the end of the reception year. There is, however, less evidence on the association with earlier, directly assessed school readiness measures.

Despite the general acknowledgement of early developmental influences on later educational attainment and the statutory assessment of children's development at the end of the early years foundation stage (EYFS), in the UK/England there is little evidence on whether school readiness is an effective predictor of later educational attainment (except for the studies by (Atkinson et al., 2022; Treadaway, 2019)). Moreover, most previous studies are based on teacher assessments of early competences around age 5, while there is less evidence on earlier indicators of school readiness. The early acquisition of basic concept knowledge and skills is considered important for a child's future educational attainment (Duncan et al., 2007; Bracken & Crawford, 2010). There is evidence to suggest that screening young children before school entry can predict later educational attainment (Panter & Bracken, 2009), and a range of studies emphasise the importance of early interventions to improve cognitive and socio-emotional development (Heckman, 2006; Nores & Barnett, 2010; Richter et al., 2017; Johnson & Jackson, 2019). In this study we thus assess education progression based on direct assessments at age 3 with the Bracken School Readiness Assessment (Bracken, 1998), as well as EYFS assessments completed by teachers at age 5, and their relative role as predictors of later educational attainment, focusing on passing GCSE examinations at age 16, a crucial hurdle at the end of secondary school.

Attaining 'good grade' GCSE passes, particularly in English Language and maths, is increasingly fundamental for accessing the widest range of possible post-16 transitions. Concentrating specifically on students not passing expected standards in GCSE English or maths, Lupton et al. (2021) found that the post-16 transitions for all lower attainers tended to be more complex and difficult when compared with their higher attaining peers. Attainment in English language and maths at 16 can also influence later labour market outcomes (see Dickerson et al., 2022). Indeed, pupils doing poorly in GCSEs 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).

By assessing the linkages of school readiness to GCSE attainment this study closes important evidence gaps regarding the usefulness of holistic school readiness evaluations as important tools for predicting later educational outcomes for both general population samples and for potentially vulnerable populations, such as children of care leavers. If school readiness is particularly important in predicting later attainment among children of care leavers, this would indicate that 'being school ready' is particularly important for them.

The current study

The objective of this study is to provide new evidence on the intergenerational transmission of educational disadvantage for children of parents with OHC experience. Taking a developmental contextual life course perspective, we firstly assess if children of care leavers perform less well at crucial educational transition points than children whose parents have no OHC experience. Based on assumptions of intergenerational transmission of disadvantage we assume that children of care leavers have fewer psycho-social family resources and also experience educational disadvantage, starting in the pre-school years and continuing into primary school and secondary education. Second, we aim to gain a better understanding of the multiple early influences on later attainment and assess the relative and independent influence of parental OHC experience over and above a range of psychosocial resource factors in the family of origin. Based on assumptions of cumulative disadvantage we expect that multiple risk factors contribute to the emergence of educational inequality, not just parental OHC experience. Third, we assess the role of early indicators of school readiness as predictors of later educational attainment. Based on the assumption of developmental precursors of later outcomes as well as previous evidence (Atkinson et al., 2022; Panter & Bracken, 2009; Treadaway, 2019), we expect that school readiness predicts later attainment. If the predictive validity of the earlier holistic school readiness assessments on later GCSE attainment differs for children of care leavers (after considering the influence of other psychosocial risk influences), this would imply the need for additional support for this potentially vulnerable group of children.

Data and Methods

Millennium Cohort Study

The Millennium Cohort Study (MCS) is a multi-purpose ongoing longitudinal study of approximately 19,000 babies born to families living in the UK between September 2000 and January 2002 (Plewis, 2007; Connelly & Platt, 2014; Joshi & Fitzsimons, 2016). Data has been collected when the children were aged around 9 months, 3, 5,

7, 11, 14 and 17 years when approximately 10,700 study members participated. Here we draw on information collected from personal interviews and self-completion questionnaires administered to parents, teachers and the cohort children at child age 9 months, 3, 5 and 17 years (University of London, 2021 2022a 2022b 2022c). Information collected includes a wide range of robust family socio-economic, employment, qualification, health, wellbeing, and parenting behaviour, together with child characteristics, cognitive ability, and education attainment.

