Received: 9 August 2022 | Accepted: 16 March 2023

DOI: 10.1002/berj.3872

ORIGINAL ARTICLE

BERJ BERA

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

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Funding information

Nuffield Foundation

Abstract

There is persistent evidence showing that care leavers tend to have lower educational outcomes compared to their peers. There is, however, less knowledge of whether 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 is 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 mothers 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.

KEYWORDS
children of care leavers, Early Years, educational disadvantage, GCSEs

Key insights

What is the main issue that the paper addresses?

This paper addresses the lack of existing knowledge on whether the educational disadvantages experienced by care leavers transfer to their own children.

What are the main insights that the paper provides?

Findings from the UK Millennium Cohort Study suggest that given continued disadvantages, once family background, area deprivation and housing inequalities are controlled for, children of care leavers perform comparably to other children.

INTRODUCTION

In England, there are currently around 80,000 children in local authority care, representing 0.7% of the total child population (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 (DfE, 2019a, 2019b; House of Commons Education Committee, 2022; O'Higgins et al., 2017; Okpych & Courtney, 2019; Sebba & Luke, 2019). Accordingly, there is increasing interest among researchers and policy makers in how to improve the educational attainment of care leavers (Brannstrom et al., 2020; House of Commons Education Committee, 2022; Jackson & Cameron, 2012; Mannay et al., 2017). 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 ongoing support. Yet today's care leavers continue to achieve lower grades in public examinations at age 16 (DfE, 2019a, 2019b) and are more likely to have been refused admission to ‘good’ or ‘outstanding’ Ofsted-rated schools (House of Commons Education Committee, 2022). In 2021, just 7.2% of looked-after children achieved the grade 5 ‘good-pass’ threshold in English language and mathematics General Certificate of Secondary Education (GCSE), compared to 40.1% of non-looked-after children (House of Commons Education Committee, 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 et al., 2021), this study aims to address this knowledge gap by examining whether the educational progression of children of parents with OHC experience differs 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 a 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 et al., 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, together with multiple placement moves and the low expectations held by both educators and social care professionals; Mannay et al., 2017). This can contribute to low levels of educational qualification (Forsman, 2020; O'Higgins et al., 2017; Sebba et al., 2015), but also unemployment and a more disadvantaged socio-economic position (Boddy et al., 2020; Buehler et al., 2000; Cameron et al., 2018; Naccarato et al., 2010; Osterberg et al., 2016), unstable relationships and earlier family formation (Botchway et al., 2014; Roberts et al., 2017; Svoboda et al., 2012) and poorer mental and physical health (Cheung & Buchanan, 1997; Martin et al., 2014; Murray et al., 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 mothers did not experience OHC. Moreover, we ask whether it is the maternal 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 (see also Roberts, 2019, 2021). 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 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 et al., 2015; Mertz & Andersen, 2016; Wall-Wieler et al., 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 maternal 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 et al., 2010; DiPrete & Eirich, 2006). Other potential transmission processes include the experience of enduring stigma and low expectations held by social care professionals regarding future attainments of care leavers and their children (Roberts, 2019, 2021), together with the stigma experienced more generally by young working-class mothers (Mannay et al., 2018).

A child's development and education attainment are strongly linked to their family's socio-economic status (SES), broadly defined (e.g., Blanden et al., 2007; Erola et al., 2016; Feinstein, 2003; Gregg & Macmillan, 2009; Heckman & Masterov, 2007; Schoon et al., 2021), and a social gradient in cognitive and academic achievements over the life course is well established (Halsey et al., 1980). 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 (DfE, 2022c; Sutherland et al., 2015). However, there is considerable diversity in the educational transitions of care leavers, and some return to education to gain further qualifications at a later age (Harrison, 2020; Mannay et al., 2018).

