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Young carers

Impacts of caring on children's learning and wellbeing

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Australian Institute of Family Studies

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About this report

This research was completed in 2018 and submitted to the Department of Social Services (DSS) (formerly the Department of Families, Housing, Community Services and Indigenous Affairs). This is the first time the research has been published.

The *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC) is a partnership between the Department of Social Services and the Australian Institute of Family Studies, and is advised by a consortium of leading Australian academics. The Australian Bureau of Statistics were also partners of the study until 2022, with Roy Morgan taking over as our fieldwork provider at this point. This research would not have been possible without the invaluable contributions of the *Growing Up in Australia* children and their families.

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Findings and views expressed in this publication are those of the individual authors and may not reflect those of the Australian Institute of Family Studies, the Department of Social Services, the Australian Bureau of Statistics or Roy Morgan.

Executive summary

Taking on a caring role can provide many positive benefits for young people but, for some young carers, the responsibilities undertaken go beyond what adults would normally expect of teenagers. In this report we use data from the Longitudinal Study of Australian Children (LSAC) to examine the early home environment of those who subsequently became young carers, to what extent caring activities limit young people's cognitive and psycho-social outcomes, and what explains the gaps between the developmental outcomes of young carers compared to their peers.

Differences in the early home environment

In terms of their household financial situation, those who had caring responsibilities at age 14–15 were more likely to have experienced financial disadvantage throughout their childhood. Compared to young people who had no caring responsibilities at age 14–15, those who cared for a household member either daily or at least 5 hours per week:

- were more likely to live in a jobless household from a young age
- were more likely to live in a household where one or both parents relied on government payments as their main source of income
- had significantly lower levels of household income, on average, throughout their childhood
- were more likely to experience some type of financial hardship (e.g. parents were not able to pay bills, rent or mortgage on time).

In terms of maternal parenting style, overall, there were relatively few significant differences between those who became carers and those who did not. Young carers, on average, experienced lower levels of maternal consistency at ages 4–5 and 6–7, lower levels of inductive reasoning at age 6–7 and higher levels of maternal harshness at age 4–5. These differences are likely to be either due to the health limitations of the mother or time limitations and stress among mothers who have a high level of caring responsibilities for another household member.

The type and frequency of activities that young children did at home with their primary carer in the early years of childhood generally did not differ according to whether the study child had caring responsibilities at age 14–15. For some, this is because the care requirements of household members had increased over time. However, there was a significant difference in how often children were read to at age 4–5, with those who subsequently became carers being read to less often.

As reading is arguably the most important at-home activity in terms of long-term benefits for developmental outcomes, this finding is of some concern. This difference may be due either to the primary carer having a health condition that restricts the amount of time they are able to spend doing cognitively stimulating activities with their child or caring responsibilities for another household member that limit the time the primary carer is able to spend engaging in cognitively stimulating activities, such as reading, with the study child.

Differences in cognitive and social outcomes

There are substantial differences in cognitive outcomes among young people with caring responsibilities, compared to those who are not carers at age 14–15. Before controlling for other factors, average Reading scores for boys and girls who spent at least 5 hours per week caring for a household member were 44 points (1.7 years of schooling) and 29 points (1.1 years of schooling) lower, respectively, than those of boys and girls with no caring responsibilities. Average Numeracy scores for boys and girls who spent at least 5 hours per week caring for a household member were also substantially lower than those of boys and girls with no caring responsibilities (55 points (2.1 years) and 25 points (1 year) respectively).

After controlling for a wide range of factors, including early ability levels and aspects of the home environment, these differences in Year 9 NAPLAN Reading scores remain significant, at 34 points (1.5 years) for boys and 21 points (0.8 years) for girls. For boys, differences in Numeracy scores also remain significant. After controlling for other factors, boys who spend at least 5 hours per week doing caring activities are still 36 points (1.4 years) behind their peers with no caring responsibilities. However, for girls, once aspects of the home environment and previous ability are accounted for, carer status is only significant for those who care for a non-household member for fewer than 5 hours per week.

When considering these differences in NAPLAN outcomes, according to carer status at age 14–15, it is important to keep in mind that the LSAC questions about caring responsibilities were first asked at age 14–15. Therefore, it is impossible to know, based on these data, exactly when young people who had caring responsibilities at age 14–15 became carers, how long they have been doing caring activities at the current level, or even if they had been caring for someone in earlier years but no longer have these responsibilities. Further, while we know the overall types of caring activities that these young people engage in, and the number of hours per week they spent doing caring activities, we don't know the (physical or emotional) intensity of these activities, particularly for those who are caring for someone outside the home.

Differences in NAPLAN outcomes, depending on carer status at age 14–15 are apparent even in early childhood, and continue throughout the primary school years and into high school. NAPLAN Reading and Numeracy trajectories from Year 3 to Year 9 show that cognitive outcomes of those who subsequently became carers were lower, on average, from a young age. This result suggests that it is not only the caring activities that young carers are doing in their teens but aspects of their early lives, such as having a household member with a disability or health condition that requires assistance and/or having a parent with a high level of caring responsibilities for another household member, and the associated consequences for the household financial situation and home learning environment, that have had a considerable negative influence on their cognitive outcomes.

In general, caring for a household member at age 14–15 is not associated with significantly higher levels of anxiety or depression. However, a somewhat unexpected result was that those who spent only a short amount of time caring for a non-household member experienced higher levels of depressive symptoms than non-carers; and for girls who spent less than 5 hours per week caring for someone for who did not live in their household, anxiety levels were also significantly higher than those of non-carers.

While our estimates showed a clear negative influence on academic achievement and cognitive outcomes for boys and girls who spend a considerable amount of time caring for a household member at age 14–15, as well as a negative influence on psycho-social outcomes, particularly among those who were caring for a non-household member, the influence of carer status on school engagement was relatively weak. After controlling for socio-demographic characteristics, income support and disability status of household members, the relationship between carer status and school engagement was not statistically significant.

Policy implications

The evidence in this report suggests that those who are young carers at age 14–15 have different educational trajectories, compared to those with no caring responsibilities, with lower NAPLAN scores even at age 8–9. Given the lower starting point, in terms of academic achievement trajectories, of those who eventually have caring responsibilities, policies aimed at improving school readiness and early school outcomes of those children with household members with a restrictive health condition or disability will improve the future prosperity of young carers.

In terms of the numbers of carers that would likely be affected, we estimate that this would be approximately 11,482 young people caring for 5 or more hours at home; and 11,220 young people caring for 5 or more hours outside of the home. These estimates are for 14–15 year olds only. Therefore, assuming the risk of caring is similar for older young people, this means that the true number of young carers most affected would be several times these numbers.

Estimates of the number of young carers in Australia used in the Australian Priority Investment Approach to Welfare (estimated to be approximately 11,000 aged 24 and under) are based solely on those receiving Carers Payment. However, our estimates suggest that this number excludes a large number of young people in need of additional support. In other words, it is too restrictive to focus only on those young people receiving Carers Payment – many more are in need of additional support from a young age.

In terms of closing the gap in academic achievement, the statistical modelling provides some suggestions without being definitive. Examples include:

- providing encouragement to parents in households with someone with a restrictive health condition to send their young children to high quality Early Childhood Education programs, particularly 3-year-old preschool
- extending the Federal Government's Young Carer Bursary Program so that more young carers are eligible
- providing teachers with information about young carers need for additional support
- providing respite care so that young carers have time to complete their schoolwork and socialise with their peers.

Young carers can provide substantial benefits to society through the care they provide to families and relatives. They also display great emotional resilience. The evidence in this report suggests that the psycho-social wellbeing of young carers is comparable to their peers despite the challenges young carers face. However, this report finds that caring does impair academic achievement and, by extension, the life chances of these young people.

Evidence in this report suggests that the current arrangements are not sufficient to address young carers learning needs and that additional targeted assistance is needed for young children with household members with a long-term health condition or disability. Further assistance throughout the school years for those who are likely to have caring responsibilities for family members is likely to reap dividends for the future of these young people and also wider society.

1. Introduction

According to the Australian Bureau of Statistics (ABS) Survey of Disability, Ageing and Carers (SDAC), in 2015, just under one in five people reported having disability (18.3% of the total population) and around one-third of Australian households contained a person with disability (35.9% or 3.2 million households). Almost half of those households contained a carer (16.5% of all households), of which just under half contained a primary carer (8.1% of all households) (ABS, 2016).

Growing up in these households may provide opportunities for children to take on a caring role, which can provide many positive benefits but often places a strain on young people. Prior research suggests that tasks undertaken by young carers are wide-ranging including physical support, household chores and emotional and social support. For young carers these tasks and responsibilities often go beyond what adults would normally expect of children and what most children would expect to do within the family (Warren, 2007; Becker, 2007; Early et al., 2006). For example, a recent national survey of young carers in England and Wales in 2016 reported that young carers responsibilities included cooking, cleaning, doing paperwork, household chores, and providing nursing care and emotional support (Aldridge et al., 2017).

Previous analysis of the LSAC data by Warren and Edwards (2017) has shown that the specific types of care that carers aged 14–15 provided to household members varied depending on the relationship between the carer and the person receiving assistance. For example, compared to those who cared for a parent or grandparent, a higher percentage of those who cared for a sibling helped with personal care and transport. On the other hand, those who provided assistance to a parent were more likely to help with meal preparation, housework, shopping and errands than those caring for a sibling or grandparent.

Young carers receiving income support are a priority group for policy makers. For instance, the Baseline Valuation report prepared by Price Waterhouse Coopers (PwC, 2016) to inform the Australian Priority Investment Approach to Welfare has identified young carers as a key cohort for intervention due to their high lifetime welfare costs. The PwC analysis, which focuses on young carers aged 24 and under who are receiving carers' payment, shows that young carers are particularly vulnerable to the risk of long-term welfare dependency. Over 60% of this group have not studied beyond high school and these low levels of education can lead to young carers becoming welfare dependent. While young carers are a relatively small group within the Australian population (currently approximately 11,200 people aged 24 and under in the welfare system), estimates indicate that over 60% of young carers will be receiving income support in 10 years and around 50% will be receiving income support in 20 years.

Very few studies have examined the impact of caregiving on a representative sample of Australian young people, one exception is the study by Warren & Edwards (2017) in which they found evidence to suggest that young carers' NAPLAN scores were substantially lower than their peers. In this report, we build on these findings using LSAC to examine the early home environment of those who subsequently became young carers, whether caring activities limit young people's cognitive and psycho-social outcomes, and what explains the gaps between the developmental outcomes of young carers, compared to their peers.

Section 2 provides a background to what is known about young carers and the impact of caring on youth wellbeing and academic achievement. The third section of the report provides a description of the data and methodology used for the analysis. In section 4, we examine differences in the early home learning environment of children who have a household member with a long-term health condition or disability, comparing the early environment of the study children who subsequently provide care for a household member with those who do not. In section 5, we provide descriptive evidence about differences in school engagement, psycho-social development and cognitive outcomes of 14–15 year olds who are carers, compared to those with no caring responsibilities. In section 6, multivariate analysis is used to explore the factors associated with the gaps in developmental outcomes for young carers, and section 7 concludes.

2. Background

Growing up in a household with a person with disability may lead children to take on a caring role. In this section we briefly outline the prevalence and nature of the caring role (for details see Warren & Edwards, 2017) and then document what is currently known about the impact of caring for a relative on young people's psycho-social wellbeing and academic achievement.

2.1 Prevalence and the nature of the caring role

Obtaining precise estimates of the numbers of young carers is difficult because many qualitative studies note that young people may not identify as a carer either because of a reticence to admit caring responsibilities within the family or because the young person themselves does not consider themselves as a young carer (e.g. Clay et al., 2016).

Research in Australia and overseas has used different definitions of young carers and has varied in the representativeness of the population. As a result, population estimates of the prevalence of young carers vary but it is difficult to unpack whether it is due to differences in how caring is defined, the age group being considered, or whether the young person or another adult in the household is the reporter.

In brief, the 2012 ABS Survey of Disability and Caring (SDAC) estimates that 7.5% of children under the age of 15 years and 4.5% of 15–24 year olds were carers.[1] The 2011 Census of Population and Housing estimates that 4.3% of 15–19 year olds were carers.[2,3] Internationally, estimates of young carers varied between 2% and 27% of young people depending on the country and definition, specifically in:

- England: 2.1% of 5–17 year olds were young carers according to the census (Office of National Statistics, 2013)
- Wales: 2.6% of 5–17 year olds were young carers (Office of National Statistics, 2013)
- Northern Ireland: 12% of 10–11 year olds were young carers (Lloyd, 2013)
- New Zealand: 8% of children aged 14 years old or under had caring responsibilities based on the 2013 census (Carers New Zealand, 2017)
- the United States: 3.2% of 8–17 year olds were young carers (Hunt et al., 2005)
- Canada: 27% of 15–24 year olds cared for a family member or friend with a long-term health condition, disability or aging needs in the previous 12 months (Bleakney, 2014)[4]
- Austria: 4.5% of 10–14 year olds in a sample survey were young carers (Nagl-Cupal et al., 2014).

Given the wide-ranging prevalence rates likely reflect differences in how caring is defined, it is worthwhile reflecting on what type of care young people are reporting in LSAC. The LSAC data provide some of the most in-depth information about the nature of young people's caring responsibilities and shows that a substantial proportion provide some form of care for an ill or disabled relative or friend.

Using these data, Warren and Edwards (2017) found that, based on young people's reports, almost 40% of 14–15 year olds provided some form of care for someone who is elderly or who has a long-term health condition or disability. However, a much smaller proportion (22% of all 14–15 year olds) provided assistance with core activities

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[1] In the SDAC, a carer is defined as 'a person who provides any informal assistance, in terms of help or supervision, to an older person or someone who has a disability or a long-term health condition.' This is slightly broader than the definition of a carer under the *Carer Recognition Act 2010*, in which a carer is defined as 'an individual who provides personal care, support and assistance to another individual who needs it because that other individual (a) has a disability; or (b) has a medical condition (including a terminal or chronic illness) or; (c) has mental issues or (d) is frail aged. Under this Act, an individual is not a carer if he or she provides only formal care. Under the Carer Recognition Act, 'An individual is not a carer in respect of care, support or assistance he or she provides (a) under a contract of service or a contract for the provision of services; or (b) in the course of doing voluntary work for a charitable, welfare or community organisation; or (c) as part of the requirements of a course or education or training.' Further, 'An individual is not a carer merely because he or she (a) is the spouse, de facto partner, parent, child or other relative of an individual, or is the guardian of an individual, or (b) lives with an individual who requires care.'

[2] The ABS 2006 and 2011 Censuses collected data about informal carers aged 15 and over, using questions about the provision of unpaid assistance in the previous 2 weeks to a person because of disability, long-term condition or problems related to age. The parts of the definition about the reason for providing assistance are consistent with the SDAC but reference periods for the 2 collections are different, and the census does not refer to ongoing assistance (Australian Institute of Health and Welfare [AIHW], 2013).

[3] Warren and Edwards (2017) describe the prevalence rates in Australia and overseas in more detail.

[4] From the 2012 General Social Survey in Canada (which includes care of people in and outside the household but not necessarily due to disability or ill health).

of daily living; and 9% of 14–15 year olds were caring for a household member (6% helping with core and 3% providing assistance with non-core activities only). [5]

In terms of the relationship of the carer to the care recipient, among those who were caring for a household member, almost half were caring for a parent or step-parent, a third for a brother or sister and a little over 30% for a grandparent. Those who were caring for a non-household member more commonly cared for a grandparent or an unrelated child (usually a child who attends the same school as the study child).

The amount of time young people spent caring varied markedly depending on whether the care recipient lived in the same household as the study child and the relationship of the study child to the care recipient. More than half of those who cared for a resident parent or step-parent did so daily, with 22% spending more than 2 hours per day doing these activities. Over 40% of those who cared for a sibling or grandparent who lives with them spent some time every day doing caring activities. On the other hand, less than one-quarter of those who cared for an unrelated child who did not live in their household said they did so every day, and around 20% of those who cared for an unrelated child did so monthly or less often. Only 7% of 14–15 year olds who cared for a grandparent who did not live with them did so daily, with just over one-third of those who care for a non-resident grandparent doing so weekly, and almost 40% providing this type of care monthly or less often.

2.2 Impacts of caring on young people

The act of caring for a family member with disability may be personally rewarding and have great societal benefits. Young carers can experience many benefits from their caring role including developing greater sensitivity to others, enhanced living skills and strong family bonds. However, a caring role that is beyond a young person's capacity and maturity can have serious negative consequences for health and wellbeing, education, employment, relationships and socialisation, particularly for those with entrenched and intensive caring roles (Young Carers NSW, 2018). The responsibilities and tasks of being a young carer may involve taking on what are normally regarded as parental roles and may prevent young people from engaging in social and leisure activities (Becker, 2007; Cass et al., 2011; Warren, 2007).

While noting that every young carer's situation is different, Young Carers NSW (2018) has identified the following impacts of caring responsibilities for young people:

- feeling isolated and alone because they feel they can't tell anyone about their situation
- higher risk of stress, anxiety and depression because of the responsibilities of their caring role and concern about the welfare of those they care for
- fear of being seen as 'different'
- changes in the parent–child relationship because of caring leading to a heavy emotional burden for a young carer, as well as a lack of parental guidance
- may feel uncomfortable about having friends over
- hard to socialise because they are unable to leave the person they care for, or because they can't afford it
- may be more mature than peers due to their caring responsibilities and find it difficult to 'fit in'
- risk of poor health because of lack of sleep and stress
- strain, injury and even permanent damage caused by physical tasks of caring including lifting and carrying
- difficulty achieving their full potential in education due to the impact of the caring role, including being late for school, missing days, failure to complete homework and lack of concentration.

While there is a limited literature on the psycho-social wellbeing and academic performance of young carers, these cross-sectional studies do show that caring does have detrimental impacts on a range of outcomes for young people.

Several large-scale studies report that young carers have lower levels of wellbeing than their peers. A recent nationally representative survey of 9–14 year olds in Australia also reported that there was a significant gap in subjective wellbeing between young carers and those without caring responsibilities (Redmond et al., 2016). Findings from a survey of over four thousand 10–11 year old children from Northern Ireland also reported that young carers had poorer health and wellbeing, reported less happiness and were more likely to be bullied at

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[5] Core activities include personal care (e.g. washing, dressing, eating, toileting), moving around (e.g. getting in/out of bed or chair) and communicating (including being understood and understanding family, friends or others). Non-core activities include assistance with health care, transport, preparation of meals, housework/shopping, house repairs or garden care, paperwork and keeping them company.

school than their peers (Lloyd, 2013). In Austria, young carers 10–14 years old also reported worse physical and mental health than their peers (e.g. higher levels of tiredness, back pain, headache, worries, sadness; Nagl-Cupal et al., 2014). In the United States, a study of 1,281 middle school students of whom 36% were young carers reported that young carers, especially those living with the care recipient, reported significantly higher levels of anxiety/depression and lower levels of life satisfaction (Cohen et al., 2012). A recent study in England compared 420 young carers to 304 peers of the same age and found that parents of these children reported that that young carers were more likely to be bullied and more likely to fall asleep at school and had poorer health (Aldridge et al., 2017). In the same study young carers themselves reported more difficulties making friends and being bullied, more likely to be absent or late for school and falling asleep in class but not more negative emotions (Aldridge et al., 2017).