Given that the EYFS is only collected for children at school in England, we restricted our sample to cohort members in England.

Analytic sample

Of the 18,552 families who first took part in sweep 1 across the UK, our analytic sample comprises the families who lived in England (n=11,533) and the main or partner respondent had provided information on their own OHC experience and the sex and ethnicity of the cohort child (n=11,514). In this sample, we identified n=287 cohort members with a care-experienced parent. As all longitudinal studies, MCS suffers attrition over time, and at age 17 the response rate for the whole UK sample was 57%. In our analytic sample of families living in England, at age 17 we have information for n=138 (48%) children with a parent who had OHC experience compared to n=6091 (54%) with a parent who had no OHC experience.

Multiple Imputation

We used Multiple Imputation (MI) to deal with attrition and item non-response to restore sample representativeness, adopting a chained equations approach (White, Royston & Wood, 2011) under the assumption of 'missing at random' (MAR), which assumes that the most important predictors of missing data are included in our models. To maximise the plausibility of the MAR assumption the most important predictors of missing data are included in our models to further reduce bias and retain power (see Mostafa & Wiggins, 2015; Mostafa et al., 2020; Silverwood et al., 2020). All reported analyses are averaged across 25 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 0.25 (Little & Rubin, 2014). The analyses were additionally weighted to adjust for the survey's stratified clustered sampling design (Plewis, 2007).

Key Measures

Out of Home Care Experience

Experience of out of home care was identified with two questions included in the parent interview at child age nine months and child age three years (for new respondents): 'Before the age of 17, did you spend any time living away from both of your parents?' If 'yes', a follow-on question asked, 'Where did you mainly live during this time?'¹. Parents who had spent time in a children's home or with foster parents, run by either a local authority or voluntary society, were coded as having been in out-of-home care.

Bracken School Readiness

At age three MCS cohort members completed the Bracken School Readiness Assessment-Revised (BSRA-R), which is one component of the Bracken Basic Concept Scale-Revised (Bracken, 1998). The BSRA-R is used as a screening instrument to assess the 'readiness' of a child for formal education by testing their knowledge and understanding of basic concepts (Bracken, 1998). Basic concepts are defined as aspects of children's knowledge that are taught by parents and pre-school teachers to prepare a child for formal education. The assessment consists of 85 items across five basic concept sub-tests: Colours (10); Letters (15); Numbers/Counting (18); Size/Comparisons (22); and Shapes (20). All items are summed to produce a total score which is age standardised. The age standardised score is used to place cohort members into a five-category 'Normative Classification' variable which ranges from 'very advanced' 'advanced' 'average' 'delayed' and 'very delayed'. Here we compare children who are 'delayed' (combining delayed or very delayed) against those who are 'school ready' (combining average, advanced or very advanced). In our sample, 14% of children are classified as 'delayed', which is the same percentage as the overall UK MCS age three sample who completed the assessment. For further details see Connelly (2013).

Early Years Foundation Stage (EYFS) profile

The Early Years Foundation Stage (EYFS) is the standard set for education, teaching, learning and care of 0 to 5-year-olds in England. It was first introduced as

¹ Response options to the question 'Where did you mainly live during this time?': Local authority children's home; Voluntary society children's home; Children's home - not sure which type; Local authority foster parents; Voluntary society foster parents; Foster parents - not sure which type; Boarding school; Living with relatives; Prison/Young Offenders Institute/Borstal; Some other place.

the Foundation Stage Profile (FSP) in 2000 (Qualifications and Curriculum Authority, 2003), and later became part of the 2006 Childcare Act and must be followed by all Ofsted registered settings and childminders. All teachers of children at school in England complete an Early Years Foundation Stage (EYFS) profile in the final term of reception year in primary school.

The main purpose of the profile assessment at the end of the EYFS is to support a successful transition to Key Stage 1 (KS1) by informing the professional dialogue between EYFS and year 1 teachers. This should inform year 1 teachers about each child's stage of development and learning needs and help them to plan the curriculum to meet the needs of all children. The EYFS profile is also used to inform parents about their child's development.

The EYFS profile is intended to provide a reliable, valid and accurate assessment of each child's development at the end of the EYFS. Since its introduction it has undergone a number of amendments. It is currently made up of an assessment of the child's outcomes in relation to the 17 early learning goal (ELG) descriptors across six areas of learning, including personal, social, and emotional development; communication, language, and literacy; mathematical development; knowledge and understanding of the world; physical development; and creative development.

