



# Investigating positive reading trajectories among children who experienced out-of-home care

Miriam Maclean<sup>\*</sup>, Fernando Lima, Melissa O'Donnell

Australian Centre for Child Protection, University of South Australia, Australia

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## ABSTRACT

**Background:** Children who experience out-of-home care (OOHC) often have low academic achievement which subsequently negatively affects their adult life outcomes, yet a smaller proportion succeed in spite of adversity. Scant research has examined the trajectories of children who achieve well in school and factors associated with positive educational outcomes.

**Objectives:** (1) Describe the reading trajectories from Year 3 to Year 7 of school of children who experienced OOHC, with a focus on higher achievement and improving trajectories. (2) Identify child, carer and placement characteristics plus supports and services associated with positive reading trajectories among children who have experienced OOHC.

**Participants and setting:** The study included 325 children from the Pathways of Care Longitudinal Study (POCLS) in New South Wales, Australia.

**Methods:** The POCLS is a prospective cohort study including linked survey data and administrative child protection and education data. Group based trajectory modeling (GBTM) was used to identify and describe common trajectories of reading achievement. Multinomial logistic regression was used to identify factors associated with different reading trajectories.

**Results:** GBTM revealed three reading trajectories among non-Aboriginal children, and two among Aboriginal children. A high achieving group (12% of non-Aboriginal children) were the only trajectory group to maintain their level of achievement across the study. Improving achievement was rare, while falling behind over time was common across achievement levels.

**Conclusions:** Results point to the need for early intervention supporting school readiness and catch-up growth, with ongoing interventions for children who experience OOHC to prevent declining student outcomes across achievement levels and extend talented students.

## 1. Introduction

It is well established internationally that children who have experienced out-of-home care (OOHC) are at increased risk for low educational achievement (Brownell et al., 2015; Sebba et al., 2015; Trout et al., 2008). Research suggests that these outcomes primarily result from earlier experiences such as maltreatment and social disadvantage, with children already having academic difficulties prior to entering care (Berger et al., 2015; Maclean et al., 2018). However, disrupted, disadvantaged or unsupportive OOHC experiences can also contribute to worse outcomes (Jackson & Ajayi, 2007; Maclean et al., 2017). It is important to learn more about the educational development over time of children who experience care, particularly the relatively small group of

children who succeed academically. Positive educational trajectories can include consistent levels of higher achievement, or improvement over time.

Education has the potential to change life course trajectories, which is particularly important for this vulnerable group who may lack ongoing supportive parents/guardians into adulthood. Early educational achievement is often associated with later educational achievement (Duncan et al., 2007), which is required for higher education and improves employment outcomes and income in adulthood (Baum et al., 2013). Educational achievement provides opportunities for social mobility and an escape from intergenerational disadvantage (Rouse, 2007), and has been found to mitigate risks of psychosocial problems (Berlin et al., 2011) and premature death among adults previously in

<sup>\*</sup> Corresponding author.

E-mail address: [miriam.maclean@unisa.edu.au](mailto:miriam.maclean@unisa.edu.au) (M. Maclean).

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OOHC (Almquist et al., 2018).

Understanding the educational trajectories of children in care, and factors associated with positive trajectories, is important in order to increase OOHC-experienced children's developmental wellbeing both in the short term and well into adulthood, which is recognised as a difficult but important challenge for governments around the world. Longitudinal data collections such as the US National Survey of Child and Adolescent Well-being (NSCAW) and the Australian Pathways of Care Longitudinal Study provide opportunities to study the trajectories of children who enter care across a range of significant areas of development (Cashmore & Wulczyn, 2024).

### 1.1. Risk factors affecting OOHC involvement and educational outcomes

Children who enter care often have multiple risk factors at the child and family levels that also place them at increased risk for adverse educational outcomes. These include higher rates of developmental vulnerability (Pears et al., 2013; Stahmer et al., 2005) and disabilities, ethnic minority status, and lower socio-economic status (Maclean et al., 2016). Most children who enter OOHC in Australia have experienced maltreatment, which has an adverse effect on many aspects of child development including educational achievement (Laurens et al., 2020). Children in care also have higher rates of social and emotional problems (Stahmer et al., 2009) with externalising behaviours in particular linked with worse achievement outcomes (Smart et al., 2017).

Children's OOHC experiences can also increase their risk of low achievement. Placement changes or termination shortly prior to tests or exams can reduce performance and older age at care entry has been linked to lower achievement (Jackson & Ajayi, 2007; Maclean, et al., 2017). Some studies have found fewer placements (Wiegmann et al., 2014; Zima et al., 2000), a stable OOHC history (Vinnerljung et al., 2005) or longer time in current placement (Fernandez, 2009) were associated with better outcomes, but other studies have found no association (AIHW, 2015) or inconsistent results across different groups (Brownell et al., 2015; Maclean, et al., 2017; Townsend et al., 2020). Shorter time in care and placement type have also sometimes been linked to poorer educational outcomes (Maclean et al., 2017).

### 1.2. Higher achievers and out-of-home care

Most research on educational outcomes among children who experienced OOHC has focused on low achievement, with few studies examining higher achievement. A small body of qualitative research, however, has investigated factors relating to the positive outcomes of young people who have completed secondary school with good grades or entered university. Themes from these studies include having carers who value education and may be highly educated themselves, support for young people's aspirations, sense of belonging to the (foster) family, and creating environments and habits that facilitate learning (Jackson & Ajayi, 2007; Martin & Jackson, 2002; Skilbred et al., 2017).

A British study found fewer than 20 % of students in care achieved a trajectory with consistently high grades from Year 2–6, with most students showing low or declining achievement (Melkman, 2020). The child's sex, high needs (emotional/behavioural or learning based), time in care, and ability level of other students in the school were the only predictors (many other aspects of OOHC and the school environment were not statistically significant). A recent study (Maclean et al., 2024) using the POCLS data found cognitive ability, externalising behaviour problems, ethnicity, and carers education level were associated with higher achievement in Year 3 of school, while several supports and services were associated with higher achievement, but inconsistently across analyses. Identifying supports and services associated with positive trajectories would be useful as they may be more malleable compared to child and family characteristics. We include several supports that have previously been linked to positive education outcomes including education plans (Maclean et al., 2024), and direct educational

support via either tutors or foster carers (Männistö & Pirttimaa, 2018).

### 1.3. Children's educational trajectories over time

Examining educational achievement at multiple time points is necessary to understand if children's level of achievement is stable or changes over time, and the shape of their reading trajectories. Trajectory approaches can also examine whether children in specific risk groups maintain a level of achievement that is consistently behind those of other students, whether they catch up or fall further behind over time. Studies can also assess risk factors and events that influence changes in trajectories. Understanding children's developmental trajectories can assist in identifying when and how to intervene effectively.

Research shows that previous achievement is a strong predictor of subsequent achievement in reading and mathematics (Duncan et al., 2007; Hemmings & Kay, 2010), even after accounting for socioeconomic status and school (Marks, 2014). Consequently Marks (2014) recommended that policies and interventions focus on prenatal, infant and preschool factors to increase early ability and achievement, rather than focusing on resources of families or schools during the school years. Conversely, Zubrick, Taylor, and Christensen (2015) found that although early language development was an important predictor of later language outcomes, its predictive power was limited and many children developed language problems later. Consequently, identification and intervention for language problems need to continue throughout schooling rather than focussing efforts solely on early childhood.