The evidence on the impact of caring on educational outcomes suggests that being a young carer does limit young people's educational performance. Analyses of the Longitudinal Study of Young People in England (LSYPE) suggests that young carers' Year 9 examination results were substantially below their peers, although this analysis did not take into account any differences in the socio-economic or household circumstances between young carers and non-carers (The Children's Society, 2013). Evidence from 10–11 year olds in Northern Ireland also suggested young carers had poorer educational outcomes than their peers (Lloyd, 2013). For example, fewer young carers sat the secondary school transfer test than their peers (56% compared to 67%), a prerequisite for the more academic grammar school.[6] Further, those young carers who did take the transfer test did not perform as well as their peers and fewer young carers said they would like to go on to university than non-carers (Lloyd, 2013). A survey of over 11,000 school students in the United States also found that 39% of young carers reported that their caring hinders their learning and 38% reported it impacted their academic performance (Siskowski, 2006). A recent survey in England found that young carers had similar school performance (according to their parents) to other students but they were more likely to fall asleep at school and be absent or late (Aldridge et al., 2017).

One of the limitations of studies of academic performance to date is that they have relied on young carers' or young carers' parents' perceptions of the impact of caring rather than direct assessments of academic achievement. One exception is the study by Warren and Edwards (2017), where, using LSAC, they found evidence that being a young carer limits young people's educational opportunities. They reported that young carers had significantly lower performance in Reading and Numeracy in NAPLAN at Year 9 than their peers. These differences ranged from 10 months of schooling for Numeracy for boys to 1.7 years of schooling for Reading for girls and, even after controlling for a range of family demographic characteristics, young carers were still substantially behind their peers. Young carers who spent 2 or more hours per day caring were most affected but only comprised 3.6% of 14–15 year olds (Warren & Edwards, 2017).

2.3 Key research questions

In this report, we build on the findings of Warren and Edwards (2017), using LSAC to examine the early home environment of those who subsequently became young carers, whether caring activities limit young people's cognitive and psycho-social outcomes, and what explains the gaps between the developmental outcomes of young carers, compared to their peers. Three key research questions are addressed in this report. These are:

1. Are there significant differences in the early home environment of those children who subsequently provide care for a household member and those who do not?
2. To what extent does caring limit young people's learning, cognitive and psycho-social outcomes? Does the impact of caring on cognitive and psycho-social development differ according to the type and amount of care provided?
3. What explains the gaps in cognitive and psycho-social development between young carers and their peers? Is it related to growing up in a financially disadvantaged household or are there other characteristics that explain the gap, such as the early home environment?

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[6] Most of Northern Ireland has a dual grammar/secondary school system, and the transfer test (taken at age 11) is used to decide which children are eligible to go to grammar schools. While taking the test is not mandatory, grammar schools generally provide a higher academic standard of education, compared to secondary schools (Lloyd, 2013).

3. Data and methodology

3.1 The LSAC data

The analysis in this report is conducted using data from the Longitudinal Study of Australian Children (LSAC), which is conducted in a partnership between the Department of Social Services (DSS), the Australian Institute of Family Studies (AIFS) and the Australian Bureau of Statistics (ABS). The study follows 2 cohorts of children who were selected from across Australia. Children in the B cohort ('babies' at Wave 1) were born between March 2003 and February 2004 and children in the K cohort ('kindergarten' at Wave 1) were born between March 1999 and February 2000. The sampling frame for LSAC was created using the then Health Insurance Commission's (HIC) Medicare database, a comprehensive database of Australia's population. Using the database, a stratified sample of postcodes was generated, a sample of children selected and their families invited to participate in the study. The final sample, comprising 54 per cent of these families, was broadly representative of Australian children. For a detailed description of the design of LSAC, see Gray and Smart (2009).

LSAC gathers comprehensive, nationally representative data on important aspects of a child's life, including their experiences within their families and communities, childcare experiences and experiences in early education. The LSAC data also provide substantial information about various aspects of children's development, including physical and mental health; motor skills; social, cognitive and emotional development; and language, literacy and numeracy.

LSAC has been designed so the study child is the main focus of the study. Reports of different respondents are sought in order to obtain information about the child's behaviour in different contexts. Information is collected from the child (using physical measurement, cognitive testing and, depending on the age of the child, interviews), the parent who knows most about the child ('primary carer'), any secondary parent in the household (biological, adoptive or step-parents), and home-based and centre-based carers for preschool children who are regularly in non-parental care and teachers for school-aged children. From Wave 2, information has also been obtained from parents who live in a separate household from the primary carer but who still have contact with the child.

The first wave of LSAC interviews was conducted between March 2004 and January 2005 and families have been subsequently interviewed every 2 years. At the time of writing, data from 6 main waves of the survey were available, collected every 2 years from 2004 to 2014. The Wave 1 sample consisted of 5,107 observations for the B cohort and 4,983 observations for the K cohort. Just over 90% of the Wave 1 sample was retained in Wave 2; and in subsequent waves over 95% of the sample was retained from one wave to the next. As a consequence, the Wave 6 sample comprises 73.7% of the original Wave 1 sample for the B cohort and 71% for the K cohort.

The focus of this report is the K cohort Wave 6 data, when the children were aged 14–15 years, and were asked whether they help anyone with a medical condition with everyday activities; how often they do these caring activities, how many hours they spend providing care; and the type of help they provide. While carer status is only measured at age 14–15, this report will use all 6 waves of the LSAC K cohort to examine the early experiences of those who became carers. For this reason, in this report, the sample used for analysis varies according to the specific research question as well as the outcome of interest.

For example, when considering the home learning environment of those who subsequently become young carers, the sample is restricted to K-cohort children who responded to the questions about caring for others in Wave 6 of LSAC. However, differences in the home learning environment, depending on the disability status of household members are also examined; and, for this analysis, the sample size is larger, as it is not restricted to those with information about carer status at age 14–15. Sample sizes also vary depending on the outcome of interest; for example, when considering the influence of caring responsibilities on NAPLAN outcomes, the sample is restricted to those who answered the questions about caring responsibilities in Wave 6 of LSAC, who were in Year 9 in 2014 and have matched NAPLAN data. This restriction means that for the analysis of Year 9 NAPLAN outcomes by carer status, the sample is reduced by approximately one-third.

3.2 Methodology

We examine the association between carer status at age 14–15 and a range of developmental outcomes, as listed in Table 1. The key independent variable is carer status, outlined in section 3.3. The measures of child development outcomes, which are described in more detail in section 5, were selected to cover a broad range of outcomes.

Table 1: Availability of outcome measures, by age of study child

	Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Cognitive outcomes						
Who Am I?	✓					
PPVT	✓	✓	✓			
Matrix Reasoning		✓	✓	✓		
NAPLAN Reading and Numeracy			✓	✓	✓	✓
Psycho-social outcomes						
SDQ Total Problem Score	✓	✓	✓	✓	✓	✓
SDQ Prosocial Score	✓	✓	✓	✓	✓	✓
Depression					✓	✓
Anxiety					✓	✓
School engagement						
Approach to Learning		✓	✓	✓	✓	✓
Absenteeism (parent reported)		✓	✓	✓	✓	

Note: No parental report of absenteeism is available in Wave 6 as the data about absenteeism was collected from the study child.

As the measure of carer status is only available at age 14–15, we are not able to determine the age at which caring responsibilities began, the type of caring activities undertaken or the amount of time spent doing these activities prior to age 14–15. Therefore, only descriptive statistics are provided for outcomes prior to age 14–15. What we are able to discern is whether there are any differences in the early developmental outcomes, and aspects of the early home environment of those who subsequently became carers, compared to those who did not.

Aspects of the home environment include disability status of household members, financial situation (including household income and receipt of government benefits), as well as characteristics of the home learning environment including parental investment in cognitively stimulating activities (inside and outside the home), and parenting style (warmth, consistency, harshness and reasoning). We also examine whether there were significant differences in the early home learning environment according to the health status of household members and, for those with household members who had a long-term health condition or disability that restricted their everyday activities, their relationship to the study child.

For outcomes available at age 14–15, linear regression models (OLS) are used to estimate the relationship between carer status and NAPLAN outcomes before and after controlling for background characteristics. The explanatory variables used in the multivariate analyses capture a range of characteristics including age of the study child (months), birth order, Indigenous status, whether the child speaks a language other than English, whether the child lives in a single-parent household, mother's country of birth, and whether the child lives in a major city.

To account for the association between carer status and household characteristics such as mother's education, income support receipt (number of waves), household member with a restrictive health condition (number of waves) and whether the child's primary carer cares for someone who does not live in the main household, these covariates are added to the model in stages. The final specification of the model also includes measures of the home learning environment, such as maternal parenting style, the types of activities (e.g. reading to the child) that the parents did with the child early in the child's life, and measures of out of home and extra-curricular activities. To account for early ability, the child's Who Am I? score (an indicator of school readiness) is included. For cognitive outcomes, vocabulary skills at age 4–5 (measured by PPVT) are also controlled for; while for social outcomes, SDQ Total Problem score at age 4–5 is included in the model.

3.3 Measures of carer status for 14–15 year olds

In Wave 6 of LSAC, study children in the K cohort (aged 14–15) were asked 'Do you help someone who has a long-term health condition, has a disability or is elderly, with activities that they would have trouble doing on their own?' The question specifies that we are interested in help they have given, or are likely to give, for at least 6 months; and that help that is given as part of a paid job, unpaid volunteer work or community service should not be included.

Of the 3,341 children in the K cohort who completed the survey, 39% (40% of boys and 37% of girls) reported providing some type of care. Adolescents who reported providing care to someone were asked about their relationship with the person (or people) they provide assistance to, whether they live in the same household, how often they do these caring activities and the type of care they were providing for up to 3 people.[7]

This restriction resulted in some missing information for those who reported caring for more than 3 people. These observations are retained in the analysis by including a specific category for those who reported providing assistance for 4 or more people but gave no details about the relationship to the person being cared for and the type of care provided. These missing cases amount to around 4% of children (11% of those who reported providing help or care) as shown in Table 2. Warren and Edwards (2017) showed that there is a gender difference in the type of care provided by 14–15 year olds who reported caring for 4 or more people, with girls more likely to be helping at least one household member with a disability, while boys more commonly provided assistance with non-core activities for several non-household members.[8]

Table 2: Number of people cared for at age 14–15, by gender of carer

Number of people cared for	Number of observations			% (weighted)		
	Boys	Girls	All	Boys	Girls	All
Does not provide care	1,049	1,052	2,101	60.2	62.8	61.4
Provides care for …						
1 person	338	309	647	20.4	19.0	19.7
2 people	150	155	305	8.8	10.1	9.4
3 people	95	61	156	6.0	4.2	5.1
4 or more people	69	63	132	4.7	4.0	4.3
Total	1,701	1,640	3,341	100.0	100.0	100.0

Notes: Sample weights used. Adolescents who cared for someone with a long-term health condition, disability or who is elderly. Differences in proportions by gender are not statistically significant at the 5% level.

Source: LSAC K cohort, Wave 6

As almost 40% of 14–15 year olds reported providing some type of care, it is important to distinguish between assistance with 'core activities' (i.e. helping with personal care, moving around and communicating) and 'non-core activities' – that is, help with other things such as housework, preparing meals and keeping them company.[9] Among those who provided care, most were assisting someone who did not live with them. Around 16% of 14–15 year olds helped someone who did not live with them with core activities and 9% provided assistance with non-core activities for someone who did not live with them. However, only 6% of 14–15 year olds helped someone who lived with them with core activities and 3% helped someone who lived with them with non-core activities (Table 3).

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7 These questions were asked as part of the Audio Computer Assisted Self Interview (ACASI). However, when study children entered more than 3 names, the instrument was unable to process who to ask the questions about and therefore these questions were not asked. This has resulted in missing information for 132 children who reported providing help for 4 or more people. Based on the number of people in the household, the majority of these children were reporting about care for at least one person who did not live with them: 2% lived in a 2-person household (i.e. a single-parent household), 13% had 3 people in their household (including the study child), 41% had 4 people and the remaining 45% lived in a household of 5 or more people. For more details about this issue, refer to the LSAC Data Issues paper: www.growingupinaustralia.gov.au/pubs/issues/2015/data-issues.pdf.

8 Multinomial Logistic regressions of carer status showed that for boys, the odds of caring for 4 or more people were significantly lower for those in the 3rd quartile of household socio-economic position (compared to those in households in the lowest quartile), while for girls, odds are doubled if they have a household member with a disability.

9 The classification of core activities (personal care, moving around and communicating) in this report is in line with the ABS 'Core Activity Need for Assistance' concept, which was developed for the 2006 Census to identify people with a 'profound or severe core activity limitation' using similar criteria to the Survey of Disability, Ageing and Carers (SDAC). This population is defined as people with a disability who need assistance in their day-to-day lives with any or all of the following core activities – self-care, body movements or communication (ABS, 2013).

Table 3: Carer status at age 14–15, by gender of the study child, type of assistance and household membership of the person being cared for

Carer status at age 14–15	Male (%)	Female (%)	All (%)
Does not provide care	60.2	62.8	61.4
Helps someone who lives with them[a]	8.2	9.8	9.0
Helps someone who lives with them with core activities	4.9	6.5	5.6
Helps someone who lives with them with non-core activities only	3.4	3.4	3.4
Helps only those who do not live with them	27.0	23.4	25.2
Helps someone who does not live with them with core activities	15.9	16.6	16.3
Helps someone who does not live with them with non-core activities only	11.0	6.8	9.0
Cares for 4 or more people (no details about residence or type of care)	4.7	4.0	4.3
Total	100.0	100.0	100.0
N	1,701	1,640	3,341

Notes: Sample weights used. [a] Some young carers provide assistance for more than one person. When allocating these cases to the categories above, priority was given to helping a household member, and then core activities.

Source: LSAC K cohort, Wave 6

It is also important to note that very few carers provide assistance only with core activities. That is, most carers who help with core activities also provide other types of help as well.[10] In examining the association between carer status and NAPLAN outcomes, Warren and Edwards (2017) showed that it is the amount of time spent caring, rather than whether they are providing assistance with core or non-core activities, that is associated with poorer cognitive outcomes for the carer.

Therefore, for the purposes of this report, we are mainly interested in the developmental outcomes of young people who spend a considerable amount of time caring for someone else. The measure of carer status used in this analysis is summarised in Table 4. We first differentiate between those who care for a household member and those who care only for non-household members, with an additional category for those who reported caring for 4 or more people. These categories are then further divided into those who care for someone daily or at least 5 hours per week and those who spend less than 5 hours per week doing caring activities.[11]

Table 4: Carer status, by gender of the study child

How often care is provided	Male (%)	Female (%)	All (%)
Does not provide care	60.2	62.8	61.4
Cares for a household member:			
Daily or at least 5 hours per week	4.5	5.2	4.8
Less than 5 hours per week	3.7	4.7	4.2
Cares for non-household members only:			
Daily or at least 5 hours per week	5.5	3.9	4.7
Less than 5 hours per week	21.5	19.5	20.5
Cares for 4 or more people	4.7	4.0	4.3
Daily or at least 5 hours per week	[#]0.7	[#]1.2	1.0
Less than 5 hours per week	3.9	2.8	3.4
Total	100.0	100.0	100.0
N	1,701	1,640	3,341

Notes: Sample weights used. [#]Estimate not reliable (Cell count < 20). Gender difference in proportions is not significant at the 5% level.

Source: LSAC K cohort, Wave 6

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[10] The specific types of assistance that young carers provide is explored in more detail in Warren and Edwards (2017).

[11] If a study child cares for more than one person, they are allocated to the 'cares for a household member' category if they care for at least one household member, even if they also care for someone living elsewhere.

As Table 4 shows, very few 14–15 year olds who reported caring for 4 or more people did so for 5 or more hours per week. Due to the limited number of observations for this group, for the rest of the analysis in this report, 'Cares for 4 or more people' is reported as a single category, with no differentiation according to time spent caring.

4. Differences in the early home environment

In this section, we examine whether there are significant differences in the early home environment of those children who subsequently became carers, compared to those who did not. Aspects of the home environment include disability status of household members, financial situation (including household income and receipt of government benefits), as well as characteristics of the home learning environment including parental investment in cognitively stimulating activities (inside and outside the home), and parenting style (warmth, consistency, harshness and reasoning).

4.1 Health limitations of household members

Not surprisingly, one of the strongest predictors of carer status of young people is having a household member with a long-term health condition or disability. Using the LSAC data, Warren and Edwards (2017) showed that, after controlling for a range of characteristics of the child and their household, compared to 14–15 year olds with no household members who had a long-term disability or health condition, the odds of having some type of caring responsibility at age 14–15 were 1.4 times higher for boys and 2.1 times higher for girls if they were living with someone with an ongoing health limitation. Further, among boys aged 14–15 years who had a household member with a disability or long-term health condition, the odds of helping someone who lives with them with core activities were 3.6 times the odds of those who were not living with someone who had a long-term health limitation; and for girls, the corresponding odds ratio was 4.9.

As the questions about caring responsibilities were asked for the first time when the LSAC study children were aged 14–15, we are not able to tell exactly when those who reported having caring responsibilities first took on those responsibilities, or for how long they have been caring at the level they were (in terms of hours and types of help). What we do know from the LSAC data is whether or not they were living with a household member who had a health condition or disability that restricted them in their everyday activities, potentially requiring assistance from another person.

The questions about restrictive health conditions used in this report are taken from the LSAC Household Form, a component of the interview that contains questions asked about every member of the study child's household. The following 2 questions were asked in relation to each household member:

1. Does [person] have any medical conditions or disabilities that have lasted, or are likely to last, for 6 months or more?
2. Still thinking of conditions lasting 6 months or more, is [person] restricted in everyday activities because of any of the following?