Children are defined as having reached a Good Level of Development (GLD) at the end of the EYFS if they have achieved at least the expected level for the ELGs in the prime areas of learning and the specific areas of mathematics and literacy. This helps teachers and parents to understand broadly what a child can do in relation to national expectations. Each ELG has a score range of 0-9, with a scorer of 6 or higher indicating a child has reached the expected level in a specific ELG (Early Years Foundation Stage Profile 2022 Handbook, DfE 2022d). When the MCS children completed the EYFS (then FSP) there were 13 assessment scales, giving a score range of 0-117. Here we compare children who were assessed at 'below the expected level' (0-77) against those who were 'at or above the expected level' (78-117). In our sample, 28% of children were assessed as being 'below the expected level' which again matches the age 5 sample of MCS children living in England.

GCSE attainment

At the end of Year 11 at age 15 or 16, teenagers at school in England sit their GCSE public examinations. One of the ways in which a school is judged is by the proportion of students who get five or more 'good grade' GCSE exam passes including English language and Maths. Reforms to GCSEs were introduced in 2015, with the first cohorts taking the new exams in 2017 and 2018. GCSEs grades now range from 1 to 9, with a Grade 4 being considered by the Government as the 'standard' pass rate for pupils. Prior to this, GCSE grades ranged from A*-G, with an A*-C grade

representing the expected national standard, with a Grade C and Grade 4 being broadly equivalent (Greening, 2017). Since 2014 students who did not gain at least a Grade C or Grade 4 in English language or maths have needed to continue studying the subjects and to re-sit the examination (Lupton et al., 2021), although a Grade 5 is considered a 'strong' pass and is now the target grade (DfE 2022c).

The MCS teenagers sat their GCSEs in 2017 and reported their grades when interviewed in 2018. Of the 11,514 in our sample, 61% achieved 5+ grade 4 or higher GCSEs; 72% achieved a good pass in English language and 71% in maths. This compares favourably with statistics from the Department for Education (DfE) which show that around 7 in 10 students taking GCSEs in England at the end of Year 11 achieved a grade 4 or higher in English language or Maths in 2017 and 2018 (Ofqual, 2018).

Covariates

We control for a wide range of family and local environment measures that have been associated with cognitive and academic attainment in the literature review. These measures are taken from the first MCS survey when cohort members were age 9 months. The specific SES measures included in the models are *parent highest qualification level* (four categories ranging across National Vocational Qualification (NVQ) levels from None/NVQ1; NVQ2 (GCSE equivalent); NVQ3 (equivalent to A-level qualifications); NVQ4/5 (equivalent to degree-level qualifications or higher); *working status*, whether someone in the household is working (0) or it is a workless household (1); *language spoken*, if only English is spoken in the home (0) or English and/or only another language is spoken (1). In terms of housing, we include the *Index of Multiple Deprivation* (IMD) which classifies the area where a cohort member lives into 10 deciles and compare the eight more affluent decile areas (0) against the bottom two deciles (1); *housing tenure*, if the housing is owner occupied (0) or rented (1); *overcrowding*, whether the home is overcrowded, comparing homes with <1 person per room (0) against those with 1+ person per room (1); and *dampness*, whether there is no dampness in the home (0) or the home suffers from dampness (1). For family status we differentiate by *number of parents*, comparing two parent (0) or single parent (1) families and *age of mother*, whether the mother was an older (0) or teenage mother (1). For health, we include a measure of *maternal general health*, comparing those who self-report good, very good or excellent health (0) against those who report having poor or fair health (1); *maternal depressive symptoms*, as assessed by the shortened 9 question version of the Malaise Inventory, an established scale to measure signs of psychological distress or depression in teenagers and adults (Rutter, 1970). In the shortened version scores range between 0-9, with a score of 0-3 indicating no/low signs of depression (0), 4+ indicating the mother is experiencing signs of depression (1). For the majority binary measures, 0 indicates the reference category. For parental highest qualification level, NVQ4 or 5 (degree level or higher) is the reference group.