Disadvantaged neighbourhoods (Sammons et al., 2014), poor housing and overcrowding in the home are also related to lower academic attainment (Goux & Maurin, 2003), and children growing up in a workless household have poorer early academic outcomes and make less progress between age 3 and 5 than those living in working households (Parsons et al., 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 et al., 2020; Cameron et al., 2018; Mann-Feder & Goyette, 2019) and are facing the risks of homelessness or poor housing (Briheim-Crookall et al., 2020; Davison & 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 (Kiernan & Huerta, 2008; Osborn et al., 1984; Rouse et al., 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 et al., 2013; Schoon, 2020). Most previous research has considered the influence of distinct groups of risk factors (e.g., 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 as 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; Johnson & Jackson, 2019; Nores & Barnett, 2010; Richter et al., 2017; 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 (Aiona, 2005; Carlton & Winsler, 1999; Snow, 2006).

School readiness is generally conceptualised 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 & Engel, 2013; Claessens et al., 2009; Duncan et al., 2007), others note the additional importance of behavioural and motor skills (e.g., Grissmer et al., 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 et al., 2006; Pan et al., 2019), the Quebec Longitudinal Study of Child Development (Forget-Dubois et al., 2007), administrative data from Australia (Brinkman et al., 2013) and England based on evidence from the National Pupil Database (Treadaway, 2019) and the longitudinal cohort study 'Born in Bradford' (Atkinson et al., 2022). 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 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 EYFS, in the United Kingdom/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 and 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 (Bracken & Crawford, 2010; Duncan et al., 2007). 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; Johnson & Jackson, 2019; Nores & Barnett, 2010; Richter et al., 2017). 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 mathematics, is increasingly fundamental for accessing the widest range of possible post-16 transitions. Concentrating specifically on students not passing expected standards in GCSE English language or mathematics, 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 mathematics at age 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 thrive 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 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 first 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 psychosocial family resources and also experience educational disadvantage, starting in primary school and continuing into 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 maternal 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 maternal 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 MCS is a multi-purpose ongoing longitudinal study of approximately 19,000 babies born to families living in the United Kingdom between September 2000 and January 2002

(Connelly & Platt, 2014; Joshi & Fitzsimons, 2016; Plewis, 2007). Data has been collected when the children were aged around 9 months, 3, 5, 7, 11, 14 and 17 years, with approximately 10,700 study members participating. 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 United Kingdom, our analytic sample comprises the families who lived in England ($n = 11{,}533$) and where the parent 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 with 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, we have information for $n = 138$ (48%) children whose parent had OHC experience at age 17 compared to $n = 6091$ (54%) whose mother 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 et al., 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, we additionally included a wide range of auxiliary variables associated with attrition and missing data in our imputation model to further reduce bias and retain power (see Mostafa & Wiggins, 2015; Mostafa et al., 2020; Silverwood et al., 2020). In total, $n = 99$ variables are included in the imputation process. All reported analyses are averaged across 25 replicated datasets based on Rubin's rule for the efficiency of estimation under a reported degree of missingness across the whole data of around 0.21 (Little & Rubin, 2014). Missingness in the variables ranges from <1% in many of the sweep 1 measures, to 46% for one of the outcome variables—self-reported GCSE attainment at sweep 7; for the variables used in the analyses, the reported degree of missingness was just 7%. (See Supplementary Table A1 for the level of missingness in all variables included in the imputation process by parent OHC status.)

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 OHC was identified with two questions included in the parent interview at child age 9 months and 3 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] In this paper, parents who had spent time in a children's home (run by either a local authority or a voluntary society), or with foster parents, were coded as having been in OHC. We acknowledge that this coding does not do justice to the wide range of OHC circumstances, periods of time in care, age at entry or ongoing contact (or not) with their birth family, which may have different short- and long-term outcomes for care leavers and their children, and it is something that we will develop in later research.

Bracken School Readiness

At age 3, 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' to '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 3 sample who completed the assessment. For further details, see Connelly (2013).

