The First Five Years: What makes a difference?

2.1 Child and family characteristics

Key Findings

We analysed the associations between child and family characteristics and developmental vulnerability. Guided by the literature and the characteristics available in the data, we considered parental education, single-parent status, socio-economic circumstances, language background, maternal age, and health.

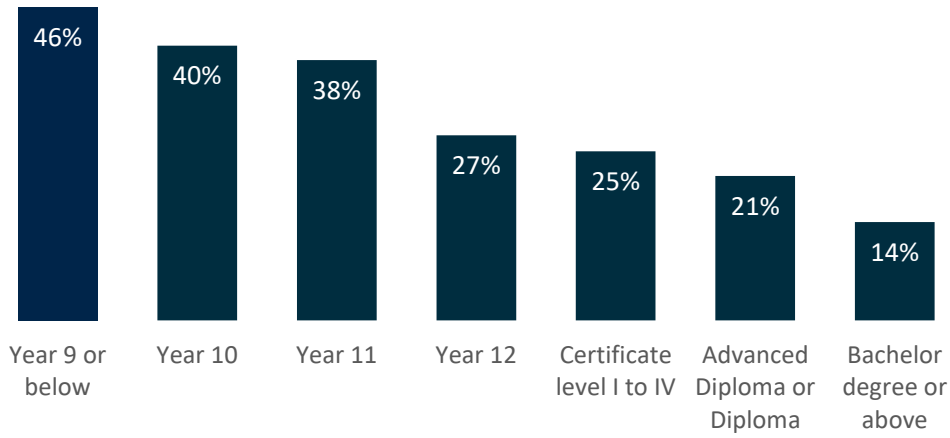
- Higher parent or carer highest educational attainment was associated with lower rates of developmental vulnerability.
- Neighbourhood socio-economic status and household income were protective factors for child development. Children of families in the third lowest household income decile had the highest overall rates of developmental vulnerability.
- Children from language backgrounds other than English and those with a parent not born in an Organisation for Economic Cooperation and Development (OECD) country were substantially more likely to be developmentally vulnerable on the communication skills and general knowledge domain.
- Rates of developmental vulnerability were higher among children of mothers under 20 and children of single parents. Children born when their mothers were aged between 28 and 39 years were least likely to be developmentally vulnerable.
- Parental mental ill-health also increased the risk of developmental vulnerability in children, particularly long-term parental mental ill-health.

Parent or carer educational attainment

The Australian Early Development Census (AEDC) reports the highest level of school and post-school education attained for up to two parents or carers[1]. We used this information to derive the highest educational attainment of the most educated and least educated parent or carer for each child (see *Methodology* section).

Overall, we found higher levels of parent or carer educational attainment were associated with lower rates of child developmental vulnerability, both for the most educated parent (Figure 1), and for each parent individually (Figure 2). These results are consistent with previous studies, which have identified family education levels as a key attribute related to developmental vulnerability, typically with a focus on maternal education (Kohl and Hobbs 1998; Lapointe et al. 2007; Noble et al. 2015; Comuk-Balci et al. 2016). Past research suggests the mechanism behind this relationship may stem from associated attributes like intellectual capability and greater income (Venetsanou and Kambas 2010; Noble et al. 2015). Additionally, previous studies indicate that parental education may contribute to child development through more stimulating environments, positive psychology and greater literacy of health and child rearing practises (Venetsanou and Kambas 2010; Comuk-Balci et al. 2016).

Figure 1. Proportion (%) of children who are developmentally vulnerable on one or more domains, by highest educational attainment of most educated parent, 2018 AEDC cohort.



