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Technical report

Pathways of Care Longitudinal Study: Outcomes of Children and Young People in Out-of-Home Care

Wave 1 data response patterns: length of time in out-of-home care and non-participation in questions

Pathways of Care Longitudinal Study: Outcomes of Children and Young People in Out-of-Home Care in NSW

Technical Report No. 4

Wave 1 data response patterns: length of time in out-of-home care and non-participation in questions

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About the information in this report

All the information in this report is accurate as of May 2015. The analyses presented are based on a an almost final version of the Wave 1 unweighted data collected in face-to-face interviews with children, young people and caregivers; and FACS administrative data.

Pathways of Care Longitudinal Study Clearinghouse

All study publications including research reports, technical reports and briefs can be found on the study webpage www.community.nsw.gov.au/pathways

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Abbreviations and acronyms

Acronym	Meaning
BITSEA	Brief Infant Toddler Social and Emotional Assessment
CBCL	Child Behaviour Checklist
Child, Children	Child and young person; children and young people
CSBS	Communication and Symbolic Behaviour Scales
FACS	NSW Department of Family and Community Services
MCDI-III	MacArthur-Bates Communicative Developmental Inventories
MR	Matrix Reasoning Test from Wechsler Intelligence Scale for Children
NSW	New South Wales
OOHC	Out-of-home care
POCLS	Pathways of Care Longitudinal Study
PPVT-IV	Peabody Picture Vocabulary Test
WISC	Wechsler Intelligence Scale for Children

Preface

Pathways of Care Longitudinal Study (POCLS) is funded and managed by the New South Wales Department of Family and Community Services (FACS). It is the first large-scale prospective longitudinal study of children and young people in out-of-home care (OOHC) in Australia. Information on safety, permanency and wellbeing is being collected from various sources. The child developmental domains of interest are physical health, socio-emotional wellbeing and cognitive/learning ability.

The overall aim of this study is to collect detailed information about the life course development of children who enter OOHC for the first time and the factors that influence their development. The POCLS Objectives are to:

- describe the characteristics, child protection history, development and wellbeing of children and young people at the time they enter OOHC for the first time
- describe the services, interventions and pathways for children and young people in OOHC, post restoration, post adoption and on leaving care at 18 years
- describe children's and young people's experiences while growing up in OOHC, post restoration, post adoption and on leaving care at 18 years
- understand the factors that influence the outcomes for children and young people who grow up in OOHC, are restored home, are adopted or leave care at 18 years
- inform policy and practice to strengthen the OOHC service system in NSW to improve the outcomes for children and young people in OOHC.

The POCLS is the first study to link data on children's child protection backgrounds, OOHC placements, health, education and offending held by multiple government agencies; and match it to first hand accounts from children, caregivers, caseworkers and teachers. The POCLS database will allow researchers to track children's trajectories and experiences from birth.

The population cohort is a census of all children and young people who entered OOHC for the first time in NSW between May 2010 and October 2011 (18 months) (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 April 2013 (2,828) were eligible to participate in the study. For more information about the study please visit the study webpage www.community.nsw.gov.au/pathways.

Executive summary

This report sought to investigate two issues:

- Whether there were differences in the characteristics, wellbeing and family relationships of children participating in the Pathways of Care Longitudinal Study (POCLS) according to the length of time they had been in care. As the POCLS had a wide eligibility and recruitment lens, it was possible that bias may have been introduced by differences in the length of time between children's first entry into out-of-home care (OOHC) and the Wave 1 data collection, or the duration of the placement current at Wave 1.
- Whether children's non-participation in certain elements of the Wave 1 data collection may have introduced bias. Caregivers reported on all children's progress and wellbeing, while children aged three to 17 years were able to take part in direct assessments of functioning or in an interview (the minimum age varied across these components). Some children eligible for the direct assessments or interview did not participate. It was possible that there were systematic differences between those who took part and those who did not, which may affect the generalisability of the findings.

Length of time in care

Length of time since the child's 'first placement in out-of-home care' or the 'duration of Wave 1 placement' was calculated as the total number of months between entering the care arrangement and the Wave 1 interview. Categorical variables were developed for these two 'length of time' variables to cater for the possibility that only particular time spans were important (for example, only a short time span was influential). Three sub-groups were formed (short, medium and long time spans) for each 'length of time' variable. The groups contained similar percentages of children (as they were to be further sub-divided in analyses of outcomes and there were low incidences of some outcomes).

The groups were compared on child demographic characteristics (age, cultural background, gender and placement type); indicators of child wellbeing (physical health, emotional/social wellbeing, and language/cognitive development); and children's relationships with caregiving family members. Bivariate logistic regression analyses were undertaken to establish whether there were significant differences between the groups on these aspects. A series of multivariate logistic regressions subsequently examined whether significant group differences on child wellbeing indicators and relationships with caregiving family members remained when possible confounding factors were included to control for their effects (these were child age, gender, cultural background and placement type).

Major findings from the bivariate analyses were:

- Child age was significantly associated with both 'length of time in care' variables. Older children were more likely to have experienced a longer time period since entering OOHC or have been in the Wave 1 placement for longer than younger children (this finding may at least partially reflect the effects of the staggered start to fieldwork for children of differing ages).
- There were generally no differences between the short, medium and long time span groups on child gender, cultural background, placement type, physical health, emotional/social wellbeing, or language/cognitive development.

- A longer time in the Wave 1 placement was related to a higher frequency of very close relationships between children and various caregiver family members as reported by caregivers. Additionally, primary caregivers were more likely to feel they knew children 'very well' if children had been residing with the caregiving family for a longer period of time.

These results held when multivariate analyses of children's wellbeing and relationships with caregiving family members were undertaken in which the effects of other potentially influential variables were held constant.

The implications of these findings include:

- When investigating children's relationships with caregiving family members, it would seem desirable to control for the effects of the Wave 1 placement duration or the length of time since the child's first OOHC placement.
- The two 'length of time' variables were generally unrelated to children's wellbeing, and consequently there seems little need to control for 'length of time' effects when undertaking analyses examining wellbeing outcomes using Wave 1 data.
- When examining the effect of other influences on children's wellbeing that are sensitive to length of time in care (e.g. relationships with caregivers), inclusion of length of time in care should be given consideration.
- When investigating child age differences, controlling for 'length of time' in care would appear beneficial.

Non-participation in various components

A set of dichotomous variables was created to compare children who participated or did not participate in various components of Wave 1 data collection (the Peabody Picture Vocabulary Test, the Matrix Reasoning Test, an adaptation of the Kvebaek Family Sculpture Technique, or an interview). Non-participation could have occurred for a variety of reasons, including child refusal, the child being ill or not present at the time of the Wave 1 interview, caregiver refusal, or the child's non-English speaking background or disability preventing the undertaking of an assessment. Other reasons for non-participation included IT problems such as lack of internet coverage preventing the iPad being used, direct assessment materials not being available due to lost luggage, and a household running out of time to complete all aspects of the survey. Additionally, technical errors prevented the capture of data for some interview questions for some children aged 12 and over.

The sub-groups formed ('participated' and 'did not participate' in each particular component) were compared on the same aspects of child wellbeing and relationships with caregiving family members that were used to investigate 'length of time' effects. The findings indicated:

- Participation rates generally did not significantly differ according to child demographic characteristics (gender, cultural background, placement type), with the exception of child age.
- Children with health conditions or high levels of behaviour problems had higher non-participation rates on several components (Peabody Picture Vocabulary Test, the Matrix Reasoning Test and the interview).

- The participating and non-participating groups did not significantly differ on children's quality of relationships with caregiving family members. It should be noted that the number of cases in some cells was at times quite small, resulting in reduced power to detect effects.
- The participating and non-participating groups did not significantly differ on the length of time since children's first OOHC placement or the duration of their Wave 1 placement.

Overall, the findings of the participation/non-participation analyses suggest that when examining the sample's performance on some child-completed components (Peabody Picture Vocabulary Test, the Matrix Reasoning and the interview), some caution is needed, as missing data due to higher non-participation rates among children with health conditions or behaviour problems may have resulted in a slight underestimation of the rate of difficulties within the sample.

1 Overview of study design and issues addressed in this report

The Pathways of Care Longitudinal Study (POCLS) is a large-scale longitudinal study of children and young people aged 9 months to 17 years entering out-of-home care (OOHC) for the first time on Children's Court orders in New South Wales (NSW). The study is led and managed by the NSW Department of Family and Community Services (FACS), with assistance from Australian and international researchers at various universities and research organisations and the data collection being undertaken by I-view. The study aims to provide the knowledge needed to strengthen the OOHC service system in order to improve the outcomes for children and young people in OOHC.

Three waves of data collection are being conducted, with each wave to be completed over an approximately two-year period with an 18-month interval between waves. To be eligible for the study, the children and young people[1] entered OOHC for the first time on interim court orders within an 18-month period between May 2010 and October 2011, and received final orders by April 2013. The Wave 1 data collection was conducted over a 27-month period from May 2011 to August 2013. Wave 2 data collection commenced in March 2013 and concluded in March 2015 (24 months). Wave 3 data collection commenced in August 2014 and is scheduled for completion in June 2016 (22 months).

The Wave 1 data collection was staggered, with differing start dates for the recruitment and interviewing of caregivers and children of varying ages. For example, interviews for caregivers of 9–35 month olds commenced in May 2011, while interviews for caregivers of children aged 12–17 years did not start until March 2012. The staggered data collection resulted in some children being interviewed only three months after receipt of final orders, while others were interviewed more than three years after their receipt of final orders.

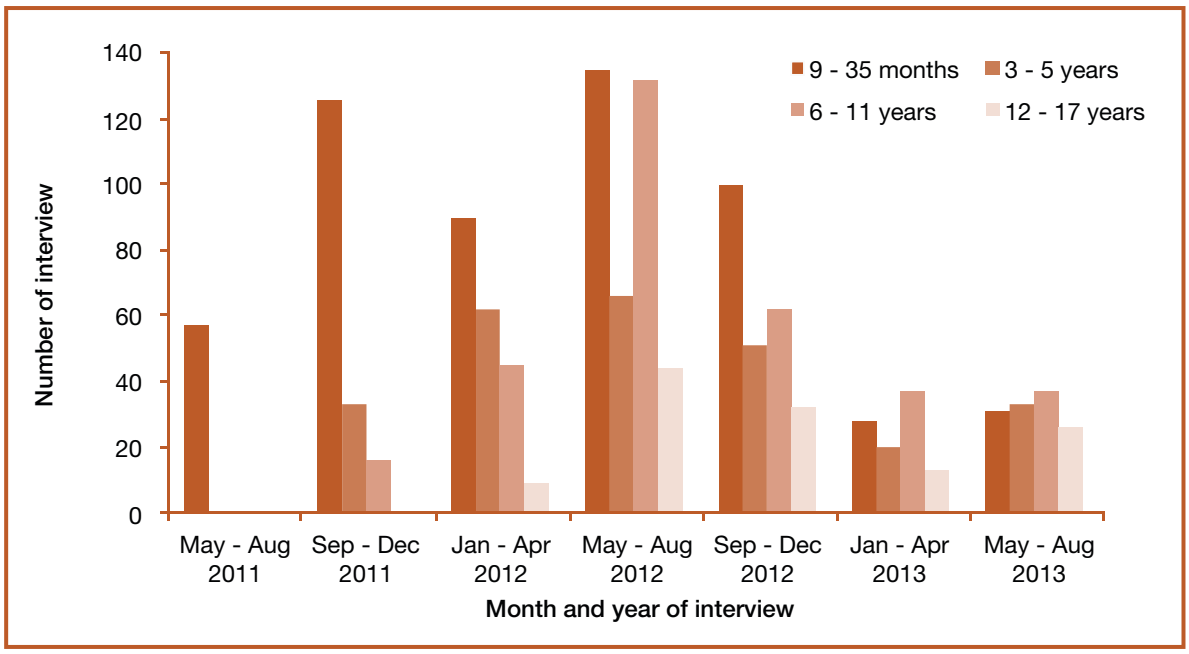

Figure 1: Spread of Wave 1 interviews by age of study child

1 For reader ease, children and young people are referred to as 'children' hereafter.

Figure 1 shows the numbers of children of varying ages for whom interviews were completed by the date of the Wave 1 data collection (i.e. their age at the time of the Wave 1 interview). While May to August 2012 was the peak period for interviews across all age groups, the figure clearly shows that more caregivers of 9–35 month and 3–5 year old children were interviewed prior to this time point than subsequently, while more caregivers and children in the 6–11 and 12–17 year age groups were interviewed after this time point than before it.