For the purposes of this report, we are interested in conditions that result in a household member being restricted in everyday activities, resulting in the need for care or assistance from another person. For this reason, in the remainder of this report, when considering the health status of household members, we focus on those who have a health condition that restricts their everyday activities.[12]

Table 5 shows the percentage of study children who had a household member with a health condition that restricts their everyday activities, according to their relationship to that household member. The percentage of those who had a household member who was restricted in their everyday activities ranged from 38% of 4–5 year olds (in Wave 1) to only 12% of 10–11 year olds (in Wave 4), before increasing to 24% in Wave 6, when the study children were aged 14–15. However, it is likely that most of these differences can be explained by differences in the prompt cards between waves, rather than changes in the percentage of study children living with a

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[12] Readers should note that some household members were reported as not having a disability but as being restricted in their everyday activities, and these individuals were defined as having a health limitation for the purposes of this analysis. The most important caveat to note is that this definition of 'health restriction' groups a very wide range of conditions together, including those that may have different effects on carers and families (Maguire, 2012).

household member with a health condition or disability.[13] Therefore, it is important to keep in mind that these percentages are not directly comparable across waves.

Table 5: Household member (other than the study child) is restricted in everyday activities, K cohort, Waves 1–6

Household member restricted in everyday activities	% of study children with a household member who is restricted in everyday activities					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
Any household member	37.9	21.2	16.0	12.3	21.0	24.2
Mother	19.6	10.4	7.4	1.9	10.6	13.0
Father	13.1	6.3	4.9	6.7	6.0	6.5
Sibling	14.3	7.8	4.3	4.4	6.0	6.9
Grandparent	1.8	1.2	1.1	0.6	1.4	1.6
Other household member	1.0	0.5	0.4	#0.0	0.3	0.6
N	4,983	4,464	4,331	4,164	3,956	3,337

Notes: Sample weights used. #Estimate not reliable (cell count < 20). Numbers in columns do not total 100, each cell represents the percentage of all study children who had a household member who was restricted in everyday activities; and children may have more than one household member who is restricted in everyday activities.

Source: LSAC K cohort, Waves 1–6

Still, what we are able to tell from Table 5 is that among those study children who had a household member with a health condition that restricted their everyday activities, it was more commonly the study child's mother who had a restrictive health condition. Given that the mother is most often the primary carer for children, this is likely to have a substantial influence on the home environment.

Across all waves, relatively few study children (less than 2% in each wave) were living with a grandparent who was restricted in everyday activities. In other words, for most children with a household member with a restrictive health condition, it was most often either their parent or their sibling. Given the fact that very few study children were living with a grandparent who was restricted in their everyday activities, it is apparent that very few study children were living in a situation where their primary carer had substantial caring responsibilities for their own parent (i.e. the study child's grandparent) who lived with them.

Table 6 shows the percentage of children who had a household member with a health condition that restricted everyday activities, according to the carer status of the study child at age 14–15.[14] Even at age 4–5, there were considerable differences in the percentage of children living in a household where at least one household member was restricted in their everyday activities, with 51% of those who were caring for a household member for at least 5 hours per week at age 14–15, living with a household member with a restrictive health condition at age 4–5, compared to 36% of those who were not carers at age 14–15. Among those who reported caring for 4 or more people at age 14–15, the percentage of children who, at age 4–5, had a household member with a health condition that restricted their activities was also high, at 44%.

The presence of a household member with a health condition that restricts everyday activities, particularly if it is the child's primary carer, may result in lower levels of investment in the early home environment of the child. There are several reasons for this. First, if it is the primary carer who is limited in their everyday activities, their ability to engage in cognitively stimulating activities (e.g. reading, playing games) or even out of home activities such as going to the library or to a playground with the child may be limited. Second, if the primary carer has caring responsibilities for another household member who is restricted in their everyday activities, this may limit the amount of time and attention that they are able to give to the study child. Third, if the study child's primary carer is restricted in their everyday activities or providing care for someone who has a health condition or disability, this caring responsibility may limit their employment opportunities and result in lower levels of household income, leading to lower levels of financial investment in cognitively stimulating activities for the study child (e.g. music classes). These differences in the early home environment are explored in section 4.3 of this report.

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[13] This is explained in detail in Appendix A.

[14] Again, it is important to keep in mind that these numbers are not comparable across waves, and the percentages at ages 8–9 and 10–11 are likely to be an underestimate of the actual number of study children living with someone with a restrictive health condition.

Table 6: Household member restricted in everyday activities, by carer status at age 14–15, K cohort, 2004–14

Carer status at age 14–15	% of study children with a household member who is restricted in everyday activities					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
Does not provide care (reference group)	35.6	20.9	15.2	10.3	17.7	19.7
Cares for a household member[a]						
Daily or at least 5 hours per week	51.1***	39.2***	31.3***	28.4***	41.0***	53.9***
Less than 5 hours per week	41.8	26.9	21.1	20.7***	39.9***	46.1***
Cares for non-household members only						
Daily or at least 5 hours per week	34.0	21.6	14.9	16.4	22.3	27.5
Less than 5 hours per week	38.2	19.8	16.0	11.6	22.5*	22.8
Cares for 4 or more people	44.3*	27.7	22.3	#11.5	26.1	36.9***
All	37.5	22.1	16.6	12.1	21.3	24.1
N	3,108	3,100	3,088	3,067	3,038	3,218

Notes: Population weighted results. #Estimate not reliable (Cell count < 20). ***$p < .001$, **$p < .01$ and *$p < .05$ indicate that proportions are significantly different from the reference category. Sample restricted to those with information about carer status at age 14–15.

Source: LSAC K cohort, Waves 1–6

The home environment might also be affected if the study child's primary carer spends a considerable amount of time caring for someone outside their main household. Table 7 shows that from ages 8–9 to 12–13, the percentage of children whose primary carer was caring for someone who did not live with them was highest among those who subsequently cared for a non-household member at age 14–15. At age 14–15, around 20% of teens with low-intensity caring responsibilities (less than 5 hours per week for either a household member or someone living elsewhere) had a parent who cared for someone outside the household, compared to only 12% of those with no caring responsibilities. Differences in the early home environment, depending on whether the study child's primary carer had caring responsibilities for someone who did not live with them are explored in section 4.3 of this report.

Table 7: Primary carer cares for someone outside the home, by carer status at age 14–15, K cohort, 2008–14

Carer status at age 14–15	% of study children whose primary carer cares for someone outside the home			
	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
Does not provide care (reference group)	8.6	9.1	10.2	11.6
Cares for a household member				
Daily or at least 5 hours per week	#13.5	#13.7	#14.4	#11.2
Less than 5 hours per week	#8.7	#13.4	15.9	20.8**
Cares for non-household members only				
Daily or at least 5 hours per week	15.1*	#7.3	13.1	16.2
Less than 5 hours per week	11.3	13.3**	14.4**	19.0***
Cares for 4 or more people	#9.5	#8.3	#9.6	#12.3
All	9.7	10.3	11.6	13.7
N	3,108	3,107	3,096	3,327

Notes: Sample weights used. #Estimate not reliable (cell count < 20). ***$p < .001$, **$p < .01$, and *$p < .05$. The question about primary carer caring for someone outside the household was asked from Wave 3 onwards.

Source: LSAC K cohort, Waves 3–6

4.2 Household financial situation

Young carers are more likely to experience financial disadvantage during their childhood and adolescence, due to a number of factors. They may be a result of living in a jobless household if they have a parent who has a health condition or disability that limits their employment opportunities and/or the amount of paid work they are able to do; or if a parent has substantial caring responsibilities for another household member, which limits the amount of time they are available to undertake paid employment. If the study child's primary carer has a health condition or disability that has resulted in limited education opportunities earlier in life, this may also result in limiting adolescents' future employment opportunities and earning capacity.

In this section, we compare the household employment and financial situation of those who subsequently became carers with those who were not carers at age 14–15. Table 8 compares the percentage of study children who were living in a jobless household (i.e. in a two-parent household where neither parent was employed, or in a single-parent household where that parent was not employed) according to their carer status at age 14–15.[15]

Table 8: Jobless household, by carer status at age 14–15, K cohort, 2004–14

Carer status at age 14–15	% of children living in a jobless household					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
Does not provide care (reference group)	8.5	8.5	6.3	6.3	5.9	6.3
Cares for a household member:						
Daily or at least 5 hours per week	**20.1*** **	**#19.3**	**#19.2*** **	**25.0*** **	**23.8*** **	**21.8*** **
Less than 5 hours per week	#11.7	#10.8	#8.6	**#12.4*** **	**#16.2*** **	**23.8*** **
Cares for non-household members only:						
Daily or at least 5 hours per week	#15.8	#9.2	#6.3	#7.1	#8.6	#10.5
Less than 5 hours per week	10.9	9.9	6.1	6.7	7.7	6.1
Cares for 4 or more people	#14.0	#11.6	#8.4	#7.2	#5.9	#8.5
All	10.3	9.6	7.1	7.6	7.7	8.0
N	3,103	3,107	3,107	3,095	3,093	3,332

Notes: Population weighted results. # Estimate not reliable (cell count < 20). ***$p < .001$, **$p < .01$, and *$p < .05$.
Source: LSAC K cohort, Waves 1–6

Living in a jobless household was much more common among those who subsequently became carers for a household member. Over 20% of those who were caring for a household member for at least 5 hours per week at age 14–15 were living in a jobless household at either age 10–11, 12–13 or 14–15, compared to only 6% of those with no caring responsibilities at age 14–15.

The combination of health limitations and caring responsibilities means these households are more likely to have at least one parent relying on government payments as their main source of income. Table 9 shows that, across all ages, there were significant differences in the percentage of children living in households where government payments were their main source of household income.

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[15] The percentage of study children living in a single-parent household increased from 13% of 4–5 year olds to 20% of 14–15 year olds. Only at Waves 5 and 6 (age 12–13 and 14–15) are differences in the percentage of study children in single-parent households significantly different depending on carer status at age 14–15, with almost 30% of those who cared for a household member at age 12–13 and 24% of those who cared for 4 or more people living in a single-parent household at age 12–13, compared to only 16% of those who were not carers. At age 14–15, the numbers were similar, with almost 30% of those who were caring for a household member, or more than 4 people, living in a single-parent household, compared to only 18% of non-carers.

Table 9: Main source of household income is government payments, by carer status at age 14–15, K cohort, 2004–14

Carer status at age 14–15	% of children in households where the main source of income is government payments					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
Does not provide care (reference group)	11.1	10.8	8.4	8.7	8.1	8.1
Cares for a household member						
Daily or at least 5 hours per week	**27. 7*****	**22.4****	**22.7*****	**27.1*****	**29.3*****	**26.8*****
Less than 5 hours per week	**#20.8***	**#19.3***	#14.0	#15.4	**#20.6*****	**27.2*****
Cares for non-household members only						
Daily or at least 5 hours per week	#18.6	#16.8	#11.9	#6.8	#12.2	12.1
Less than 5 hours per week	11.7	13.9	10.1	10.4	9.9	7.9
Cares for 4 or more people	#17.2	#14.6	#13.0	#9.2	#9.9	13.6
All	13.0	12.8	10.1	10.1	10.3	10.2
N	2,922	2,919	2,880	2,889	2,859	2,689

Notes: Sample weights used. #Estimate not reliable (cell size < 20) $^{***}p < .001$, $^{**}p < .01$, and $^{*}p < .05$. Main source of household income is government payments in single-parent households where that parent's main source of income is government payments OR two-parent households where both parents' main source of income is government support payments.

Source: LSAC K cohort, Waves 1–6

While 8% to 11% of children who were not carers at age 14–15 were living in a household depending mainly on government payments, for those who were caring for a household member at age 14–15, this percentage was over 20%, even in the early years of primary school.

There were also significant differences in the percentage of study children living in a household where at least one parent relied on government payments as their main source of income. Table 10 shows that, among those who were caring for a household member either daily or for 5 hours or more per week at age 14–15, at least 45% were living in a household where at least one parent relied on government payments in any particular year. At age 14–15, over 50% of those who were caring for a household member for at least 5 hours per week were living in a household where at least one parent's main source of income was a government pension, compared to only 18% of those with no caring responsibilities.

Table 10: At least one parent's main source of income is government payments, by carer status at age 14–15, K cohort, 2004–14 (%)

Carer status at age 14–15	% of children in households where at least one parent's main source of income is government payments					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14-15 (Wave 6, 2014)
Does not provide care (reference group)	43.4	37.5	28.2	25.1	21.3	18.1
Cares for a household member						
Daily or at least 5 hours per week	**55.6***	**50.9***	**44.8*****	**44.8*****	**44.9*****	**50.5*****
Less than 5 hours per week	**55.0***	45.7	33.2	28.9	**31.5***	**38.7*****
Cares for non-household members only						
Daily or at least 5 hours per week	52.6	**55.2***	**39.4***	33.5	**33.4***	27.1
Less than 5 hours per week	44.1	39.2	28.2	27.5	20.8	18.5
Cares for 4 or more people	43.9	**49.9***	36.9	30.6	27.3	**29.3*****
All	45.0	40.22	30.1	27.3	23.6	21.5
N	2,944	2,929	2,888	2,892	2,865	3,097

Notes: Sample weights used. $^{***}p < .001$, $^{**}p < .01$, and $^{*}p < .05$.

Source: LSAC K cohort, Waves 1–6

As the percentage relying on government payments as their main source of income is considerably higher, across all waves, among those who subsequently become carers, it naturally follows that household income will be lower, on average, for this group. Across all waves, average (equivalised) household income was significantly lower among those who subsequently cared for a household member for at least 5 hours per week, compared to those who were not carers at age 14–15. These differences increased from $139 per week at age 4–5 to $276 per week by age 14–15.[16] These differences in the household financial circumstances of those who became carers, compared to those who did not, are also evident in the percentage of children living in households where parents experience some type of financial hardship, as shown in Table 11.[17]

At ages 4–5, 8–9, 10–11 and 14–15, there were significant differences in the percentage of parents who reported experiencing at least one aspect of financial hardship, depending on the carer status of the study child at age 14–15. Among those who were spending at least 5 hours per week caring for a household member at age 14–15, 27% to 29% were living in households that experienced financial hardship in any particular year, compared to 16% to 18% of those who had no caring responsibilities at age 14–15. Compared to non-carers, experiences of financial hardship were also more common among those who spent at least 5 hours per week caring for someone outside their household, and those who reported caring for 4 or more people at age 14–15. Presumably for some of these young people, their parents contribute financially towards the care of family members living elsewhere.

Table 11: At least one indicator of financial hardship, by carer status at age 14–15 (%)

Carer status at age 14–15	% of children in households experiencing at least one type of financial hardship					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
Does not provide care (reference group)	43.4	37.5	28.2	25.1	21.3	18.1
Cares for a household member						
Daily or at least 5 hours per week	**55.6***	**50.9***	**44.8*****	**44.8*****	**44.9*****	**50.5*****
Less than 5 hours per week	**55.0***	45.7	33.2	28.9	**31.5***	**38.7*****
Cares for non-household members only						
Daily or at least 5 hours per week	52.6	**55.2***	**39.4***	33.5	**33.4***	27.1
Less than 5 hours per week	44.1	39.2	28.2	27.5	20.8	18.5
Cares for 4 or more people	43.9	**49.9***	36.9	30.6	27.3	**29.3*****
All	45.0	40.2	30.1	27.3	23.6	21.5
N	2,944	2,929	2,888	2,892	2,865	3,097

Notes: Sample weights used. ***$p < .001$, **$p < .01$, and *$p < .05$. Reported experiences of financial hardship are more common in Wave 1 as household income is often lower in households with pre-school age children where mothers commonly work fewer hours, or do not do any paid work, until their children start school.

Source: LSAC K cohort, Waves 1–6

Parents with health limitations or caring responsibilities are likely to face limitations in both their education and employment opportunities. These limitations are evident in the percentage of children living in households in the lowest quartile of socio-economic position (SEP), with those who care for a household member either daily or at least 5 hours per week more commonly residing in low SEP households from age 6–7 onwards (Table 12).

A relatively high proportion of those who spent a considerable amount of time caring for a non-household member at age 14–15 were also living in low SEP households, with over 30% in low SEP households in each wave, compared to around 20% of those who were not carers at age 14–15. Among those who reported caring for 4 or more people when they were aged 14–15, the percentage in low SEP households remained quite close to that of the overall population until age 14–15, when it increased to 36%.

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[16] Amounts are adjusted for CPI to 2014 dollars. Differences in household income between non-carers and other carer groups were not statistically significant.

[17] The indicators of financial hardship are not being able to pay electricity, gas or telephone bills on time; not being able to pay rent or mortgage on time; asking for financial help from friends or family; unable to heat home; going without meals; pawned or sold something; asked for help from welfare or community organisations. The number of observations of those who experienced 2 or more of these indicators was too small to produce reliable estimates when broken down according to carer status at age 14–15.

Table 12: Lowest quartile of socio-economic position, by carer status at age 14–15 (%)

Carer status at age 14–15	% living in households in the lowest quartile of socio-economic position					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
Does not provide care (reference group)	19.1	20.4	20.1	19.6	21.7	21.9
Cares for a household member:						
Daily or at least 5 hours per week	**28.4***	**39.5*****	**33.9****	**36.3*****	**41.0*****	**37.3*****
Less than 5 hours per week	**33.2****	**37.2*****	**30.4***	**33.1*****	33.7	29.7
Cares for non-household members only:						
Daily or at least 5 hours per week	**31.4****	**30.9***	**34.4*****	**34.2*****	**32.8***	**38.9*****
Less than 5 hours per week	19.4	21.2	20.5	21.3	23.5	24.9
Cares for 4 or more people	24.2	28.2	22.8	25.3	22.9	**35.6****
All	21.0	23.0	22.0	22.2	24.1	25.0
N	3,105	3,095	3,097	3,092	3,084	3,306

Notes: Sample weights used. ***$p < .001$, **$p < .01$, and *$p < .05$. In Waves 1 to 5, totals are lower than 25% because SEP quartiles are calculated on the complete sample in each wave but the sample used for Table 12 is restricted to those with information about carer status in Wave 6.

Source: LSAC K cohort, Waves 1–6

In summary, those who were carers at age 14–15 were significantly more likely to experience financial disadvantage throughout their childhood. Those who were caring for a household member either daily or for at least 5 hours per week more commonly lived in a jobless household and were more likely to live in a household where one or both parents relied on government payments as their main source of income. Further, compared to those with no caring responsibilities at age 14–15, those with high levels of caring responsibilities had significantly lower levels of equivalised household income, on average, throughout their childhood and were more likely to experience some type of financial hardship.

These differences in the household financial situation across childhood of those who go on to have caring responsibilities, compared to those who do not, are important, as previous research has shown that children living in households experiencing financial disadvantage are more likely to have a poorer early home learning environment and this, in turn, is likely to result in poorer developmental outcomes (Warren, 2017; Warren & Edwards, 2017).

One explanation for these differences in children's developmental outcomes is that low income leads to lower investments by parents in goods and services beneficial for their children's outcomes, particularly in education – the 'investment model' (Becker & Tomes, 1986). A second strand of research argues that family processes mediate the relationship between low income and child outcomes. That is, low income is detrimental for children not because parents have less money but because low income decreases the quality of parents' non-monetary investments, such as their interactions with their children (Mayer, 2002). The next section of this report explores differences in the early home environment of children who subsequently become carers, compared to those who do not.