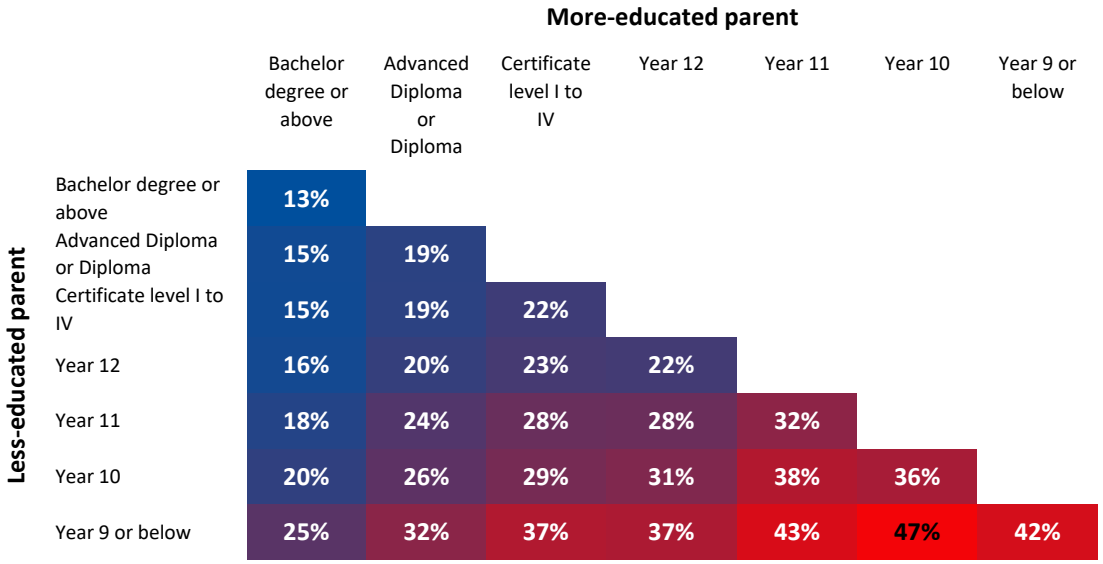
Source: Customised 'First Five Years' extract from the Multi-Agency Data Integration Project.

Notes: This figure compares children from the 2018 cohort of the Australian Early Development Census. N = 259,034. Grouped by highest educational attainment of most educated parent or carer.

For children with two parents or carers listed in the AEDC, we found that higher educational attainment in both parents/carers positively impacted child development. Figure 2 shows how different combinations of parent or carer educational attainment were associated with the risk of child developmental vulnerability.

[1] The education details recorded in the AEDC are collected from school enrolment records, which collect data for up to two parents or carers.

Figure 2. Proportion (%) of children who are developmentally vulnerable on one or more domains, by highest educational attainment of the most educated and the least educated parents or carers, 2018 AEDC cohort.



Source: Customised 'First Five Years' extract from the Multi-Agency Data Integration Project.

Notes: This figure compares children from the 2018 cohort of the Australian Early Development Census. N =235,149. Data only available for up to two parents or carers. Parent or carer education was identified using the AEDC (see Methodology section).

For children with two parents or carers listed in the AEDC, as the highest educational attainment of either parent or carer decreased, the proportion of children that were developmentally vulnerable on one or more domains generally increased. This trend was consistent at all education levels except as it passed through the Certificate level I to IV group when holding the less-educated parent's education level constant. This is likely because the AEDC contains a broad education level grouping Certificate I to IV, treating four distinct education levels under the Australian Qualifications Framework (AQF) as one group (DET 2019). There is a large spread of difficulty and length within the Certificate I-IV grouping reported in the AEDC, making this difficult to order with the other qualifications listed.

The importance of the less educated parent's or carers' education can be illustrated by looking at the last row in Figure 2. For a parent or carer with a highest educational attainment of Year 9 or below, even if the other parent or carer has a Bachelor degree or above, the rate of child developmental vulnerability on one or more domains was 25 per cent. As the level of highest educational attainment of the more educated parent or carer decreased, the percentage of children that were developmentally vulnerable on one or more domains increased, with rates at 47 per cent and 42 per cent for Year 10 and Year 9 or below, respectively.

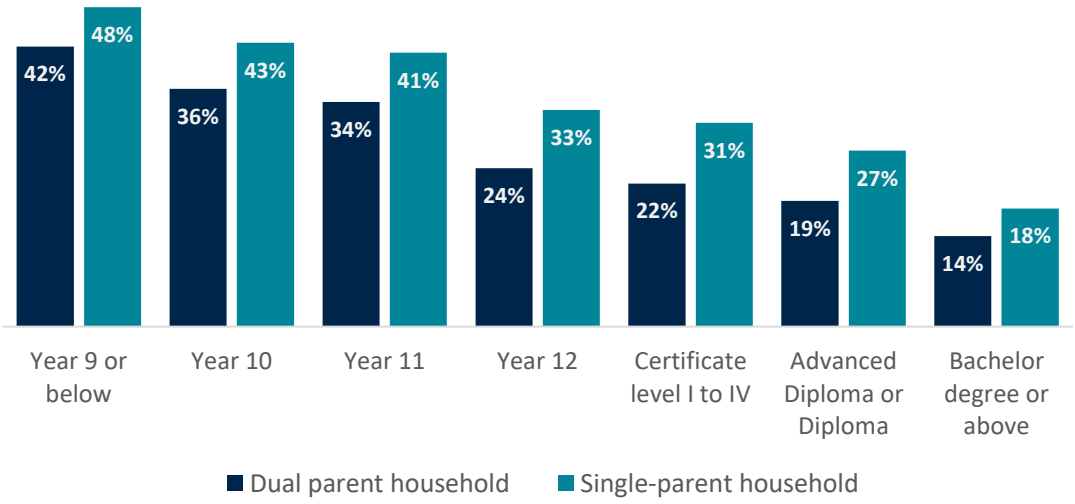
The prevalence of post-school education among parents or carers of young children in Australia is high. Only 9,756 children had at least one parent or carer with a highest educational attainment of Year 9 or below, with 2,496 children having two parents or carers with a highest educational attainment of Year 9 or below. In contrast, 64,356 children had two parents or carers with a highest educational attainment of bachelor degree or above and a total of 114,361 children had at least one parent or carer with a bachelor degree or above.