Given the two-year period of data collection for Wave 1 and the staggered start dates for different age groups, it is possible that a 'length of time in care' bias may have been introduced. It is possible that children who have been in OOHC for a longer period of time may be more settled and emotionally secure than those who have been in care for a short period. Therefore, there could be differences in children's emotional and behavioural wellbeing due to length of time in care, and the effects of length of time in care might need to be controlled when examining wellbeing outcomes. This report aims to investigate this issue by comparing the characteristics of children who differ in the time span between first entry into OOHC and the Wave 1 interview. The question examined is: Could differences in the length of time in OOHC prior to the Wave 1 interview have introduced systematic error or variation in child characteristics and outcomes?

The second issue addressed by this report is the effects of child participation or non-participation in differing components of the Wave 1 data collection and whether the patterns of non-participation observed are a potential source of error; that is, whether participation or non-participation in various modules is related to differences in caregiver-reported child characteristics and outcomes. Wave 1 included a caregiver and child interview as well as standardised assessments of children. Children could complete several activities such as the Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 2007), the Matrix Reasoning Test from the Wechsler Intelligence Test for Children (MR; Wechsler, 2003), an adaptation of the Kvebaek Family Sculpture Technique (referred to hereafter as the Felt Security Activity; Cromwell, Fournier & Kvebaek, 1980) and a computer-assisted self interview for 12–17 year olds or an interviewer-administered interview for children aged 7–11 years. If the child was eligible[2] to undertake the respective component, they were asked if they were willing to complete the activity. Some children did not participate in one or more of the activities due to a variety of reasons such as child refusal, the child being ill or not present at the time of the Wave 1 interview, caregiver refusal, or the child's non-English speaking background or disability preventing the completion of a valid assessment.

1.1 Rationale

Systematic error or bias is present in all research studies irrespective of the nature of research undertaken (Gerhard, 2008; Pannucci & Wilkins, 2010; Sica, 2006). Systematic error can result from faulty or inaccurate measurement (e.g. an incorrect setting on a measurement device); personal factors (e.g. participation or non-participation); or external effects (e.g. differing time spans). Although it is difficult to eliminate bias, it is possible to minimise it by understanding and controlling for its effects. This report examines whether bias may have been introduced by differences in the length of time between entry into care and the Wave 1 data collection or the duration of the child's placement at Wave 1; as well as by child non-participation in certain components of the Wave 1 data collection.

2 The eligible ages for the different child components were PPVT: 3 years and above; MR: 6 years and above; Felt Security Activity: 7 years and above; interview: 7 years and above.

It is important to understand and correct or minimise potential bias, as it may distort research outcomes. This report will provide a greater understanding of whether bias was introduced by these two issues and will be valuable in guiding decisions about whether particular variables should be statistically controlled in future analyses (for example, length of time in OOHC prior to the Wave 1 interview). Misinterpretation and misuse of data will likely be reduced.

The contents of the report are organised as follows: Section 2 describes the creation of length-of-time variables and the selection and treatment of key demographic and outcome variables. Simple, bivariate comparisons are also reported. Section 3 presents the results for the effects of differing lengths of time in care once potential confounding variables are included in the statistical models. Section 4 presents findings relating to the effects of participation/non-participation in various components. Section 5 discusses the implications of the findings for future research and some limitations of the analyses undertaken.

2 Differences in length of time in care

This section describes the approaches taken to investigate the effects of differences in length of time in care, looking first at how length of time is measured, the creation of variables used to evaluate length of time effects, and results of bivariate analyses examining whether length of time is related to child characteristics and relationships.

2.1 Measuring length of time in care

Time span can be measured either as a continuous variable or a discrete categorical variable depending on the research question addressed. As this report aimed to investigate whether there were differences between children interviewed closer to their entry into OOHC and those interviewed after a longer period of time, as well as to determine whether particular time differences may have been important (e.g. only a short time interval was influential), it was considered appropriate to measure time as a discrete categorical variable with three categories, as explained below.

'Length of time since the child's first OOHC placement' was calculated as the difference between the date a child first entered OOHC and the date of the Wave 1 interview. This was the first placement experienced by the child, and could have been a temporary or emergency care placement that preceded the granting of the first/final court orders. This variable reflects the length of children's exposure to the OOHC system.

Another aspect that may influence children's wellbeing at the time of the Wave 1 interview is the length of time they have been placed with the Wave 1 caregiving adult or family. Those who have been in the placement for a relatively short time may be more unsettled emotionally and be in the early stages of establishing close relationships with caregivers and other family members than those who have been in the placement for a longer period of time. It was thus considered important to also assess the effects of the duration of the Wave 1 placement in addition to the children's length of time in OOHC. 'Duration of the Wave 1 placement' was calculated as the number of months between entering the Wave 1 placement and the Wave 1 interview.

Descriptive statistics for both types of placements are presented in Table 1. The table shows that on average 17 months had elapsed between children's first OOHC placement and the Wave 1 interview, with the range varying from four to 39 months. In comparison, the average length of time children had spent in their Wave 1 placement was 13 months.

Table 1: Length of time in OOHC placement

Type of placement	Months				
	n	Mean	Standard deviation	Min	Max
Length of time since first OOHC placement	1,285	17.4	5.8	3.9	38.6
Duration of Wave 1 placement	1,278^	13.2	6.3	1.5	38.6

^ Seven cases did not have data on the commencement date of the Wave 1 placement and are therefore omitted from analyses using this variable.

While the length of the child's exposure to the OOHC system and the duration of the Wave 1 placement provide information about differing issues, the two variables are related. Therefore, the degree of overlap was checked. The correlation between the two length-of-time variables was 0.61, indicating that 37% of the variance was common across the two variables (thus, the majority of the variance in each variable was unique). This reinforces the value of including both 'length of time' variables.

Table 1 indicates that there was considerable diversity in the time interval since children's first OOHC placement, or placement with the Wave 1 caregiving adult or family. Categorical variables for the two 'length-of-time' variables were generated to help identify the influence of differing lengths of time since first entry into OOHC or commencement of the Wave 1 placement, and to cater for the possibility that only particular time spans were important.

The two 'length of time' continuous variables were split into three levels to create sub-groups of children who had experienced a short, medium or long time interval since entry into the particular type of placement ('first OOHC placement' or 'Wave 1 placement'). Cut-offs were developed following examination of the frequency distributions of the two continuous 'length of time' variables, with each category comprising approximately one third of the sample. This approach was taken to ensure that a sufficient number of cases were available for reliable statistical analyses, given that further sub-division of cases was necessary for cross-tabulations with other characteristics, some of which had low incidences. The cut-offs, and the number and percentage of cases in the three sub-groups are presented in Table 2.

Table 2: Cut-offs used to create sub-groups for the length of time variables; numbers and proportions in sub-groups

Sub-group	Length of time since first OOHC placement	n	%	Duration of Wave 1 placement	n	%
Short	Up to 14 months	424	33.0	Less than 10.2 months	426	33.3
Medium	14.1–18.9 months	432	33.6	10.2–15.7 months	425	33.3
Long	More than 18.9 months	429	33.4	More than 15.7 months	429	33.4

2.2 Analysis methods

The analyses reported in this section examine whether sub-groups formed on the basis of the length of time since first placement in OOHC, or duration of the Wave 1 placement, differed significantly on child demographic characteristics, indices of child wellbeing, and relationships with caregiving family members. It is recognised that other factors might contribute to any differences found, and this is taken up in Section 3, in which possible confounding factors are included in analyses to control for their effects. For the bivariate analyses reported in this section, tests of significance using Pearson Chi Square (c2) analyses were used. If a significant Pearson c2 result was found, inspection of adjusted residuals was undertaken to identify the cells in which trends were significantly different to those expected by chance. The Pearson c2 results are shown in the report, while significant adjusted residual results are included in Appendix 1.

2.3 Child demographic characteristics

The demographic variables selected to compare the 'length of time' sub-groups were: child age (with categories of 9–35 months, 3–5 years, 6–11 years and 12–17 years); gender (male and female); cultural identity/background (with categories of Aboriginal, culturally diverse, and other Australian children); and placement type (foster and relative/kinship3). The profiles of the sub-groups on these characteristics are presented in Table 3.

Looking first at child age, Pearson c2 statistical tests indicated that the age distributions of the 'length of time' sub-groups were significantly different from those expected by chance (for both length of time since first OOHC placement and duration of Wave 1 placement). Age differences were expected because of the staggered start to the Wave 1 fieldwork for different age groups. Inspection of adjusted residuals indicated that a significantly higher percentage of children aged 9–35 months and significantly fewer children in older age groups had experienced a short period of time since their first OOHC placement than would be expected by chance (Appendix 1.1). Additionally, significantly fewer 9–35 month old children had experienced a medium or long time interval since their first placement than would be expected by chance, while significantly more 6–11 and 12–17 year olds had done so. Similar results were evident when adjusted residuals for the duration of the Wave 1 placement were examined.

Pearson c2 statistical tests indicated that there were no significant gender differences when comparing 'length of time' sub-groups. No significant differences were found in placement type for children's length of time since first OOHC placement, but there were significant differences in duration of the Wave 1 placement. Inspection of adjusted residuals showed that a significantly higher proportion of children in foster care than those in relative/kinship care had been in their Wave 1 placement for a short period of time than would be expected by chance. Additionally, significantly fewer children in foster care than in relative/kinship care had been in the Wave 1 placement for a long period of time than expected by chance (Appendix 1.1). No significant differences were evident for children's cultural identity/background when comparing the 'length of time' sub-groups.

3 Residential care was excluded due to very low cell counts in the subsequent analyses.

Table 3: Children's characteristics by length of time sub-groups

	Length of time since first OOHC placement (%)				Duration of Wave 1 placement^ (%)			
	Short	Medium	Long	Total	Short	Medium	Long	Total
Age[a]								
9–35 months	65.3	39.6	27.7	44.1	55.4	45.4	32.1	44.3
3–5 years	16.0	22.7	23.1	20.6	17.1	22.1	22.5	20.6
6–11 years	15.3	30.3	31.0	25.6	20.4	25.7	30.9	25.7
12–17 years	3.3	7.4	18.2	9.7	7.0	6.8	14.5	9.5
Gender[b]								
Male	48.4	51.4	49.0	49.6	51.9	48.2	48.2	49.5
Female	51.7	48.6	51.1	50.4	48.1	51.8	51.8	50.6
Placement type[c]								
Foster care	53.2	49.9	54.6	52.5	61.1	50.1	45.7	2.3
Relative/Kinship care	46.8	50.1	45.5	47.5	39.0	49.9	54.3	47.7
Cultural identity+[d]								
Aboriginal	37.0	38.4	39.8	38.4	37.4	37.4	40.2	38.3
Culturally diverse	8.7	8.5	10.3	9.2	10.8	8.1	8.4	9.1
Other Australian children	54.3	53.0	49.9	52.4	51.8	54.6	51.4	52.6

^ Seven cases did not have data for the commencement date of the Wave 1 placement and were excluded from analyses using this information.