4.3 Differences in the home learning environment

In this section, we examine differences in the home learning environment of children, according to their carer status at age 14–15; and also depending on whether they had a household member with a restrictive health condition or their primary carer cared for someone outside the household. The early home learning environment is particularly important for children's development, with skills developed in early childhood laying the foundation for later skills.

The years from birth to age 5 have been identified as the most important developmental period during childhood (Shonkoff & Phillips, 2000). Capacity for change in human skill development and neural circuitry is highest early in life and decreases over time, with critical periods during early childhood when particular skills and abilities are more readily acquired (Knudsen et al., 2006). Research has shown that brain development in the first years of life lays the foundation for language development, literacy acquisition, cognitive processes, emotional development, self-regulation and problem-solving skills and has a lasting impact on health, future learning and life success (McCain & Mustard, 1999; Shonkoff & Phillips, 2000).

Furthermore, because learning is a cumulative process in which early skills facilitate further skill acquisition, the benefits of early interventions are larger, are enjoyed for longer and are often more cost effective than later remediation (Carniero & Heckman, 2003, Heckman, 2006). Cunha and Heckman (2007) developed a conceptual framework capturing the essential features of human development. They show that current capabilitiesdepend on capabilities in the previous period as well as investments, the home environment and parental traits.[18] In other words, the development of capabilities at any particular time depends on the set of capabilities already present, as well as investments at home and at school (Conti & Heckman, 2012).

Differences in the early home learning environment, parenting style and other types of parental investment among those who subsequently become carers, compared to those who do not, are likely to be either because the child's primary carer has a health condition or disability that restricts their ability to engage in cognitively stimulating activities with the child; or because the primary carer has considerable caring responsibilities for a household member or a family member living elsewhere. This may result in the child missing out on some beneficial aspects of parental investment in their home learning environment; for example, at-home activities such as reading to the child, out-of-home activities such as going to the library or community events, and extra activities such as music lessons or team sports.

While most of these aspects of the home learning environment are related to the primary caregiver(s) having enough time to do these activities with the child, there may also be a financial aspect. For example, if the primary caregiver has to take time off work because of their own caring responsibilities, or is unable to work due to a disability or illness, this is likely to result in lower levels of household income, and extra activities such as music and sports lessons may not be possible for this reason. In the next section, we will examine these differences in the home learning environment.

Aspects of the home environment examined here include activities children do at home with their parents, out-of-home activities and whether the child attends extra paid activities:

- **At-home activities** include how often (days per week) the child is read to; told a story (not from a book); draws pictures or does other art and craft activities; plays music or sings; plays with toys or games indoors; is involved in everyday activities (e.g. cooking, caring for pets); plays a game outdoors or exercises together with parent. Parents' responses to questions about how frequently they do these activities with the study child are used to create a scale from 0 to 5, with higher scores indicating that these activities are done more frequently.
- **Out-of-home activities** is measured by whether the child has, in the month prior to the interview, done any of the following with a family member: gone to a movie, playground or swimming pool; gone to a sporting event in which the child was not a player; gone to a live performance for children (e.g. a concert or play); attended a school, cultural or community event; attended a religious service; visited a library, museum or art gallery. Parents' responses to questions about how frequently they do these activities with the study child are used to create a scale from 0 to 5, with higher scores indicating that these activities are done more frequently.
- **The extracurricular activities** measure is an indicator of whether the child does any extra activities, such as swimming, gymnastics, team sports, music classes or religious group. As the number of specific extracurricular activities asked about varies between waves, and it is not necessarily the case that more activities are necessarily better for children than one or two activities, an indicator of whether the study child participates in at least one extra activity is used.

Differences in at-home activities, by carer status at age 14–15

At-home activities encompass a wide range of aspects of the home learning environment, with some activities possibly replacing others to an extent (e.g. reading to a child, as opposed to telling the child a story). In households where a household member has a health condition that restricts their everyday activities, some activities may be more feasible than others; for example, playing music or singing may be possible, while doing art and craft or exercising together may be more difficult, either because of health restrictions or caring responsibilities of the primary carer.

At ages 4–5 and 6–7, there were no significant differences in the average scores on the 'at-home activities' scale, according to carer status at age 14–15, disability status of household members or whether the primary carer cared for someone outside the household. However, there were some significant differences in the proportion of children who did specific at-home activities with their parents at age 4–5, according to carer status at age 14–15.

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[18] Investments include investments by parents, schools and intervention programs and may include time spent with parents, time spent at a preschool centre or early childhood intervention program, or investment in materials that stimulate the development of capabilities.

While there were no significant differences in the amount of time spent storytelling, drawing or playing outside at age 4–5, playing music or singing was actually more common among those who subsequently became carers, compared to those who were not carers at age 14–15. Among those who were not carers at age 14–15, 24% played music or sang with their primary carer 6 or 7 days per week, compared to 43% of those who were spending at last 5 hours per week caring for a household member at age 14–15. Similarly, the percentage of study children who played with toys or games with their primary carer 6 or 7 days per week at age 4–5 was 19% for those who were not carers at age 14–15, compared to 27% for those who were caring for a household member for at least 5 hours per week at age 14–15.

One possible explanation for this result is that in households where a household member has a disability or restrictive health condition, the study child's primary carer may spend more time at home with the study child, either because of their own health issues or because of caring responsibilities. Compared to parents in paid employment, this may give them more time to spend with the study child doing activities such as singing, playing music and playing with toys and games. For some, these activities may overlap with time spent caring for another household member, particularly if the household member who requires care is a sibling of the study child.

However, for long-term developmental benefits, some early home activities are more important than others. For example, reading to children from a young age has been shown to have a long-term influence on cognitive outcomes (Kalb & van Ours, 2013). Table 13 shows that there were differences in the amount of time that parents spent reading to their children at age 4–5, depending on whether the child subsequently became a carer. Just under 40% of those who were caring for a household member at age 14–15 were read to on 6 or 7 days per week at age 4–5, compared to 49% of those who were not carers at age 14–15.

Table 13: How often the study child was read to at age 4–5, by carer status at age 14–15

Carer status at age 14–15	Number of days per week the study child was read to			
	0–2 days (%)	3–5 days (%)	6–7 days (%)	Total (%)
Does not provide care (reference group)	20.3	30.8	48.9	100.0
Cares for a household member				
Daily or at least 5 hours per week*	30.6	29.5	39.9	100.0
Less than 5 hours per week	29.4	31.0	39.6	100.0
Cares for non-household members only				
Daily or at least 5 hours per week	22.9	27.6	49.6	100.0
Less than 5 hours per week	23.3	28.7	48.0	100.0
Cares for 4 or more people	27.7	35.7	36.6	100.0
All	22.2	30.4	47.4	100.0

Notes: Sample weights used. ***p < .001, **p < .01 and *p < .05.
Source: LSAC K cohort, Waves 1–6. N = 3,106

There are several possible reasons for the differences in how often the study child was read to. If their primary carer had a long-term health condition or disability, this may have restricted the amount of time they were able to spend reading to their child. Similarly, if the primary carer had caring responsibilities for another household member, this may limit the amount of time they were able to spend engaging in 'one on one' activities, such as reading, with the study child. At age 4–5, those who had a sibling with a health condition were less likely to be read to 6–7 days per week (38%, compared to 46% of those who did not have a sibling with a restrictive health condition or disability).

By age 6–7, there were no significant differences in frequency of reading to the child, according to their carer status at age 14–15. This is likely to be because, by this age, children are starting to read for themselves and, for most children, being read to by their primary carer becomes less frequent.

Differences in out-of-home activities, by carer status at age 14–15

Table 14 shows that there are differences in the average number of out-of-home activities that children were engaged in, from age 4–5 to age 14–15, depending on their carer status at age 14–15. Compared to those who were not carers at age 14–15, those who cared for a household member either daily or for at least 5 hours per week had lower scores on the out-of-home activities scale, on average, from age 6–7 up to age 12–13.

- At age 4–5, those who were spending less than 5 hours caring for a household member and those who reported caring for 4 or more people at age 14–15 had average scores on the out-of-home activities scale 0.3 points (0.3 standard deviations) lower than those who were not carers at age 14–15.
- From age 6–7 to age 12–13, those who, at age 14–15, were caring for a household member either daily or for at least 5 hours per week had significantly lower scores on the out-of-home activities scale than those of non-carers, with differences of 0.3 to 0.4 points (0.2 to 0.3 standard deviations).
- At age 10–11, average scores on the out-of-home activities scale were also lower (0.2 standard deviations) for those who, at age 14–15, reported spending at least 5 hours per week caring for someone who did not live in their household.

Table 14: Out-of-Home Activities Index, by carer status at age 14–15 (means)

Carer status at age 14–15	Out-of-Home Activities Index (average)					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14-15 (Wave 6, 2014)
Does not provide care (reference group)	3.12	2.74	2.56	2.50	2.13	1.95
Cares for a household member						
Daily or at least 5 hours per week	2.94	**2.41***	**2.18***	**2.17***	**1.83***	1.99
Less than 5 hours per week	**2.82***	2.63	2.44	2.39	2.04	1.87
Cares for non-household members only						
Daily or at least 5 hours per week	2.91	2.61	2.48	**2.22***	2.09	2.11
Less than 5 hours per week	3.09	2.83	2.61	2.51	2.23	1.98
Cares for 4 or more people	**2.82****	2.67	2.47	2.36	2.22	2.01
All	3.06	2.73	2.54	2.47	2.13	1.96
SD	1.12	1.24	1.25	1.23	1.23	1.27
N	3,107	3,108	3,108	3,107	3,095	3,327
Household member restricted in everyday activities						
Yes	3.01	**2.59***	**2.37***	**2.34***	2.10	1.98
No	3.06	2.70	2.51	2.45	2.11	1.97
Mother restricted in everyday activities						
Yes	3.00	**2.51****	2.50	2.51	2.00	1.87
No	3.05	2.70	2.30	2.44	2.12	1.99
Father restricted in everyday activities						
Yes	3.00	2.57	**2.30***	2.29	2.12	2.01
No	3.05	2.68	2.50	2.45	2.11	1.97
Sibling restricted in everyday activities						
Yes	3.04	2.63	2.51	2.49	**2.25***	2.14
No	3.04	2.68	2.49	2.44	2.10	1.96
Grandparent restricted						
Yes	3.14	2.86	**2.88***	2.63	2.30	2.20
No	3.04	2.67	2.48	2.44	2.10	1.97
Parent cares for someone outside the household						
Yes	-	-	2.58	**2.57****	**2.25****	**2.16****
No	-	-	2.48	2.41	2.09	1.93

Carer status at age 14–15	Out-of-Home Activities Index (average)					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
All	3.04	2.67	2.48	2.43	2.11	1.96
SD	1.14	1.22	1.24	1.22	1.22	1.27
N	4,981	4,464	4,330	4,159	3,912	3,454

Notes: Sample weights used. Statistical significance is tested against the reference category ('Does not provide care'), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K cohort, Waves 1–6

These differences suggest that either having a household member with a disability that restricts their everyday activities or having a primary carer with caring responsibilities for another person is associated with a reduced likelihood of participation in activities outside the home. This explanation is supported, to some extent, by the differences in average scores on the out-of-home activities scale according to whether the study child had a person in their household who was restricted in their everyday activities (Table 14).

At ages 6–7, 8–9 and 10–11, children living with someone who was restricted in their everyday activities due to a health condition or disability did significantly fewer activities outside the home, with differences between this group and those who did not have any household members with health restrictions around 0.15 points (0.1 standard deviations). However, there was no strong pattern regarding the relationship of the study child to the household member who was restricted in their everyday activities. At age 6–7, those with a mother who was restricted in her everyday activities did significantly fewer activities outside the home, while at age 8–9, the difference in average scores was significant for those whose father had a health restriction.

On the other hand, out-of-home activities were actually more frequent among children who, at age 10–11, had a resident grandparent who was restricted in everyday activities. This was also the case among those who, at age 12–13, had a sibling with a health condition or disability. It may be the case that for those with a primary carer who spends a considerable amount of time providing care for another household member, particularly if the primary carer is not in paid work due to those caring responsibilities, there are actually more opportunities for engaging in activities outside the home. Looking at differences in the out-of-home activities scale according to whether the primary carer cares for someone outside the home, this is indeed the case, with higher average scores at ages 10–11, 12–13 and 14–15 among those whose primary carer had caring responsibilities outside the home, compared to those who did not.

Differences in extracurricular activities, by carer status at age 14–15

Across all waves, there were significant differences in the percentage of children who were engaged in at least one, paid, extracurricular activity, depending on their carer status at age 14–15. Table 15 shows that the percentage of study children who participated in at least one extracurricular activity was lowest among those who subsequently became a carer for a household member.

The lower section of Table 15 shows that, across all waves, the percentage of children who participated in an extracurricular activity was significantly lower among those with a parent or grandparent who had a restrictive health condition. There are several possible explanations for this. It may be because the household financial situation means that extra paid activities are not possible, or health restrictions of the primary carer(s) may limit their ability to take children to these activities, or if the primary carer has caring responsibilities for another household member, this may limit the amount of time available to take the study child to extra activities.

Table 15: Any extracurricular activities, by carer status at age 14–15

Carer status at age 14–15	% of children who did at least one extracurricular activity					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14-15 (Wave 6, 2014)
Does not provide care (reference group)	69.8	78.7	90.7	91.5	79.4	70.8
__Cares for a household member__						
Daily or at least 5 hours per week	__54.1***__	__64.9**__	__74.8***__	__83.0***__	__63.8***__	__60.5*__
Less than 5 hours per week	__56.7**__	__66.1**__	86.9	82.8	__65.9***__	__60.0*__
__Cares for non-household members only__						
Daily or at least 5 hours per week	60.2	77.8	85.8	__84.2**__	73.1	68.2
Less than 5 hours per week	66.1	81.5	89.5	90.9	78.4	71.3
Cares for 4 or more people	__57.1**__	75.4	88.7	87.7	82.1	68.4
All	66.8	77.9	89.3	90.2	77.8	69.8
N	3108	3,108	3,108	3107	3,095	3,108
__Household member restricted in everyday activities__						
Yes	__61.0***__	__67.4***__	__81.0***__	__83.8**__	__70.4***__	__62.5***__
No	66.8	76.3	88.8	89.8	78.6	72.1
__Mother restricted in everyday activities__						
Yes	__65.6**__	__66.9***__	__77.3***__	__77.6**__	__69.0***__	__57.6***__
No	60.5	75.3	88.3	89.2	77.8	71,6
__Father restricted in everyday activities__						
Yes	63.1	__66.7**__	84.3	86.1	75.1	66.6
No	64.8	74.5	87.7	89.2	77.0	70.0
__Sibling restricted in everyday activities__						
Yes	__58.8**__	__66.5**__	82.2	__82.1*__	__64.2***__	__57.4***__
No	65.6	75.1	87.7	89.3	77.7	70.7
__Grandparent restricted__						
Yes	__64.9**__	74.5	83.3	87.0	68.2	61.8
No	50.2	67.7	87.6	89.0	77.0	69.9
__Parent cares for someone outside the household__						
Yes	-	-	86.0	87.4	75.9	74.5
No	-	-	87.4	89.0	76.5	76.8
All	3.81	3.82	3.85	3.83	3.83	3.91
N	4,982	4,443	4,285	4,082	3,808	3,337

Notes: Sample weights used. Statistical significance is tested against the reference category ('Does not provide care'), ***p < .001, **p < .01 and *p < .05.
Source: LSAC K cohort, Waves 1–6

In summary, while there were relatively few differences in the frequency of at-home activities that children engaged in with their primary carers, the one exception was that those who were carers at age 14–15 were read to less often at age 4–5. Out-of-home activities and paid extracurricular activities were also less common among those who subsequently became carers. These differences in 'parental investment' in the early home environment can potentially contribute to poorer academic and social outcomes later in life, as the home learning environment in early childhood has been found to account for much of the early achievement gaps that lead to longer term learning gaps in later years (Melhuish et al., 2008; Yeung & Pfeiffer, 2009).

4.4 Differences in maternal parenting style

In the section, we examine differences in maternal parenting style experienced by those who subsequently became carers, compared to those who did not. Four measures of maternal parenting style are examined in this section:

- **maternal warmth** — displays of affection and awareness of child's needs
- **harsh parenting** — feelings of anger or frustration towards the child and emotional reactivity
- **maternal consistency** — the setting and consistent application of age-appropriate rules and expectations
- **maternal inductive reasoning** — parenting behaviours that help children to learn rules, master tasks in achievable steps and make choices.

These measures are calculated from the mother's responses to a series of questions about her relationship with the child.[19] Parents were asked to rate each item on a 5-point Likert scale with 1 meaning 'never/almost never' and 5 meaning 'always/almost always'. Responses to these items are then averaged to create a 0 to 5 scale. As there were relatively few significant differences in average levels of maternal parenting style, according to carer status at age 14–15 and health restrictions of household members, these comparisons are presented in Appendix Tables B1 to B4. The findings are summarised below.

Maternal consistency

Compared to non-carers, those who were caring for a household member at age 14–15 (regardless of the amount of time spent caring), and also those who reported caring for 4 or more people, experienced significantly lower levels of maternal consistency (up to 0.3 standard deviations) at age 4–5 and age 6–7. However, from age 8–9 onwards, there were no significant differences in levels of maternal consistency according to carer status of the study child at age 14–15.

In terms of the health status of household members, at age 4–5 and age 6–7, only those who had a sibling who was limited in his or her everyday activities experienced significantly lower levels of maternal consistency (up to 0.3 standard deviations), presumably as the mother's time is taken up with caring responsibilities. At age 8–9 and 10–11, those who had a household member with a health restriction experienced significantly lower levels of maternal consistency. There were no significant differences in maternal consistency levels according to whether the mother cared for someone outside the household.

Maternal warmth

There were very few differences in levels of maternal warmth according to carer status at age 14–15, and it is important to keep in mind that this measure is highly skewed, with most mothers reporting high levels of warmth towards their children. However, there were small but significant differences at age 4–5, with those who subsequently became carers experiencing higher levels of maternal warmth than those who were not carers at age 14–15 (difference of 0.2 standard deviations). At age 12–13, children who reported caring for non-household members at age 14–15, particularly those who spent less than 5 hours per week doing caring activities, experienced higher levels of maternal warmth – approximately 0.1 standard deviation higher than non-carers. This result may reflect a situation where those who experienced higher levels of maternal warmth may be more likely to offer assistance to people who do not live with them (e.g. classmates).