Even once a range of other factors were accounted for, our predictive modelling showed that the highest level of educational attainment of the most educated parent or carer was an important factor for predicting developmental vulnerability (see *Predictive modelling* section, Figures 1, 2b, 3b).

Single parent households

Overall, children from single parent households had higher rates of developmental vulnerability than children with two parents (29 and 18 per cent respectively), and this was true for all parental education levels (Figure 3). Developmental vulnerability of children in single parent households decreases as parent or carer educational attainment increases, ranging from 48 per cent for Year 9 or below to 18 per cent for Bachelor degree or above. Our predictive modelling identified being from a single parent household as an important factor of developmental vulnerability (see *Predictive modelling* section, Figure 1)[2].

Figure 3. Proportion (%) of children who are developmentally vulnerable on one or more domains, by highest educational attainment of most educated parent or carer, by single parent household status, 2018 AEDC cohort.



Source: Customised 'First Five Years' extract from the Multi-Agency Data Integration Project.

Notes: This figure compares children from the 2018 cohort of the Australian Early Development Census. N =252,998. Single-parent household status was identified through child and parent(s) shared address data. Parent or carer education was identified using the AEDC (see Methodology section).

[2] The parent or carer variable in AEDC does not individually identify the parent or carer and cannot be directly linked to the parent identity used in the single parent household information.

Neighbourhood-level characteristics such as the proportion of single parent households, the proportion of unemployed adults and socio-economic status (SES) in general have also been linked to developmental outcomes (Leventhal and Brooks-Gunn 2000).

In the 2018 AEDC cohort, children from single parent households were more represented in lower household income deciles, ranging from 54 per cent in the first decile to only 9 per cent in the tenth decile. This trend is also true for lower neighbourhood SES, ranging from 45 per cent single-parent households in the lowest SES neighbourhood, to 13 per cent in the highest SES neighbourhoods. The benefit of two parents or carers compared to one could be attributed to the capacity to share the parental load and higher income due to a greater overall capacity to work.

Neighbourhood SES and household income

Household income and neighbourhood SES are positively associated with developmental outcomes (Brooks-Gunn et al. 1993; Willms 2002). Children belonging to higher SES neighbourhoods tend to have better developmental outcomes (Leventhal and Brooks-Gunn 2000).

As the SES of the neighbourhood increased, the proportion of children who were developmentally vulnerable on one or more domains generally decreased. Within each household income decile, this trend was consistent, with children from households in lower SES neighbourhoods having higher rates of developmental vulnerability (Figure 4).

The association between lower SES neighbourhoods and poorer developmental outcomes is consistent with the literature, which suggests lower SES is associated with a lack of resources for establishing a positive developmental environment (Lapointe et al. 2007; Oliver et al. 2007). The neighbourhood setting of the child has a substantial impact upon child development as it creates the social context that directly and indirectly affects child development including school readiness upon entry (Lapointe et al. 2007; Oliver et al. 2007; Venetsanou and Kambas 2010; Coulton et al. 2016).

Similarly, as the household income decile decreased the proportion of children who were developmentally vulnerable on one or more domains generally increased. This trend held across household income deciles, however it peaked at the third household income decile before slightly declining in the lowest two household income deciles (Figure 4). This trend is somewhat surprising as lower household income is associated with greater risk of developmental vulnerability (Lapointe et al. 2007). This may reflect unmeasured wealth and relative advantage in the lowest household income earners. The Survey of Income and Housing excludes the 1st and 2nd percentiles in the low income quintile definition due to the high wealth and expenditure characteristics those households exhibit, and the prevalence of income types other than employee income and government pensions and allowances (ABS 2013; ABS 2022).

Figure 4. Proportion (%) of children who are developmentally vulnerable on one or more domains, by neighbourhood socio-economic status (SES), by household income decile, 2018 AEDC cohort.