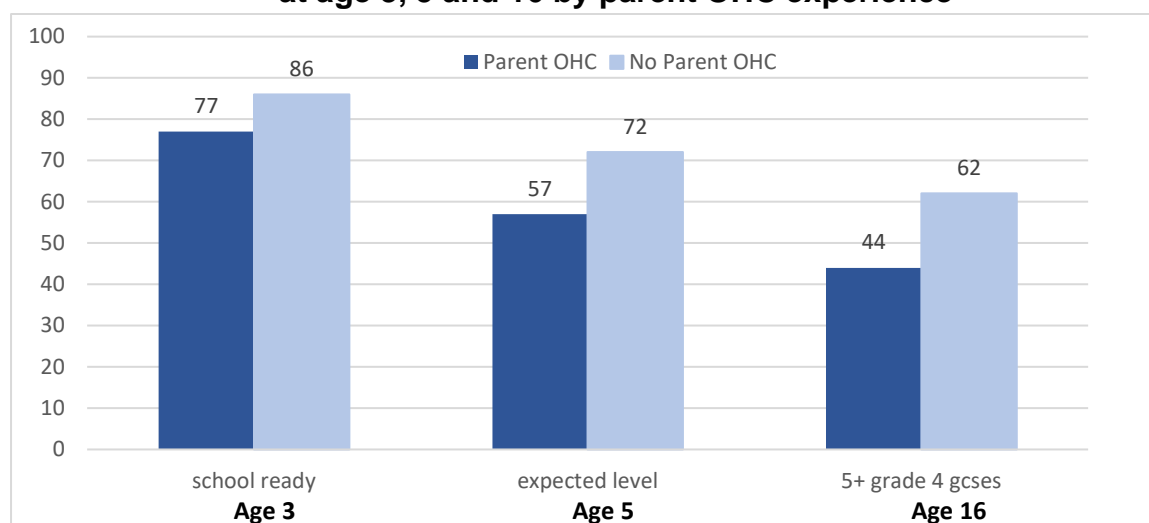
For all three binary outcomes measures, 0 indicates not having reached the expected level of achievement; 1 indicates having reached the expected threshold at age 3, 5 or 16. A child's sex (male = 0; female = 1) is also included in the modelling as girls perform better than boys in both the early years (DfE, 2019c) and in GCSE attainment (Smithers, 2014; DfE, 2019b), together with their ethnicity (BAME = 0; White = 1). For the EYFS and GCSE attainment the earlier performance measures are also included.

Results

Educational attainment of children of care leavers compared to their peers during the pre-school years (3), at school entrance (5) and the end of secondary education early years (16)

The majority of all children were 'school ready' at age 3, were adjudged to be performing 'at or above the expected level' at age 5 and went on to attain the threshold of 5+ grade 4 or higher GCSEs at age 16 including English language and maths. The correlations between the different indicators of educational attainment are of small to moderate size ranging from .17 (Bracken and GCSEs) to .30 (Bracken and EYFS; EYFS and GCSEs). At each stage of educational development, significantly fewer children with a parent with OHC experience had reached the threshold compared to children with a parent with no OHC experience. As shown in Figure 1, at age 3 77% (95% CI .71-.83) compared to 86% (95% CI .85-.87) respectively were school ready; in the EYFS teacher assessment at age 5 significantly fewer 57% (95% CI .51-.64) versus 72% (95% CI .71-.74) were at the expected level; and at age 16 significantly fewer children with a parent with OHC experience attained 5+ grade 4 or higher GCSE passes: 44% (95% CI .35-.54) versus 62% (95% CI .60-.63). Nonetheless, the majority of children of care leavers were identified as school ready at age 3 and age 5, and nearly half achieved 5+ grade 4 or higher GCSE passes.

Figure 1: % of children assessed at the expected threshold of achievement at age 3, 5 and 16 by parent OHC experience



Note: all differences significant at $p < .05$

Family background characteristics

Table 1 shows the family psychosocial resources of children by parental OHC experience at child age 9 months. Although the disadvantages experienced by parents with OHC experience are apparent in all measures included here, the most overt disadvantages are around worklessness, low parent education levels, area and housing deprivation.