A study using Australian National Assessment Program – Literacy and Numeracy (NAPLAN) data to describe reading growth over time made the important point that typical reading growth shows a decelerating curve over time (Goss et al., 2016). The study converted NAPLAN scale scores to Equivalent Year Levels, and showed that comparing growth of students with different starting scores can be misleading. A gain of 17 scale points from a score of 566 would take a student from Year 8 equivalent level to Year 9 equivalent level, a full year's growth. Yet the same 17 scale point gain from a starting score of 421 which is equivalent to Year 3 reading level, equates to less than half a year's growth. The authors highlighted that the higher gain scores shown for students with low early achievement appear to show them catching up with their peers, but unless their Equivalent Years of Growth matches their peers, they may in fact be falling further behind.

### 1.4. Educational trajectories of children who have entered out-of-home care

In the general population, research shows that with appropriate support poor educational outcomes can be improved (Holmes & Dowker, 2013); however there are more challenges for children in care that also impact including multiple school changes, placement moves and effects of trauma from abuse and neglect (Maclean et al., 2017; Rouse, 2007; Townsend et al., 2016). Given the significant changes and disruptions of entering OOHC and potentially experiencing multiple placements, it is likely that many of these children are not achieving at their full potential and that their achievement does not reflect ability (Maclean, 2016). Children who entered OOHC have been found to have more variability in their achievement levels over time but declines and stable low achievement are prevalent (Melkman, 2020). Nonetheless, of children scoring in the lowest third of the WA State population in Year 3 reading and who had been in OOHC, 12.5 % improved to middle level achievement and around 3 % to the top third in Year 9 tests (Maclean, 2016).

### 1.5. Current study

The current study describes the trajectories of Aboriginal and non-Aboriginal children who experienced OOHC, including children with

positive trajectories i.e. stable high achievement or improving to higher achievement in Year 7, assesses how common the different trajectories are among children who experienced OOHC. Sub-group analyses by sex is also provided (see [Appendix A](#)), as NAPLAN results typically differ for girls and boys ([Australian Curriculum Assessment and Reporting Authority, 2016](#)). The study also examines factors that may be associated with positive trajectories. We hypothesise that positive educational trajectories will be less common than stable low or declining trajectories, but will be found for a number of the students. We hypothesise positive trajectories will be more common for girls, non-Aboriginal students, children from higher socio-economic areas, children without educational vulnerabilities such as disability or low cognitive test scores or clinical range externalising scores, and with fewer reports to child protection. We also hypothesise that positive educational trajectories will be associated with an earlier age at entry to care, longer time in care, fewer placement changes, being in care at the time of NAPLAN, foster care placement type, a carer with higher levels of education, and the presence of supports such as an education plan, tutoring, and frequent help with homework.

The study includes data collected from Aboriginal children and families. Interpretation of the data should consider the factors associated with the over-representation of Aboriginal children in child protection and OOHC including the legacy of past policies of forced removal and the intergenerational effects of previous forced separations from family and culture. This erosion of community and familial capacity over time needs to be considered in any reform efforts as it continues to have a profoundly adverse effect on child development. Policy and practice should highlight strengths, develop Aboriginal-led solutions and ensure that better outcomes are achieved for Aboriginal people.

## 2. Method

### 2.1. Data sources and cohort

The Pathways of Care Longitudinal Study (POCLS) is a longitudinal prospective study of children in care in New South Wales (NSW) Australia. Survey data from the POCLS (November 2020 version, unweighted data), as well as linked administrative data from the NSW Department of Communities and Justice (DCJ) and NSW Education Standards Authority (NESA) were used in this study. The population cohort for the POCLS is a census of all children and young people who entered OOHC for the first time in NSW over the 18-month period between May 2010 and October 2011 ( $n = 4,126$ ). A subset of those children and young people who went on to receive final Children's Court care and protection orders by 30 April 2013 ( $n = 2,828$ ) were eligible to participate in the interview component of the study. Among them ( $n = 2,828$ ), 1,789 children and their caregivers agreed to participate in the interviews. Four waves of data collected 18 to 24 months apart were available at the time the current analyses were conducted.

Children's NAPLAN reading scores were obtained from NESA (March 2021 version). NAPLAN assessments are conducted in May every year for all children in Years 3, 5, 7 and 9 of school across Australia, with a small percentage of children exempt due to significant disabilities or as recent immigrants with a language background other than English. In NSW participation rates are around 97 %, including approximately 1.5 % who are exempt, with the remainder of students absent or withdrawn from the test ([Australian Curriculum Assessment and Reporting Authority, 2016](#)).

Child protection data from the NSW DCJ administrative data including information on child's sex and Aboriginal status, child protection reports, and OOHC placements were used. The Child, Young Person and Carer interview with current carers informed the carer characteristics, as well as supports and services received by the child. Four standardised measures were used to assess children's socio-emotional and cognitive development: the Child Behavior Checklist (CBCL) Externalising scale completed by carers, the Matrix Reasoning

Test from Wechsler Intelligence Scale for Children IV (WISC) and Peabody Picture Vocabulary Test (PPVT). Finally, Socio-economic Index of Area (SEIFA) 2011 from the Australian Bureau of Statistics was used to describe neighbourhood level socio-economic status as it was the closest data to the time of entry to care (1 = most disadvantaged to 5 = least disadvantaged).

This study cohort included all children who participated in NAPLAN reading tests in Years 3, 5 and 7 of school and whose carer completed at least one interview of the POCLS before the Year 7 reading test ( $N = 325$ ) ([Fig. 1](#)). The children who met these criteria were aged between 3 and 11 years at first entry to care. As children entered OOHC and the POCLS study at different ages, they sat their NAPLAN tests across different years. The cohort sat their Year 7 NAPLAN tests between 2012 and 2019.

Three quarters of children in the study participated in two waves of the POCLS survey, half in three waves and 22 % in all four waves. All spent at least one continuous period in OOHC (which may include multiple care placements), with 5 % experiencing two periods of care and only 1 % having had three periods of care. The majority of children (76 %) were in care by Year 3 of school and 71 % were still or again in care by Year 7.

### 2.2. Ethics approval

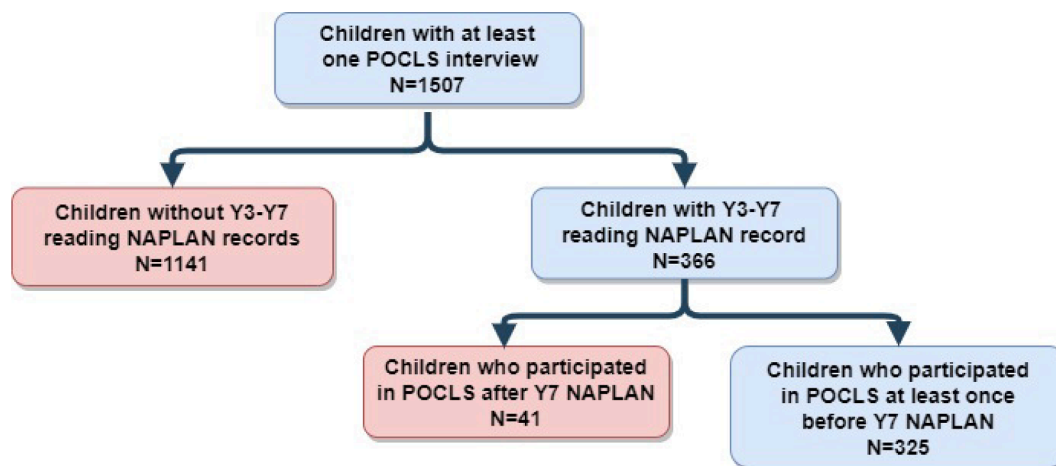
Ethical approval was obtained from the University of NSW Human Research Ethics Committee (approval number HC10335 & HC16542); Aboriginal Health and Medical Research Council of NSW Ethics Committee (approval number 766/10); NSW Department of Education and Communities State Education Research Approval Process (SERAP, approval number 2012250); and the NSW Population & Health Services Research Ethics Committee (Ref: HREC/14/CIPHS/74 Cancer Institute NSW: 2014/12/570).