\+ Cultural identity was not known for 64 children/young people who were thus excluded from analyses in which the cultural identity variable was used.

a Pearson c2 statistic for child age and the length of time since first OOHC placement = 156.24, $p < .000$; for child age and duration of Wave 1 placement = 56.49, $p < .000$.

b Pearson c2 statistic for child gender and length of time since first OOHC placement = 0.89 (ns); for child gender and duration of Wave 1 placement = 1.50 (ns).

c Pearson c2 statistic for placement type and length of time since first OOHC placement = 1.94 (ns); placement type and duration of Wave 1 placement = 23.34, $p < 0.00$.

d Pearson c2 statistic for child cultural identity and length of time since first OOHC placement = 2.12 (ns); for child cultural identity and duration of Wave 1 placement = 3.04 (ns).

2.4 Child wellbeing

The POCLS has a number of measures of child functioning available in the three major areas of physical health, emotional/social wellbeing, and language/cognitive development that could be used for this investigation. It was important to select indicators that were measured across the age span of children in the study where possible (covering 9 months to 17 years). Where different measures of the same domain were used for children of differing ages (e.g. differing behaviour problem scales), it was necessary to first create comparable outcome measures across the various instruments.

The approach taken was to use the normative cut-offs provided by the differing instruments that assessed a single domain to differentiate children who were experiencing significant problems from those who were not (with 1 = the child was experiencing significant problems, and 0 = the child was not experiencing significant problems). These dichotomous variables

were only created if the differing scales measured the same developmental domain, and similar normative cut-offs were available so that cross-instrument differences could be minimised. The binary variables created were subsequently used in analyses investigating whether the length-of-time sub-groups differed on the frequency of problems.

The binary variables have the advantage of spanning all ages where possible and maximising the number of observations available for statistical analysis. The variables and information used to generate them are discussed in detail below. Table 4 presents the proportion of children exhibiting problems in the separate domains, cross-tabulated against the differing length-of-time sub-groups, with results for tests of significant differences shown beneath the table and significant adjusted residuals shown in Appendix 1.1 and 1.2.

2.4.1 Health conditions

Caregivers were asked whether the child in their care had a health condition from the list provided (e.g. asthma; problems with eyes, ears, teeth; allergies; respiratory diseases; heart conditions) that had lasted for six months or more and had been diagnosed by a health professional. From this information, a dichotomous variable was formed to denote whether a child had a health problem, with 1 = one or more long-term health conditions were present and 0 = no long-term health conditions were present.

Table 4 shows that the proportions of children in the 'length of time since first OOHC placement' sub-groups who had a long-term health condition differed significantly from those expected by chance. The adjusted residuals (Appendix 1) indicated that a significantly higher percentage of children in the long length-of-time sub-group were reported to have a health condition, while a lower percentage of those in the short length - of - time sub-group had a health condition than would be expected by chance (i.e. 50% in comparison to 38%). Additionally, a significantly smaller percentage of the short length-of-time sub-group had a health condition than expected by chance. These findings may, to a certain extent, reflect the longer time period available for the emergence/detection of health problems following children's first placement in care. They may also reflect the effects of child age, as a higher percentage of 6–17 year olds participating in the POCLS were reported to have a health condition than 9 month to 5 year olds (Smart, 2015). Section 3.1.1 of this report examines in greater depth whether length of time differences remain once the effects of child age and other child demographic variables are controlled for. There were no significant differences between the 'duration of the Wave 1 placement' sub-groups in the incidence of health conditions.

2.4.2 Behaviour problems

The presence of behaviour problems among the POCLS children was assessed using caregiver reports on two widely used and respected scales. The Brief Infant Toddler Social and Emotional Assessment scale (BITSEA; Briggs-Gowan & Carter, 2006) was used with caregivers of 12–35 month old children. The BITSEA includes 32 items measuring internalising, externalising, dysregulation, and other behaviour problems (plus 10 additional items measuring child competencies that are not further discussed here). For children aged 3 to 17 years, caregiver reports using the Child Behaviour Checklist (CBCL; Achenbach & Rescorla, 2000, 2001) were obtained. The CBCL contains 100 and 120 items measuring a range of common and rare behaviour problems among children aged 3–5 and 6–17 years respectively. The BITSEA and CBCL both provide normative cut-offs by which to identify

children experiencing significant levels of behaviour problems. Using the BITSEA and CBCL normative cut-offs for total behaviour problems, a dichotomous variable was generated for 1–17 year olds, with 1 = the child was exhibiting high levels of behaviour problems, and 0 = the child was not exhibiting high levels of behaviour problems.

Table 4 shows the percentage of children in each length-of-time sub-group exhibiting high levels of behaviour problems (21% to 28%) and indicates that the proportions found did not differ significantly from chance.

2.4.3 Language problems

Different instruments are used in the POCLS to measure the language ability and skills of differing age groups. As language is a rapidly developing capacity, a single scale would be unable to accurately measure the early emergence and later consolidation of language skills. The caregiver-completed Communication and Symbolic Behaviour Scales (CSBS; Wetherby & Prizant, 2003) were used for 9–24 month old children; the caregiver-completed MacArthur Bates Communicative Development Inventories (MCDI-III; Fenson, Marchman, Thal, Dale, Bates & Reznick, 2007; Fenson, Pethick, Renda, Cox, Dale & Reznick, 2000) were used for 25–35 month old children, and the interviewer-administered Peabody Picture Vocabulary Test IV (PPVT; Dunn & Dunn, 2007) was used to assess receptive language skills among 3 to 17 year olds.

Cut-offs are available for all three scales to identify children with language problems. These differed slightly across scales. For the CSBS, a score in the lowest 10% of the normative population was considered indicative of language problems, while the cut-off for MCDI was a score in the lowest 15% of the normative population. For the PPVT, a standard score of 85 or below was used, which is one standard deviation below the mean and equivalent to being in the lowest 15% of the normative population. As all of the three instruments measured vocabulary and language skills, it was considered appropriate to create one across-age dichotomous variable with 1 = language problems were present (i.e. the child's score was lower than the cut-off) and 0 = language problems were not present.

Table 4 indicates that the percentage of children in the differing length-of-time sub-groups who were experiencing language problems did not differ significantly from the proportions expected by chance, ranging from 21% to 28% across the sub-groups.

2.4.4 Cognitive problems

Cognitive ability was measured using the interviewer-administered Matrix Reasoning (MR) sub-test from the Wechsler Intelligence Scale for Children (WISC; Wechsler, 2003). The WISC can only be used with children aged 6–16 years; hence POCLS children aged below 6 years or aged 17 years of age were excluded from analyses using this variable, resulting in a smaller sample size. The MR yields a standard score with a possible range of 1–19. The normative mean is 10, with a standard deviation of 3. A score below 7 was used to categorise children as having cognitive problems (i.e. their score was in the lowest 15% of the normative population). Using this criterion, a dichotomous variable was created with 1 = cognitive problems were present and 0 = cognitive problems were not present.

Table 4 indicates that the percentage of children in the differing length-of-time sub-groups who were experiencing cognitive problems did not differ significantly from the proportions expected by chance, ranging from 25% to 35% across the sub-groups.

Table 4: Proportions of children exhibiting problems by length-of-time sub-groups

Problems	Length of time since first placement %					Duration of Wave 1 placement %				
	n	Short	Medium	Long	Total	n	Short	Medium	Long	Total
Health[a]	1,285	38.0	48.8	49.7	45.5	1,278	46.0	42.8	47.5	45.5
Behaviour[b]	1,190	21.0	26.0	26.8	24.9	1,183	28.3	22.8	23.6	24.8
Language[c]	1,180	22.1	23.5	23.5	25.4	1,174	25.8	20.6	23.9	23.4
Cognitive[d]	398	33.3	24.7	29.3	28.4	396	34.7	24.0	28.2	28.5

a Pearson c2 statistics for the presence of a health condition and the length of time since first OOHC placement =14.62, (p =.001); for the presence of a health condition and duration of Wave 1 placement = 2.00 (ns).

b Pearson c2 statistics for the presence of behaviour problems and the length of time since first OOHC placement = 3.86 (ns); for the presence of behaviour problems and duration of Wave 1 placement = 3.60 (ns).

c Pearson c2 statistics for the presence of language problems and the length of time since first OOHC placement= 1.17 (ns); for the presence of language problems and duration of Wave 1 placement = 3.03 (ns).

d Pearson c2 statistics for the presence of cognitive problems and the length of time since first OOHC placement = 1.95, (ns); for the presence of cognitive problems and duration of Wave 1 placement = 3.12 (ns).

2.5 Caregiver reports of relationships with caregiving family members

This section looks at whether children's relationships with caregiving family members differed according to the length of the time since their first placement in OOHC or the duration of their Wave 1 placement. The POCLS is a large dataset, with several measures of caregiver-child relationships and interactions available for analysis and possible inclusion in this report. Selection of measures was guided by the conceptual match between variables and the domain of interest for this report, which was children's relationships with caregiving family members; whether measures spanned all age groups; and the viability of establishing meaningful, interpretable distinctions between sub-groups when creating cut-offs, as was possible with the other outcomes measured (e.g. high levels of behaviour problems vs. not; language problems vs. not; presence of a health condition vs. not).

Primary caregivers' responses to the following three questions were used in this report:

- 'How would you describe your relationship with the study child?'
- 'How would you describe the study child's relationship with [other adult caregiver's name]?' (if appropriate)
- 'How would you describe the study child's relationship with other children and young people living here?' (if appropriate and excluding siblings)

Responses of 'very close', 'quite close' or 'not very close' were available. In addition, primary caregivers were asked how well they felt they knew the child in their care (this information was not available for secondary caregivers), with responses of 'very well', 'fairly well', 'not very well' and 'not at all well' available.

While most primary caregivers were female and secondary caregivers were male, this was not always the case. Therefore, the first step taken was to recode the data so that children's relationships with female adult caregivers were grouped together, as was the data on

relationships with male adult caregivers.[4] The second step was to examine frequencies for the relevant variables to check whether cell sizes would be sufficient for subsequent analyses. These revealed that the data was skewed such that there were few instances of 'not very close' relationships (1.5% of child-female adult caregiver relationships, 2.2% of child-male adult caregiver relationships, and 4.7% of child-other children relationships). Similarly, only 0.9% of primary caregivers reported knowing the child 'not very' or 'not at all' well.

Thus, dichotomous variables were created in which 1 = a very close relationship and 0 = a less close relationship, with the 'quite close' and 'not very close' categories combined. Similarly, a binary variable was created for how well primary caregivers knew the child in their care, with 1 = the caregiver knew the child very well, and 0 = the caregiver knew the child less well.

The proportion of children reported to have very close relationships, or whose caregivers felt they knew the child very well, in the differing length-of-time sub-groups is presented in Table 5 with results for Pearson c2 statistical tests shown beneath the Table and significant adjusted residual findings in Appendix 1.2.