Table 1: Family Background characteristics of children by parent OHC experience

	No OHC experience	OHC experience
Family environment (9 months)		
Single Parent	.14	.19
Teenage mother	.07	.19
Workless Household	.16	.41
Parent No quals/NVQ1 quals	.16	.34
Parent Degree+	.44	.20
Rented Home	.37	.74
Overcrowded Home	.24	.41
Damp Home	.14	.29
Bottom two deciles IMD	.22	.39
English + Other language spoken at home	.12	.03
Parent poor/fair general health	.16	.33
Mother depressive symptoms	.13	.25
N(100%)=	11227	287

Note: weighted proportions; unweighted N. Bold indicates difference statistically significant at $p < .05$

Regression analyses

To help isolate the specific correlations linking different characteristics to later outcomes, we ran a series of stepwise logistic regression analyses predicting a) being assessed as being school ready at age 3, b) being assessed at or above the expected level at age 5, and c) gaining 5+ grade 4 or higher GCSEs (including English language and maths). Model 1 included parent OHC experience. Models 2 to 5 included Model 1 plus the different aspects of the family environment as detailed below. Model 6 includes Model 1 plus the child's biological sex and ethnicity, and for the EYFS outcome Model 6(a) additionally included performance in the Bracken school readiness assessment at age 3; for the GCSE outcome Model 6(b) included performance in the Bracken school readiness assessment at age 3 *and* overall performance in EYFS. Model 7 included all measures. In summary:

- Model 1: parent OHC experience
- Model 2: Model 1 + parent education and working status
- Model 3: Model 1 + area deprivation and housing conditions
- Model 4: Model 1 + family status
- Model 5: Model 1 + parent general and mental health
- Model 6: Model 1 + child biological sex and ethnicity
- Model 6a: Model 1 + child biological sex + Bracken school readiness assessment
- Model 6b: Model 1 + child biological sex Bracken school readiness assessment + overall performance in EYFS
- Model 7: Model 1 + all measures

Predicting school readiness at age 3

Table 2 shows the odds ratios for children to be school ready by parent OHC experience, early family background and biological sex. The findings suggest that the significance of parent OHC experience is completely explained by family socio-economic resources (lower levels of parent qualification, being part of a workless household and a household where an additional language to English is spoken (M2)); or by housing conditions (living in poor quality rented housing in a deprived area (M3)). Family status (M4), parental health (M5), and child's biological sex and ethnicity (M6) do not attenuate the negative association between parental OHC experience and their child being 'school ready' at age 3. In the final model (M7), parental worklessness, low qualifications, area deprivation and rented overcrowded housing are all significantly negatively associated with school readiness. Being BAME is also negatively associated with school readiness, being female is positively associated with school readiness at age 3.

Table 2: Odds Ratios for being 'School Ready' in Bracken assessment at age 3.

	M1 Parent OHC	M2 +SES	M3 +Housing	M4 +FS	M5 +Health	M6 +Sex/Eth	M7 +All
Parent OHC	0.55*** (0.10)	0.74 (0.14)	0.88 (0.16)	0.59** (0.11)	0.61** (0.11)	0.53*** (0.10)	0.91 (0.18)
Workless household		0.48*** (0.04)					0.57*** (0.06)
Parent Highest qual							
NVQ1		0.27*** (0.03)					0.36*** (0.04)
NVQ2		0.37*** (0.04)					0.45*** (0.05)
NVQ3		0.53*** (0.06)					0.61*** (0.07)
Eng +/- or other lang		0.32*** (0.03)					0.60*** (0.08)
IMD bottom 2 dec			0.45*** (0.05)				0.69*** (0.06)
Rented home			0.51*** (0.04)				0.73*** (0.06)
Overcrowded home			0.58*** (0.05)				0.72*** (0.06)
Damp home			0.86 (0.08)				0.90 (0.09)
Teenage mother				0.72** (0.08)			0.99 (0.11)
Single parent				0.47*** (0.04)			1.17 (0.13)
Poor general health					0.65*** (0.06)		0.86 (0.08)
Poor mental health					0.79* (0.07)		0.99 (0.10)
Female child						1.69*** (0.11)	1.76*** (0.12)
BAME						0.30*** (0.03)	0.57*** (0.07)
<i>R</i> ²	.00	.10	.08	.02	.01	.05	.13
<i>N</i>	11514	11514	11514	11514	11514	11514	11514