### 2.3. Measures

#### 2.3.1. Outcome variable – Reading achievement

Two different measures were used to investigate children's NAPLAN reading achievement trajectories between Year 3 and Year 7 of school, providing a categorical variable for tabulating the data and a continuous variable for the GBTM analysis. As defined by the National Assessment Program, reading scores are standardised in 10 different performance levels from Year 3 to Year 9 called bands. The first six bands cover student performance in the Year 3 NAPLAN test; bands 3 to 8 represent children's scores scale for Year 5 NAPLAN test; and bands 4 to 9 define Year 7 NAPLAN tests assessment scale. For this study, students scoring in the top 3 bands on each year level's NAPLAN reading tests were selected as representing higher achievement. Students in the fifth band from the top are considered to meet National Minimum Standards. The cut-off chosen for higher achievement therefore places children comfortably above National Minimum Standards, but is not a high threshold, with 72 % of all Year 3 and 48 % of all Year 9 students in NSW achieving this level (ACARA, 2016). Given the lower levels of achievement among children in OOHC, markedly smaller proportions are anticipated amongst this cohort. These cut-offs were used to describe higher achieving children in the cohort in descriptive statistics, including cross-tabulations of Year 3, 5 and 7 results to identify patterns of achievement over time.

Additionally, aiming to investigate trajectories over time, NAPLAN reading test scale scores were used as a continuous variable for statistical modeling. Two comparison trajectory lines were presented to aid interpretation: the cut-off for high achievement (top 3 bands) and 'equivalent year level' based on a Grattan Institute study ([Goss et al., 2016](#)) which depicts the reading score growth trajectory of a 'typical student' using NAPLAN data. This trajectory represents the scores a typical student would achieve in each year level, and allows consideration of NAPLAN scores in terms of 'equivalent year level' (the year level



**Fig. 1.** Flow chart – cohort selection using interview data from Waves 1–4. Note: Red-excluded; Blue-selected. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

at which a typical student would be expected to achieve a particular scale score) and ‘years of progress’ (the time in years and months for a typical student to move from one NAPLAN score to another). Further information is provided in Goss et al., 2016.

Regardless of the student’s actual age or the year level they are enrolled in, if they are performing reading skills at an average/typical Year 3 level, and 12 months later they are at an average/typical Year 4 level, they have shown one year of expected progress over one year. For simplicity, we will still refer to it as two years expected progress over two years if this occurs over two year levels/grades of schooling (i.e. the time from Year 3 tests to Year 5 tests, even if the student had to repeat a year of school to be at grade level). A child who sits the Year 3 reading test and achieves the ‘equivalent year level’ reading skills of a typical Year 6 student, and 4 years later sits the Year 7 reading test and achieves the ‘equivalent year level’ reading skills of a typical Year 8 student, would be considered to have a higher level of reading achievement, but slow growth as they have only improved the equivalent of 2 years expected progress (Year 6 level to Year 8 level skills) over 4 years of schooling.

### 2.3.2. Covariates

Given the temporal differences between NAPLAN reading tests (conducted at Year 3, 5 and 7 of school) and POCLS waves of data collection (conducted at 18 to 24 months apart, from when the child entered care and the POCLS study), three different approaches were taken aiming to utilise POCLS survey information in the most appropriate manner to assess children’s NAPLAN reading trajectories. In some cases, covariates were summarised across available waves (responses from different waves were collapsed in a single value); in others, the information used was obtained from the closest wave to Year 3 or to Year 7 NAPLAN reading tests, as appropriate. For each variable we selected an appropriate time point based on our judgement of how that variable may affect outcomes, e.g. we considered that absence of some supports in the lead-up to Year 7 would be most influential (currency or recency effects of supports that may wash out over time if removed), whereas tutoring might remedy a problem at any point and then no longer be required. Note that, as mentioned previously, the study cohort includes all children with at least one wave of POCLS data. Some children will have only one wave of data available while others might have more (up to 3). As a result, for 31 % of the cohort the POCLS wave closest to Year 3 is the same as the closest to Year 7.

Several child-related characteristic variables were included, such as sex, Aboriginality, and Risk of Significant Harm (ROSH) reports prior to entry to care. Child development was captured by standardised measures, including the CBCL (Externalising behaviour scale) assessing the

child’s socio-emotional wellbeing using carer reports for children aged 3–17 years; the PPVT to assess verbal skills (ages 3+) and WISC for non-verbal cognitive development (ages 6+). Additionally, children were identified as having a disability based on the DCJ data (current as at 30 June 2019).

Established cut-off points were used for all standardised measures (NSW Department of Communities and Justice, 2020); however, due to low cell counts, some categories were collapsed as follows: CBCL Externalising behaviours scale scores were classified as ‘typical’ ( $\leq 63$ ) and ‘clinical range’ ( $> 63$ , which is  $> 1.3$  SD above the mean). The closest CBCL to the Year 7 NAPLAN test was used as behavioural wellbeing can change markedly. Similarly, PPVT and WISC were classified as ‘typical’ (within or above 1 SD of normative population means), and ‘at risk’ (below 1 SD from normative population means). For the PPVT and WISC, information from the closest POCLS wave to NAPLAN Year 3 test. Additionally, a summary variable was created aiming to identify ‘educationally vulnerable’ children who were ‘at risk’ on the PPVT or WISC or identified as having a disability.

Child OOH placement characteristics included: if child was in care at each NAPLAN test (coded 1 if in care at NAPLAN test and 0 otherwise); age at first entry to care (3–6 years, 7–11 years); number of placements prior to each NAPLAN test (1, 2–3 and 4 or more) (excluding respite and non-permanent placement of  $< 7$  days); total days in care prior to each NAPLAN test; and most recent placement type to Year 7 NAPLAN (foster, relative/kinship, other). Carer’s highest level of education (degree/diploma or higher, Certificate or other non-school qualifications, Year 10–Year 12, or  $\leq$  Year 9) was obtained from the interview closest to NAPLAN Year 7.

Finally, carer reported services and supports received by the child or carer, including:

- (1) Whether ‘additional help or tutoring from outside household’ was provided. A summary variable was coded 1 = tutoring provided in any wave available and 0 = otherwise;
- (2) Frequency of help with homework. Both information closest to Year 3 and Year 7 were assessed (only closest to Year 7 reported in Table 1);
- (3) Whether the child had an OOH Education plan, coded as 1 if the child had an Educational plan in any wave available and 0 otherwise.