Pearson c2 tests indicated that the proportions of children reported to have very close relationships with female caregivers differed significantly from those expected by chance for both 'length of time' variables (Table 5). The adjusted residual findings showed that children who had been in their Wave 1 placement for a short period of time were significantly less likely to have a very close relationship with their female caregiver than would be expected by chance, as might be expected (Appendix 1.2). However, a differing pattern of results was found for the length of time since first OOHC placement. Here, a significantly higher proportion of children with a short time span since their first OOHC placement was reported to have a very close relationship with female caregivers, while significantly fewer with a long time span had very close relationships than would be expected by chance (Appendix 1.1). It is possible that these findings reflect positive outcomes of children being moved from a vulnerable environment to a safe, secure one; or that a longer exposure to the OOHC system may have increased children's wariness in forming close relationships. However, these are bivariate associations, and the influence of other potentially influential variables (e.g. child age, placement type) has not yet been taken into account.

With regard to children's relationships with male caregivers, no significant differences on the 'length of time since first OOHC placement' were found. As might be expected, children who had been in the Wave 1 placement for a long time span were significantly more likely, while those who had been there for a short period were significantly less likely, to have a very close relationship with their male caregiver (see Appendix 1.2).

Similar to findings for relationships with female caregivers, the Pearson c2 results in Table 5 and the adjusted residual findings in Appendix 1.1 showed children with a short time interval since their first OOHC placement tended to more frequently have very close relationships with other children in the caregiving household than those for whom the time interval had been longer. There were no significant differences found when comparing the duration of the Wave 1 placement sub-groups' results for relationships with other children and young people.

Next, looking at how well primary caregivers felt they knew the child (Table 5), caregivers of the sub-group with a short time span since their first OOHC placement were significantly more likely to feel they knew the child very well than caregivers of children with a long time

4 Where the genders of caregivers a and b were the same (n = 23), only the information for caregiver a is included. This was to avoid multiple caregiver data for these cases, whereas other cases had data for a single caregiver only.

interval since their first OOHC placement, as indicated by the adjusted residual results (Appendix 1.1). On the other hand and as might be expected, if children had been in the Wave 1 placement for a short period, caregivers were significantly less likely to feel they knew the child very well (Appendix 1.2). Section 3.1.2 will examine whether these length of time differences remain once the effects of other potentially influential variables are controlled.

Table 5: Proportions of children with very close relationships or whose primary caregivers knew them very well by length-of-time sub-groups

	Length of time since first OOHC placement %				
	n	Short	Medium	Long	Total
Female caregiver[a]	1,241	82.4	79.8	75.1	79.1
Male caregiver^ [b]	807	74.2	74.9	72.0	73.7
Other child/young person[c]	1,102	77.3	73.3	66.9	72.4
Knew the child very well[d]	1,285	87.5	85.7	80.2	84.4
	Duration of Wave 1 placement %				
	n	**Short**	**Medium**	**Long**	**Total**
Female caregiver[a]	1,236	74.0	83.4	81.7	89.7
Male caregiver^ [b]	802	66.9	76.7	79.0	73.8
Other child/young person[c]	1,095	68.1	74.7	74.6	72.5
Knew the child very well[d]	1,278	80.3	86.4	87.4	84.7

^ The n is lower because there were fewer male adult caregivers.

a Pearson c2 statistics for the closeness of the relationship with the female caregiver and the length of time since first OOHC placement = 6.64, ($p < .036$); for the closeness of the relationship with the female caregiver and duration of Wave 1 placement = 11.04 ($p < .004$).

b Pearson c2 statistics for the closeness of the relationship with the male caregiver and the length of time since first OOHC placement = 0.63 (ns); for the closeness of the relationship with the male caregiver and duration of Wave 1 placement = 11.77 ($p < .003$).

c Pearson c2 statistics for the closeness of the relationship with other children/young people and the length of time since first OOHC placement = 10.11 ($p < .001$); for the closeness of the relationship with other children/young people and duration of Wave 1 placement = 5.16 (ns; $p < .076$).

d Pearson c2 statistics for how well the primary caregiver knew the child and the length of time since first OOHC placement = 9.41 ($p < .001$); for how well the primary caregiver knew the child and length and duration of Wave 1 placement = 9.61($p < .008$).

3 Logistic regression analyses investigating length of time in care effects after controlling for other influential variables

This section examines the extent to which length of time in care contributed to children's outcomes and interpersonal relationships after taking into account the effects of other potentially influential variables. Each outcome is examined separately using logistic regression, a common technique used to investigate the association between two or more explanatory variables (x) and a single binary dependent variable (y). The outcome variable (y) takes one of two values:

$$y = \begin{cases} 1 \; with \; probability \; (p) \\ 0 \; with \; probability \; (1-p) \end{cases}$$

Our interest is in modelling p as a function of one or more explanatory variables (x). This can be expressed as the probability that y takes the value 1 given x as:

$$\Pr(y = 1|x) = F(X'\beta)$$

where X is a vector of explanatory variables and β is a vector of unknown parameters. The error (variance) component in the model is logistically distributed, hence the name logistic regression or logit.

A series of logistic regression analyses was undertaken to examine associations between the two length-of-time variables (time interval between the first-ever placement and the Wave 1 interview; time in the placement current at Wave 1) and the eight dependent variables (child outcomes and interpersonal relationships).

3.1 Marginal effects

In linear regression models, the interpretation of regression coefficients is straightforward, as they measure the change in y associated with a one-unit change in the respective explanatory variable (xi). This is the same as a marginal effect, which measures the expected change in the dependent or outcome variable as a function of a change in one explanatory variable while keeping all other covariates constant. For non-linear regression models such as logistic regression, the interpretation of the coefficients is not as straightforward as it is in linear models.

The marginal effect of one particular explanatory variable xi in such models is the partial derivative of the expected change in y with respect to xi, and measures the expected change in the dependent variable as a function of the change in xi with all other explanatory variables held constant. Interpretation of marginal effects in a logistic regression model often provides more information than inspection of coefficients. Marginal effects can provide a useful approximation of the amount of change in y that will be produced by a one-unit change in x i (or in the case of logistic regression, the change in the probability that the dependent variable is equal to one) and can provide a more meaningful interpretation of the effect of the explanatory variables on the outcome variable (Mood, 2013).

Thus, marginal effects for the two length-of-time variables (length of time since first OOHC placement, and duration of the Wave 1 placement) are the major findings reported here.[5]

This section reports findings for two sets of logistic regressions. The first set examines the contribution of the length-of-time variables to child wellbeing outcomes and children's relationships with caregiving family members, while controlling for the effects of child age, child gender, child cultural identity, and placement type. Due to a small amount of missing data on some control variables, the number of cases available for analysis is smaller than for the comparable analyses reported in Section 2. Separate analyses were undertaken for each length-of-time outcome variable. As some variables had a smaller number of cases available due to the sub-set of children available for inclusion (e.g. the Matrix Reasoning sub-test was used with 6–16 year olds), the sample sizes available for analysis vary across outcomes.

The second set of analyses used the continuous length-of-time variables to determine whether sensitivity had been reduced by the categorical approach used for the length-of-time variables.

Frequencies for the variables included in the analyses are shown in Table 6.

5 Odds ratios could have been used instead of marginal effects. Odds ratios provide useful information but they do not shed light on the magnitude of difference between groups. For example, an odds ratio of 2 could mean that the odds for outcome A were 2 when the odds for outcome B were 1, or for outcome A the odds were 60 when they were 30 for outcome B. Odds ratios smaller than 1 are also not easily interpretable. Onukwugha, Bergtold, and Jain (2015) compare marginal effects and odds ratios thus: "ratios quantify the relative differences between defined groups while the ME quantifies the incremental difference in outcomes between defined groups. The relative difference adjusts for baseline differences between patient groups. At the same time, the relative difference is unit-less and does not convey a sense of magnitude. The ME is an appropriate measure of association". Marginal effects provide information such as the likelihood of a particular outcome was 8% greater in group A than in group B. Hence, while recognising that odds ratios could have been generated for this report, it was decided to use marginal effects, especially given the differing base frequencies for the various outcomes.

Table 6: Summary of variables included in the logistic regression analyses

	n in category	% of POCLS cohort
Independent variables		
Length of time since first placement (n = 1,285)		
Up to 14 months	424	33.0
14.1–18.9 months	432	33.6
More than 18.9 months	429	33.4
Duration of Wave 1 placement (n = 1,278)		
Less than 10.2 months	426	33.3
10.2–15.7 months	425	33.3
More than 15.7 months	427	33.4
Control variables		
Child age (n = 1,285)		
9–35 months	567	44.1
3–5 years	265	20.6
6–11 years	329	25.6
12–17 years	124	9.7
Child gender (n = 1,285)		
Male	637	49.6
Female	648	50.4
Child cultural background^ (n = 1,221)		
Aboriginal	469	38.4
Culturally diverse	112	9.2
Other Australian	640	52.4
Placement type* (n = 1,254)		
Foster	656	52.3
Relative/Kinship	598	47.7
Dependent (outcome) variables		
Child wellbeing	**% with problem**	
Health condition (n = 1,285)	581	45.5
Behaviour problems (n = 1,190)	296	24.9
Language problems (n = 1,180)	279	23.6
Cognitive problems (n = 398)	113	28.4
Relationships with caregiving family members	**% with very good relationship, or knew the child very well**	
Relationship with female caregivers (n = 1,241)	982	79.1
Relationship with male caregivers (n = 799)	595	73.7
Relationship with other children in household (n = 1,102)	798	72.4
How well primary caregivers know the child (n = 1,285)	1,085	84.4

^ Cultural identity was missing for 64 children who were therefore excluded from the analyses.

* Children in other types of care (e.g. residential care) were not included due to the low numbers.

3.1.1 Child wellbeing

Marginal effects for child wellbeing outcomes are shown in Table 7, while details of model estimates are provided in Appendices 2 and 3.

Table 7 shows the marginal effects for the two 'length-of-time' variables in relation to the child wellbeing outcomes when the effects of other variables that might contribute to the findings were held constant. The only significant difference found was for the 'duration of the Wave 1 placement' sub-groups in regard to behaviour problems, with those in the long-term sub-group being 6.7 percentage points less likely to be reported as having behaviour problems than the short-term sub-group. Possible explanations for this finding include:

- the POCLS children had become more settled in their Wave 1 placement after living in the household for a reasonable length of time and may have been less likely to misbehave or show distress;
- children may have adjusted to being in care, and emotions and behaviours resulting from removal from birth families may have diminished;
- caregivers have had longer to help the child overcome emotional or behavioural issues; and/or
- a larger period of time may have meant services and support were provided.

Table 7: Marginal effects and (standard errors) for child wellbeing outcomes, controlling for child age, gender, cultural background, and placement type (significant results are bolded)

	Child wellbeing outcomes			
	Health condition	**Behaviour problems**	**Language problems**	**Cognitive problems**
Length of time since first OOHC placement				
Short	*Omitted as is the reference category*			
Medium	0.07 *(0.04)*	0.02 *(0.03)*	-0.00 *(0.04)*	-0.07 *(0.07)*
Long	0.05 *(0.04)*	-0.01 *(0.03)*	-0.01 *(0.04)*	-0.05 *(0.06)*
n	1,197	1,107	1,101	365
Duration of Wave 1 placement				
Short	*Omitted as is the reference category*			
Medium	-0.05 *(0.04)*	-0.05 *(0.03)*	-0.05 *(0.04)*	-0.04 *(0.06)*
Long	-0.01 *(0.04)*	**-0.07*** ***(0.03)***	-0.05 *(0.03)*	0.00 *(0.06)*
n	1,192	1,102	1,096	363

* $p < .05$

While not the focus of this report, Appendices 2 and 3 indicate that the variables included as controls (ie child age, gender, cultural background, placement type) were often significantly associated with child wellbeing outcomes.