Exponentiated coefficients; Standard errors in parentheses

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

Predicting EYFS at age 5

Table 3 shows the odds ratios for being assessed by their teacher to be 'at or above the expected level' at the end of the EYFS after adjustment for parent OHC experience, family background and individual characteristics. For this outcome only housing conditions (living in overcrowded, rented housing in a deprived area (M3)) completely attenuate the negative association with parent OHC. Interestingly, performance in the Bracken assessment at age 3 did not attenuate the association (M6), yet we find a positive association between school readiness at age 3 and 5. In the final model (M7), being part of a workless household, low levels of parent education, rented, overcrowded housing, area deprivation and poor parental health, all significantly reduced the likelihood of a child being assessed at or above the expected level. Being BAME is also negatively associated with being assessed at or above the expected level, whereas earlier good performance in the Bracken assessment and being female are both significantly associated with good assessment at age 5.

Although the correlations between the two assessments were relatively modest, we re-ran models 6a and 7 including interactions between parental OHC status and the school readiness assessment to see if the predictive validity of the school readiness assessment on later educational attainment differs for children of care leavers (after considering the influence of other psychosocial risk influences). The interactions were not significant.

Table 3: Odds Ratios for being At/above expected level in EYFS at age 5

	M1 Parent OHC	M2 +SES	M4 +Housin g	M4 +FS	M5 +Health	M6 + Sex/Eth/Edu	M7 +All
Parent OHC	0.51*** (0.07)	0.73* (0.11)	0.79 (0.11)	0.56*** (0.08)	0.57*** (0.08)	0.56*** (0.08)	0.96 (0.14)
Workless household		0.53*** (0.04)					0.76** (0.08)
Parent Highest Qual NVQ1		0.25*** (0.02)					0.39*** (0.03)
NVQ2		0.41*** (0.03)					0.54*** (0.04)
NVQ3		0.52*** (0.04)					0.62*** (0.06)
Eng +/-or other lang		0.65*** (0.06)					1.03 (0.12)
IMD bottom 2 dec			0.59*** (0.05)				0.83* (0.07)
Rented home			0.42*** (0.03)				0.62*** (0.04)
Overcrowded home			0.67*** (0.04)				0.77*** (0.05)
Damp home			0.98 (0.07)				1.06 (0.08)
Teenage mother				0.56*** (0.05)			0.86 (0.09)
Single parent				0.48*** (0.04)			1.14 (0.11)
Poor general health					0.57*** (0.04)		0.72*** (0.05)
Poor mental health					0.79** (0.06)		0.97 (0.07)
Female child						1.60*** (0.08)	1.74*** (0.09)
BAME						0.70*** (0.06)	0.88 (0.08)
'School Ready' Bracken						4.63*** (0.34)	3.23*** (0.26)
<i>R</i> ²	.00	.08	.07	.02	.01	.08	.14
<i>N</i>	11514	11514	11514	11514	11514	11514	11514

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

Predicting GCSE attainment at age 16

Table 4 shows the odds ratios for attaining 5+ good grade GCSEs. As we found for being 'school ready' at age 3, family status and parental health do not attenuate the negative association between parent OHC experience and GCSE attainment at age 16. However, family socio-economic resources (parental education, being part of a workless household and a household where an additional language to English is spoken (M2); and housing conditions (living in poor quality rented housing in a deprived area (M3) completely explain the associations between parent OHC and lower levels of educational attainment at age 16. In addition, and as found for EYFS, earlier education performance did not attenuate the association with parent OHC (M6). In the final model (M7), significant negative associations were found for low parental education, worklessness, rented housing and living in a deprived neighbourhood; earlier strong educational performance, being female, BAME, and living in a household where an additional language is spoken are all positively associated with higher educational attainment at age 16.

We again re-ran models 6b and 7 including interactions between parent OHC status and the earlier assessments to see if the predictive validity of the school readiness assessment and the EYFS on later educational attainment differs for children of care leavers (after considering the influence of other psychosocial risk influences). The interactions were not significant.