EYFS profile

EYFS is the standard set for education, teaching, learning and care of 0 to 5-year-olds in England. It was first introduced as 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 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 (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 5+ good-grade GCSE examination passes including English language and mathematics. Reforms to GCSEs were introduced in 2015, with the first cohorts taking the new examinations in 2017 and 2018. GCSE grades now range from 1 to 9, with grade 4 being considered by the government as the 'standard' pass rate for pupils. Prior to this, GCSE grades ranged from A* to G, with an A* to C grade representing the expected national standard, with 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 mathematics have needed to continue studying the subjects and to resit 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 mathematics. This compares favourably with statistics from the Department for Education 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 mathematics 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 (A-level equivalent); NVQ4/5 (degree-level equivalent or higher); whether someone in the household is working (0) or it is a workless household (1); 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 compares the eight more affluent decile areas (0) against the bottom two deciles (1); if the housing is owner-occupied (0) or rented (1); whether the home is overcrowded, comparing homes with <1 person per room (0) against those with 1+ person per room (1); and whether there is no dampness in the home (0) or the home suffers from dampness (1). For family status, we differentiate between two-parent (0) or single-parent (1) families and 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); whether the mother exhibits a high number of depressive symptoms, as assessed by the shortened nine-question version of the Malaise Inventory, an established scale to measure signs of psychological distress or depression in teenagers and adults (Rutter et al., 1970). In the shortened version, scores range between 0 and 9, with a score of 0–3 indicating no/low signs of depression (0) and 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 measures of educational outcomes, 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) and ethnic minority status (white = 0; other = 1) are also included in the modelling, as girls perform better than boys in both the early years (DfE, 2019c) and in GCSE attainment (DfE, 2019b; Smithers, 2014), and there are variations in educational attainment by ethnicity (DfE, 2020, 2022c). 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 (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 mathematics. The correlations between the different indicators of educational attainment are of small to moderate size, ranging from 0.17 (Bracken and GCSEs) to 0.30 (Bracken and EYFS; EYFS and GCSEs). At each stage of educational development, fewer children with a mother with OHC experience had reached the threshold compared to children with a mother with no OHC experience. As shown in Figure 1, at age 3, 77% (95% CI 0.71–0.83) compared to 86% (95% CI 0.85–0.87) were school ready; in the EYFS teacher assessment at age 5, fewer—57% (95% CI 0.51–0.64) versus 72% (95% CI 0.71–0.74)—were at the expected level; and at age 16, fewer children with a mother with OHC experience attained 5+ grade 4 or higher GCSE passes—44% (95% CI 0.35–0.54) versus 62% (95% CI 0.60–0.63). Nonetheless, the majority of children of care leavers were identified as school ready at age 3 and 5, and nearly half achieved 5+ grade 4 or higher GCSE passes.

Family background characteristics

Table 1 shows the family psychosocial resources of children by maternal OHC experience at child age 9 months. Although the disadvantages experienced by mothers 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.

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,

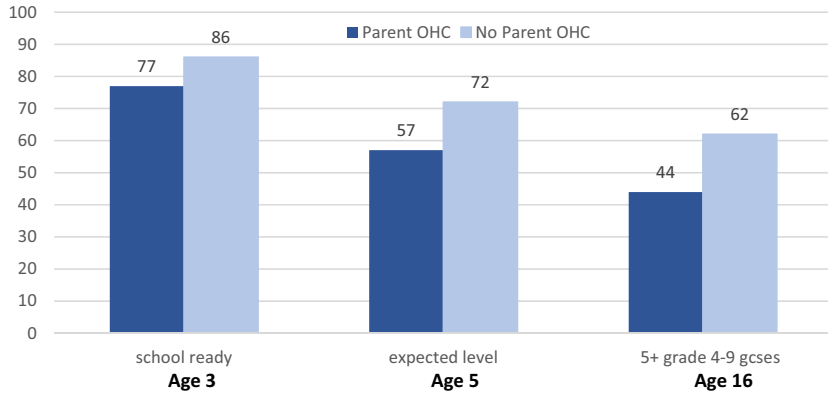

FIGURE 1 Percentage of children assessed at the expected threshold of achievement at age 3, 5 and 16 by parent OHC experience.

TABLE 1 Family background characteristics of children by parent OHC experience.