3.1.2 Children's relationships with caregiving family members

3.1.2.1 Length of time since first OOHC placement and children's caregiving family relationships

Table 8 shows that length of time since the first OOHC placement was significantly related to child-adult caregiver relationships as reported by caregivers (Appendix 4). There were also trends for differences in relationships with other children living in the household ($p < .052$ between the short and long length-of-time sub-groups and $p < .092$ between the short and medium length-of-time sub-groups), but no significant differences in whether caregivers felt they knew the child very well. These differences were evident after the effects of other variables that might contribute to the findings were held constant. Findings for specific members of the caregiving family are detailed below.

- The likelihood of children being reported as having a 'very close' relationship with their female caregiver was 9.8 percentage points higher for the medium and long-term sub-groups compared to the short-term sub-group. These differences were significant at the $p < .05$ level.
- The likelihood of children being reported to have a 'very close' relationship with their male caregiver was 12.6 percentage points higher for the medium-term sub-group and 15.7 percentage points higher for the long-term sub-group compared to the short-term sub-group ($p < .05$ and $p < .01$ respectively).
- There was a similar trend for differences in the likelihood of children being reported as having a 'very close' relationship with other children in the household ($p < .10$).

3.1.2.2 Duration of Wave 1 placement and children's caregiving family relationships

There were significant differences between the 'duration of the Wave 1 placement' child sub-groups regarding their relationships with all types of caregiving family members, and the primary caregiver's likelihood of feeling very close to the child, after inclusion of other potentially influential variables to control for their effects (Appendix 5). Analysis of marginal effects, shown in Table 8, revealed:

- The likelihood of children being reported as having a 'very close' relationship with their female caregiver was 14.5 percentage points higher for the medium-term sub-group and 18.6 percentage points higher for the long-term sub-group compared to the short-term sub-group. These differences were significant at the $p < .001$ level.
- The likelihood of children being reported as having a 'very close' relationship with their male caregiver was 17.7 percentage points higher in the medium-term sub-group and 24.2 percentage points higher in the long-term sub-group compared to the short-term sub-group. These differences were significant at the $p < .001$ level.
- The likelihood of children being reported as having a 'very close' relationship with other children in the household was 14.1 percentage points higher in the medium-term sub-group and 20.3 percentage points in the long-term sub-group compared to the short-term sub-group. These differences were significant at the $p < .001$ level.

- The likelihood of the primary caregiver knowing the child in their care 'very well' was 8.8 percentage points higher in the medium-term sub-group and 12.3 percentage points in the long-term sub-group compared to the short-term sub-group. These differences were significant at the $p < .007$ and $p < .001$ levels respectively.

As was found in analyses examining relationships between the 'length-of-time' variables and child wellbeing outcomes, several of the additional variables included in the analyses were significantly related to interpersonal relationship outcomes, particularly child age and placement type. These are not discussed further here, as they are not the focus of this report, which examines whether the two length-of-time variables remain significantly associated with outcomes once the effects of other influential variables are taken into account.

Table 8: Marginal effects and (standard errors) for children's caregiving family relationships, controlling for child age, gender, cultural background, and placement type (significant results are bolded)

	Primary caregiver reports of children's relationships			
	Very close relationship with female caregiver	Very close relationship with male caregiver	Very close relationship with children/young people living in household	How well primary caregiver knew the child
Length of time since first OOHC placement				
Short	*Omitted as is the reference category*			
Medium	**0.10***	**0.13***	0.07	0.05
	(0.04)	***(0.05)***	*(0.04)*	*(0.03)*
Long	**0.10***	**0.16****	**0.08^**	0.03
	(0.04)	***(0.05)***	***(0.04)***	*(0.03)*
n	1,180	769	1,027	1,197
Duration of the Wave 1 placement				
Short	*Omitted as is the reference category*			
Medium	**0.14*****	**0.18*****	**0.14*****	**0.09****
	(0.04)	***(0.05)***	***(0.0)***	***(0.03)***
Long	**0.19*****	**0.24*****	**0.20*****	**0.12*****
	(0.04)	***(0.05)***	***(0.04)***	***(0.03)***
n	1,175	764	1,022	1,192

* $p < .05$ ** $p < .01$ *** $p < .001$ ^ $p < .056$

In summary, greater length of time since the first placement in OOHC and a longer duration of the Wave 1 placement were both consistently associated with more frequent very close relationships between children and caregiver family members as reported by caregivers. Additionally, primary caregivers were more likely to feel they knew children 'very well' if children had been residing with the caregiving family for a longer period of time.

3.2 Sensitivity tests

To check the sensitivity of the multivariate models and their estimates of marginal effects, an additional set of analyses was undertaken in which the two continuous length-of-time variables were used in logistic regression analyses instead of the categorical length-of-time variables, with the potentially influential variables previously used included to control for their effects.

The results revealed a similar pattern of results to those found for the first set of analyses, with the exception that the association between 'length of time since first OOHC placement' and relationships with other children and young people living in the home was now significant ($p < .013$) (the association using the categorical variable approached but did not reach significance, see Appendix 4).

The marginal effects for the sensitivity tests are presented in Table 9, with little change evident from the results presented in Tables 7 and 8. Overall, the sensitivity tests indicate that the values estimated by the models were stable and suggest that the creation of categories to investigate the impact of length of time did not greatly affect sensitivity.

Table 9: Marginal effects and (standard errors) using continuous length of time variables, controlling for child age, gender, cultural background, and placement type (significant results are bolded)

Outcome	Length of time since first OOHC placement	Duration of Wave 1 placement
Health condition	0.001 *(0.003)*	-0.002 *(0.002)*
Behaviour problems	-0.002 *(0.003)*	**-0.004*** ***(0.002)***
Language problems	-0.001 *(0.003)*	-0.002 *(0.002)*
Cognitive problems	0.001 *(0.004)*	0.003 *(0.004)*
Relationship with female caregiver	**0.007**** ***(0.003)***	**0.012***** ***(0.002)***
Relationship with male caregiver	**0.010**** ***(0.004)***	**0.017***** ***(0.003)***
Relationship with other children/young people in household	**0.008*** ***(0.003)***	**0.012***** ***(0.003)***
How well caregiver knows the child	0.002 *(.0.002)*	**0.008***** ***(0.002)***

*p < .05 ** p < .01 *** p < .001

4 Child participation/non-participation in differing components of the Wave 1 data collection

Next, the effect of child non-participation is investigated by examining whether there were significant differences in the demographic characteristics and caregiver-reported outcomes of children who participated or did not participate in the components of Wave 1 for which they were eligible. These were: the Peabody Picture Vocabulary Test (PPVT), Matrix Reasoning (MR) Test from the Wechsler Intelligence Scale for Children (WISC), the Felt Security Activity, and a face-to-face or audio-computer-assisted-self interview. Non-participation could have occurred for a variety of reasons, including child refusal, the child being ill or not present at the time of the Wave 1 interview, caregiver refusal, the child's non-English speaking background or a disability preventing the completion of an assessment.

Each measure was selected to assess differing aspects of children's functioning. The PPVT was used to assess language capacities in children aged 3–17 years, while the MR was used to assess general non-verbal intelligence or cognitive ability among children aged 6–16 years. The interview was used to assess child experiences in the caregiving home, at school, with peers, as well as their social emotional wellbeing and services/supports received. Questions differed across the two age bands (7–11 and 12–17 years) to ensure that they were conceptually appropriate for the particular age group. The Felt Security Activity (adapted from the Kvebaek Family Sculpture Technique) was used to assess the child's perceptions of their closeness to caregiving family members as well as other individuals who were special or important to them (used with children aged 7–17 years).

Table 10 shows the percentage of children who participated or did not participate in the various components, cross-classified by various child characteristics– age, gender, placement type and cultural identity. Pearson c2 tests indicated that there were generally no significant differences in child gender, and cultural identity. The frequency of participation in the MR differed significantly from chance across placement types, with adjusted residuals suggesting that those in residential care were significantly less likely to participate (details of adjusted residual results are shown in Appendix 1.3).

Consistent age differences were found for participation in the PPVT, MR and the Felt Security Activity. Inspection of adjusted residuals (see Appendix 1.3) showed that children aged 6–11 years were significantly more likely, and 12–17 year olds were significantly less likely: to have completed the PPVT than would be expected by chance. Similar results were found when adjusted residuals were examined for participation in the MR and the Felt Security Activity.

Table 10: Percentage of children who did or did not participate in various components: comparison by child demographic characteristics

Characteristic	Whether child completed component (%)							
	PPVT		MR		Felt Security Activity		Interview	
	No	Yes	No	Yes	No	Yes	No	Yes
Age group[a]								
3 - 5 years	8.7	91.3	-----	------	------	------	-------	-------
6/7 - 11 years^	6.1	93.9	7.3	92.7	9.1	90.9	9.5	90.5
12 - 17 years	15.3	84.7	21.8	78.2	18.6	81.5	12.9	87.1
n	718		453		377		377	
Gender[b]								
Female	7.9	92.1	10.7	89.3	13.1	86.9	12.1	87.9
Male	9.4	90.6	11.8	88.2	11.2	88.8	9.0	91.0
n	718		454		377		377	
Placement type at Wave 1[c]								
Foster care	8.5	91.5	10.4	89.6	12.4	87.7	11.2	88.8
Kinship care	8.0	92.0	9.7	90.3	11.1	89.0	8.8	91.2
Residential care	19.2	80.8	30.8	69.2	19.2	80.8	19.2	80.8
n	718		454		377		377	
Child cultural identity[d]								
Aboriginal	6.7	93.3	9.7	90.3	12.8	87.2	12.0	88.0
Culturally diverse	9.4	90.6	10.2	89.8	12.2	87.8	12.2	87.7
Other Australian	9.6	90.4	12.5	87.5	11.8	88.2	9.7	90.3
n	684		436		361		361	

^ The age range was 7–11 for the Felt Security Activity and the interview, but 6–11 for the PPVT and the MR. PPVT = Peabody Picture Vocabulary Test; MR = Matrix Reasoning Test.

a Pearson c2 statistics for child age cross-tabulated against participation in: PPVT = 9.75 (p = .008); MR = 18.90 (p =.000); Felt Security Activity = 6.95 (p = .008); Interview = 1.02 (p = .311).

b Pearson c2 statistics for child gender cross-tabulated against participation in the PPVT = 0.13 (p = .724); MR = 10.60 (p = .005); Felt Security Activity = 0.29 (p = .588); Interview = 0.93 (p = .334).

c Pearson c2 statistics for child placement type cross-tabulated against participation in the PPVT = 3.91 (p = .141); MR = 10.60 (p = .005); Felt Security Activity= 1.43 (p = .490); Interview = 2.69 (p = .260).

d Pearson c2 statistics for child cultural identity cross-tabulated against participation in the PPVT = 1.73 (p = .422); MR = 0.80 (p = .670); Felt Security Activity = 0.07 (p = .965); Interview = 0.50 (p = .81).