Household income decile	Neighbourhood SES 1	2	3	4	5	6	7	8	9	10	All SES
1	35%	28%	23%	24%	19%	20%	19%	18%	17%	14%	25%
2	37%	29%	25%	24%	24%	20%	19%	20%	17%	16%	28%
3	38%	29%	26%	25%	24%	22%	21%	20%	16%	18%	29%
4	37%	28%	24%	22%	20%	18%	18%	17%	16%	16%	26%
5	34%	24%	22%	19%	18%	17%	15%	15%	15%	14%	22%
6	32%	23%	21%	19%	16%	15%	15%	14%	14%	13%	20%
7	28%	20%	18%	17%	15%	15%	15%	13%	13%	13%	18%
8	26%	19%	18%	16%	16%	14%	15%	12%	14%	13%	16%
9	23%	17%	16%	15%	14%	14%	13%	13%	12%	11%	14%
10	18%	15%	14%	14%	14%	12%	12%	12%	12%	10%	12%
All incomes	34%	25%	21%	20%	18%	16%	15%	14%	13%	12%	

Source: Customised 'First Five Years' extract from the Multi-Agency Data Integration Project.

Notes: This figure compares children from the 2018 cohort of the Australian Early Development Census. N = 266,299. Neighbourhood SES (1 - lowest SES to 10 - highest SES) based on Socio-Economic Indexes for Areas Index of Relative Socio-Economic Advantage and Disadvantage (SEIFA IRSAD). Household income deciles are based on parental income as per tax data (see Methodology section).

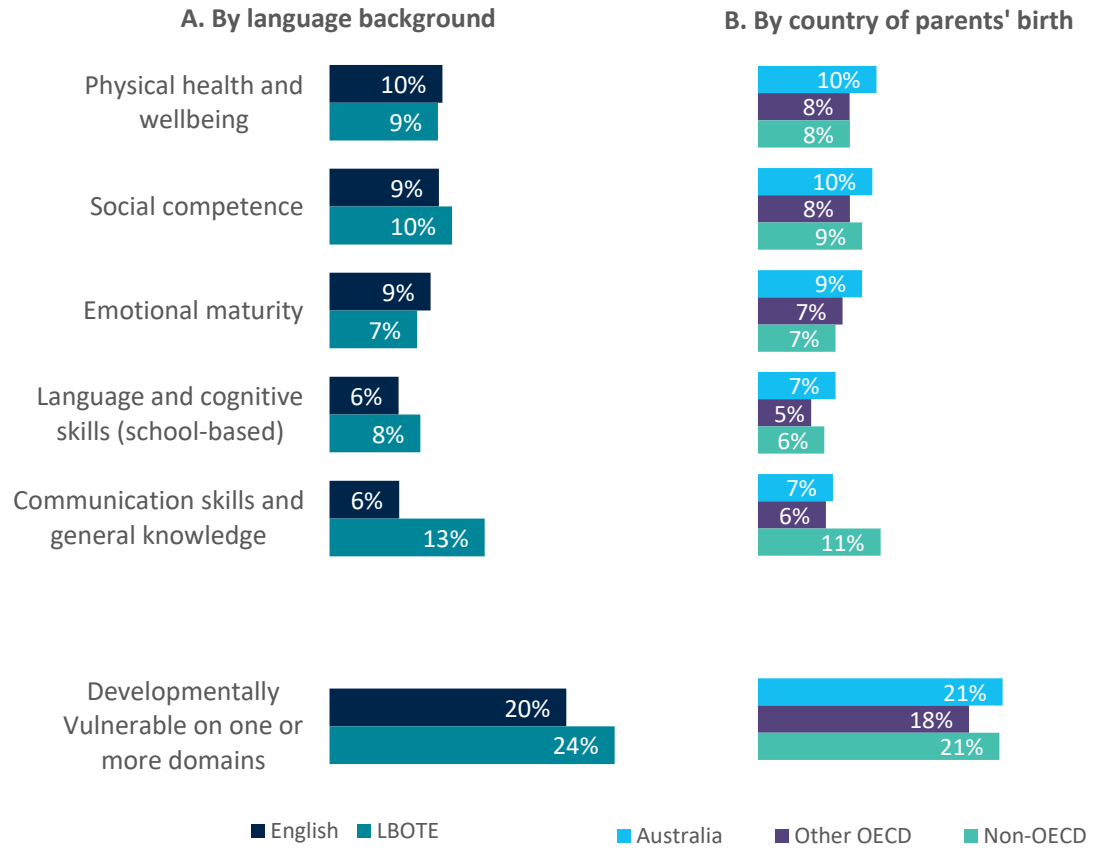
To better understand the differences between neighbourhood SES and household incomes we explored co-occurring developmental risk factors. The third-lowest household income decile contained the highest percentage of children whose most educated parent or carer had Year 10 or below as their highest educational attainment, almost double that of the first household income decile. The welfare profiles also differed in the third household income decile; there was a higher percentage of children with parents receiving rent assistance compared to the first household income decile. Additionally, children in the third household income decile had higher proportions of parents receiving carer payments, disability support pension, and unemployment payments. Both rent assistance and unemployment payments require asset tests to be eligible, potentially indicating the third decile has less wealth than all other income deciles including the first household income decile.