	No OHC experience	OHC experience
Family environment (*9 months*)		
Single parent	0.14 (0.13, 0.15)	0.19 (0.14, 0.25)
Teenage mother	0.08 (0.07, 0.08)	0.19 (0.15, 0.24)
Workless household	0.16 (0.15, 0.18)	0.41 (0.34, 0.48)
Parent no quals/NVQ1 quals	0.16 (0.14, 0.17)	0.34 (0.27, 0.41)
Parent degree+	0.44 (0.41, 0.47)	0.20 (0.15, 0.26)
Rented home	0.37 (0.34, 0.39)	0.74 (0.69, 0.80)
Overcrowded home	0.24 (0.23, 0.26)	0.41 (0.25, 0.48)
Damp home	0.14 (0.13, 0.15)	0.29 (0.23, 0.34)
Bottom two deciles IMD	0.23 (0.19, 0.27)	0.39 (0.31, 0.48)
English + other language spoken at home	0.12 (0.09, 0.14)	0.03 (0.01, 0.06)
Parent poor/fair general health	0.16 (0.15, 0.17)	0.33 (0.28, 0.38)
Mother depressive symptoms	0.13 (0.12, 0.14)	0.25 (0.19, 0.31)
N(100%)	11,227	287

Note: Weighted proportions (95% CIs); unweighted *N*.

Abbreviations: NVQ, National Vocational Qualification; OHC, out-of-home care.

and (c) gaining 5+ grade 4 or higher GCSEs (including English language and mathematics). Model 1 included maternal 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 for the EYFS outcome Model 6a additionally included performance in the Bracken school readiness assessment at age 3; for the GCSE outcome Model 6b 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 [SES]
- Model 3: Model 1 + area deprivation and housing conditions [Housing]
- Model 4: Model 1 + family status [FS]

- Model 5: Model 1 + parent general and mental health [Health]
- Model 6: Model 1 + child biological sex and ethnicity [Child]
- Model 6a: Model 1 + child biological sex and ethnicity + Bracken school readiness assessment [Child]
- Model 6b: Model 1 + child biological sex and ethnicity + Bracken school readiness assessment + overall performance in EYFS [Child]
- Model 7: Model 1 + all measures [All]

Predicting school readiness at age 3

Table 2 shows the odds ratios for children to be school ready by maternal OHC experience, early family background and biological sex. The findings suggest that the significance of maternal 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), child's biological sex and ethnicity (M6) do not attenuate the negative association between maternal 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 female is positively associated with school readiness at age 3 and ethnic minority status is negatively associated with school readiness at age 3.

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. 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 maternal 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.

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

TABLE 2 Odds ratios for being 'school ready' in Bracken assessment at age 3.

	M1	M2	M3	M4	M5	M6	M7
	Parent OHC	**+ SES**	**+ Housing**	**+ FS**	**+ Health**	**+ Child**	**+ All**
Parent OHC	0.55***	0.74	0.88	0.59**	0.61**	0.53***	0.91
	(0.10)	(0.14)	(0.16)	(0.11)	(0.11)	(0.10)	(0.18)
Workless household		0.48***					0.57***
		(0.04)					(0.06)
Parent highest qualification							
NVQ1		0.27***					0.36***
		(0.03)					(0.04)
NVQ2		0.37***					0.45***
		(0.04)					(0.05)
NVQ3		0.53***					0.61***
		(0.06)					(0.07)
Eng +/or other lang		0.32***					0.60***
		(0.03)					(0.08)
IMD bottom 2 dec			0.45***				0.69***
			(0.05)				(0.06)
Rented home			0.51***				0.73***
			(0.04)				(0.06)
Overcrowded home			0.58***				0.72***
			(0.05)				(0.06)
Damp home			0.86				0.90
			(0.08)				(0.09)
Teenage mother				0.72**			0.99
				(0.08)			(0.11)
Single parent				0.47***			1.17
				(0.04)			(0.13)
Poor general health					0.65***		0.86
					(0.06)		(0.08)
Poor mental health					0.79*		0.99
					(0.07)		(0.10)
Female child						1.69***	1.76***
						(0.11)	(0.12)
Ethnic minority status						0.30***	0.57***
						(0.03)	(0.07)
N	11,514	11,514	11,514	11,514	11,514	11,514	11,514

Note: Exponentiated coefficients; standard errors in parentheses.

Abbreviations: NVQ, National Vocational Qualification; OHC, out-of-home care.

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

TABLE 3 Odds ratios for being at/above expected level in EYFS at age 5.