Participation and non-participation patterns across a range of caregiver-reported or interviewer-administered assessments of child wellbeing outcomes are presented in Table 11. In general, participation rates tended to be higher among children and young people who did not have wellbeing problems. With regard to health conditions, trends were significantly different for participation in the PPVT, MR, Felt Security Activity and interview to those expected by chance. Examination of adjusted residuals showed that those without a health condition were significantly more likely, and those with health conditions were significantly less likely, to participate in the differing assessments (Appendix 1.3). Similar findings were evident for behaviour problems, with those showing high levels of behaviour problems via caregiver

reports significantly less likely to complete the PPVT, MR and interview than would be expected by chance according to the adjusted residuals. Children who had language problems were less likely to complete the MR. There were no participation/non-participation group differences in relation to cognitive problems.

Table 11: Percentage of children who did or did nor participate in various components: comparison by child wellbeing outcomes

Child wellbeing	Whether child completed component (%)							
	PPVT		MR		Felt security activity		Interview	
	No	Yes	No	Yes	No	Yes	No	Yes
Health condition[a]								
No	4.1	95.9	6.0	94.0	7.4	92.6	5.5	94.5
Yes	12.7	87.3	15.4	84.6	15.9	84.1	14.5	85.5
n	718		454		377		377	
Behaviour problems[b]								
No	7.0	93.0	8.6	91.4	10.1	89.9	7.6	92.4
Yes	11.7	88.3	15.1	84.9	14.0	86.0	14.0	86.0
n	714		450		373		373	
Language problems[c]								
No	-------	-------	2.1	97.9	2.2	97.8	2.7	97.3
Yes	-------	-------	6.3	93.8	4.5	95.5	4.5	95.5
n	-------		408		335		335	
Cognitive problems[d]								
No	0.4	99.7	-------	-------	2.7	97.4	1.3	98.7
Yes	1.8	98.2	-------	-------	1.9	98.1	2.9	97.1
n	398		-------		329		329	

PPVT = Peabody Picture Vocabulary Test; MR = Matrix Reasoning Test.

a Pearson c2 statistics for child health problems cross-tabulated against participation in: PPVT = 16.89 (p = .000); MR = 10.02 (p = .002); Felt Security Activity = 6.28 (p = .012); Interview = 7.84 (p = .005).

b Pearson c2 statistics for child behaviour problems cross-tabulated against participation in: PPVT = 4.27 (p = .039); MR = 4.48 (p = .034); Felt Security Activity = 1.25 (p = .263); Interview = 3.93 (p = .047).

c Pearson c2 statistics for child language problems cross-tabulated against participation in: MR = 4.47 (p = .034); Felt Security Activity = 1.32 (p = .250); Interview = 0.78 (p = .377).

d Pearson c2 statistics for child cognitive problems cross-tabulated against participation in: PPVT = 2.18 (p = .140); Felt Security Activity = 0.15 (p = .697); Interview = 0.99 (p = .319).

Turning now to perceived closeness of relationships with caregiving family members as reported by caregivers (Table 12), children who had 'very close' relationships with female or male caregivers, or other children in the household, did not differ significantly in participation rates from those with less close relationships.

Table 12: Percentage of children who did or did nor participate in various components: comparison by relationships with caregiving family members (caregiver reports)

Child-caregiving family relationships	Whether child completed component (%)							
	PPVT		MR		Felt security activity		Interview	
	No	Yes	No	Yes	No	Yes	No	Yes
Female caregiver 'very close' to child[a]								
No	8.6	91.4	10.1	89.9	10.8	89.2	8.6	91.4
Yes	7.8	92.2	9.5	90.6	11.8	88.2	10.3	89.7
n	681		333		265		265	
Male caregiver 'very close' to child[b]								
No	8.9	91.1	10.4	89.6	12.1	87.9	9.1	90.9
Yes	5.2	94.8	7.8	92.2	9.5	90.5	8.6	91.4
n	431		263		219		219	
Children 'very close' to other children in household[c]								
No	10.2	89.8	11.2	88.8	12.4	87.6	8.7	91.3
Yes	7.1	92.9	8.2	91.8	9.6	90.4	10.3	89.7
n	623		384		317		317	
Primary caregiver knows the child very well[d]								
No	9.0	91.0	11.8	88.2	11.0	89.0	7.6	92.4
Yes	8.5	91.5	11.0	89.0	12.7	87.3	12.0	88.0
n	718		454		377		377	

PPVT = Peabody Picture Vocabulary Test. MR = Matrix Reasoning Test.

a Pearson c2 statistics for relationships with female caregivers cross-tabulated against: PPVT = 0.12 (p = .726); MR = 0.26 (p = .612); Felt Security Activity = 0.08 (p = .780); Interview = 0.26 (p = .60l9).

b Pearson c2 statistics for relationships with male caregivers cross-tabulated against: PPVT = 2.38 (p = .123); MR = 0.51 (p = .474); Felt Security Activity = 0.36 (p = .550); Interview = 0.02 (p = .896).

c Pearson c2 statistics for relationships with other children/young people in household cross-tabulated against: PPVT = 1.86 (p = .173); MR = 1.00 (p = .318); Felt Security Activity = 0.64 (p = .425); Interview = 0.23 (p = .635).

d Pearson c2 statistics for how well caregivers knew children cross-tabulated against: PPVT = 0.85 (p = .846); MR = 0.05 (p = .815); Felt Security Activity = 0.23 (p = .635); Interview = 1.61 (p = .204).

Finally, participation and non-participation patterns were cross-tabulated against the two length-of-time variables ('length of time since first OOHC placement' and 'duration of the Wave 1 placement'; results shown in Table 13). Significant differences were found on participation in the PPVT for the time interval since first OOHC placement, with those who had experienced the shortest time span being more likely to participate, and those with the longest time interval being less likely to participate, than would be expected by chance according to the adjusted residuals (Appendix 1). There was also a trend for differences on participation in the MR for the length of time since first OOHC placement. No significant differences were found in relation to the duration of the Wave 1 placement.

Table 13: Percentages of children who did or did nor participate in various components: comparison by the two length-of-time variables

Length of time in care	Whether child completed component (%)							
	PPVT		MR		Felt Security Activity		Interview	
	No	Yes	No	Yes	No	Yes	No	Yes
Length of time since first OOHC placement[a]								
Short	2.7	97.3	3.8	96.2	5.1	94.9	4.4	95.6
Medium	8.8	91.2	11.6	88.4	13.1	86.9	11.2	88.8
Long	11.3	88.7	13.7	86.5	13.8	86.2	10.0	90.0
n	718		454		377		253	
Duration of Wave 1 placement[b]								
Short	7.9	92.1	12.0	88.0	13.7	86.3	12.3	87.7
Medium	7.8	92.2	8.7	91.3	11.1	88.9	5.7	94.3
Long	9.7	90.3	11.8	88.2	11.8	88.2	11.1	88.9
n	712		450		373		252	

PPVT = Peabody Picture Vocabulary Test; MR = Matrix Reasoning Test.

a Pearson c2 statistics for length of time since first OOHC placement cross-tabulated against: PPVT = 9.30 (p = .010); MR = 5.73; (p = .057); Felt Security Activity = 3.35 (p = .188); Interview = 1.71 (p = .425).

b Pearson c2 statistics for duration of Wave 1 placement cross-tabulated against: PPVT = 0.74 (p = .690); MR = 0.99 (p = .610); Felt Security Activity = 0.35 (p = .841); Interview = 2.38 (p = .304).

In summary, there did not appear to be systematic differences between children who did, or did not, participate in differing components of the Wave 1 data collection in regard to child demographic characteristics (gender, cultural identity, placement type) with the exception of child age. The younger age groups were more likely to participate in most components than older age groups (PPVT, MR and Felt Security Activity).

However, children with health conditions or high levels of behaviour problems consistently had higher non-participation rates, being more likely to not complete the PPVT, the MR and the interview. Additionally, children with health conditions were more likely to not complete the Felt Security Activity. These findings do not explain why there might be differences in participation rates, which could be due to a number of child or caregiver factors. For example, a reason noted by interviewers was that some caregivers refused to allow the child to complete the assessments, as they did not want the OOHC child in their care to be seen as different to other children in the household. Nevertheless, the findings do reveal a systematic trend for children with health conditions or behavioural problems as reported by caregivers to have higher levels of missing data on the PPVT, the MR and the interview.

Children's quality of relationships with caregiving family members was not systematically related to participation or non-participation. Finally, participation or non-participation was generally not related to the length of time since the child's the first placement in OOHC or the duration of the placement current at Wave 1, with the exception of differences on the PPVT for the 'length of time since first OOHC placement' sub-groups.

5 Conclusions

This report sought to investigate whether bias may have been introduced by differences in the length of time since the child's first entry into care or the duration of the Wave 1 placement, as well as by non-participation in certain elements of the data collection. The analyses aimed to inform future analyses of the POCLS dataset.

Length of time in care (i.e. time interval since first placement in OOHC, or the duration of the Wave 1 placement) did not seem to be related to differential patterns of emotional/social and language/cognitive wellbeing among POCLS children (with the sole exception that health conditions were less common among children whose time interval since their first OOHC placement was shorter). These findings suggest that when aspects of child wellbeing are examined in future analyses using Wave 1 data, controlling for length of time in care is unlikely to be necessary.

There were also no systematic length-of-time differences on children's demographic characteristics (gender, cultural background, their placement type), but differences were evident on child age. Older children tended to have been in OOHC, and in their Wave 1 placement, for longer than younger children at the time of the Wave 1 data collection. These results are likely due to the staggered start to the Wave 1 data collection. Nonetheless, they suggest that when investigating age differences across the POCLS sample, controlling for the effects of time in care would be desirable.

There were consistent length-of-time effects when the closeness of children's relationships with caregiving family members was considered (as shown by the findings from multivariate models and marginal effects). Children were more likely to be seen as having very close relationships with caregiving family members, and primary caregivers to feel that they knew children very well, if the time interval was longer. These findings suggest that when children's relationships with caregiving family members are examined in future analyses using Wave 1 data, length of time in care should be included to control for its effect. As the two length-of-time variables are quite highly correlated, only one of these variables should be included. Duration of the Wave 1 placement is likely to be the more proximal influence and hence would appear to be the more salient variable to include when endeavouring to control for length–of-time effects.

Investigation of participation and non-participation patterns across the differing components of the Wave 1 data collection indicated that children with health or behavioural problems were less likely to complete several components (PPVT, MR, interview). Thus, the findings obtained for the POCLS sample relating to these measures may be conservative and slightly underestimate the extent of vulnerabilities in the sample, as the non-participating sub-group tended to be somewhat more problematic than the participating sub-group. However, this did not apply to the other characteristics tested (child demographics, caregiving family relationships, length of the Wave 1 placement).

Some caveats to the analyses undertaken should be mentioned.

- The findings cannot be used to infer causality. The analyses were conducted simply to investigate associations between length-of-time and non-participation with various outcomes to probe whether bias might have been generated.
- The study does not have measures of children's wellbeing at their first entry into care or at the commencement of their Wave 1 placement. Therefore, the possibility that differences emerging from the Wave 1 data collection are due to initial group differences cannot be ruled out. For the analyses undertaken here, it was necessary to assume that levels of wellbeing at these earlier time points were randomly distributed across groups. The analyses merely provide information about differences at Wave 1 between children who experienced dissimilar lengths of time since entry into care or duration of the current placement, which might then need to be taken into account (as controls) in subsequent analyses.
- While categorisation of the continuous length-of-time variables was used to enable a clearer delineation of associations, this approach may have caused some loss of sensitivity. It is possible that differences have been underestimated, although it is important to note that when the continuous length-of-time variables were used instead of categorical ones, minimal changes to the findings were noted.
- Children's relationships with differing caregiving family members were all reported by the same individual (primary caregivers), and hence there may be some 'eye of the beholder' effects present in the findings.
- Differences according to placement type may be influenced by the existing relationships children already have developed with relative/kinship caregivers compared with foster caregivers.
- The number of children who did not participate in some of the components was quite small, resulting in reduced power to detect associations.