Table 4: Odds Ratios for gaining 5+ GCSEs Grade 4 or higher (inc. Maths and English) at age 16

	M1 Parent OHC	M2 +SES	M3 +Housing	M4 +FS	M5 +Health	M6 +Sex/Eth/ Edu	M7 +All
Parent OHC	0.50*** (0.09)	0.76 (0.15)	0.72 (0.14)	0.54** (0.11)	0.54** (0.11)	0.60* (0.12)	0.94 (0.21)
Workless household		0.54*** (0.04)					0.75** (0.08)
Parent Highest Qual							
NVQ1		0.26*** (0.02)					0.41*** (0.04)
NVQ2		0.41*** (0.03)					0.55*** (0.04)
NVQ3		0.55*** (0.04)					0.67*** (0.06)
Eng +/-or other lang		1.48*** (0.12)					1.62*** (0.20)
IMD bottom 2 dec			0.67*** (0.05)				0.83* (0.06)
Rented home			0.43*** (0.03)				0.69*** (0.06)
Overcrowded home			0.88 (0.06)				0.95 (0.07)
Damp home			0.97 (0.08)				1.00 (0.09)
Teenage mother				0.55*** (0.06)			0.97 (0.12)
Single parent				0.47*** (0.04)			1.12 (0.13)
Poor general health					0.67*** (0.05)		0.86 (0.07)
Poor mental health					0.80** (0.07)		0.94 (0.09)
Female child						1.30*** (0.08)	1.39*** (0.09)
BAME						1.47*** (0.12)	1.34* (0.15)
'School Ready' Bracken						1.98*** (0.17)	1.57*** (0.14)
Expected level EYFS						3.61*** (0.22)	2.80*** (0.17)
R ²	.00	.07	.05	.02	.01	.09	.13
N	11514	11514	11514	11514	11514	11514	11514

Discussion

This study provides much needed evidence on the intergenerational transmission of educational disadvantage among children of care leavers, and the usefulness of holistic school readiness assessments as predictors of later educational attainment. Taking a developmental-contextual approach, we examined the education progression of children of care leavers compared to a general population sample. We explored the relative and independent role of parent OHC experience and a range of family psycho-social resources as predictors of educational progression and attainment and assessed the predictive validity of early holistic assessments of school readiness for academic attainment at age 16.

We find that the majority of the children of care leavers are identified as school ready by age 3 and 5, and 44% achieved 5+ grade 4 or higher GCSE passes. However, the children of a parent with OHC experience do less well during pre-school, primary and secondary school than their peers whose parent had no OHC experience. That is, they are more likely considered as not yet 'school ready' at age 3, evaluated as being below the expected level by teachers in the EYFS assessment at age 5, and are less likely to achieve 5+ GCSEs at grade 4 or higher (including English language and maths) at age 16.

In a series of logistic regression models we assessed the role of different psychosocial risk factors in explaining the association between parent OHC status and educational attainment, focusing on a) parent education and employment status, b) area deprivation and housing conditions, c) family status, d) parent general and mental health, e) child sex and earlier education attainment and g) all measures combined to assess the relative importance of different socio-economic resources. We find that once parental education and employment status *or* area deprivation and housing conditions in a child's early years are taken into account, the negative association between parent OHC experience and academic performance of their children is completely attenuated. It is thus not parental OHC experience per se, but the additional psycho-social risk factors experienced by care leavers that crush the educational progression of their children. The findings thus point towards the devastating role of cumulative socio-economic disadvantage in undermining the educational attainment of children of care leavers.

In addition, there is evidence of resilience, with children ready to learn at age 3 and at the start of formal education having higher odds to perform well at later educational assessments (i.e., the GCSE exams at age 16), independent of parental OHC experience and early psychosocial family adversity. This applies to both children of care leavers and a general population sample, suggesting that early school

readiness assessments are powerful predictors of subsequent educational attainment (see also Atkinson et al., 2022; Panter & Bracken, 2009; Treadaway, 2019).

However, there is a gradual decline in positive attainment over the years, suggesting that more has to be done to improve educational progression and maintenance of initial attainment levels, especially during the preschool years to build up relevant skills and during primary and secondary education to consolidate and advance these competences. Future studies need to explore in more detail the factors and processes that support educational progression and participation, particularly among care leavers and their children.