### 2.4. Analysis

Descriptive and inferential statistics were used to investigate reading achievement trajectories between Years 3 and 7 for children in the study

**Table 1**

Characteristics of the overall sample and higher achieving students.

	Overall		Higher (top three bands) Reading achievement					
	N	%	Year 3		Year 5		Year 7	
			N	%	N	%	N	%
N	325	100.0	124	38.2	99	30.5	86	26.5
Gender								
Female	189	58.2	82	66.1	52	52.5	53	61.6
Male	136	41.8	42	33.9	47	47.5	33	38.4
Aboriginality								
Aboriginal	115	35.4	34	27.4	26	26.3	21	24.4
Non-Aboriginal	210	64.6	90	72.6	73	73.7	65	75.6
SEIFA								
1	55	16.9	22	17.7	15	15.2	11	12.8
2	56	17.2	21	16.9	13	13.1	14	16.3
3	57	17.5	25	20.2	22	22.2	20	23.3
4	22	6.8	<5	<5.0	6	6.1	<10	<10.0
5	22	6.8	<15	<15.0	8	8.1	<5	<5.0
Missing	113	34.8	42	33.9	35	35.4	32	37.2
Disability								
Yes	26	8.0	<10	<10.0	<5	<5.0	<5	<5.0
No	299	92.0	<150	<100	<100	<100	<100	<100
Numbers of ROSH before entry to care								
1–5	48	14.8	24	19.4	14	14.1	13	15.1
6–10	83	25.5	36	29.0	29	29.3	24	27.9
11–20	124	38.2	46	37.1	39	39.4	36	41.9
>20	70	21.5	18	14.5	17	17.2	13	15.1
CBCL externalising cut off								
Typical	234	72.0	93	75.0	80	80.8	65	75.6
Clinical	90	27.7	31	25.0	19	19.2	21	24.4
Missing	1	0.3	0	–	0	–	0	–
PPVT cut off								
Typical	223	68.6	93	75.0	84	84.8	72	83.7
At risk	79	24.3	21	16.9	7	7.1	6	7.0
Missing	23	7.1	10	8.1	8	8.1	8	9.3
WISC cut off								
Typical	220	67.7	94	75.8	79	79.8	64	74.4
At risk	73	22.5	17	13.7	9	9.1	11	12.8
Missing	32	9.8	13	10.5	11	11.1	11	12.8
Number of placements before or at NAPLAN								
1	45	13.8	11	8.9	10	10.1	12	14.0
2–3	132	40.6	50	40.3	43	43.4	38	44.2
4+	148	45.5	63	50.8	46	46.5	36	41.9
Days in care before NAPLAN (mean, SD)	–		711.5 (590.3)		1215.8 (693.4)		1696.8 (824.2)	
Placement type at NAPLAN								
Foster Care	148	45.5	58	46.8	41	41.4	36	41.9
Relative/Kinship	165	50.8	61	49.2	56	56.6	46	53.5
Others	12	3.7	5	4.0	2	2.0	4	4.7
Age at first entry to care								
3–6 years	169	52.0	69	55.6	52	52.5	50	58.1
7–11 years	156	48.0	55	44.4	47	47.5	36	41.9
In care at NAPLAN test								
No	–		42	33.9	21	21.2	33	38.4
Yes	–		82	66.1	78	78.8	53	61.6
Carer 1 highest level of education								
Bachelor/diploma or higher	94	28.9	45	36.3	38	38.4	29	33.7
Certificate or other non-school	81	24.9	27	21.8	19	19.2	25	29.1
Years10–12	85	26.2	29	23.4	25	25.3	16	18.6
Year 9	65	20.0	23	18.5	17	17.2	16	18.6
Help from household with homework								
Few times a week	174	53.5	55	44.4	41	41.4	34	39.5
Few times a month	69	21.2	29	23.4	29	29.3	26	30.2
less often	47	14.5	25	20.2	18	18.2	19	22.1
N/A	35	10.8	15	12.1	11	11.1	7	8.1
Additional help or tutoring from outside household*								
Yes	76	23.4	17	13.7	19	19.2	15	17.4
No	217	66.8	92	74.2	69	69.7	64	74.4
N/A	32	9.8	15	12.1	11	11.1	7	8.1
OOHC Education plan for the child*								
Yes	143	44	52	41.9	38	38.4	29	33.7
No	182	56	72	58.1	61	61.6	57	66.3

\* Summarises the information in all waves. If ever had yes, was flagged as yes.



cohort. The cohort's overall and higher achieving students within each NAPLAN test (top 3 bands) were described in cross-tabulations. Regression analysis on reading achievement trajectories across NAPLAN Year 3 to Year 7 test was conducted in two separate steps: first, Latent Class Growth Modelling (Group-based trajectory model, GBTM) was used to identify a number of latent clusters or groups of children following similar trajectories of reading achievement over the school years under study; second, multinomial logistic regression analysis was performed to investigate potential factors associated with trajectory group membership.

GBTM identifies groups of individuals following a specific trajectory within the population under study (Nagin, 2005). It assumes that the population is formed by different clusters with distinct developmental trajectories and distinctive characteristics. This model utilises a multinomial modelling strategy, using maximum likelihood to estimate the model's parameters. GBTM estimates the probability of group membership (average posterior probability), the proportion of the population in each group (note that estimates of the population proportion of individuals in each group are a result of maximum likelihood estimation and can slightly differ from the cohort proportions) and the shape of each group's trajectories over time. The Bayesian Information Criterion (BIC), the sample-size adjusted BIC and the Akaike Information Criterion (AIC) were used to determine the number of latent groups which better fitted the data (Nagin, 2005; Nagin et al., 2016). Additional model fit criteria were used (see Appendix A), as: average posterior probability of group membership > 0.7; odds of correct classification based on posterior probability > 5; model entropy close to 1. Individuals are assigned to the group for which they have a higher probability of membership. A censored normal distribution was used for the GBTM as our outcome variable (reading scores) is a repeated measure, continuous scale, censored in a maximum score of 670. Multinomial logistic regression was then conducted to investigate factors associated with different reading achievement trajectory groups. Bivariate multinomial analysis investigated the association between each predictor and trajectory group membership. Only covariates showing significant bivariate association were included in the multivariable model. The lowest achievement trajectory group was selected as the reference group. Results from both the bivariate and model were presented to highlight findings from each. Directly comparing results from the bivariate to the multivariate multinomial analysis (e.g. to identify mediation effects from adding more variables to the model) is not recommended because of potential rescaling issues (Williams & Jorgensen, 2023).

These steps were conducted for the overall cohort, as well as separately for Aboriginal and non-Aboriginal children. Stata option 'rrr' was used to compute Relative Risk Ratios (RRRs) and 95 % confidence intervals (CIs). The analysis was conducted in Stata version 16.0 software and the command *traj* used for fitting the GBTM (Jones & Nagin, 2013). Multinomial logistic regression included the whole cohort as sample size precluded sub-group analysis.

### 3. Results

#### 3.1. Characteristics of the sample and higher achieving students

Table 1 shows the sample characteristics, overall and for higher achieving students in each year level. Of the 325 participants, 189 (58.2 %) were female and 115 (35.4 %) were Aboriginal. The vast majority of children had a most recent placement type of either relative/kinship care (53.5 %) or foster care (41.9 %).