	M1	M2	M4	M4	M5	M6	M7
	Parent OHC	**+ SES**	**+ Housing**	**+ FS**	**+ Health**	**+ Child**	**+ All**
Parent OHC	0.51***	0.73*	0.79	0.56***	0.57***	0.56***	0.96
	(0.07)	(0.11)	(0.11)	(0.08)	(0.08)	(0.08)	(0.14)
Workless household		0.53***					0.76**
		(0.04)					(0.08)
Parent highest qualification							
NVQ1		0.25***					0.39***
		(0.02)					(0.03)
NVQ2		0.41***					0.54***
		(0.03)					(0.04)
NVQ3		0.52***					0.62***
		(0.04)					(0.06)
Eng +/or other lang		0.65***					1.03
		(0.06)					(0.12)
IMD bottom 2 dec			0.59***				0.83*
			(0.05)				(0.07)
Rented home			0.42***				0.62***
			(0.03)				(0.04)
Overcrowded home			0.67***				0.77***
			(0.04)				(0.05)
Damp home			0.98				1.06
			(0.07)				(0.08)
Teenage mother				0.56***			0.86
				(0.05)			(0.09)
Single parent				0.48***			1.14
				(0.04)			(0.11)
Poor general health					0.57***		0.72***
					(0.04)		(0.05)
Poor mental health					0.79**		0.97
					(0.06)		(0.07)
Female child						1.60***	1.74***
						(0.08)	(0.09)
Ethnic minority status						0.70***	0.88
						(0.06)	(0.08)
'School ready' Bracken						4.63***	3.23***
						(0.34)	(0.26)
N	11,514	11,514	11,514	11,514	11,514	11,514	11,514

Note: Exponentiated coefficients; standard errors in parentheses.

Abbreviations: NVQ, National Vocational Qualification; OHC, out-of-home care.

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

TABLE 4 Odds ratios for gaining 5+ GCSEs grade 4 or higher (including English language and mathematics) at age 16.

	M1	M2	M3	M4	M5	M6	M7
	Parent OHC	**+ SES**	**+ Housing**	**+ FS**	**+ Health**	**+ Child**	**+ All**
Parent OHC	0.50***	0.76	0.72	0.54**	0.54**	0.60*	0.94
	(0.09)	(0.15)	(0.14)	(0.11)	(0.11)	(0.12)	(0.21)
Workless household		0.54***					0.75**
		(0.04)					(0.08)
Parent highest qualification							
NVQ1		0.26***					0.41***
		(0.02)					(0.04)
NVQ2		0.41***					0.55***
		(0.03)					(0.04)
NVQ3		0.55***					0.67***
		(0.04)					(0.06)
Eng +/or other lang		1.48***					1.62***
		(0.12)					(0.20)
IMD bottom 2 dec			0.67***				0.83*
			(0.05)				(0.06)
Rented home			0.43***				0.69***
			(0.03)				(0.06)
Overcrowded home			0.88				0.95
			(0.06)				(0.07)
Damp home			0.97				1.00
			(0.08)				(0.09)
Teenage mother				0.55***			0.97
				(0.06)			(0.12)
Single parent				0.47***			1.12
				(0.04)			(0.13)
Poor general health					0.67***		0.86
					(0.05)		(0.07)
Poor mental health					0.80**		0.94
					(0.07)		(0.09)
Female child						1.30***	1.39***
						(0.08)	(0.09)
Ethnic minority status						1.47***	1.34*
						(0.12)	(0.15)
'School ready' Bracken						1.98***	1.57***
						(0.17)	(0.14)

TABLE 4 (Continued)

	M1	M2	M3	M4	M5	M6	M7
	Parent OHC	**+ SES**	**+ Housing**	**+ FS**	**+ Health**	**+ Child**	**+ All**
Expected level EYFS						3.61***	2.80***
						(0.22)	(0.17)
N	11,514	11,514	11,514	11,514	11,514	11,514	11,514

Note: Exponentiated coefficients; standard errors in parentheses.

Abbreviations: NVQ, National Vocational Qualification; OHC, out-of-home care.

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

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 maternal 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, ethnic minority status and living in a household where an additional language is spoken are positively associated with higher educational attainment at age 16.