Our results show that family and neighbourhood socio-economic characteristics have an important association with childhood development, consistent with earlier literature on the topic – lower neighbourhood SES and lower household income are generally associated with higher rates of developmental vulnerability. Future research in this area could benefit from further unpacking these trends, including the interactions between individual risk factors and neighbourhood socio-economic attributes.

Language background and country of parent's birth

A greater proportion of children from language backgrounds other than English (LBOTE) were developmentally vulnerable on one or more domains than children from predominantly English-speaking homes in the 2018 AEDC cohort (Figure 5A) (AEDC 2019). This difference was driven by the greater proportion of children from LBOTE who were developmentally vulnerable on the communication skills and general knowledge domain. These children generally had similar rates of developmental vulnerabilities in other domains to children from English-speaking backgrounds.

Figure 5. Proportion (%) of children who are developmentally vulnerable, by domain, 2018 AEDC cohort.



Source: Customised 'First Five Years' extract from the Multi-Agency Data Integration Project.

Notes: This figure compares children from the 2018 cohort of the Australian Early Development Census. N = 272,626. LBOTE: Language Background Other Than English based on AEDC data; OECD: Organisation for Economic Cooperation and Development based on combined demographic data.

By controlling for a wide range of events and circumstances surrounding the child, including ECEC attendance, single parent status, health and welfare receipt, we found that being from LBOTE was associated with a statistically significant increase in the likelihood of being developmentally vulnerable on at least one domain for both boys and girls (see *Predictive modelling section*, Figure 2a and 3a).

We also compared developmental vulnerability rates for children with parents born in Australia, in other OECD countries, and in non-OECD countries. OECD and non-OECD countries were selected for comparison because OECD countries, including Australia, have much higher Gross Domestic Product per capita on average than non-OECD countries[3]. Children with at least one parent born overseas in an OECD country had lower rates of developmental vulnerability on one or more domains (18 per cent) than either children with two Australian-born parents or children with a parent born in a non-OECD country (both 21 per cent; Figure 5B). This was driven by lower average developmental vulnerability rates in the communication skills and general knowledge, social competence, and language and cognitive skills (school-based) domains (Figure 5B). Our country of parents' birth data is sourced primarily from the 2016 Census of Population and Housing, therefore recent migrants' country of birth may be underrepresented (see *Methodology* section).

Previous research (Washbrook et al. 2012; Queensland Health 2019) suggests there is substantial variation in developmental outcomes of children of migrants relative to children of Australian-born parents, depending on their cultural and ethnic background as well as the developmental domain in question. Children from LBOTE with at least one parent from a non-OECD country have a great deal of overlap in our cohort. Future analysis could consider the combined effects of country of birth and language background on developmental vulnerability.

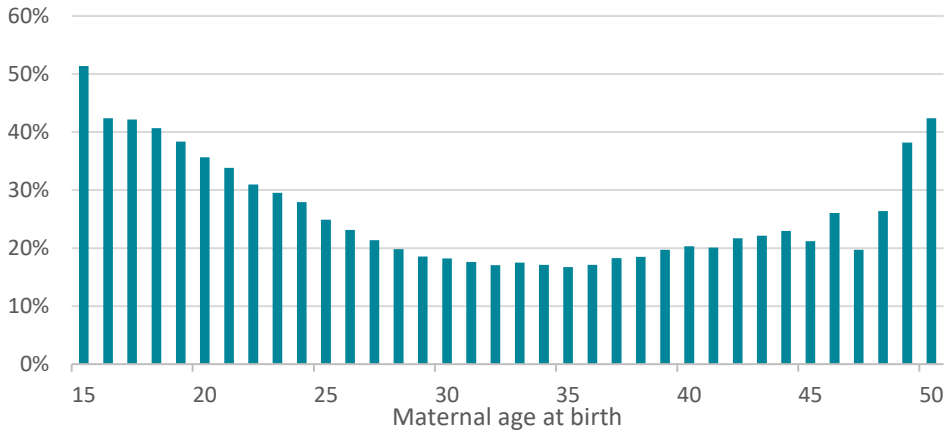
Maternal age at birth

The association between maternal age at birth and developmental vulnerability on one or more domains in the 2018 AEDC is shown in Figure 6. Rates of developmental vulnerability were highest among children of mothers under 20 years old, with 51 per cent of children of mothers aged 15 years or younger being developmentally vulnerable in one or more domains. The rate of developmental vulnerability was at its lowest point, between 16.7 and 19.8 per cent, among children born when their mothers were aged between 28 and 39 years. Rates of developmental vulnerability increased slightly among children of older mothers (Figure 6).