There were also relatively few significant differences in levels of maternal warmth depending on health status of household members, at age 12–13, those whose mother was restricted in everyday activities experienced higher levels of maternal warmth (0.2 standard deviations), compared to those whose mother had no health limitations; and at age 14–15, those who had a resident grandparent with a health condition that restricted everyday activities experienced higher levels of maternal warmth (0.3 standard deviations higher than those who did not). At age 8–9 and also at age 14–15, reported levels of maternal warmth were significantly higher among those whose parent cared for someone outside the household (approximately 0.1 standard deviation higher than those whose parents were not carers).

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[19] These questions are listed in Appendix B. While we acknowledge that paternal parenting style is also important, however, missing data, due to fathers living elsewhere and non-response of fathers who do live in the same household as the study child means that analysis of paternal parenting style is likely to be positively biased, with fathers who are more engaged with their children more likely to have participated in the study.

Maternal harshness

Overall, there were very few differences in levels of maternal harshness, according to carer status of the study child at age 14–15. Those who reported caring for 4 or more people at age 14–15 experienced significantly higher levels of harshness at age 4–5, and those who spent less than 5 hours per week caring for a non-household member experienced higher levels of maternal harshness than non-carers at this age.

At age 10–11 and 14–15, those whose mother had a health condition that restricted her everyday activities experienced higher levels of maternal harshness (0.5 and 0.1 standard deviations higher, respectively, compared to those whose mother had no health limitations).

Maternal inductive reasoning

The only significant difference in inductive reasoning by carer status was at age 6–7, when those who cared for a household member at age 14–15 experienced slightly lower levels of maternal reasoning than non-carers (0.2 standard deviations lower).

There were, however, differences in maternal reasoning depending on the health status of household members. In some instances, maternal reasoning was significantly lower among those who had a household member with a health condition that restricted their everyday activities.[20]

5. Does caring for a household member limit young people's learning, cognitive and psycho-social outcomes?

In this section, we examine differences in cognitive, psycho-social and school outcomes according to carer status at age 14–15. The aim of this section is to determine whether there are significant differences in these outcomes at younger ages. If aspects of the child's early home environment – in particular, having a household member with a health condition or disability that restricts their activities or having a primary carer who cares for someone outside the household – are associated with poorer outcomes, then identifying those who could potentially become carers, and providing assistance in the early school years, would be beneficial for long-term outcomes.

5.1 Differences in cognitive outcomes, by carer status

Four different measures are used to examine the associations between carer status and children's cognitive outcomes: NAPLAN Scores for Reading and Numeracy; the 'Who Am I?' test (WAI); the Peabody Picture Vocabulary Test (PPVT-III); and Matrix Reasoning Scores. These measures are described below.

The **National Assessment Program – Literacy and Numeracy (NAPLAN)** commenced in Australian schools in May 2008. Every year, students in Years 3, 5, 7 and 9 in government and non-government schools are assessed using common national tests in numeracy, reading, writing and language conventions (spelling, grammar and punctuation). The NAPLAN tests broadly reflect aspects of literacy and numeracy common to the curriculum in each state or territory, with test formats and questions chosen so they are familiar to teachers and students across Australia (Australian Curriculum Assessment and Reporting Authority [ACARA], 2008). The skills assessed in the 4 NAPLAN tests are mapped onto national achievement scales that span Years 3, 5, 7 and 9, with scores that range from 0 to 1,000 (ACARA, 2008). The scale for each domain is divided into 10 bands to cover the full range of student achievement from Year 3 through to Year 9. Each of the scales was standardised independently to have a mean of 500 and a standard deviation of 100 (Victorian Curriculum and Assessment Authority (VCAA), 2010). In this report, the analysis of NAPLAN outcomes is limited to reading and numeracy scores.

The **'Who Am I?' (WAI)** test is a measure of cognitive development created by the Australian Council for Educational Research (ACER) in 1997 to assess the general cognitive abilities needed for beginning school (de Lemos & Doig, 1999). The test was developed based on previous research about the use of copying and writing tasks for the assessment of children's developmental level and school readiness. Children are asked to write their

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[20] Refer to Appendix Table B3 for details.

name, copy shapes and write letters, numbers, words and sentences with simple instructions and encouragement from their interviewer.

Each response is assessed on a four-point scale relating to the skill required for the task. A score of zero is assigned if no attempt was made on the item. Final test scores are transformed to a scale with a mean of 64 and standard deviation of 8 (Rothman, 2005). This test has several advantages over other measures of cognitive development in early childhood. Scores are stable over time and uniform across different evaluators and it provides a reliable measure of development, which is valid across cultural groups and among children whose knowledge of English is limited (Doig, 2005). 'Who Am I?' scores are available only for children aged 4 to 5 years.

The **Peabody Picture Vocabulary Test (PPVT-III)** is a test designed to measure a child's receptive vocabulary and knowledge of the meaning of spoken words. In this test, the child points to (or says the number of) a picture that best represents the meaning of the word read out by the interviewer. Different versions of the PPVT containing different, although overlapping, sets of items of appropriate difficulty were used for the children when aged 4 to 5 years, 6 to 7 years and 8 to 9 years. PPVT scores are calculated using Rasch modelling to allow comparison between children across waves.

The **Matrix Reasoning (MR) Test** from the Wechsler Intelligence Scale for Children, 4th edition (WISC-IV) was completed by children at ages 6–7, 8–9 and 10–11 years. This test of non-verbal intelligence presents the child with an incomplete set of diagrams (an item) and requires them to select the picture that completes the set from 5 different options. The data file includes raw scores (number of correct responses) and scaled scores based on age norms given in the WISC-IV manual. The instrument comprises 35 items of increasing complexity, with children starting on the item corresponding to their age-appropriate start point.

The WAI, PPVT and Matrix Reasoning tests are taken at the time of the LSAC interview. However, children who are in Years 3, 5, 7 and 9 take the NAPLAN tests in May. Therefore, the majority of children in the LSAC study would have completed their NAPLAN tests prior to their LSAC interview in any given year (or the previous or subsequent year, depending on the school year the child was in at the time of interview). It should also be noted that because of the age distribution of the children in the LSAC study and timing of the NAPLAN tests, the LSAC sample is not nationally representative of the Australian population of children in any given year level.[21]

NAPLAN Reading and Numeracy

Compared to 14–15 year olds with no caring responsibilities, young carers, particularly those who spend a considerable amount of time doing caring activities, have significantly lower NAPLAN outcomes in Year 9. Table 16 shows that boys who were spending at least 5 hours per week doing caring activities, either for someone who lives with them or someone outside the household had significantly lower Reading and Numeracy scores, on average, than boys who had no caring responsibilities. Compared to non-carers, average NAPLAN scores for girls were also significantly lower among those who had caring responsibilities, particularly among girls who reported caring for 4 or more people.

One way to think about the magnitude of these differences is that the NAPLAN score required to meet the national minimum standard in Year 3 is 270 points and the score required to meet the national minimum standard for Year 5 is 374 points. The difference over 2 years is 104 points. Therefore 52 NAPLAN points can be considered to be the equivalent of one year of schooling at the Year 3 level (Warren & Haisken de New, 2013).[22] Between Years 5 and 7 and also between Years 7 and 9, the difference in the score required to meet the national minimum standards (NMS) is 52 points, rather than 104 points. So, in later years, one year of schooling could be considered to be equivalent to 26 points.

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[21] For further details about the NAPLAN scores in LSAC, refer to Daraganova, Edwards and Sipthorp (2014).

[22] Note that because each NAPLAN bandwidth is 52 points, this measure is the same regardless of which cut-point between bands is used. For example, the cut-off point for being above the NMS at Year 3 is 322 points and at the Year 5 level it is 426 points – a difference of 104 points.

Table 16: Average NAPLAN scores in Year 9 Reading and Numeracy, by carer status and gender

Carer Status at age 14–15	Average Reading score		Average Numeracy score	
	Male	Female	Male	Female
Does not provide care (reference group)	595.5	622.6	618.9	610.3
Cares for a household member				
Daily or at least 5 hours per week	**559.0*** **	**589.0** **	**588.0** **	**578.2** **
Less than 5 hours per week	575.8	**591.1** **	603.4	**581.5** **
Cares for non-household members only				
Daily or at least 5 hours per week	**565.0** **	**607.7***	**586.2** **	596.6
Less than 5 hours per week	585.6	**595.6*** **	611.3	**592.7*** **
Cares for 4 or more people	579.7	**545.7***	**590.4*** **	**552.6*** **
All	588.3	611.1	611.9	601.6
N	1,031	1,019	1,021	1,020

Notes: Sample weights used. Statistical significance is tested against the reference category ('Not a carer'), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K cohort, Wave 6, sample restricted to 14–15 year olds who completed their Year 9 NAPLAN tests in 2014

Compared to boys who had no caring responsibilities at age 14–15, those who spent at least 5 hours per week caring for a household member had reading scores 36.5 points (1.4 years of schooling at the Year 9 level) lower, on average, and numeracy scores 30.9 points (1.2 years) lower. Boys who spent at least 5 hours per week caring for someone who did not live with them had reading scores 29.5 points (1.1 years) lower, and numeracy scores 32.7 points (1.3 years) lower, on average, than non-carers. For boys, scores for numeracy, but not for reading, were significantly lower among those who reported caring for 4 or more people (73.2 points, or 2.8 years of schooling).

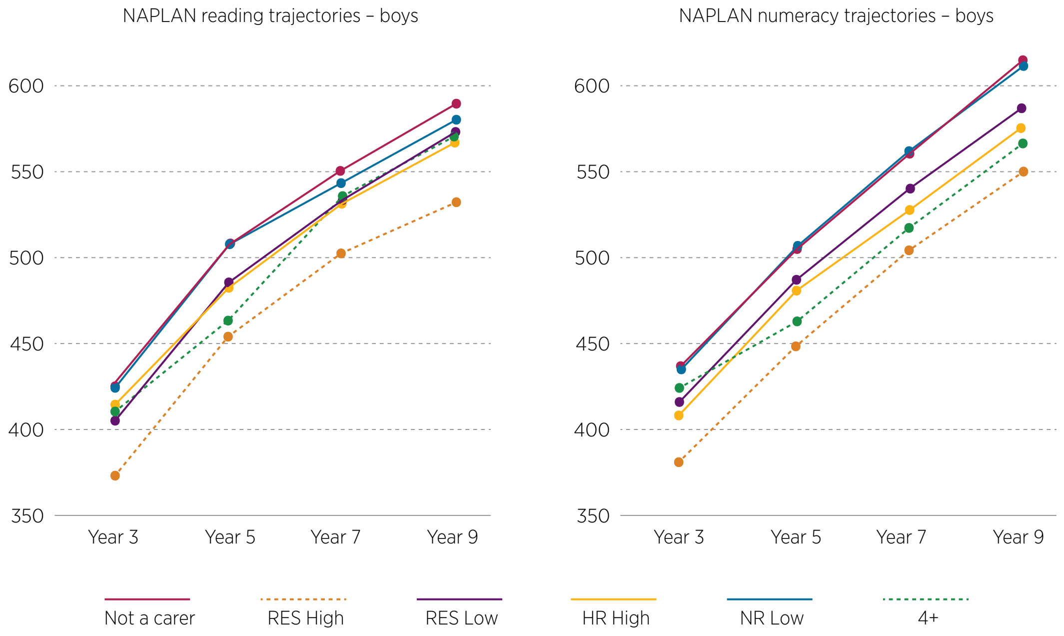
For girls, average scores for reading were significantly lower among all carer groups, compared to non-carers, with largest differences of around 33 points (1.3 years of schooling) among those who cared for a household member, or cared for at least 4 people, and differences of 15 points (0.6 years), on average, for those who spent at least 5 hours per week caring for a non-household member. Average numeracy scores for girls were also significantly lower among carers, compared to non- carers, with differences ranging from 17.6 points (0.7 years of schooling) for those who spent less than 5 hours per week caring for someone who did not live with them, to 57.7 points (2.2 years) for girls who cared for 4 or more people.

Figures 1 and 2 show the NAPLAN achievement trajectories for Reading and Numeracy for boys and girls from Year 3 to Year 9, according to carer status at age 14–15. These figures show that for boys and girls, differences in academic achievement were evident even in Year 3. In Year 3, average Reading and Numeracy scores were lowest for boys who, at age 14–15, were caring for a household member either daily or for at least 5 hours per week, with differences of 48 points (0.9 years of schooling at the Year 3 level) for Reading and 55 points (2.1 years of schooling) for Numeracy compared to boys with no caring responsibilities at this age (Figure 1). While the shape of the trajectories from Year 3 to Year 9 tended to show a roughly similar pattern, this achievement gap continued throughout their school lives, with lower average NAPLAN scores, on average, in Years 5, 7 and 9.

For girls, there were also significant differences in average NAPLAN reading and numeracy scores, even in Year 3, according to carer status at age 14–15. However, it was girls who reported caring for 4 or more people at age 14–15 who had the lowest NAPLAN scores in Year 3, with average Reading scores 82 points (1.6 years of schooling at the year 3 level) lower than those who had no caring responsibilities and average Numeracy scores 59.7 points (1.1 years) lower. As was the case for boys, this achievement gap for girls continued throughout their school years, with significantly lower average NAPLAN scores from Year 3 until Year 9 (Figure 2).

It is important to keep in mind, when looking at these figures, that we are looking at NAPLAN outcomes at a time before we are able to determine whether the study child does any type of caring activities; and not all of the study children who reported caring responsibilities at age 14–15 have had caring responsibilities from a young age. We are not able to determine when these young carers began to take on caring activities, and whether the intensity of these activities, in terms of the amount of time doing these activities, has increased over time. Conversely, we are not able to determine instances where a study child had caring responsibilities in earlier years but not at age 14–15. For example, in cases where a household member who required care had left the household.

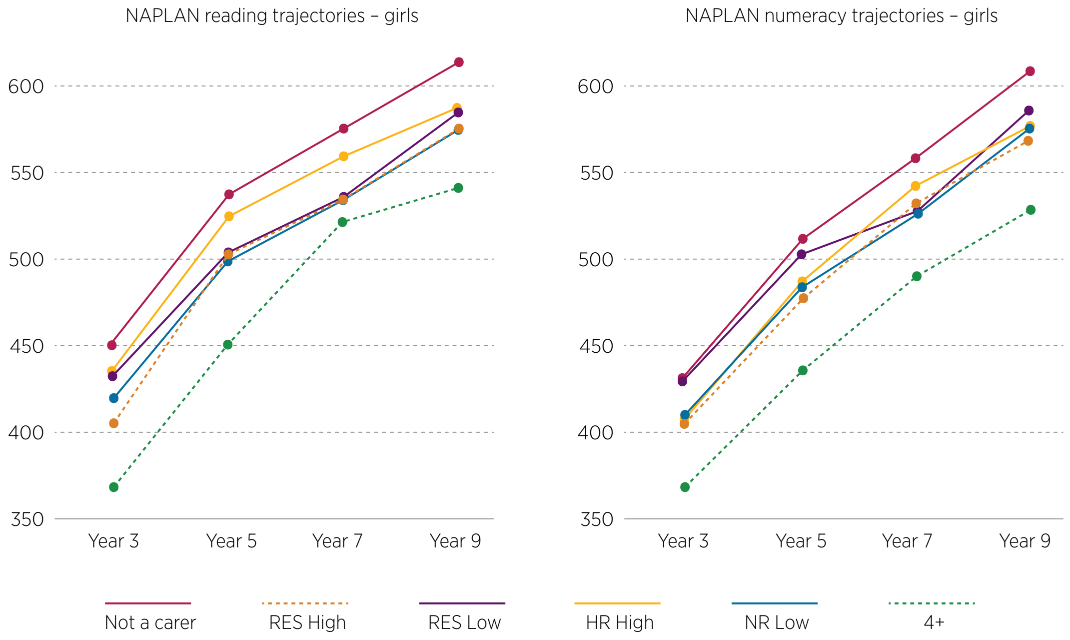
Figure 1: NAPLAN Reading and Numeracy trajectories, by carer status at age 14–15, boys



Notes: RES-High (Resident-High) is the group who cared for a household member either daily or at least 5 hours per week; RES-Low (Resident-Low) represents those who spent less than 5 hours per week caring for a household member; NR-high (Non-resident-High) is the group who cared for a non-household member either daily or at least 5 hours per week; NR-Low (Non-resident-Low) are those who spent less than 5 hours per week caring for a household member; 4+ are those who reported caring for 4 or more people.

Source: LSAC K cohort, Waves 3–6. Sample weights used. Sample restricted to those with NAPLAN scores for Reading and Numeracy in all 4 waves. *N* = 945

Figure 2: NAPLAN Reading and Numeracy trajectories, by carer status at age 14–15, girls



Note: RES-High is the group who cared for a household member either daily or at least 5 hours per week; RES-Low represents those who spent less than 5 hours per week caring for a household member; NR-high is the group who cared for a non-household member either daily or at least 5 hours per week; NR-Low are those who spent less than 5 hours per week caring for a household member; 4+ are those who reported caring for 4 or more people.

Source: LSAC K cohort, Waves 3–6. Sample weights used. Sample restricted to those with NAPLAN scores for Reading and Numeracy in all 4 waves. *N* = 942

While the NAPLAN trajectories are lower for those who subsequently have caring responsibilities, the shape of the trajectories are similar. That is, the average NAPLAN scores increase at a similar rate every 2 years. However, those who subsequently become carers generally don't 'catch up' in terms of average NAPLAN scores. In fact, the achievement gap in terms of years of schooling gets larger as children get older. For example, Table 17 shows that while the difference between NAPLAN scores for those with no caring responsibilities at age 14–15, compared to those who spend at least 5 hours per week caring for a household member, is quite similar at Year 3 and Year 9, because the number of NAPLAN points equivalent to one year of schooling is different (one year of schooling is equivalent to 52 NAPLAN points at Year 3, and 25 points at the Year 9 level), the achievement gap at Year 9 is roughly double that at Year 3 (Table 17).

Table 17: Achievement gap between non-carers and those who cared for a household member at least 5 hours per week

	Reading		Numeracy	
	NAPLAN points	Years of schooling	NAPLAN points	Years of schooling
Boys, Year 3	48.0	0.9	54.5	1.0
Boys, Year 9	44.5	1.7	54.7	2.1
Girls, Year 3	27.3	0.5	20.8	0.4
Girls, Year 9	32.6	1.3	29.6	1.1

Notes: At the Year 3 level, one year of schooling is equivalent to 52 NAPLAN points. At the Year 9 level, one year of schooling is equivalent to 26 NAPLAN points.
Source: LSAC K cohort, Waves 3–6. Sample weights used. Sample restricted to those with NAPLAN scores for Reading and Numeracy in all 4 waves. *N* = 942

As we are not able to identify exactly when their caring responsibilities began, or how the intensity of their caring responsibilities have changed over time, there is no way to tell exactly how much of this achievement gap is due to differences in the home learning environment, as opposed to differences in caring responsibilities.