Two-thirds were in care prior to the Year 3 NAPLAN test, with the rest entering care between Year 3 and Year 7 tests. A substantial minority of the students had disabilities (8 %) or at risk cognitive test scores (WISC 22.5 % and PPVT 24.3 %) indicating educational vulnerability. Fewer than 20 students scored in the above average range on the PPVT, so this group has been aggregated with average scores. Students with above average scores almost always scored in the top 3 reading

bands on the NAPLAN test (not shown). As shown in Table 1, slightly over half the carers (53.5 %) indicated they provided help with homework several times a week. Carer reports showed almost one in four children received tutoring across any wave of the survey. Less than half of the carers indicated the child had an Education plan.

Higher achieving students shared many similarities with other children in the POCLS, for example 13–18 % of students overall and among higher achievers in each Year level had a 2011 carer SEIFA level of 1 (most disadvantaged quintile). All groups showed a wide range of numbers of ROSH reports prior to entry to OOHC. Half of higher achieving Year 3 students had four or more placements (50.8 %), compared to 41.9 % of higher achieving Year 7 students. Higher achieving students were more likely to have a 'typical' PPVT score (average or above) compared to the overall cohort (68.6 %), with a higher percentage of Year 7 students (83.7 %) than Year 3 students (75.0 %) having a typical PPVT score.

#### 3.2. Descriptive patterns of achievement over time

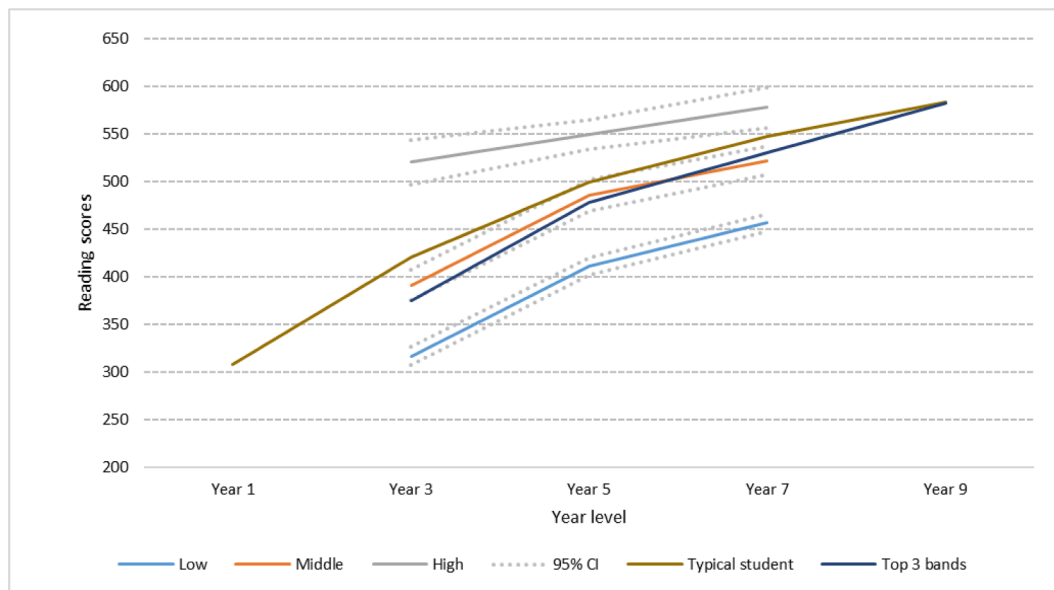
Cross-tabulation of children's achievement over time (with a score in the top three NAPLAN bands for year level representing higher achievement, and below this cut-off indicating lower scores) was used to identify common patterns of achievement, and the frequency of positive patterns such as improving or consistent higher achievement. As shown in Table A (Appendix A) the most common pattern (48.6 %) was 'stable low' – a score below the top three bands in all three NAPLAN tests (Year 3, 5 and 7). The second most common set of patterns was 'declining' (higher scores in Year 3, dropping to lower scores from either Year 5 onwards or Year 7). Approximately one in five students showed a 'declining' pattern. Almost one in six students had 'stable high' achievement, and 7.4 % showed an 'improving' pattern (below the top 3 bands in Year 3 but in the top 3 bands by Year 7). This method provides a useful summary of the number of children meeting and crossing over the threshold for higher or lower achievement over time. It does not, however, show the shape of their trajectories; for example, a child with a score in the highest band in Year 3 could actually decline in performance but still be counted as stable high achievement as long as they did not cross the threshold into the fourth highest band in Year 7.

#### 3.3. Reading achievement trajectories

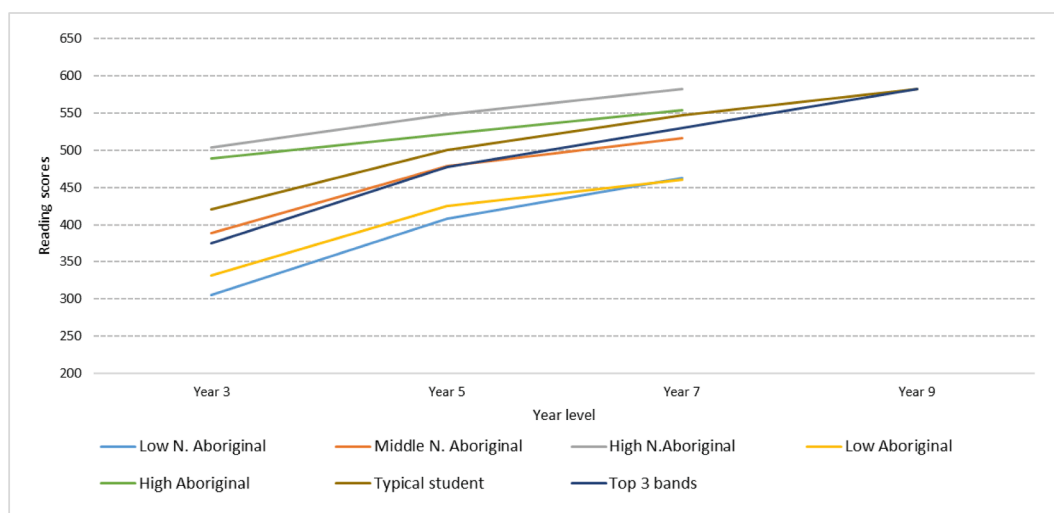
Three latent clusters or groups of children following similar trajectories of reading achievement from Year 3 to Year 7 were identified by GBTM. The three trajectories (Fig. 2) include a stable 'high' group with a flatter slope representing the trajectories of 9 % of the cohort; a middle group almost parallel to the typical scores and gains described in Goss et al. (2016), comprising 34 % of the cohort; and a low group with scores showing similar gains but at a lower level (in Year 3 scoring only slightly above Year 1 scores of a 'typical student'), comprising 58 % of the cohort. Quadratic trajectories shapes were better fit for the low and middle groups and linear trajectory was fitted for the stable high group. Trajectories vary in steepness in keeping with faster skills development at earlier stages of reading development, and the three trajectories each showing the equivalent of about three years growth for a 'typical' student over the four years of the study. The slower than typical growth primarily occurred between Years 5 and 7.

GBTM was repeated to separately examine the trajectories of Aboriginal and non-Aboriginal students. For non-Aboriginal students, a three class solution broadly similar to the overall cohort model was selected. For the Aboriginal students, a two class solution was the best fit for the data. The trajectories from both models are presented together in Fig. 3.