These findings are similar to results of previous research into maternal age at birth on child development (Falster et al. 2018; Hanly et al. 2020). However, once we adjusted the data for a range of other child and family circumstances, we found that maternal age at birth was less important in explaining developmental vulnerability than most other factors investigated, including parental employment, neighbourhood SES and child and parental mental health issues (see *Predictive modelling* section). This is consistent with other research that suggests maternal age at birth performs poorly as a sole predictor of child developmental vulnerability (Chittleborough et al. 2011).

[3] World Bank data on 2019 GDP per capita in US Dollars (World Bank 2021).

Figure 6. Proportion (%) of children who are developmentally vulnerable on one or more domains (DV1), by maternal age at birth, 2018 AEDC cohort.



Source: Customised 'First Five Years' extract from the Multi-Agency Data Integration Project.

Notes: This figure compares children from the 2018 cohort of the Australian Early Development Census. N = 268,995.

Parental mental and physical health

Chronic physical and mental ill-health in children and their parents have been associated with poorer development outcomes in children (Bell et al. 2016; Razaz et al. 2016; Comaskey et al. 2017; Bell et al. 2019; Laurens et al. 2019).

To study the effect of physical and mental health on developmental vulnerability in our cohort, we developed two health measures using government-supported health service access as a proxy for experiencing mental ill-health and chronic physical ill-health. Accessing Medicare Benefits Schedule (MBS) items, for example psychologist visits, or Pharmaceutical Benefits Scheme (PBS) prescriptions, for example anti-depressants, were used to indicate mental ill-health. Accessing MBS items related to chronic physical ill-health, for example Chronic Disease Management, were used to indicate chronic physical ill-health (see *Methodology* section).

The analysis focussed on children with developmental data in the AEDC. The AEDC excludes domain and developmental vulnerability scores for children with special needs because of the already identified substantial developmental needs of this group (Social Research Centre 2019). Children with special needs (without developmental scores) have a higher prevalence of mental and chronic ill-health compared to children without special needs[4]. As a result, the developmental risks associated with ill-health are likely to be understated.

Most of the analysis on ill-health is performed for girls and boys separately for two reasons. First, boys were more likely to be developmentally vulnerable than girls on one or more domains (DV1 rates for boys and girls are 27.0% and 14.6% respectively), and on each individual AEDC domain (AIHW 2020). The difference in development is thought to reflect principally biological dispositions, although different parenting practices and expectations for boys and girls also might have some influence

[4] Children with special needs (as identified by the AEDC): mental ill-health 46%, chronic physical ill-health 57%, N = 13,593. Children without special needs: mental ill-health 8%, chronic physical ill-health 12%, N = 279,648.

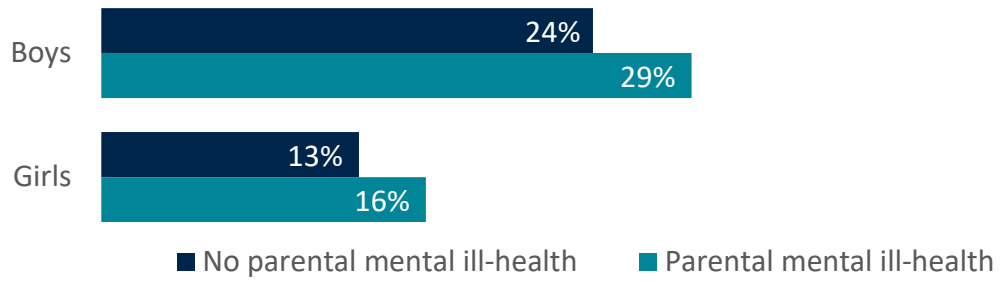
(AIHW 2015). Furthermore, our results show the prevalence of ill-health and the impact of parental ill-health are quite different for boys and girls.

Parents' mental ill-health have also been associated with poor developmental outcomes in children (Comaskey et al. 2017; Bell et al. 2019). For the 2018 cohort, we found that over half of Australian children had at least one parent experiencing mental ill-health between the year prior to their birth and 2018. Past research has been focused on maternal and perinatal issues (Field 2011; Raposa et al. 2014; Comaskey et al. 2017).