Still, what these trajectories show us is that, among those who reported having caring responsibilities at age 14–15, cognitive outcomes were lower, on average, from a young age. This result suggests that among those who undertake caring activities at age 14–15, there are likely to have been aspects of their early home environment, such as having a household member with a disability or health condition that requires assistance, and/or having a parent with a high level of caring responsibilities for another household member, and the associated consequences for the household financial situation and home learning environment, that have had a considerable negative influence on their cognitive outcomes.

This finding is consistent with previous research that shows that the early years of childhood are the most important years for cognitive development, which is a cumulative process whereby capabilities developed in the early years are built on throughout childhood (Conti & Heckman, 2012; Heckman, 2006). These differences in early cognitive outcomes are also evident in 'Who Am I?' (WAI) and PPVT scores, as shown in Table 18. Compared to those who were not carers at age 14–15:

- At age 4–5, WAI average scores were significantly lower among boys who cared for a household member at age 14–15 (regardless of the amount of time), girls who spent less than 5 hours per week doing caring activities at age 14–15 and girls who cared for 4 or more people at age 14–15.
- At age 4–5, average PPVT scores were significantly lower among boys and girls who, at age 14–15, spent at least 5 hours per week caring for someone else (either in their household or elsewhere). PPVT scores were also lower among boys who reported caring for 4 or more people and girls who spent fewer than 5 hours per week caring for a household member at age 14–15.
- At age 6–7, average PPVT scores were lower among boys who, at age 14–15, spent at least 5 hours per week doing caring activities, and among girls who provided some type of care (regardless of number of hours).
- At age 8–9, average PPVT scores were also significantly lower among those who were providing some type of care at age 14–15. The only exception was for boys who spent less than 5 hours per week caring for a household member.

For boys and girls, average WAI and PPVT scores at ages 4–5 and 6–7 were significantly lower among those who had a household member with a long-term health condition or disability that restricted their everyday activities, compared to those who did not (Appendix Tables C5 and C6). This was particularly so if the household member was their mother or their sibling. However, at age 8–9, there were no significant differences in average PPVT scores depending on the disability status of household members. This is likely to be because vocabulary skills generally develop at different rates before this age and, by age 8–9, many of those who were behind at earlier ages will have caught up to their peers.[23]

Table 18: Average 'Who Am I?' and PPVT scores, by carer status at age 14–15 and gender

Carer status at age 14–15	Average WAI score		Average PPVT score					
	Age 4–5		Age 4–5		Age 6–7		Age 8–9	
	Male	Female	Male	Female	Male	Female	Male	Female
Does not provide care (reference group)	62.4	67.3	64.4	65.3	74.4	74.0	78.9	78.5
Cares for a household member								
Daily or at least 5 hours per week	**60.3****	65.8	**61.3*****	**62.2***	**71.8*****	**71.9****	**76.5*****	**76.0****
Less than 5 hours per week	**59.3****	**64.5****	64.2	**61.3***	74.5	**71.5*****	**77.7***	**76.9***
Cares for non-household members only								
Daily or at least 5 hours per week	61.0	**65.2**	**61.8****	**63.8***	**72.4****	**72.1****	**76.8*****	**76.9***
Less than 5 hours per week	61.4	66.4	63.8	64.4	74.0	**73.1****	78.6	**77.9***
Cares for 4 or more people	61.3	**62.7****	**61.6****	64.4	73.2	**72.8****	**77.0****	**76.9****
All	61.9	66.7	63.9	64.7	74.0	73.5	78.5	78.0
SD	7.5	7.9	6.2	6.1	5.1	4.9	4.9	4.7
N	1,563	1,514	1,433	1,390	1,544	1,483	1,571	1,518

Notes: Sample weights used. Statistical significance is tested against the reference category ('Does not provide care'), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K cohort, Waves 1–6

Table 19 shows that matrix reasoning scores were also lower, on average, for those who were carers at age 14–15, compared to those who were not:

- At age 6–7, boys who subsequently spent at least 5 hours per week caring for a household member had significantly lower matrix reasoning scores than non-carers, as did girls who spent fewer than 5 hours per week caring for someone (at home or elsewhere) and girls who reported caring for 4 or more people.
- At ages 8–9 and 10–11, boys who were spending at least 5 hours per week caring for a household member had significantly lower matrix reasoning scores. For girls, matrix reasoning scores at age 8–9 were significantly lower among those who were carers at age 14–15, compared to those who were not. The only exception was among girls who spent less than 5 hours per week caring for a household member at age 14–15.
- Similarly, at age 10–11, girls who were carers at age 14–15 had lower matric reasoning scores than non-carers. Particularly if they were spending at least 5 hours per week caring for a household member or caring for 4 or more people by age 14–15.
- There were few significant differences in matrix reasoning scores according to disability status of household members. Boys had significantly lower matrix reasoning scores at age 4–5 if they had a household member with a restrictive health condition, particularly if that person was their mother; and girls had lower matrix reasoning scores at age 10–11 if they had a household member with a restrictive health condition or disability (Appendix Table C7).

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[23] Research on the course of vocabulary development during the early language learning years has found that children vary a great deal in the rate at which they acquire vocabulary (e.g. Fenson et al., 1994). However, the relationship between vocabulary growth rates and later vocabulary skill differs depending on the socio-economic status of the child (Rowe et al., 2012).

Table 19: Average matrix reasoning scores, by carer status at age 14–15 and gender

Carer status at age 14–15	Average matrix reasoning score					
	Age 6–7		Age 8–9		Age 10–11	
	Male	Female	Male	Female	Male	Female
Does not provide care (reference group)	10.4	10.7	10.6	11.3	10.8	11.1
Cares for a household member						
Daily or at least 5 hours per week	__8.8***__	10.1	__8.5***__	__9.8**__	__8.3***__	__9.9**__
Less than 5 hours per week	9.5	__9.8**__	9.9	10.7	10.1	10.4
Cares for non-household members only						
Daily or at least 5 hours per week	9.8	10.2	10.1	__10.4**__	10.5	10.5
Less than 5 hours per week	10.3	__10.3***__	10.7	__10.5***__	10.4	__10.7*__
Cares for 4 or more people	9.8	__9.2***__	9.9	__9.2***__	__9.6**__	__9.2***__
All	10.2	10.5	10.4	10.9	10.5	10.9
SD	3.0	3.0	3.1	3.0	2.9	2.9
N	1,573	1,516	1,572	1,518	1,566	1,512

Notes: Statistical significance is tested against the reference category ('Does not provide care'), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K cohort, Waves 2–6

In summary, the results in this section show that there are substantial differences in cognitive outcomes among young people with caring responsibilities, compared to those who are not carers at age 14–15. These differences are apparent even in early childhood and continue throughout the primary school years and into high school. This finding is consistent with the findings of Heckman (2006) and others who have shown that cognitive development is a cumulative process, with early skills providing the foundation for later skills. This result highlights the importance of policies aimed at alleviating these issues in the early years.

5.2 Differences in psycho-social outcomes, by carer status

Caring responsibilities can be difficult and stressful at any age. For some young people, taking on the demands of supporting someone with a long-term health condition or disability can lead to a significant and long-term negative impact on their physical and mental health and wellbeing (Alexander, 2014). Research by the Carers Trust and The University of Nottingham (Alexander, 2014) shows that many young carers experience traumatic life changes such as bereavement, family break-up, losing income or housing, and seeing the effects of an illness on the person they care for. These things, as well as the pressure of school and the social isolation experienced by many, can lead to stress, anxiety and depression, with 38% of young carers in that study reporting having a mental health issue (Alexander, 2014).

The social and emotional outcomes analysed in this report are based on children's scores on Strengths and Difficulties Questionnaire (SDQ), as well as measures of anxiety and depression calculated from the study child's responses to a series of questions at ages 12–13 and 14–15.

SDQ Total Problem Scores and Prosocial Scores

The SDQ is a brief behavioural screening questionnaire designed to measure the psychological adjustment of children aged between 3 and 16 years. The full SDQ questionnaire consists of 25 items, which make up the SDQ total problems subscale and the SDQ prosocial scale. The SDQ total problems subscale consists of 20 items, some positive and others negative, where an item describes an attribute of the child's behavior (Goodman, 1999). The 20 items are divided into 4 scales of 5 items each:

1. hyperactivity/inattention (e.g. is restless, overactive, cannot stay still for long)
2. conduct problems (e.g. often fights with other children or bullies them)
3. emotional symptoms (e.g. has many fears and is easily scared)
4. peer problems (e.g. is rather solitary, tends to play alone).

The child's parent who is the primary carer (usually the child's mother) indicates whether each item is: not true, somewhat true or certainly true of the child in question and responses are scored 0, 1 or 2, such that higher scores indicate more problematic behaviour.[24] Each of the 4 subscales therefore has a range of 0 to 10, with higher scores indicating a higher risk of clinically significant problems. Responses across all scales are summed to derive the Total Difficulties Score with a range of 0 to 40. Scores of 13 or lower are considered to be average, scores of 14 to 16 indicate a slightly raised risk of clinically significant problems and scores of 17 and over indicate a high risk of clinically significant problems.

The SDQ prosocial scale is based on an additional 5 items (considerate of other people's feelings; shares readily with other children; helpful if someone is hurt, upset or feeling ill; kind to younger children; often volunteers to help others). The prosocial scale has a range of 0 to 10. Low scores on the prosocial scale indicate a higher risk of social problems, with scores of 0 to 4 indicating a substantial risk of clinically significant problems in this area, a score of 5 indicating a slight risk and a score of 6 or higher indicating that the risk of clinical problems in this area is unlikely (Goodman, 1999).

In Tables 19 and 20, average SDQ total problem scores are compared, according to carer status at age 14–15, for boys and girls respectively.[25] For boys, Table 20 shows that compared to non-carers, average total problem scores at ages 4–5, 10–11 and 12–13 were significantly higher among boys who were caring for a household member for at least 5 hours per week at age 14–15, with differences of 0.3 to 0.4 standard deviations. There were also significant differences in the total problem scores of boys who were spending at least 5 hours caring for a non-household member at age 14–15, with differences of 0.4 to 0.6 standard deviations at ages 4–5, 8–9, 12–13 and 14–15. While these differences are not consistent across all waves, this result suggests that for boys, growing up in a household where a household member requires ongoing care may increase the likelihood of issues such as hyperactivity, conduct problems, emotional problems or issues interacting with peers.

Table 20: Average SDQ total problem scores, by carer status at age 14-15, boys

Carer status at age 14–15	Average SDQ total problem score					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
Does not provide care (reference group)	9.6	8.6	8.2	8.6	8.1	7.5
Cares for a household member						
Daily or at least 5 hours per week	**10.9***	9.6	8.5	**11.2*****	**10.5****	9.0
Less than 5 hours per week	9.0	8.5	8.0	8.4	6.7	8.0
Cares for non-household members only						
Daily or at least 5 hours per week	**12.8****	9.8	**11.0****	11.0	**10.5***	**10.3***
Less than 5 hours per week	9.9	8.4	8.6	8.8	8.6	7.8
Cares for 4 or more people	11.1	9.1	9.6	8.8	9.3	8.2
All	9.9	8.6	8.5	8.9	8.4	7.8
SD	5.4	5.2	5.6	5.8	5.8	5.6
N	1,578	1,552	1,437	1,574	1,555	1,659

Notes: Sample weights used. Statistical significance is tested against the reference category ('Does not provide care'), ***p < .001, **p < .01 and *p < .05.
Source: LSAC K cohort, Waves 1–6

For girls, Table 21 shows that there were significant differences in average SDQ total problem scores, according to carer status at age 14–15. Differences between the average scores of carers, compared to non-carers, ranged from 0.1 standard deviation, at age 4–5 and also at age 6–7, for girls who cared for a non-household member for less than 5 hours per week at age 14–15, up to 0.4 standard deviations at age 10–11, for girls who, at age 14–15, were caring for a household member for at least 5 hours per week.

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[24] Parent-reported, rather than child-reported, SDQ Measures are used in this analysis, as the parent reported measure is available in all 6 waves. While both parents, and in some waves of LSAC also teachers, complete the SDQ, the SDQ measure used in this report is based on the responses of Parent 1, which is usually the mother of the study child.

[25] Differences in separate scales for hyperactivity, conduct problems, emotional symptoms and peer problems scales, by carer status at age 14–15, were generally consistent with those for the overall SDQ total problem score measure.

Table 21: Average SDQ total problem scores, by carer status at age 14–15, girls

Carer status at age 14–15	Average SDQ total problem score					
	Age 4–5 (Wave 1, 2004)	Age 6–7 (Wave 2, 2006)	Age 8–9 (Wave 3, 2008)	Age 10–11 (Wave 4, 2010)	Age 12–13 (Wave 5, 2012)	Age 14–15 (Wave 6, 2014)
Does not provide care (reference group)	8.3	6.9	6.5	7.0	6.4	6.8
Cares for a household member						
Daily or at least 5 hours per week	9.1	**8.1***	7.6	**9.1****	**8.1***	7.9
Less than 5 hours per week	9.1	**8.2***	**8.5***	8.2	7.9	**8.5***
Cares for non-household members only						
Daily or at least 5 hours per week	**10.4****	**8.6****	**8.2***	**8.8****	**8.3****	**9.5*****
Less than 5 hours per week	**8.9***	**7.5***	6.7	7.4	**7.0***	**7.1***
Cares for 4 or more people	**10.2*****	**8.4****	7.3	**8.6***	**8.0****	**8.0***
All	8.7	7.3	6.8	7.4	6.8	7.1
SD	4.9	4.6	4.8	5.4	5.1	5.6
N	1,525	1,489	1,402	1,519	1,507	1,604

Notes: Sample weights used. Statistical significance is tested against the reference category ('Does not provide care'), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K cohort, Waves 1–6

Across all waves, SDQ total problem scores were significantly higher among boys and girls who had a household member with a disability or health condition that restricted their everyday activities, particularly if that household member was their mother or sibling (Appendix Tables C8 and C9). In some but not all waves, those whose primary carer cared for someone who did not live with them had higher SDQ total problem scores than those whose primary carer had no caring responsibilities outside the household (boys and girls at age 8–9 and girls aged 12–13).

In terms of SDQ prosocial scores, there were very few statistically significant differences between average scores, according to carer status at age 14–15. Compared to boys who had no caring responsibilities at age 14–15, average prosocial scores at age 8–9 were significantly higher among those who subsequently cared for a household member at age 14–15; and at age 12–13, average prosocial scores were significantly higher among boys who were caring for a non-household member for fewer than 5 hours per week at age 14–15.[26] It may be the case that boys who have better social skills at age 14–15 may be more likely to offer assistance to a non-household member or, on the other hand, they may have developed better social skills as a result of their caring activities.

Anxiety and depression

Evidence about the association between caring responsibilities and symptoms of anxiety and depression for young people is limited. Furthermore, the existing evidence is not consistent in terms of the influence of caring on depression and anxiety. For example, Cohen and colleagues (2012) found that young carers, particularly those living with the care recipient, reported significantly higher levels of anxiety and depression and lower levels of life satisfaction. However, a recent study in England found that while young carers reported more difficulties making friends and were more likely to be bullied, to be absent or late for school and to fall asleep in class, they did not have higher levels of negative emotions (Aldridge et al., 2017).

Anxiety, by carer status at age 14–15

For this report, the measure of anxiety is derived from Spence Anxiety Scale (short form, Spence, 1998). At LSAC Wave 5 and 6 interviews, study children were asked to state how often each of the following happens to them, with 0 meaning 'never', 1 'sometimes', 2 'often' and 3 'always':

- I worry about things.
- I feel afraid.

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[26] For boys at age 8–9, average prosocial scores were 7.87 for those with no caring responsibilities at age 14–15 and 8.05 for those who cared for a non-household member less than 5 hours per week at age 14–15, a difference of 0.1 *SD*. At age 12–13, average prosocial scores were 7.97 for those with no caring responsibilities at age 14–15 and 8.02 for those who cared for a non-household member less than 5 hours per week at age 14–15, a difference of 0.03 *SD*. T-tests indicate that these differences are significant at the 5% significance level.

- I feel afraid that I will make a fool of myself in front of people.
- I worry that something bad will happen to me.
- I feel nervous.
- I wake up feeling scared.
- I worry what other people think of me.
- All of a sudden, I feel really scared for no reason at all.

Total scores ranged from 0 to 24, with higher scores reflecting higher levels of anxiety symptoms. Boys with a total score of 9 or above and girls with a total score of 11 or above are classified as having a high level of anxiety. At age 12–13, 15% of boys and girls were classified as having a high level of anxiety. By age 14–15, 14% of boys and 25% of girls had high anxiety levels. For some carer status categories, the number of observations for those with high anxiety was too small for reliable estimates, particularly for boys.

At age 12–13, there was a small but statistically significant difference in the average anxiety scores for boys who, by age 14–15, were caring for a non-household member for at least 5 hours per week, compared to those with no caring responsibilities at age 14–15 (Table 22). However, by age 14–15, there were no significant differences in anxiety scores according to carer status. For girls, anxiety levels were significantly higher at age 12–13 among those who, by age 14–15, were caring for a household member for at least 5 hours per week. However, at age 14–15, this was not the case, and compared to non-carers, it was girls who were caring for a non-household member or caring for 4 or more people, who had significantly higher levels of anxiety.

While there is no way to determine for certain the reason why anxiety levels were higher for young carers who cared for someone who did not live with them, there are several possible explanations. First, spending a considerable amount of time with a family member who needs a high level of care; that is, intensive help with core activities, may contribute to anxiety levels, particularly if this person lives in a residential care facility where the young person may also interact with other people with health conditions or disabilities requiring high levels of care. Second, it is possible that young people who voluntarily offer to help other people who require assistance with daily activities (e.g. classmates) are also more likely to report feelings of being worried or nervous.

Table 22: Average anxiety scale scores, by carer status at age 14–15 and gender

Carer status at age 14–15	Average anxiety score			
	Age 12–13		Age 14–15	
	Male	Female	Male	Female
Does not provide care (reference group)	5.1	6.2	4.4	7.2
Cares for a household member				
Daily or at least 5 hours per week	4.9	**8.8*****	4.2	8.1
Less than 5 hours per week	4.2	6.5	4.5	7.7
Cares for non-household members only				
Daily or at least 5 hours per week	**6.6***	6.6	4.7	**8.9***
Less than 5 hours per week	5.2	6.5	5.0	**8.3****
Cares for 4 or more people	4.5	6.4	4.9	**8.2***
All	5.1	6.5	4.6	7.6
SD	3.9	4.4	3.8	5.2
N	1,556	1,511	1,698	1,638

Notes: Sample weights used. Statistical significance is tested against the reference category ('Does not provide care'), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K cohort, Waves 5 and 6

For boys and girls, there were no significant differences in anxiety scores at 12–13 depending on whether they had a household member with a disability or health condition that restricted their everyday activities (Appendix Table C10). However, at age 14–15, those with a household member with a restrictive health condition had significantly higher anxiety scores. For boys, this was particularly so if it was a sibling who was restricted in everyday activities, while for girls, those whose mother or sibling had a restrictive heath condition had significantly higher anxiety scores.