The three trajectories from the non-Aboriginal group included a High achieving trajectory, a Middle level trajectory, and a Low trajectory. The High achieving trajectory accounts for 12 % of non-Aboriginal children in the cohort. The trajectory is consistently above the threshold marked



**Fig. 2.** Estimated reading trajectory latent groups and comparison groups. Full cohort. Note. 'Typical student' based on Goss (2016) expected reading growth for a typical student.



**Fig. 3.** Estimated reading trajectory latent groups and comparison groups. Aboriginal and non-Aboriginal students. Note. 'Typical student' based on Goss (2016) expected reading growth for a typical student.

by the top three NAPLAN bands, with the slightly lower slope, indicating a slower rate of improvement over time in terms of scale score points. With an initial level of 504 (Year 3) this group is characterised by a trajectory that begins and remains at an Equivalent Year Level two years ahead of the students' actual year level however, based on Goss et al. (2016) figures. The Middle trajectory (41 %) follows close to the threshold for top three NAPLAN bands. Although the steeper trajectory suggests faster growth than the high achiever trajectory, the increase is actually slower in terms of equivalent years of growth, with less than 4 years growth between Year 3 and Year 7. Similarly, the Low achievement trajectory (48 %) is characterised by slow progress on Equivalent Year Levels, but also begins from a low level of achievement in Year 3. From an initial level of 305, which is close to the projected Year 1 Equivalent Year Level, and final level of 462, which is close to Year 4 Equivalent Year Level, students on this trajectory fall from two years behind their expected level in Year 3 to three years behind their expected year level in Year 7.

Two potential explanations why a middle group did not emerge from

the GBTM for Aboriginal students include the smaller group size, or the possibility there is genuinely a more divided set of trajectories for Aboriginal students. Without the category of a middle trajectory, scores closer to the middle level would have been allocated to either the High or Low achievement groups. This may explain why both groups are closer to the middle level of achievement than among the non-Aboriginal students. Among the Aboriginal students, the High achieving trajectory (15 % of Aboriginal children) was characterised by very high achievement at Year 3, falling to slightly above average at Year 7. With an initial level of 489 in Year 3, students Equivalent Year Level was between Year 4 (466) and Year 5 (500). In Year 7, the trajectory finished at 554, falling between Equivalent Year Level Year 7 (547) and Year 8 (566). The Low achieving trajectory (85 % of Aboriginal children) had an initial level of 332 in Year 3, which falls between Equivalent Year Level Year 1 (308) and Year 2 (365). This trajectory finished at 460 in Year 7, which is around the Equivalent Year Level 4, meaning students were 3 years behind an average student in their year.

### 3.4. Multinomial logistic regressions – All students

To understand which variables were associated with higher likelihood of membership in one trajectory compared to another, we conducted a series of bivariate multinomial regressions, and a multivariable multinomial regression which included the variables found to be significant in the bivariate results. The Low trajectory was used as the reference group. As the SEIFA variable had missing data, reducing sample size and robustness, we excluded SEIFA from the main analysis. The analyses with SEIFA included is provided in the [Appendix A](#): there was a significant association between SEIFA and education outcomes, but only the middle level of SEIFA was significant, showing no clear socio-economic gradient effect, and confidence intervals were wide.

#### 3.4.1. Bivariate results

Educationally vulnerable children (those with low cognitive test scores or a disability) were less likely to be in the Middle or High trajectory groups compared to the Low trajectory group ([Table 2](#)). Students with a carer with a degree/diploma were more likely to be in the High trajectory group. First entering care at an older age and having a higher number of ROSH reports prior to entry to OOHC were each associated with a lower likelihood of being in the High trajectory group. Girls were more likely to be in the Middle trajectory than Low trajectory group.

**Table 2**  
Multinomial regression: Full cohort.

Variable (ref)	Bivariate		Multivariable (without SEIFA)	
	RRR (95 %CI)		RRR (95 %CI)	
	Middle (Low)	High (Low)	Middle (Low)	High (Low)
Aboriginal (non-Aboriginal)	0.61 (0.37–1.01)	0.49 (0.20–1.21)	0.79 (0.45–1.38)	0.69 (0.25–1.96)
Females (males)	1.64 (1.01–2.68) *	1.58 (0.69–3.61)	2.00 (1.17–3.44) *	2.19 (0.86–5.58)
Numbers of ROSH before entry to care (continuous)	0.99 (0.96–1.01)	0.94 (0.89–0.99)*	0.98 (0.96–1.01)	0.94 (0.88–1.00)
Educationally vulnerable				
Yes (No)	0.33 (0.20–0.56) *	0.21 (0.08–0.57)*	0.29 (0.16–0.50) *	0.18 (0.06–0.53) *
In care at Y7				
Yes(No)	0.52 (0.31–0.87) *	0.66 (0.28–1.57)	0.59 (0.33–1.04)	1.11 (0.4–3.05)
Age of entry to the first period of care (continuous)	0.98 (0.89–1.09)	0.79 (0.64–0.97)*	0.99 (0.88–1.11)	0.77 (0.61–0.97) *
Carer 1 highest level of education (Year 9)				
Degree/ diploma or higher	2.01 (1.00–4.05)	3.91 (1.03–14.81) *	1.91 (0.88–4.18)	Omitted
Certificate or other	1.12 (0.54–2.35)	2.35 (0.59–9.40)	0.93 (0.41–2.11)	
Yr10–Yr12	1.55 (0.76–3.14)	1.50 (0.34–6.63)	1.27 (0.58–2.76)	
Additional help or tutoring from outside household*				
Yes (No)	0.55 (0.3–1.00)*	0.40 (0.13–1.23)	0.53 (0.28–1.02)	0.41 (0.12–1.38)
Help from household with homework (less often)				
Few times a week	0.64 (0.32–1.31)	0.20 (0.07–0.58)*	0.63 (0.28–1.38)	0.12 (0.04–0.42) *
Few times a month	0.89 (0.39–2.01)	0.79 (0.27–2.29)	0.74 (0.29–1.83)	0.44 (0.12–1.60)

Note: Comparison between unadjusted and adjusted multinomial regression outputs is not recommended as it can lead to an incorrect interpretation of outputs due to rescaling.

Students in care at Year 7 were less likely to be in the Middle trajectory group compared to the Low group. Students who received tutoring were less likely to be in the Middle than the Low trajectory group. Students who received help with homework frequently were less likely to be members of the High than the Low trajectory group.

#### 3.4.2. Multivariable results

The multivariable results are also shown in [Table 2](#). Educationally vulnerable students were less likely to be in the Middle or High trajectory group than the Low trajectory group. Children who entered care at an older age had a lower likelihood of being in the High trajectory group. Girls were more likely to be in the Middle trajectory than Low trajectory group. Students who received help with homework frequently were less likely to be members of the High trajectory group compared to the Low trajectory group.

## 4. Discussion

### 4.1. Reading trajectories of children who entered OOHC

A central aim of this study was to describe the varying academic trajectories of children who experienced OOHC, and to identify characteristics of the child, their child protection and OOHC history, and supports and services associated with positive reading trajectories (characterised by high achievement and/or fast progress). Descriptive analysis showed 14.5 % of students showed stable high achievement, defined as scoring in the top 3 NAPLAN reading bands in Year 3, 5 and 7 tests. A further 7.4 % were classed as having an improving pattern of achievement, defined as crossing the threshold into the top three NAPLAN bands by Year 7, after scoring below this level in Year 3.