We again re-ran models 6b and 7 including interactions between maternal 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.

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 maternal OHC experience and a range of family psychosocial 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 mothers with OHC experience do less well during pre-school, primary and secondary school than their peers whose mother 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 mathematics) at age 16.

In a series of logistic regression models, we assessed the role of different psychosocial risk factors in explaining the association between maternal 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, ethnic minority status and earlier education attainment and (f) 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 parental OHC experience and academic performance of their children is completely attenuated. It is thus not parental OHC experience per se, but the additional psychosocial risk factors experienced by care leavers that affect 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 of performing well at later educational assessments (i.e., GCSE examinations at age 16), independent of maternal 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 mothers. However, our sample of care-leaver mothers may be relatively well-adjusted and functional compared to all those with care experience known to social services. After all, the mothers 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 is 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 is 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 relatively small number of care leavers in the sample and the variables available in the dataset. Other factors might play an important role in explaining variations in educational attainment, 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 and 2001, limiting the generalisability to other socio-cultural and historical contexts. In addition, the study assesses educational attainment up to GCSE examination passes at age 16 and does not capture those who return to education and acquire educational qualifications at a later age (see, e.g., Brady & Gilligan, 2019; Harrison, 2020). 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 policies 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 (House of Commons Education Committee, 2022). Although the parents with OHC experience in this research had an age range of 15–45 at the birth of the cohort child, and experienced care systems and policies covering the 1950s to 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 et al., 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, 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 extending statutory support beyond age 16, enabling care leavers to do well at all stages of education (including support for returning to education at later ages), 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 educational progression and 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. Given that poverty is a central issue here, we draw attention to the Basic Income Pilot that was launched in Wales in 2022 (Welsh Government, 2022). The pilot is offering a degree of financial security to care leavers, in recognition of the fact that care-experienced people are disproportionately disadvantaged compared to their peers. Care leavers will receive £1280 every month to spend on food, clothing and other things they may need and will receive this money for two years following their 18th birthday. Furthermore, the Scottish Government have announced an extension of 1140 free hours of early learning and childcare eligibility to 2-year-olds with a care-experienced parent. Eligibility for all looked-after/care-experienced children aged 2 or older has always been a feature of the policy, but children of care-experienced parents were more recently made eligible (Scottish Government, 2021).

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 & Burris, 2014) encountered by care leavers. Children's care homes in the United Kingdom are often located in more deprived areas, where accommodation is cheapest (House of Commons Education Committee, 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 schools are (DfE, 2017)—and 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.

ACKNOWLEDGEMENTS

We wish to thank the numerous team members involved with the MCS, including interviewers, technicians, researchers, administrators, managers, teachers and health professionals. Most of all we wish to thank the MCS cohort members for their continued and invaluable contribution to the study over the past 20 years.

FUNDING INFORMATION

This research is funded by the Nuffield Foundation (JUS /FR-000022636), but the views expressed are those of the authors and not necessarily the Foundation. Visit www.nuffieldfoundation.org. The MCS is funded by the ESRC and various government departments and supported by the Centre for Longitudinal Studies, Resource Centre 2015–20 grant (ES/M001660/1), with scientific leadership by the UCL Institute for Longitudinal Studies.

CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

The data used in this research is derived from anonymised datasets that can be downloaded with corresponding documentation for use by researchers from the UK Data Service (beta.ukdataservice.ac.uk/datacatalogue/series/series?id=2000031).

ETHICS STATEMENT

Each wave of data collection in the MCS has been granted ethical approval by the National Health Service Research Ethics Committee and all participants have given informed consent. The cohort members (CMs) were recruited to the study at 9 months, via an interview carried out with their mother. Although the CMs are not involved with the design of the study or the questionnaire content, their feedback is regularly sought and results are disseminated on the study members website; a summary of the latest findings is regularly sent to CMs by the survey team.

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ENDNOTE

[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.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Parsons, S., Fitzsimons, E., & Schoon, I. (2023). Intergenerational transmission of educational disadvantage: Education progression of children of care leavers compared to a general population sample. *British Educational Research Journal*, *00*, 1–25. https://doi.org/10.1002/berj.3872