Depressive symptoms, by carer status at age 14–15

Depression scale scores are calculated based on responses to the Short Mood and Feelings Questionnaire (Angold et al., 1995). Each of the following items is rated on a 3-point Likert scale with values of 0–2 assigned to response statements of ‘True’ (2), ‘Sometimes’ (1), and ‘Not true’ (0) given a time frame over the previous 2 weeks:

- I felt miserable or unhappy.
- I didn’t enjoy anything at all.
- I felt so tired I just sat around and did nothing.
- I was very restless.
- I felt I was no good anymore.
- I cried a lot.
- I found it hard to think properly or concentrate.
- I hated myself.
- I was a bad person.
- I felt lonely.
- I thought nobody really loved me.
- I thought I could never be as good as other kids.
- I did everything wrong.

Total scores ranged from 0 to 26 with higher scores reflecting a greater level of depression. Adolescents with scores 8 or more were categorised as having significant depressive symptoms. At age 14–15, 19% of boys and 34% of girls had scores in this scale of 8 or higher – up from 16% of boys and 19% of girls at age 12–13. However, the number of study children with significant depressive symptoms, according to carer status at age 14–15, was too small for reliable estimates. Therefore, average depression scores, by carer status at age 14–15, are presented in Table 23.

Table 23: Average depression scale scores, by carer status at age 14–15 and gender

Carer status at age 14–15	Average depression scale score			
	Age 12–13		Age 14–15	
	Male	Female	Male	Female
Does not provide care (reference group)	3.8	4.1	3.9	6.1
Cares for a household member				
Daily or at least 5 hours per week	4.3	**6.4***	4.1	**7.8***
Less than 5 hours per week	2.7	4.7	5.3	**7.6***
Cares for non-household members only				
Daily or at least 5 hours per week	5.0	4.6	**6.0***	**8.6****
Less than 5 hours per week	3.8	4.4	**5.2***	**7.8***
Cares for 4 or more people	4.6	4.9	5.5	7.0
All	3.8	4.4	4.4	6.7
SD	5.1	5.5	6.1	7.1
N	1,556	1,510	1,698	1,636

Notes: Sample weights used. Statistical significance is tested against the reference category (‘Does not provide care’), ***$p < .001$, **$p < .01$ and *$p < .05$. *SD* larger than mean indicates that the data for the depression measure is not normally distributed – it is highly skewed towards the lower end of the scale.
Source: LSAC K cohort, Waves 5 and 6

For boys, there are no significant differences in average depression scores at age 12–13, according to carer status 2 years later. However, at age 14–15, boys who were caring for a non-household member either daily or for at least 5 hours per week had significantly higher levels of depressive symptoms, with average scores 2.2 points (0.3 standard deviations) higher than those of non-carers. Boys who cared for a non-household member for fewer than 5 hours per week also had significantly higher scores on this scale, with average scores 1.4 points, or 0.2 standard deviations lower than those of non-carers. As was the case with anxiety levels, one possible explanation for this difference is that those who are caring for non-household members may be spending time with people with more profound illnesses or disabilities, and this contributes to higher levels of depressive symptoms among this group.

For girls, levels of depressive symptoms at age 12–13 were significantly higher among those who were caring for a household member for at least 5 hours per week at age 14–15. At age 14–15, girls who were carers had higher levels of depressive symptoms than non-carers, regardless of the amount of time they spent or whether they were caring for a household member or someone living elsewhere. The only exception was among girls who reported caring for 4 or more people, for whom there was no significant difference between levels of depressive symptoms compared to non-carers.

Turning now to differences in depressive symptoms according to the disability status of household members, we find no significant differences for boys at age 12–13 (Appendix Table C11). However, at age 14–15, boys whose mother or sibling was restricted in everyday activities had significantly higher levels of depressive symptoms. Girls who had a household member with a restrictive health condition at age 12–13 had higher levels of depressive symptoms, particularly if the household member was their mother. At age 14–15, average levels of depressive symptoms were significantly higher among girls who had a household member with a restrictive health condition, particularly if it was their mother, father or sibling. Levels of depressive symptoms at age 14–15 were also significantly higher among those whose primary carer cared for someone who did not live with them.

The results in this section indicate that, in general, for young people, caring for a household member is not associated with significantly higher levels of social or emotional issues. A somewhat unexpected result was that those who spend only a short amount of time caring for a non-household member experienced worse social-emotional outcomes.

5.3 Differences in school outcomes, by carer status

Previous research has shown that being a carer can have adverse effects on school outcomes, as those with caring responsibilities are likely to have limited time to do homework and study and, in some cases, frequent absences from school, due to their caring responsibilities. As the previous section has shown, academic achievement trajectories have a lower starting point for young carers, and this gap continues throughout school, in some cases getting larger over time.

While for some, school may be seen as a respite from the demands of caring at home, others who have fallen behind at school or are experiencing other issues at school (e.g. being bullied or picked on or just experiencing problems getting along with classmates) may become more disengaged as they struggle to keep up with their peers. Therefore, it may not be just the caring responsibility but lack of enthusiasm for school over time that explains the differences in school engagement of those who subsequently become young carers.

In this section, we explore whether there are differences in absenteeism and school engagement among those children who became carers, compared to those who did not. Absenteeism is measured by parents' reports of the number of days the study child was absent from school in the previous 4 weeks, and teacher reports of whether the child is frequently absent from school.

Absence from school, by carer status

In terms of parent reported absence from school, there were very few differences in the average number of days that children were reported absent in the previous 4 weeks, depending on carer status at age 14–15 (Table 24). At age 6–7, boys who were caring for a household member for at least 5 hours per week at age 14–15 had significantly higher absence levels (2 days compared to 1.1 days for non-carers) and girls who cared for 4 or more people at age 14–15 had a higher number of absences (1.7 days compared to 1.3 or non-carers). At this young age, this is likely to reflect the primary carer's ability to get the child to school (possibly due to their own health issues), rather than truancy of the study child.

At age 10–11, girls who, at age 14–15, were spending at least 5 hours per week caring for a household member had a higher number of absences, on average, compared to non-carers; and, at age 12–13, girls who were caring for 4 or more people at age 14–15 were absent for 2.2 days, on average, compared to 1.3 days for non-carers.

Table 24: Number of days absent in the last 4 weeks (parent reported), by carer status at age 14–15 and gender

Carer status at age 14–15	Average days absent from school in the last 4 weeks							
	Age 6–7		Age 8–9		Age 10–11		Age 12–13	
	Male	Female	Male	Female	Male	Female	Male	Female
Does not provide care (reference group)	1.1	1.3	1.1	1.2	1.2	1.2	1.3	1.3
Cares for a household member:								
Daily or at least 5 hours per week	**2.0***	1.4	1.7	1.4	1.4	**2.0****	1.7	1.7
Less than 5 hours per week	1.4	1.7	1.4	1.1	2.0	1.1	1.8	1.4
Cares for non-household members only:								
Daily or at least 5 hours per week	1.1	1.4	1.4	1.3	1.1	1.3	1.1	1.1
Less than 5 hours per week	1.3	1.3	1.2	1.0	1.0	1.2	1.7	1.1
Cares for 4 or more people	0.9	**1.7***	1.8	1.5	1.5	1.5	1.4	**2.2*****
All	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.3
N	1,573	1,520	1,572	1,518	1,573	1,513	1,568	1,517

Notes: Sample weights used. Statistical significance is tested against the reference category ('Does not provide care'), ***$p < .001$, **$p < .01$ and *$p < .05$. Sample is restricted to those who answered the questions about care in Wave 6.
Source: LSAC K cohort, Waves 2–6

While there were few differences in the average number of absences according to carer status at age 14–15, there was a clear pattern in the average number of absences according to disability status of household members (Appendix Table C12). Across all waves, those who had a household member with a restrictive health condition had a significantly higher number of days absent, on average, than those who did not. At ages 6–7 and 8–9, this was particularly the case if it was the study child's mother who was restricted in everyday activities; while at ages 10–11 and 12–13, it was those whose father or sibling, respectively, was restricted in everyday activities who had a significantly higher number of days absent from school.

However, as parent reported absences only relate to absences in the previous 4 weeks, it is possible that this measure is not accurately capturing regular absences from school. Table 25 shows that there were some differences in teacher reported absences, with generally higher levels of absence among boys who subsequently cared for a household member at age 14–15.

Table 25: Study child has frequent absences from school (teacher reported), by carer status at age 14–15 and gender (%)

Carer status at age 14–15	Study child has frequent absences from school (%)							
	Age 6–7		Age 8–9		Age 10–11		Age 12–13	
	Male	Female	Male	Female	Male	Female	Male	Female
Does not provide care (reference group)	4.8	5.2	5.0	4.7	3.3	5.5	9.1	8.2
Cares for a household member:								
Daily or at least 5 hours per week	**#24.2****	2.6	7.3	2.8	5.3	8.1	17.7	3.4
Less than 5 hours per week	#2.1	6.9	3.1	8.2	8.9**	8.2	**24.9****	15.1
Cares for non-household members only:								
Daily or at least 5 hours per week	#2.3	**0.6***	3.0	4.1	**15.1****	7.6	3.7	13.0
Less than 5 hours per week	7.0	4.9	4.2	3.7	8.4	3.7	8.6	6.2
Cares for 4 or more people	#3.4	6.2	6.0	**15.7*****	2.4	**17.2****	16.0	14.7
All	5.6	4.9	4.8	5.0	5.3	5.9	10.0	8.4
N	1,301	1,261	1,342	1,272	1,263	1,264	1,284	1,271

Notes: Sample weights used. Pearson test indicates that categories are significantly different (***$p < .001$, **$p < .01$ and *$p < .05$). #Estimate not reliable (cell count < 20). Sample is restricted to those who answered the questions about care in Wave 6.
Source: LSAC K cohort, Waves 2–6

School engagement, by carer status

At ages 6–7, 8–9 and 10-11, school engagement is measured using the Approaches to Learning scale, which includes 6 items by which a teacher rates a child's attentiveness, task persistence, eagerness to learn, learning independence, flexibility and organisation – factors that reflect children's behavioural engagement within the classroom.[27] The items included in the Approaches to Learning scale are reported on a four-point scale: never = 1, sometimes = 2, often = 3 and very often = 4.[28] The measure used in this analysis is the average of all items where teachers provided a response of never, sometimes, often or very often for all items, with higher scores on this scale indicating higher levels of academic engagement.

At ages 12–13 and 14–15, teachers are asked to rate the following items on a scale of 1 to 5, where 1 means 'never' and 5 means 'all the time':

- works hard
- relates well to other students
- passive and withdrawn
- attentive
- disruptive
- late
- absent
- completes homework.

Scores for 'passive and withdrawn', disruptive, late, absent are reversed; and then scores are averaged to create the school engagement scale, so that higher scores indicate higher levels of academic engagement. Tables 26 and 27 present the average levels of school engagement, by carer status at age 14–15, for boys and girls respectively.

Table 26: Average school engagement scores, by carer status at age 14–15, boys

Carer status at age 14–15	Average school engagement score				
	Age 6–7	Age 8–9	Age 10–11	Age 12–14	Age 14–15
Does not provide care (reference group)	3.07	3.09	3.14	3.96	3.92
Cares for a household member:					
Daily or at least 5 hours per week	2.96	3.02	3.04	3.90	3.75
Less than 5 hours per week	3.00	2.92	3.06	3.86	3.84
Cares for non-household members only:					
Daily or at least 5 hours per week	2.94	3.00	3.05	3.95	3.92
Less than 5 hours per week	3.09	3.02	3.06	3.97	3.85
Cares for 4 or more people	**2.80***	3.12	**3.33***	3.96	**3.72***
All	3.05	3.06	3.12	3.94	3.89
SD	0.72	0.72	0.72	0.62	0.63
N	1,307	1,343	1,263	1,316	1,278

Notes: Sample weights used. Statistical significance is tested against the reference category (Does not provide care), ****p* < .001, ***p* < .01 and **p* < .05.
Source: LSAC K cohort, Waves 2–6

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[27] The specific question asks: How often did this child demonstrate the following behaviour in the past month or two? Items listed are: Keeps belongings organised, Works independently, Persists in completing tasks, Shows eagerness to learn new things, Easily adapts to changes in routine, Pays attention well.

[28] Teachers are also able to indicate that the child has had 'No opportunity' to exhibit each of the behaviours associated with an item (coded as -1). Very few teachers indicated that their students had not had an opportunity to display a particular behaviour. These students are not included in the analysis of this scale.

Table 27: Average school engagement scores, by carer status at age 14–15, girls

Carer status at age 14–15	Average school engagement score				
	Age 6–7	Age 8–9	Age 10–11	Age 12–14	Age 14–15
Does not provide care (reference group)	3.46	3.47	3.57	4.33	4.21
Cares for a household member:					
Daily or at least 5 hours per week	3.27	3.32	**3.42***	4.29	**4.05***
Less than 5 hours per week	**3.25***	3.24	**3.39***	**4.04****	4.13
Cares for non-household members only:					
Daily or at least 5 hours per week	3.35	3.32	**3.37***	**4.15****	**4.03***
Less than 5 hours per week	3.45	3.47	3.54	**4.25****	4.20
Cares for 4 or more people	**3.25***	**3.28****	**3.42****	4.20	**4.06***
All	3.42	3.44	3.53	4.27	4.19
SD	0.63	0.64	0.59	0.53	0.60
N	1,260	1,266	1,260	1,330	1,294

Notes: Sample weights used. Statistical significance is tested against the reference category (Does not provide care), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K cohort, Waves 2–6

For boys, there were very few significant differences in levels of school engagement by carer status. At ages 6–7 and 14–15, levels of engagement were significantly lower among those who reported caring for 4 or more people at age 14–15, compared to non-carers. However, at age 10–11 scores for this group were higher, on average, than those for non-carers. These results should be interpreted with caution, as the number of boys who reported caring for 4 or more people is relatively small.

For girls, Table 27 shows that there were significant differences in school engagement, even at age 6–7, with those who were caring for 4 or more people or caring for a household member for fewer than 5 hours per week having lower school engagement scores, on average, than non-carers. However, at age 8–9, average school engagement scores were only lower for girls who reported caring for 4 or more people at age 14–15. Then, at age 10–11, school engagement scores were generally lower for those who had some caring responsibilities at age 14–15, compared to those who did not – the only exception being those who spent less than 5 hours per week caring for a non-household member. By age 14–15, girls who were spending at least 5 hours per week caring for either a household member or someone who did not live with them and girls who reported caring for 4 or more people had significantly lower levels of school engagement than non-carers.

Across all waves, for boys, levels of school engagement were significantly lower among those who had a household member with a restrictive health condition, particularly if it was their mother who was restricted in everyday activities (Appendix Table C13). However, for girls, the differences in levels of school engagement, according to disability status of household members were less consistent (Appendix Table C14). At ages 6–7, 12–13 and 14–15, average levels of school engagement were lower among girls who had a household member with a restrictive health condition, particularly if it was their mother. At age 8–9, school engagement was only significantly lower among those whose mother had a restrictive health condition (but not significantly different overall for those who had a household member with a health condition), compared to those who did not. There was also a significant difference in levels of school engagement among girls whose primary carer cared for someone who did not live in their household, compared to those whose primary carer did not have these responsibilities.

6. Multivariate analysis: The influence of caring for others on cognitive, social and school outcomes at age 14–15

The descriptive evidence in this report has shown that there are substantial differences in the average NAPLAN scores of 14–15 year olds according to whether or not they care for someone who either has a disability or long-term illness or is elderly. However, it is important to note that the simple differences in test scores between children who provided care or assistance to someone else and those who did not should not be regarded as causal, as they may simply reflect other characteristics, such as parental education, which may be correlated with both carer status and developmental outcomes.

Sample characteristics in section 4 of this report indicate that 14–15 year olds who cared for someone else were less advantaged than those who were not carers; in terms of household financial situation as well as important aspects of their early home environment. Further, Warren and Edwards (2017) showed that those who cared for another person at age 14–15 more commonly lived in low socio-economic position and lone parent households, and those whose mother did not have a post-school qualification were more likely to be carers.

To control for these differences in characteristics, multivariate regressions were conducted to examine the association between carer status at age 14–15 and a range of cognitive (NAPLAN Reading and Numeracy) and social outcomes (SDQ total problem scores, anxiety and depression). As information about carer status is only available at age 14–15, the multivariate regressions are only conducted for outcomes at this age.

First, we estimate the influence of caring on these outcomes using an indicator of whether or not the study child provides any type of care, controlling for a range of socio-demographic characteristics. To account for the association between carer status and household characteristics such as mother's education and parent's employment status, covariates are added in stages. Finally, to account for other differences in the early home environment, variables measuring the number of years the study child's household relied on income support and other aspects of parenting style and parental investment in the early years were added. A complete case analysis sample is used to maintain consistency in the sample across the 4 model specifications.

- The baseline model (Model I) includes only carer status at age 14–15.
- In Model II, controls for socio-demographic characteristics (age in months, birth order, whether the study child speaks a language other than English, mother's country of birth, Indigenous status, single-parent household) are added.[29]
- In Model III, mother's education (indicator of whether mother has a degree qualification) and household income support (number of waves in which government payments are the main source of household income) are added. The number of waves that a household member had a health condition that restricted their everyday activities are also added to the model, as well as the number of waves the study child's primary carer cared for someone who did not live in their main household.
- In Model IV, other aspects of the home environment are included. These include:
  - parenting style (average maternal consistency, inductive reasoning and hostile parenting over the 5 waves from ages 4–5 to 12–13)
  - aspects of parental investment (whether child is read to at least 6 days a week at age 4–5, as well as the out-of-home activities scale and extracurricular activities indicator averaged over the 5 waves from age 4–5 to 12–13).

To account for school readiness at age 4–5, the child's 'Who am I?' score is also included. For cognitive outcomes, PPVT at age 4–5 is also included, while for social outcomes, SDQ total problem score at age 4–5 is included to control for problems that may have existed from an early age.

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[29] Unless otherwise specified, for variables that change over time, e.g. whether the study child lived in a single-parent household, Wave 6 measures are used.

6.1 The influence of caring on NAPLAN outcomes

Estimates of the influence of caring at age 14 on Year 9 NAPLAN Reading and Numeracy scores are presented in Tables 28 and 29 respectively.