We found children who had a parent experiencing mental ill-health had higher rates of developmental vulnerability on one or more domains (Figure 7).

This trend was stronger for children whose mother had mental ill-health (boys 30 per cent; girls 17 per cent) over the father (boys 27 per cent; girls 15 per cent). This finding is consistent with several studies that indicate maternal health conditions have a higher impact on child development (Field 2011; Comaskey et al. 2017).

Figure 7. Proportion (%) of children who are developmentally vulnerable on one or more domains, by parental mental ill-health status, by gender, 2018 AEDC cohort.



Source: Customised 'First Five Years' extract from the Multi-Agency Data Integration Project.

Notes: This figure compares children from the 2018 cohort of the Australian Early Development Census. Boys (N = 137,273); Girls (N = 134,861). Parental ill-health has been identified using MBS and PBS data from birth to 2018 (see Methodology section).

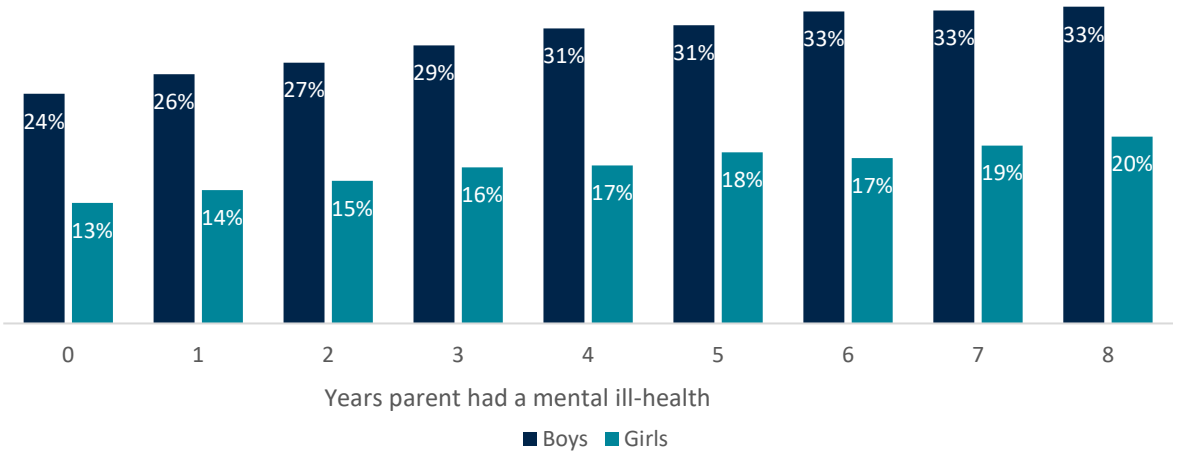
Children were much more likely to access services for mental ill-health if either of their parents accessed mental health services compared to children that had no parents with mental ill-health (10.7 compared to 3.4 per cent). Intergenerational mental ill-health is likely caused by both genetic and environmental factors (Comaskey et al. 2017). Increased parental awareness of mental ill-health may contribute to higher rates of children accessing mental health services. In 87 per cent of cases where both the child and parent accessed mental health services, the parents' mental health service access preceded the child's access.

Longitudinal mental ill-health

Past research has explored the impact of severity, timing and chronicity of parental mental ill-health on childhood development, and has shown that chronic or recurring mental ill-health are particularly detrimental (Brennan et al. 2000; Comaskey et al. 2017).

We studied the history of parental mental health service access from one year prior to childbirth to 2018 (Figure 8). As the number of years a parent experienced mental ill-health increased, the risk of developmental vulnerability trended upwards.

Figure 8. Proportion (%) of children who are developmentally vulnerable on one or more domains, by number of years of parental mental ill-health and gender, 2018 AEDC cohort.