In conclusion, the major implication to emerge from the analyses undertaken was that when investigating children's relationships with caregiving family members (measured by caregiver reports), it would be desirable to control for the effects of the duration of their placement with the Wave 1 family. However, 'length of time' was generally unrelated to children's wellbeing (physical health, emotional/social wellbeing, cognitive/language development) and consequently there seems little need to control for length of time in care in analyses examining these outcomes. Nevertheless, if including other variables in analyses of children's wellbeing that are known to be sensitive to length of time in care (e.g. their relationships with caregivers), inclusion of length of time in care should be given consideration. As the POCLS sample includes children aged 9 months to 17 years of age, differences between age groups may be of interest. Controlling for the length of time in care would seem desirable in analyses comparing age groups. Finally, analysis of participation/non-participation patterns suggests that when examining the POCLS sample's performance in several components (PPVT, MR and interview), some caution is needed, as missing data due to higher non-participation rates among children with health or behaviour problems may have resulted in a slight underestimation of the rate of difficulties within the sample.

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Appendices

Appendix 1: Adjusted residual results

An adjusted residual of 1.96 or greater indicates that the number of cases in the particular cell differs significantly to that expected by chance at the 5% level (Tredoux & Durrheim, 2004). If an adjusted residual has a value of 2.58 or greater, it is significant at the 1% level. In the tables below, significant adjusted residuals are bolded.

1.1 Adjusted residual results for length of time since first OOHC placement

Child age	Length of time since first OOHC placement		
	0—14 months	14.1—18.9 months	More than 18.9 months
9—35 months			
Actual n	277	171	119
Expected n	188	191	189
Adjusted residual	**10.74**	**-2.33**	**-8.37**
3—5 years			
Actual n	68	98	99
Expected n	87	89	88
Adjusted residual	**-2.85**	1.30	1.54
6—11 years			
Actual n	65	131	133
Expected n	109	111	110
Adjusted residual	**-5.92**	**2.76**	**3.14**
12—17 years			
Actual n	14	32	78
Expected n	41	42	41
Adjusted residual	**-5.41**	-1.94	**7.33**

Child has a health condition	Length of time since first OOHC placement		
	0—14 months	14.1—18.9 months	More than 18.9 months
No			
Actual n	263	221	216
Expected n	231	235	234
Adjusted residual	**3.82**	-1.70	**-2.10**
Yes			
Actual n	161	211	213
Expected n	193	197	195
Adjusted residual	**-3.82**	1.70	**2.10**

Child's relationship with female caregiver	Length of time since first OOHC placement		
	0—14 months	14.1—18.9 months	More than 18.9 months
Very close			
Actual n	341	339	302
Expected n	328	336	318
Adjusted residual	**1.99**	0.40	**-2.40**
Less close			
Actual n	73	86	100
Expected n	86	89	84
Adjusted residual	**-1.99**	-0.40	**2.40**

Child's relationship with other children and young people	Length of time since first OOHC placement		
	0—14 months	14.1—18.9 months	More than 18.9 months
Very close			
Actual n	282	263	253
Expected n	264	270	274
Adjusted residual	**2.53**	0.44	**-2.94**
Less close			
Actual n	83	96	125
Expected n	101	99	104
Adjusted residual	**-2.53**	-0.44	**2.94**

Primary caregiver knows child very well	Length of time since first OOHC placement		
	0—14 months	14.1—18.9 months	More than 18.9 months
Yes			
Actual n	371	370	344
Expected n	358	365	362
Adjusted residual	**2.13**	0.85	**-2.98**
No			
Actual n	53	62	85
Expected n	66	67	67
Adjusted residual	**-2.13**	-0.85	**2.98**

1.2 Adjusted residual results for duration of the Wave 1 placement

Child age	Duration of Wave 1 placement		
	0—10.1 months	10.2—15.7 months	More than 15.7 months
9—35 months			
Actual n	236	193	137
Expected n	189	188	189
Adjusted residual	**5.64**	0.57	**-6.22**
3—5 years			
Actual n	73	94	96
Expected n	88	87	88
Adjusted residual	**-2.15**	0.96	1.19
6—11 years			
Actual n	87	109	132
Expected n	109	109	110
Adjusted residual	**-3.03**	-0.01	**3.04**
12—17 years			
Actual n	30	29	62
Expected n	41	42	41
Adjusted residual	**-2.09**	**-2.28**	**4.37**

Placement type	Duration of Wave 1 placement		
	0—10.1 months	10.2—15.7 months	More than 15.7 months
Foster care			
Actual n	257	209	190
Expected n	220	218	218
Adjusted residual	**4.40**	-1.10	**-3.32**
Relative/Kinship care			
Actual n	164	208	226
Expected n	201	199	198
Adjusted residual	**-4.40**	1.10	**3.32**

Child's relationship with female caregiver	Duration of Wave 1 placement		
	0—10.1 months	10.2—15.7 months	More than 15.7 months
Very close			
Actual n	304	342	335
Expected n	326	329	325
Adjusted residual	**-3.31**	1.88	1.43
Less close			
Actual n	107	73	75
Expected n	85	86	85
Adjusted residual	**3.31**	-1.87	-1.43

Child's relationship with male caregiver	Duration of Wave 1 placement		
	0—10.1 months	10.2—15.7 months	More than 15.7 months
Very close			
Actual n	196	201	195
Expected n	216	193	182
Adjusted residual	**-3.38**	1.30	**2.21**
Less close			
Actual n	97	61	52
Expected n	77	69	65
Adjusted residual	**3.38**	-1.30	**-2.21**

Primary caregiver knows child very well	Duration of Wave 1 placement		
	0—10.1 months	10.2—15.7 months	More than 15.7 months
Yes			
Actual n	342	367	373
Expected n	361	360	362
Adjusted residual	**-3.07**	1.18	1.89
No			
Actual n	84	58	54
Expected n	65	65	65
Adjusted residual	**3.07**	1.18	1.89
Primary Caregiver knows child very well	**Duration of Wave 1 placement**		
	0—14 months	**14.1—18.9 months**	**More than 18.9 months**
Yes			
Actual n	342	367	373
Expected n	361	360	362
Adjusted residual	**-3.07**	1.18	1.89
No			
Actual n	84	58	54
Expected n	65	65	65
Adjusted residual	**3.07**	-1.18	-1.89

1.3 Adjusted residual results for participation/non-participation in PPVT, MR, Felt Security Activity or interview

Type of care*	Did not complete PPVT	Completed PPVT
Foster care		
Actual n	21	181
Expected n	23	179
Adjusted residual	-0.51	0.51
Relative/Kinship care		
Actual n	22	204
Expected n	25	201
Adjusted residual	-1.01	1.01
Residential care		
Actual n	8	18
Expected n	3	23
Adjusted residual	**3.25**	**-3.25**

* Although one of the six cells has an expected frequency of less than 5, this is within the criterion recommended by Cochran (1952) of no more than 20% of cells being able to have an expected frequency of less than 5.

Presence of health condition	Did not complete PPVT	Completed PPVT
No		
Actual n	14	327
Expected n	29	312
Adjusted residual	**-4.11**	**4.11**
Yes		
Actual n	48	329
Expected n	33	344
Adjusted residual	**4.11**	**-4.11**

Presence of behaviour problems	Did not complete PPVT	Completed PPVT
No		
Actual n	35	465
Expected n	42	458
Adjusted residual	**-2.07**	**2.07**
Yes		
Actual n	25	189
Expected n	18	196
Adjusted residual	**2.07**	**-2.07**

Presence of health condition	Did not complete MR	Completed MR
No		
Actual n	12	189
Expected n	23	178
Adjusted residual	**-3.17**	**3.17**
Yes		
Actual n	39	214
Expected n	28	225
Adjusted residual	**3.17**	**-3.17**

Presence of behaviour problems	Did not complete MR	Completed MR
No		
Actual n	25	266
Expected n	32	259
Adjusted residual	**-2.12**	**2.12**
Yes		
Actual n	24	135
Expected n	17	142
Adjusted residual	**2.12**	**-2.12**

Presence of language problems*	Did not complete MR	Completed MR
No		
Actual n	6	274
Expected n	10	270
Adjusted residual	**-2.12**	**2.12**
Yes		
Actual n	8	120
Expected n	4	124
Adjusted residual	**2.12**	**-2.12**

*As one of the four cells had an expected frequency of less than 5, these results should be treated as indicative only.

Presence of a health condition	Did not complete the Felt Security Activity	Completed the Felt Security Activity
No		
Actual n	12	151
Expected n	7	143
Adjusted residual	**-2.52**	**2.51**
Yes		
Actual n	34	180
Expected n	26	188
Adjusted residual	**2.51**	**-2.52**

Presence of a health condition	Did not complete an interview	Completed an interview
No		
Actual n	9	154
Expected n	17	146
Adjusted residual	**-2.80**	**2.80**
Yes		
Actual n	31	183
Expected n	23	191
Adjusted residual	**2.80**	**-2.80**

Presence of behaviour problems	Did not complete an interview	Completed an interview
No		
Actual n	18	219
Expected n	24	213
Adjusted residual	**-1.98**	**1.98**
Yes		
Actual n	19	117
Expected n	13	123
Adjusted residual	**1.98**	**-1.98**

Length of time since first OOHC placement	Did not complete PPVT	Completed PPVT
Short		
Actual n	4	143
Expected n	13	134
Adjusted residual	**-2.86**	**2.86**
Medium		
Actual n	23	238
Expected n	23	238
Adjusted residual	0.13	-0.13
Long		
Actual n	35	275
Expected n	27	283
Adjusted residual	**2.21**	**-2.21**

Appendix 2: Logistic regression results for length of time since first OOHC placement and child wellbeing outcomes: Model coefficients and (standard errors), Wald statistics, and 95% confidence intervals

	Health condition			Behaviour problems			Language problems			Cognitive problems		
	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs
Length of time since first OOHC placement												
Short	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Medium	.29 (.15)	1.93	-.00 – .58	.11 (.18)	0.58	-.25 – .46	.01 (.18)	0.08	-.34 – .37	-.35 (.33)	-1.05	-1.01 – .30
Long	.22 (.15)	1.44	-.08 – .53	-.06 (.19)	-0.31	-.43 – .31	-.06 (.18)	-0.33	-.42 – .30	-.26 (.32)	-0.79	-.89 – .38
Age group												
9—35 months	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*NA*		
3—5 years	.43 (.16)	**2.71****	.11 – .74	.27 (.20)	1.37	-.12 – .67	-.12 (.21)	-0.59	-.53 – .29	*NA*		
6—11 years	.87 (.15)	**5.75*****	.67 – 1.25	.80 (.18)	**4.44*****	.45 – 1.15	.49 (.17)	**2.82****	.15 – .83	*Omitted — Reference category*		
12—17 years	.47 (.24)	**1.99***	.01 – .93	1.19 (26)	**4.64*****	.69 – 1.69	1.11 (.26)	**4.26*****	.60 – 1.62	-.13 (.32)	-0.41	-.75 – .49

	Health condition			Behaviour problems			Language problems			Cognitive problems		
	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs
Child gender												
Male	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Female	-.26 (.12)	**-2.17***	-.49 – -.03	-.11 (.14)	-0.75	-.39 – .17	-.24 (.14)	-1.62	-.51 – .05	-.55 (.24)	**-2.25***	-1.03 – -.07
Child cultural background												
Aboriginal	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Culturally diverse	-.29 (.22)	-1.29	-.72 – .15	-.17 (.29)	-0.59	-.74 – .40	.04 (.25)	0.17	-.44 – .53	-.79 (.47)	-1.70	-.170 – .12
Other Australian	.04 (.13)	0.33	-.21 – .29	.33 (.15)	**2.16***	.03 – .63	-.12 (.19)	**-5.89*****	-1.47 – -.74	-.23 (.26)	-0.91	-.73 – .27
Placement type												
Foster care	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Relative/Kinship care	-.35 (.12)	**-2.88****	-.58 – -.11	-.41 (.15)	**-2.84****	-.70 – -.13	-.23 (.15)	-1.60	-.52 – .05	-1.02 (.25)	**-4.14**	-1.50 – -.54
Constant	-.23 (.15)	-1.48	-.53 – .07	-.99 (.18)	-5.49***	-1.35 – -0.64	-1.10 (.19)	-5.89***	-1.47 – -.74	.29 (.34)	0.85	-.38 – .98
Model statistics												
N	1,197			1,107			1,101			365		
Log likelihood	-794.68			-587.99			-584.43			-203.75		
χ^2	57.14***			46.30***			30.53***			28.83***		

* p < .05 ** p < .01 *** p < .001; Coeff = model coefficients; SE = standard errors; 95% CIs = 95% confidence intervals.