GBTM revealed three trajectories of achievement among non-Aboriginal students, and two among Aboriginal students. Both included High and Low trajectory groups, with analysis of the non-Aboriginal cohort also finding a Middle level trajectory. None of the trajectory groups showed more than four years growth in Equivalent Year Level over the four years between Year 3 and Year 7 NAPLAN tests. This is in keeping with findings by [Melkman \(2020\)](#) that for most children, experiences in OOHC and primary school at best prevent deterioration of educational outcomes, but do not improve them. Only one trajectory group, the High trajectory group among non-Aboriginal students showed four years of progress over the four years of the study. This group also had a high level of achievement to begin with, resulting in a positive trajectory in terms of both achievement and growth, and was estimated to represent 12 % of the non-Aboriginal students.

Among Aboriginal students GTBM also identified a High trajectory group. Although this group began more than a year ahead on Equivalent Year Level, they only progressed three years equivalent growth over the four years of the study. Their strong starting position meant they were still above average but they were drifting closer to the average as time went on. Previous research found declining achievement is common among children who experienced OOHC, particularly among Aboriginal children who have been in OOHC ([Maclean, 2016](#)). Our study shows that even among higher achieving students this trend is evident. This group of children is clearly capable of higher achievement, yet if their trajectory continues they are likely to fall below average in the upper years of secondary school.

The remaining trajectories (Middle and Low) showed around two and a half to three years equivalent growth over the four years from Year 3 and Year 7. Most concerning are the Low trajectory groups, as they begin with low achievement and continue to fall further behind a 'typical' peer as they are not showing the rapid growth expected for children early in their reading skills development.

In our study only 12 % of non-Aboriginal students were classified as in the High trajectory level group and 15 % of Aboriginal students. Similarly, an English cohort study of children in care found 17 % of students followed a stable high trajectory, with the remaining 80 %



following one of a range of maladaptive trajectories including average and decreasing, low, and very low (Melkman, 2020).

There is a strong need for support during school years for children who have entered OOHC, as even among the high achievers there is a tendency to show slower progress than children not in care. While early intervention is recommended, for these children there is a need for continued attention to education as even children who are doing well can drift towards lower achievement, and for the lower achieving students the gaps continue or widen over time. There should be a goal that wherever possible, every child who enters care should make at least one year of progress per school year, with additional goals promoting opportunities for students who are behind to catch up to their peers, and for young students who achieve highly to be extended and supported to reach their potential. Interventions to improve educational achievement should be informed by the research evidence.

#### 4.2. Characteristics of the child associated with reading outcomes

A number of child characteristics were related to reading outcomes in the GBTM, multinomial regression and descriptive statistics. These included Aboriginality, sex, and age at first entry to care, consistent with previous research showing boys and ethnic minority groups including Aboriginal children are at increased risk of lower reading achievement (Marks, 2014), as are children who enter OOHC at an older age (Maclean et al., 2017). Lower achievement among Aboriginal students has been attributed to a range of social factors such as socio-economic circumstances, expectations for the child's educational future, racism, and living in regional areas with less access to services (Zubrick et al., 2006). The link between socio-economic status and achievement is well established (Caro et al., 2009; Laurens et al., 2020) but was only partially evident in the current analysis, with children in the third quintile of SEIFA more likely to be in the Middle trajectory than the Low trajectory group (see Appendix A). Missing data and smaller cell sizes for less disadvantaged SEIFA levels and the High trajectory group may be the reason more consistent effects of socioeconomic status were not found. Having many ROSH reports prior to OOHC entry was associated with a lower likelihood of being in the High trajectory group, consistent with research linking chronic maltreatment to worse educational outcomes (Coohey et al., 2011; Townsend et al., 2020).

Finally, educationally vulnerable children (those with low cognitive test scores or a disability) were less likely to be in the Middle or High trajectory groups. Previous research has shown higher rates of disability including intellectual disability among children in care (Maclean et al., 2016), which needs to be considered when examining children's educational development. The current study showed that while cognitive ability is an important predictor of reading outcomes, many of the children with unsatisfactory achievement trajectories are of typical cognitive ability, and therefore capable of higher performance than they are currently achieving. Overall, our findings regarding child characteristics point to a need for early interventions to promote children's development and school readiness, particularly within disadvantaged areas and groups. Early interventions to reduce child maltreatment may also play a role in improving educational outcomes.

It was somewhat surprising that CBCL scores did not predict reading trajectories, given behaviour has often been linked to education outcomes (Smart et al., 2017), and CBCL externalizing scores were found in a previous study using POCLS data to be a significant predictor of low reading achievement (Maclean et al., 2024). It is possible the choice of Year 7 CBCL scores rather than Year 3 or an indicator of improving or declining CBCL scores may have affected this result, or that the smaller sample size of students who had completed three waves of NAPLAN may have affected the results.

#### 4.3. OOHC characteristics, supports and services associated with reading outcomes

Several aspects of children's OOHC placement history were associated with lower trajectories, including entering care at an older age (consistent with previous research such as Maclean et al., 2017), and being in care at Year 7. Students whose carers were highly educated were more likely to be in the High trajectory group, consistent with some previous research suggesting that highly educated carers may better support children towards high achievement and a university education (Jackson & Ajayi, 2007). A previous Swedish study of 2167 young people found only a weak association between foster carer education level and the foster children's school performance and attainment (Berlin et al., 2019), raising the possibility that the association may vary depending on cultural context, or the age or other characteristics of the children or carers. Even without a high level of education, carers who value school and education have been identified by academically successful foster youth as an important factor perceived to have contributed to their success (Jackson & Ajayi, 2007). A study found kinship carers with low levels of education were reluctant to engage with the education system because they felt intimidated by it, however a school-based intervention increased their self-efficacy in supporting the education of the children in their care (Strozier et al., 2005). Carers' attitudes, self-efficacy and skills in supporting children's educational needs may be easier targets for interventions than their education level.

The negative associations with both tutoring and frequent help with homework most likely reflect reverse causality, i.e. children having academic difficulties are provided more help than children who are not. Unfortunately the nature of the study (observational cohort rather than experimental design), means only a portion of the students receive various supports, and the students are likely to be selected for supports because of specific characteristics (such as low achievement). The results indicate that in this real-world context, a number of the children are being appropriately identified as needing additional educational support, but that the support provided is not sufficient to raise achievement levels out of the low trajectory. Further information would be useful regarding the nature, quantity and quality of the support they received, e.g. whether the support they are receiving is aimed at improving reading versus other subjects such as math, the number of tutoring sessions, whether the students have had some improvements as a result of the intervention. Without this information, the results should certainly not be interpreted as in indication that direct support does not help children's reading/educational achievement, as intervention studies suggest it is one of the most promising approaches (Männistö & Pirttimaa, 2018).

Previous studies of achievement have found that amongst OOHC samples, it can be hard to identify predictors because a) the clarity of the effects of various aspects of OOHC is generally inconclusive and significant bivariate associations often became non-significant in multivariable analyses, suggesting other co-occurring factors may drive apparent relationships (Melkman, 2020) and b) children's individual, family and placement characteristics are often clustered to the extent that disentangling causal effects can be challenging (Maclean et al., 2017). Children in care typically have many risk factors and potential influences, such that the presence or absence of any single one may not have the same measurable impact as would be expected for a child with few risk factors.