Strengths and limitations

In interpreting the findings of this study, a number of limitations have to be considered. The study included a retrospective question on mothers and (if resident in the household) their partners' experience of out-of-home care during their own childhood, which has provided a rare opportunity to examine the education outcomes of the children of a (relatively) large sample of care-experienced individuals who became parents. However, our sample of care-leaver parents may be relatively well adjusted and functional compared to all those with care experience known to social services. After all, the mothers and fathers in our sample are looking after their children in a family setting – and they agreed to take part in the MCS study. Moreover, the 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, although this is minimised in this research by using multiple imputation and including the most important predictors of missing data in our models to maximise the plausibility of the missing at random assumption and restore sample representativeness. However, bias due to a non-ignorable missing data generating mechanism cannot be ruled out. In addition, the analysis is limited by the variables available in the data set, and the relative small number of care leavers in the sample. The variables included in the regression models explained only a small amount of variation in the educational attainment outcomes (indicated by the low R^2), suggesting that other factors might play an important role, such as the type and length of the OHC placement, or the quality of the educational settings and the support provided. Moreover, the study is focused on families in England and children born between 2000/2001, limiting the generalisability to other socio-cultural and historical contexts. Nonetheless, a key strength of this research lies in its use of the Millennium Cohort Study, a large population-based and representative prospective longitudinal study with a design that ensured adequate representation of disadvantaged groups and families from minority ethnic backgrounds.

Implications of the findings

Despite the limitations, the findings point to policy leavers that can attenuate the intergenerational disadvantage of poor education outcomes among care leaver families and highlight the need for governments to better address the education experiences of children in state care (see the 2022 report by the House of Commons Education Committee). Although the parents with OHC experience in this research experienced care systems and policies covering the 1950s-2000, the findings are just as pertinent for stopping the intergenerational transmission of disadvantage among more recent care leavers and their (future) children (Brannstrom et al., 2020; O'Higgins, Sebba, & Gardner, 2017; Okpych & Courtney, 2019; Sebba & Luke, 2019). The findings pinpoint the importance of early interventions for those with care experience and young families with children before problems start to escalate, and to prevent the vicious cycle of intergenerational transmitted inequality. Relevant measures include raising the educational attainment of children in care, improving their educational provision, and extend statutory support beyond age 16, enabling care leavers to do well at all stages of education, to make a smooth transition into paid employment, and to support appropriate housing.

Our analysis has highlighted how crucial parental education levels, employment and housing conditions are in shaping the education outcomes for children of care leavers. The combination of poor education qualifications, less stable post-16 transitions and unsuitable housing among today's generation of care-leavers suggests that policy developments need to better address the multiple needs of looked after children. In addition to support for education, a key message to be taken from the findings is the necessity of providing better housing alternatives for care-leavers when transitioning to independent living, in particular in the light of the increased risk of homelessness or poor housing (Briheim-Crookall *et al.*, 2020; Davison and Burris, 2014) encountered by care leavers. Children's care homes in the UK are often located in more deprived areas where accommodation is cheapest (HCEC, 2022), which links directly to the quality of the local schools – the higher the property prices are in an area, the better the local primary and secondary school is (DfE, 2017) – and potentially to the quality of the accommodation being offered to care-leavers as they leave state care. For example, in 2019/20 15% (1 in 7) of care leavers were not living in accommodation considered to be 'suitable' (Foley, 2021). The (ever) increasing shortage of social housing and higher rent and variability of quality within the private rented sector (CentrePoint, 2017) indicates that the problem of suitable housing is likely to remain omnipresent in the foreseeable future.

In conclusion, the study highlights the multiple challenges facing care leavers starting a family and their children. Adopting a contextual-developmental approach to gain a better understanding of intergenerational transmission of educational inequality enables insights into the relative role of different psychosocial risk factors and experiences in the education system shaping the educational trajectory of children of

care leavers. The findings provide evidence of intergenerational transmission of educational disadvantage and pinpoint crucial risk factors, such as family social status and housing conditions, that show independent effects over and above the experience of OHC. Interventions aiming to support the educational attainment of care leavers, their housing needs and a smooth transition into the labour market are vital to break the vicious cycle, as are measures to support the educational attainment of their children. This extremely vulnerable group of children in our society should be – and have a right to be – better cared for, to improve their own future outcomes and to stop the cycle of intergenerational disadvantage being passed on to their children.

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