Appendix 3: Logistic regression results for duration of Wave 1 placement and child wellbeing outcomes: Model coefficients and (standard errors), Wald statistics, and 95% confidence intervals

	Health condition			Behaviour problems			Language problems			Cognitive problems		
	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs
Duration of Wave 1 placement												
Short	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Medium	-.20 (.15)	-1.39	-.49 – .08	-.27 (.18)	-1.54	-.62 – .08	-.27 (.18)	-1.52	-.63 – .08	-.21 (.33)	-0.65	-.85 – .43
Long	-.06 (.15)	-0.38	-.35 – .23	-.36 (.18)	**-2.01***	-.72 – -.01	-.24 (.18)	-1.34	-.58 – -.11	.00 (.30)	0.99	-.59 – .60
Age group												
9— 35 months	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*NA*		
3— 5 years	.50 (.16)	**3.17****	.19 – .82	.32 (.20)	1.61	-.07 – .72	-.12 (.21)	-0.59	-.53 – .29	*NA*		
6— 11 years	.96 (.15)	**6.44*****	.67 – 1.25	.85 (.18)	**4.75*****	.50 – 1.20	.50 (.17)	**2.90****	.16 – .84	*Omitted — Reference category*		
12— 17 years	.52 (.23)	**2.24***	.06 – .98	1.20 (.26)	**4.64*****	.69 – 1.70	1.09 (.26)	**4.20*****	.58 – 1.60	-.14 (.31)	-0.45	-.76 – .48

	Health condition			Behaviour problems			Language problems			Cognitive problems		
	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs
Child gender												
Male	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Female	-.25 (.12)	**-2.05***	-.48 – -.01	-.08 (.14)	0.53	-.36 – .21	-.22 (.15)	-1.53	-.51 – .06	-.54 (.24)	**-2.20***	-1.02 – -.60
Child cultural background												
Aboriginal	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Culturally diverse	-.32 (.22)	-1.42	-.75 –	-.24 (.30)	-0.80	-.83 – .34	.01 (.25)	0.02	-.49 – .50	-.75 (.48)	-1.56	-1.70 – .20
Other Australian	.04 (.13)	0.30	-.21 - .29	.33 (.15)	**2.16***	.03 – .63	-.11 (.15)	-0.72	-.41 – .19	-.24 (.26)	-0.93	-.74 – .26
Placement type												
Foster care	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Relative/Kinship care	-.34 (.12)	**-2.79****	-.57 – -.10	-.35 (.15)	**-2.38***	-.64 – -.06	-.18 (.15)	-1.24	-.47 – .11	-1.04 (.26)	**-4.04*****	-1.54 -.53
Constant	-.22 (.15)	-1.48	-.53 – .07	-1.35 (.20)	-6.88***	-1.74 - -.97	-.99 (.18)	-5.49***	-1.35 – -.64	.13 (.31)	0.43	-.47 – .74
Model statistics												
N	1,192			1,102			1,096			363		
Log likelihood	-791.90			-582.69			-579.22			-203.16		
χ^2	55.65***			46.74***			30.70***			27.88***		

* p < .05 ** p < .01 *** p < .001; Coeff = model coefficients; SE = standard errors; 95% CIs = 95% confidence intervals.

Appendix 4: Logistic regression results for length of time since first OOHC placement and caregiver family relationships: Model coefficients and (standard errors), Wald statistics, and 95% confidence intervals

	Very close relationship with female caregiver			Very close relationship with male caregiver			Very close relationship with other children/young people			Primary caregiver knows child very well		
	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs
Length of time since first OOHC placement												
Short	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Medium	.53 (.21)	**2.55***	.12 – .94	.56 (.23)	**2.37***	.10 – 1.02	.34 (.20)	1.69	-.06 – .74	.38 (.23)	1.65	-.07 – .82
Long	.71 (.24)	**3.01****	.25 – 1.18	.65 (.24)	**2.66****	.17 – 1.13	.38 (.20)	1.94	-.00 – .76	.24 (.23)	1.06	-.21 – .69
Age group												
9—35 months	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
3—5 years	-2.15 (.27)	**-8.00*****	-2.68 – -1.62	-1.77 (.27)	**-6.67*****	-2.30 – -1.25	-1.44 (.22)	**-6.47*****	-1.88 – -1.01	-1.57 (.30)	**-5.32*****	-2.15 – -.99
6—11 years	-2.42 (.26)	**-9.35*****	-2.92 – -1.91	-2.84 (.29)	**-9.66*****	-3.42 – -2.27	-2.19 (.22)	**-10.19*****	-2.62 – -1.77	-2.36 (.27)	**-8.73*****	-2.90 – -1.83
12—17 years	-3.54 (.37)	**-9.48*****	-4.27 – -2.81	-3.93 (.40)	**-9.80*****	-4.71 – -3.14	-2.66 (.31)	**-8.52*****	-3.27 – -2.05	-2.83 (.33)	**-8.53*****	-3.48 – -2.18

	Very close relationship with female caregiver			Very close relationship with male caregiver			Very close relationship with other children/young people			Primary caregiver knows child very well		
	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs
Child gender												
Male	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Female	-.07 (.18)	0.37	-.29 – .43	-00 (.19)	-0.02	-.38 – .37	.14 (.15)	0.92	-.16 – .44	.18 (.17)	1.03	-.16 – .51
Child cultural background												
Aboriginal	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Culturally diverse	.20 (.34)	0.58	-.47 – .87	-.38 (.32)	-1.18	-1.01 – .25	.39 (.28)	1.39	-.16 – .94	.15 (.34)	0.44	-.51 – .81
Other Australian	-.18 (.20)	-0.91	-.57 – .21	-.29 (.21)	-1.38	-.70 – .12	.01 (.16)	0.05	-.31 – .33	-.19 (.18)	-1.04	-.55 – .17
Placement type												
Foster care	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Relative/Kinship care	.49 (.20)	**2.46***	.10 – .88	.41 (.20)	**2.02***	.01 – .80	.54 (.16)	**3.34*****	.22 – .86	.65 (.17)	**3.76*****	.31 – 1.00
Constant	2.00 (.27)	7.44***	1.47 – 2.52	2.57 (.29)	8.99***	2.01 – 3.13	1.74 (.21)	8.28***	1.33 – 2.16	2.77 (.27)	10.16***	2.24 – 3.31
Model statistics												
N	1,180			769			1,027			1,197		
Log likelihood	-500.64			-362.09			-512.72			-438.18		
χ^2	132.55***			123.18***			125.24***			114.70***		

* p < .05 ** p < .01 *** p < .001; Coeff = model coefficients; SE = standard errors; 95% CIs = 95% confidence intervals.

Appendix 5: Logistic regression results for duration of Wave 1 placement and caregiver family relationships: Model coefficients and (standard errors), Wald statistics, and 95% confidence intervals

	Very close relationship with female caregiver			Very close relationship with male caregiver			Very close relationship with other children/young people			Primary caregiver knows child very well		
	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs
Duration of Wave 1 placement												
Short	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Medium	.77 (.20)	**3.86*****	.38 – 1.16	.79 (.23)	**3.43*****	.34– 1.24	.64 (.20)	**3.24*****	.25 – 1.03	.60 (.22)	**2.79****	.18 – 1.02
Long	1.07 (.20)	**5.35*****	.68 – 1.46	1.16 (.24)	**4.93*****	.70 – 1.62	.98 (.20)	**4.96*****	.60 – 1.37	.92 (.22)	**4.38*****	.50 – 1.35
Age group												
9—35 months	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
3—5 years	-2.21 (.25)	**-8.73*****	-2.70 – -1.71	-1.78 (.26)	**-6.78*****	-2.29 – -1.26	-1.53 (.22)	**-6.83******	=1.97 – -1.09	-1.65 (.28)	**-5.82*****	-2.21 – =1.10
6—11 years	-2.76 (.24)	**-11.43*****	-3.23 – -2.28	-2.39 (.25)	**-9.51*****	-2.88 – -1.90	-2.29 (.21)	**-10.69******	-2.71 – -1.87	-2.46	**-9.54*****	-2.96 – -1.95
12—17 years	-3.26 (.31)	**-10.53*****	-3.87 – -2.65	-3.53 (.36)	**-9.68*****	-4.24 – -2.81	-2.73 (.32)	**-8.43******	-3.37 - -2.10	2.99 (.32)	**-9.32*****	-3.62 – -2.36

	Very close relationship with female caregiver			Very close relationship with male caregiver			Very close relationship with other children/young people			Primary caregiver knows child very well		
	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs	Coeff (SE)	Wald	95% CIs
Child gender												
Male	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Female	-.11 (.16)	-0.67	-.43 – .21	-.03 (.19)	-0.15	-.40 – .34	.11 (.16)	0.67	-.20 – .41	.12 (.18)	0.68	-.23 – -47
Child cultural background												
Aboriginal	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Culturally diverse	.41 (.35)	1.17	-.27 – 1.09	-.20 (.33)	-0.61	-.86 – .45	.54 (.29)	1.88	-.23 – 1.11	.18 (.33)	0.54	-.47 – .83
Other Australian	-.23 (.21)	-1.14	-.64 – .17	-.31 (.22)	-1.43	-.73 – .11	.04 (.16)	0.22	-.29 – .36	-.22 (.19)	-1.17	-.60 – .15
Placement type												
Foster care	*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*			*Omitted — Reference category*		
Relative/Kinship care	.46 (.17)	**2.77****	.13 – .79	.34 (.20)	1.71	-05 – .74	.42 (.16)	**2.58****	.10 - .74	.48 (.18)	**2.68****	.13 – .84
Constant	2.56 (.26)	9.77***	2.05 – 3.07	1.95 (.27)	7.28***	1.42 – 2.47	1.56 (.21)	7.55***	1.16 – 1.97	2.71 (.29)	9.45***	2.15 – 3.28
Model statistics												
N	1,175			764			1,022			1,192		
Log likelihoo*	-483.63			-351.62			-499.46			423.57		
χ^2	175.64***			139.50***			135.26***			141.11***		

* p < .05 ** p < .01 *** p < .001; Coeff = model coefficients; SE = standard errors; 95% CIs = 95% confidence intervals.

Notes

Notes

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