#### 4.4. Approaches to improving educational outcomes among children placed in OOHC

Intervention research on effective services and supports to improve educational outcomes for children placed in OOHC is still in the relatively early stages; however, there have been promising findings from a range of interventions, particularly tutoring (Harper & Schmidt, 2016; Männistö & Pirttimaa, 2018). A paired-reading program with the foster

carers and children also had positive outcomes, with very low attrition and an average improvement in reading age of 11 month from the 16 week intervention (Vinnerljung et al., 2014). Others include book gifting ('Letterbox Club') which appeared to work well in England, but was less successful in Northern Ireland possibly due to a lack of instructions to guide the carer, and the fact that the children who already had access to plenty of books were not excited by more (Erickson, 2018). A review by Forsman (2019) concluded that book gifting programs may have a smaller positive effect on children's outcomes, but as they are lower cost and easier to implement with the potential to reach large numbers of children, may provide a useful supplement to more targeted, intensive one-one support such as tutoring or paired reading. The effectiveness of a given intervention appeared to vary not only based on the type of intervention, but also design aspects such as whether conducted at school or home, clarity and engagement, reducing perceived stigma around needing educational support (Erickson, 2018), and matching the level of adult assistance to the child's level of reading independence (Forsman, 2019).

Children who have entered care have numerous factors affecting their educational outcomes, and a holistic approach is needed in addressing the many potential barriers to high achievement. A child who is worried about their safety, family members, relationships, or whether they are about to change placements may not be able to concentrate well at school (Martin & Jackson, 2002; Sebba et al., 2015). Trauma from maltreatment can affect children's development in many ways, with cognitive and behavioural impacts on schooling and reductions in self-esteem (Keiley et al., 2001; McFadyen & Kitson, 1996). Multiple school moves when a child changes placements can disrupt their education and result in gaps in their learning (Clemens et al., 2018). Children whose carers do not have high aspirations for them may not consider the options their future could hold (Martin & Jackson, 2002). Alongside interventions aimed directly at providing increased reading skills, an overall focus on children's wellbeing and development is needed to optimise learning. One study found that while stability and number of placements were significantly associated with educational attainment, feeling loved and secure was even more important (Cashmore et al., 2007).

#### 4.5. Implications

Although a small proportion of children who entered OOHHC maintained high achievement across the four years to Year 7, many high achieving children gradually declined in performance relative to their peers, and the majority of children began with low achievement and fell further behind. There is a need to both improve children's school readiness so they are well positioned at the start of school, and also to continue to focus on the educational needs of children who enter care as they progress through school.

At the time the of the surveys, less than half the carers indicated the child had an Education Plan. In 2018 the NSW Department of Education changed the operation of the OOHHC Education Pathway so that it was no longer mandatory to develop an OOHHC Education Plan for all children in statutory care. Children now have learning and support planning initiated for them within 30 days of entering care or starting a new school but there is no requirement for a formal Education Plan to be developed. All Aboriginal young people who attend a NSW Government school must have a Personalised Learning Pathway Education Plan developed in accordance with their individual needs as part of the Personalised Learning and Support Planning process. The effects of these changes would not be apparent in the present data, and future research could evaluate changes in student outcomes resulting from these reforms. It appears from the survey data that a number of appropriate supports and services were being accessed, however they could be used more widely and systematically. Less than one in four students accessed tutoring, however most children were not keeping pace with typical student growth and may benefit from tutoring or other educational supports.

The findings highlight the importance of implementing the OOHHC Education Pathway and OOHHC Health Pathway effectively to assess, monitor and provide treatment/support to address children's developmental and educational needs in a timely and culturally appropriate manner, to support children to reach their full potential.

#### 4.6. Strengths and limitations

The study had many strengths: it drew on multiple data sources including survey data, standardised cognitive assessments, and linked administrative data, allowing a longitudinal investigation of children's reading trajectories and child, carer, OOHHC factors and supports associated with reading achievement. Using GBTM provided new information on the shape of the reading trajectories of children who entered OOHHC in New South Wales. Incorporating Equivalent Year Level information demonstrated the speed of progress associated with each trajectory, and quantification of how far behind some trajectory groups fell.

In addition to these strengths, the study had a number of limitations. The main limitation for the study was sample size, as we focussed on students with three NAPLAN waves and a survey wave prior to Year 7. In some of the multinomial analyses, low cell count in the higher trajectory group resulted in wide CIs making the estimates less robust. We elected to retain some of the affected variables such as tutoring as they are important to the study, omitting results where necessary, but further examination of these associations in a larger dataset is recommended for future research. It should be noted that children entered care at various ages prior to the Year 7 test, thus not all children were in care from before Year 3, the start of their measured reading trajectory. The results therefore represent the trajectories of the cohort of children who entered care, but should not be interpreted as a measure of the effects of being in care. The small numbers and limited information about services provided limit the knowledge of interventions that can be gleaned. Observational research is limited in its ability to assess services and supports as they occur in real life, and research to trial and evaluate interventions is recommended.

In generalising the result of the study, the representativeness is helped by the eligibility for a whole State cohort of children entering OOHHC to participate. The age range of students and age at first entry to care were restricted by the requirement of having sat the Years 3–7 tests, and the start of recruitment for the POCLS, so may not be as generalisable to students who entered care aged younger than 3 years or over 12 years. Also students who complete all their tests may differ in some ways from students who are absent, withdrawn or exempt from one or more tests. The POCLS cohort includes only children on final orders, who typically have spent more time in OOHHC than children not on final orders (Australian Institute for Family Studies, 2015). Future research with larger sample sizes and examining trajectories of children with shorter OOHHC experiences (for example re-unified children) and those who do not participate in NAPLAN is recommended. In addition, concerns have been raised regarding disruptions to children's education since the start of the Covid-19 pandemic. Although 2021 NAPLAN (ACARA, 2021) results showed the various lockdowns in 2020–21 did not result in anticipated population-level declines in achievement, school attendance level (the percentage of students attending above 90 % of their classes) has been reduced from 73.1 % in 2019 to 49.9 in 2022 and 61.6 % 2023, attributed to ongoing Covid-19 outbreaks (ACARA, 2023). Whether the pandemic has exacerbated attendance and achievement disparities for children in OOHHC has not been examined and requires further research.

#### 5. Conclusion

The findings of this study showed a small group of children who entered OOHHC (less than 10 %) maintained a high level of achievement from Year 3 to Year 7 of school. Both stable low and declining achievement relative to peers were very common, with many students

underperforming relative to the potential shown by their early achievement or cognitive ability. Many factors are associated with children's educational development, including characteristics of the child, their background, maltreatment and child protection history, carer characteristics, services and supports. Given the broad range of factors affecting educational achievement, a multifaceted approach is required that targets prevention of the adverse effects of both maltreatment and social disadvantage, promotion of school readiness, and ongoing identification and support to overcome barriers to educational achievement.

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## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

The authors do not have permission to share data.

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## Appendix A. Supplementary material

Supplementary material to this article can be found online at <https://doi.org/10.1016/j.childyouth.2024.107728>.

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