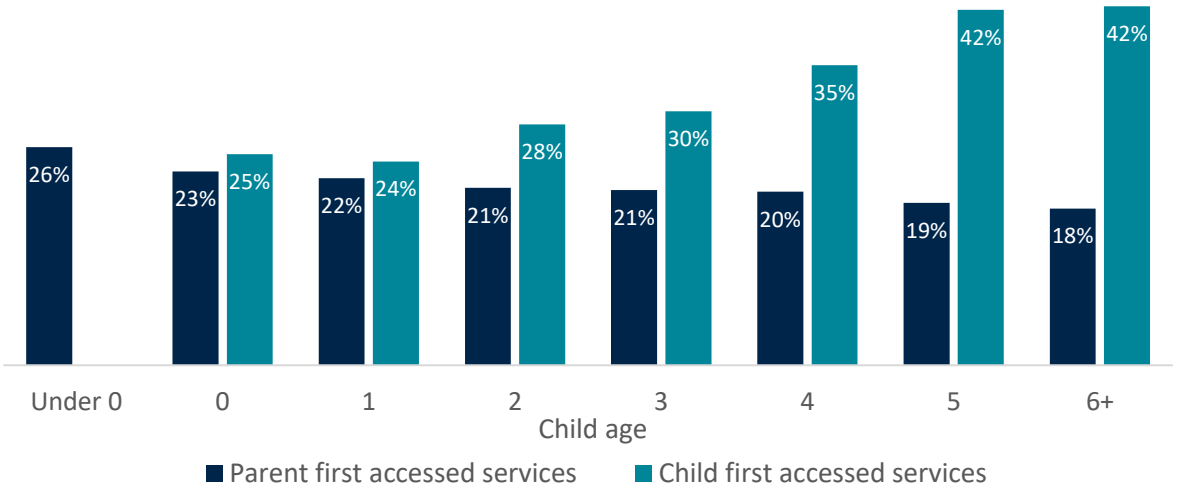
Source: Customised 'First Five Years' extract from the Multi-Agency Data Integration Project.

Notes: This figure compares children from the 2018 cohort of the Australian Early Development Census. Boys (N = 137,273); Girls (N=134,861). Parental ill-health was identified using MBS and PBS data from one year prior to birth to 2018 (see Methodology section).

The timing of mental ill-health and relationship with development is also an area of interest. Past work indicates that early exposure to parental mental ill-health, particularly during perinatal periods, is a risk factor for childhood development outcomes (Sohr-Preston and Scaramella 2006; Field 2011; Raposa et al. 2014). We analysed developmental vulnerability in relation to a child's age when the parents first accessed services during the child's lifetime and child mental ill-health. Note that mental ill-health is often chronic or episodic, so people may dip in and out of service use over a long period of time. Barriers to accessing mental health services also make it unlikely that access to a service is instantaneous with the onset of symptoms.

Parental early access of mental health services was related to higher rates of developmental vulnerability (Figure 9). This could reflect a child's long-term exposure to an unwell parent, or exposure during a critical stage of child development (Raposa et al. 2014; Comaskey et al. 2017). Conversely, for children, later access of mental health services was related to higher rates of developmental vulnerability (Figure 9). Early diagnosis and treatment of mental ill-health may contribute to improved coping mechanisms and better developmental outcomes by the time of the AEDC. However, it could reflect that different types of mental ill-health tend to be diagnosed at different ages.

Figure 9. Proportion (%) of children who are developmentally vulnerable on one or more domains, by child age when parents/children first accessed services during the child's lifetime, 2018 AEDC cohort.



Source: Customised 'First Five Years' extract from the Multi-Agency Data Integration Project.

Note: This figure compares children from the 2018 cohort of the Australian Early Development Census. Only children with child mental ill-health (N = 20,941) or parental mental ill-health (N = 160,062) are shown. Parent ill-health was identified from one year prior to birth to 2018. Child health conditions were identified using MBS and PBS data from birth to 2018 (see Methodology section).

Family and social factors on mental health

Our predictive modelling considered a wide variety of family and individual factors and found child health factors to have high importance for boys and girls in predicting developmental vulnerability. Meanwhile, parental health factors were important in predicting developmental vulnerability for girls (see *Methodology* and *Predictive modelling* sections).

Previous research has indicated that family and social factors such as dual parenthood can offset the risk of poor health outcomes (Reupert et al. 2013). We found that children in single parent households were more likely to access mental health services than children in dual parent families at 10.4 per cent and 6.7 per cent, respectively. The rate of developmental vulnerability of children with mental ill-health decreased from 42 per cent in single parent families to 33 per cent in partnered parent families.

The incidence of child mental ill-health ranges from 7 to 9 per cent, with a slightly higher incidence associated with lower socio-economic status. Child mental ill-health was less prevalent in children from a language background other than English (4 per cent) compared to children from English language backgrounds (9 per cent). It is not clear if this reflects the difference in prevalence of mental ill-health in the two populations, a difference in the rate of mental health service access in these two populations, or a combination of both.

Future research in this area will benefit from unpacking the interactions between other factors and mental health in greater depth, as well as using other health data such as hospitalisations. There is also the need to specifically examine the impacts of early infant and child maltreatment and increased risk of developmental vulnerability, given the direct correlation established between child maltreatment and increased prevalence of mental health disorders (Scott et al. 2023).

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