Table 28: OLS regressions estimating the association between carer status and NAPLAN Reading scores in Year 9

	I		II		III		IV	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Carer status (Reference = Does not provide care)								
Resident 5+ hours	-50.7***	-28.8**	-47.2***	-31.0**	-42.0***	-26.8**	-33.9**	-20.5*
Resident <5 hours	-13.3	-23.1	-9.4	-18.0	-5.3	-19.1	-4.6	-12.9
Non-resident 5+ hours	-25.1*	-35.9**	-28.8**	-33.2**	-29.2**	-29.0*	-24.7**	-28.2*
Non-resident <5 hours	-10.7	-26.0***	-10.4	-24.2***	-9.2	-21.9***	-10.8*	-17.8***
Cares for 4+ people	-15.0	-64.7**	-16.9	-62.2***	-16.8	-54.9***	-6.9	-44.8***
Socio-demographic controls			***	***	**	*	***	ns
Mother has a degree					34.1**	32.9***	24.7***	22.8***
Income support (waves)					-10.9***	-5.3	-9.4***	-2.2
HH member has a health restriction (waves)					-1.2	-1.3	-0.5	-0.8
Primary carer cares for someone outside the household (waves)					0.1	2.0	0.5	2.5
Maternal consistency							1.5	12.0*
Maternal reasoning							-1.0	-14.0***
Maternal harshness							-7.2	7.01
Out-of-home activities							1.5	6.1*
Extra activities							9.0	-7.7
Reading – Age 4–5							7.2	13.0**
PPVT – Age 4–5							3.2***	2.7***
Who Am I? – Age 4–5							1.4***	1.4***
Constant	604.9***	628.4***	624.3***	647.8***	653.0***	658.2***	401.8***	430.8***
R^2	0.03	0.05	0.08	0.11	0.16	0.17	0.27	0.28
N	835	842	835	842	835	842	835	842

Notes: ***p < .001, **p < .01 and *p < .05. Covariates included in models II to IV: age (in months), birth order, whether the study child speaks a language other than English, mother's country of birth, Indigenous status, single-parent household. Significance levels for socio-demographic controls are based on *F*-tests of joint significance.
Source: LSAC K cohort, Waves 1–6

For boys, the estimates for Reading show that those who spent a considerable amount of time caring – that is, at least 5 hours per week – are likely to have lower NAPLAN scores, on average, compared to non-carers. Before accounting for other factors, average Reading scores of those who spent at least 5 hours per week caring for a household member were 51 points (almost 2 years of schooling) lower than those of non-carers; and boys who spent at least 5 hours per week caring for someone outside their household were 25 points (0.9 years of schooling) lower than those of non-carers.

Even after accounting for aspects of the early home learning environment, parenting style and ability level at age 4–5 (Model IV), there were significant and substantial differences in Reading outcomes, depending on carer status. Compared to boys with no caring responsibilities at age 14–15, average Reading scores of those who spent at least 5 hours per week caring for a household member were 34 points (1.3 years) lower, scores for boys who spent at least 5 hours per week caring for someone who did not live with them were 25 points (almost 1 year) lower, and scores for boys who spent less than 5 hours per week caring for someone who did not live in their household were 11 points (0.4 years) lower.

For girls, average Reading scores in Year 9 were significantly lower among those who provided any type of care, with differences between carers and non-carers ranging from 29 points (1.1 years of schooling) for those who spent at least 5 hours per week caring for someone who did not live with them to 65 points (2.5 years) for those who reported caring for 4 or more people. Even after accounting for a wide range of socio-demographic characteristics, as well as the home environment, parenting style and early ability levels, girls who had caring responsibilities at age 14–15 had significantly lower Reading scores, on average.

Compared to non-carers, girls who spent at least 5 hours per week caring for a household member had average Reading scores 21 points (0.8 years) lower, those who spent at least 5 hours per week caring for non-household members had average scores 28 points (1.1 years) lower, those who cared for a non-household member for fewer than 5 hours per week had average scores 18 points (0.7 years) lower; and girls who reported caring for four or more people had average Reading scores 45 points (1.7 years) lower.

It is interesting to note that for boys, but not for girls, the number of waves of income support receipt had a significant negative influence on Reading scores; while for girls, but not for boys, other aspects of the home environment were statistically significant. For girls, maternal consistency and the number of out-of-home activities had a significant positive influence; and the average Reading scores of girls who were read to on at least 6 days per week at age 4–5 scored 13 points (0.5 years of schooling) higher than those of girls who were read to less often.[30]

Turning now to the estimates for Numeracy, Table 29 shows that, for boys, it was again the case that those who spent the most time caring had NAPLAN scores significantly lower than those of non-carers, with boys who spent at least 5 hours per week caring for a household member 55 points (2.1 years) behind non-carers and those who spent at least 5 hours caring for someone outside their household 278 points (1.1 years) behind those who did not provide care for someone else. As was the case for Reading, controlling for a variety of socio-demographic characteristics, including mother's education, income support receipt and disability status of household members, changed the estimates only minimally. After controlling for the early home environment, parenting style and previous ability levels, boys who spent at least 5 hours per week caring for someone else, either at home or elsewhere, still had significantly lower NAPLAN scores, on average, than non-carers (36 points (1.4 years) and 25 points (1 year) respectively).

For girls, a more complex picture emerged. After adjusting for socio-demographic variables including maternal education as well as income support, disability status of household members and whether their primary carer had caring responsibilities for someone outside the household, average Numeracy scores were lower among girls who spent at least 5 hours per week caring for a household member, those who spent less than 5 hours per week caring for someone who did not live with them and also for girls who reported caring for 4 or more people.

However, after accounting for the home environment, parenting style and early ability, average Numeracy scores remained significantly lower only for girls who cared for a non-household member for less than 5 hours per week (11 points or 0.4 years).[31] Before the early home learning environment and school readiness were taken into consideration (Model III), there was a significant difference between the Numeracy scores of girls who spent at least 5 hours per week caring for a household member, compared to girls with no caring responsibilities (21 points or 0.8 years of schooling). Given that a long-term health condition or disability in the family is likely to affect the capacity for mothers to provide a cognitively stimulating home environment, taking these factors into account may well be overly conservative.

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[30] For girls, maternal reasoning appears to have a significant negative influence on Reading scores. This measure of inductive reasoning is based on 2 measures – How often do you explain to this child why he/she is being punished? and How often do you talk it over and reason with this child when he/she misbehaves? Therefore, it is possible that this measure is actually picking up higher levels of maternal criticism, that those who, either misbehave more or are punished more often for misbehaving, have higher scores on this scale, resulting in a significant negative association between the reasoning measure and developmental outcomes.

[31] The number of observations for this group is substantially larger than that of those caring for household members and those caring for a non-household member for at least 5 hours per week. Given that the coefficient related to caring for non-household members is lower than that for other carer types, this suggests that the lack of statistical significance of other care types may be due to small sample sizes for those groups.

Table 29: OLS regressions estimating the association between carer status and NAPLAN Numeracy scores in Year 9

	I		II		III		IV	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Carer status (Reference = Does not provide care)								
Resident 5+ hours	**-55.0*** **	**-25.4***	**-52.5*** **	**-27.8** **	**-43.8*** **	**-21.0***	**-35.6** **	-14.8
Resident <5 hours	-16.1	-24.6	-13.0	-18.7	-6.9	-19.5	-4.2	-12.3
Non-resident 5+ hours	**-28.2** **	**-27.2***	**-30.7** **	-23.1	**-30.6** **	-19.2	**-24.8** **	-18.2
Non-resident <5 hours	-7.2	**-19.9*** **	-7.4	**-17.8*** **	-6.2	**-14.9** **	-9.3	**-10.5***
Cares for 4+ people	-24.1	**-55.4*** **	**-25.0***	**-50.6*** **	**-23.9***	**-41.3** **	-15.6	-25.2
Socio-demographic controls			***	***	ns	***	ns	***
Mother has a degree					**30.2*** **	**31.5*** **	**20.0*** **	**24.1*** **
Income support (waves)					**-10.0*** **	**-6.4***	**-7.4*** **	-2.9
HH member has a health restriction (waves)					**-3.8***	**-3.5***	-1.7	-2.6
Primary carer cares for someone outside the household (waves)					2.0	-1.7	2.4	-1.2
Maternal consistency								
Maternal reasoning							6.3	6.0
Maternal harshness							-4.2	**-18.7*** **
Out-of-home activities							-8.0	1.5
Extra activities							2.2	3.7
Reading – Age 4–5							**39.4***	**23.0***
PPVT – Age 4–5							0.1	7.6
Who Am I? – Age 4–5							**2.0*** **	**1.1*** **
Constant							**2.27*** **	**2.7*** **
*R*²	**628.2*** **	**615.8*** **	**728.2*** **	**687.2*** **	**747.6*** **	**694.2*** **	**527.1*** **	**574.3*** **
N	0.03	0.03	0.08	0.10	0.15	0.17	0.26	0.29
	828	845	828	845	828	845	828	845

Notes: ****p* < .001, ***p* < .01 and **p* < .05. Covariates included in models II to IV: age (in months), birth order, whether the study child speaks a language other than English, mother's country of birth, Indigenous status, single-parent household. Significance levels for socio-demographic controls are based on *F*-tests of joint significance.
Source: LSAC K cohort, Waves 1–6

After controlling for school readiness, maternal parenting style and aspects of the early home environment, the number of waves on income support had a significant negative influence on Numeracy scores for boys but not for girls. Further, for boys and girls, the extra activities index had a significant positive influence on Numeracy scores. One possible explanation for this is that many extracurricular activities (in particular, music, dance and even art and craft) involve aspects of pattern recognition and are known to have a positive influence on Numeracy (e.g. Trinick et al., 2016).

These results show that even after accounting for previous ability levels, and aspects of the home environment, as well as a range of socio-demographic characteristics, being a young carer limits young people's educational opportunities and, by extension, their life chances. Young carers have significantly lower performance in Reading and Numeracy in NAPLAN at Year 9 than their peers.

Before controlling for other factors, average Reading scores for boys and girls who spent at least 5 hours per week caring for a household member were 44 points (1.7 years of schooling) and 29 points (1.1 years of schooling) lower, respectively, than those of boys and girls with no caring responsibilities. After controlling for a wide range of factors, including early ability levels and aspects of the home environment, these differences remain significant, at 34 points (1.5 years) for boys and 21 points (0.8 years) for girls. For Numeracy, boys and girls with a high level of caring responsibilities (at least 5 hours per week) for a household member are also substantially behind their peers with no caring responsibilities (55 points (2.1 years) and 25 points (1 year) respectively). For boys, this difference remains significant even after controlling for a range of factors, including the home environment and previous ability; boys are still 36 points (1.4 years) behind. However, for girls, once aspects of the home environment and previous ability are accounted for, carer status is only significant for those who care for a non-household member for fewer than 5 hours per week.

6.2 The influence of caring on psycho-social outcomes

In this section, we examine the association between carer status at age 14–15 and psycho-social outcomes (SDQ total problem scores, SDQ prosocial scores, as well as levels of anxiety and depression), taking into account a range of other factors, including socio-demographic characteristics, disability status of household members and aspects of the early home environment.

SDQ total problem scores and prosocial scores

Estimates of the influence of caring responsibilities on SDQ problem scores are presented in Table 30. For boys, before controlling for other factors, SDQ total problem scores were higher, on average, among those who reported spending at least 5 hours per week caring for either a household member or someone who did not live with them, with differences of almost 2 points (around 0.3 standard deviations). However, after controlling for socio-demographic characteristics, income support receipt and disability status of household members, differences were only significant for boys who spent 5 or more hours per week caring for someone who did not live with them. After controlling for aspects of the home environment, parenting style and early social skills, carer status at age 14–15 was no longer statistically significant. This suggests that, in terms of social problems, there are some aspects of the home environment that are protective against the negative influence of being a carer.

Table 30: OLS regressions estimating the association between carer status and SDQ total problem scores at age 14–15

	I		II		III		IV	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Carer status (Reference = Does not provide care)								
Resident 5+ hours	**1.91***	1.18	**1.83***	1.05	0.87	0.38	0.14	0.38
Resident <5 hours	0.71	0.83	0.61	0.56	0.10	0.01	0.23	-0.06
Non-resident 5+ hours	**1.96****	**2.57*****	**1.94****	**2.39*****	**1.62***	**2.01****	0.47	**1.79****
Non-resident <5 hours	-0.27	**0.72***	-0.26	0.63	-0.33	0.50	-0.13	0.17
Cares for 4+ people	0.53	**1.72*****	0.52	1.28	0.27	0.77	-0.07	-0.20
Socio-demographic controls			**	**	ns	ns	ns	ns
Mother has a degree					**-0.65***	**-1.38*****	0.24	**-0.75****
Income support (waves)					**0.80*****	**0.57*****	**0.47*****	**0.31*****
HH member has a health restriction (waves)					**0.66*****	**0.42*****	**0.33*****	0.08
Primary carer cares for someone outside the household (waves)					0.34	0.12	**0.37***	-0.14
Maternal consistency							**-0.84*****	**-1.20*****
Maternal reasoning							**0.88*****	**1.20*****
Maternal harshness							**2.82*****	**3.11*****
Out-of-home activities							-0.03	0.14
Extra activities							**-2.13*****	**-2.99*****
Reading – Age 4–5							-0.42	0.19
PPVT – Age 4–5							**-0.07*****	**-0.06*****
Who Am I? – Age 4–5							**0.30*****	**0.23*****
Constant	**7.20*****	**6.15*****	**14.21***	5.82	**12.46***	5.44	4.08	11.37
R^2	0.01	0.01	0.03	0.04	0.08	0.08	0.36	0.25
N	1,482	1,449	1,482	1,449	1,482	1,449	1,482	1,449

Notes: ***$p < .001$, **$p < .01$ and *$p < .05$. Covariates included in models II to IV: age (in months), birth order, whether the study child speaks a language other than English, mother's country of birth, Indigenous status, single-parent household. Significance levels for socio-demographic controls are based on *F*-tests of joint significance.
Source: LSAC K cohort, Waves 1–6

For girls, before accounting for other factors, SDQ total problem scores were significantly higher among those who cared for a non-household member and those who reported caring for at least 4 people. However, after controlling for socio-demographic characteristics, income support and disability status of household members, differences in SDQ total problem scores were only significant among girls who were spending at least 5 hours per week caring for someone who did not live with them. For this group, average scores were 2.6 points higher (0.35 *SD*) than those of girls with no caring responsibilities. Even after controlling for the home environment, maternal parenting style and early social skills, girls who spent at least 5 hours per week caring for a non-household member had significantly higher scores than those of non-carers (1.8 points or 0.3 standard deviations).

For SDQ prosocial scores, the descriptive analysis in the previous section showed that there were very few differences, depending on carer status at age 14–15. There were no significant differences for girls, depending on their carer status at age 14–15.[32] However, it is interesting to note that there is a significant negative influence of income support receipt for girls, but not for boys, with each wave of income support receipt reducing prosocial scores by 0.2 points (0.1 SD). For boys, those who reported spending fewer than 5 hours per week caring for someone who did not live in their household had significantly higher prosocial scores than non-carers (0.3 points, or 0.15 *SD*), even after accounting for a variety of other factors.

One possible explanation for this result is that boys with highly developed social skills may be more likely to offer help to others outside their household (e.g. classmates). On the other hand, it could be that the experience of helping someone outside their household on a regular basis has a positive influence on boys' pro-social behaviour, particularly if the assistance provided is personally rewarding and not too physically or emotionally demanding.[33]

Anxiety and depression

Estimates of the influence of caring on levels of anxiety (Table 30) suggest that for boys, caring responsibilities have no significant influence on anxiety levels. However, compared to girls with no caring responsibilities, girls who spent less than 5 hours per week caring for someone who did not live in their household had significantly higher levels of anxiety. Even after controlling for a wide range of characteristics, including aspects of the home environment, girls in this group had anxiety scores, on average, 1.25 points (0.3 standard deviations) higher than non-carers.

It is important to note that, for the estimates of anxiety and depression levels presented in Tables 30 and 31, the *R*-squared measures are quite low, even after controlling for a wide variety of factors that may contribute to anxiety. This suggests that there are likely to be other factors, aside from socio-demographic characteristics and aspects of the home environment; for example, adverse life events or being bullied, or simply issues with relationships with family members or friends, that may be better predictors of anxiety and depression.

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[32] Estimates of the influence of caring on pro-social scores are presented in Appendix Table D1.

[33] There are likely to be some differences in the type of help that boys and girls voluntarily provide to others outside their primary household, with boys more likely to provide more help with physical tasks, e.g. gardening, home repairs, while the types of help that girls provide is more likely to involve more responsibility and caring for the personal and physical needs of others. The social role theory of gender and helping (Eagly & Crowley, 1986) suggests that the female gender role comes with certain characteristics such as caring, nurturing, responsibility, empathy and sympathy, while the masculine gender role has traditionally been characteristic of heroism, helping others with some risk to oneself. Characteristics such as willingness to take risks, being adventurous, having the ability to remain calm in a high stress situation, and the ability to stand up under pressure are all assigned to the male or masculine gender role (Bem, 1974). Females are more commonly expected to care for the personal and emotional needs of others and to deliver forms of personal service, and provide help to others (Eagly & Crowley, 1986). During adolescence the norms of gender are most strongly reinforced (Gilligan & Wiggins, 1988; Gilligan & Attanucci, 1988). Young girls are reinforced to foster nurturing and caring behaviours while young boys are reinforced to exhibit chivalrous behaviours such as heroics and strength (Bem, 1974; Eagly & Crowley, 1986).

Table 31: OLS regressions estimating the association between carer status and anxiety scores in Year 9

	I		II		III		IV	
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
Carer status (Reference = Does not provide care)								
Resident 5+ hours	0.41	0.82	0.50	0.78	0.42	0.70	0.33	0.70
Resident <5 hours	-0.07	0.78	-0.05	0.69	-0.15	0.60	-0.13	0.54
Non-resident 5+ hours	0.01	0.77	0.03	0.87	0.04	0.74	-0.12	0.62
Non-resident <5 hours	0.27	**1.41*****	0.28	**1.35*****	0.31	**1.34*****	0.37	**1.25*****
Cares for 4+ people	0.40	1.25	0.43	1.14	0.38	1.04	0.40	0.79
Socio-demographic controls			**ns**	**ns**	**ns**	**ns**	**ns**	**ns**
Mother has a degree					0.22	-0.41	**0.44***	-0.20
Income support (waves)					**-0.24***	**0.35***	**-0.30***	0.21
HH member has a health restriction (waves)					**0.23****	0.16	**0.19***	-0.01
Primary carer cares for someone outside the household (waves)					-0.01	-0.11	0.03	-0.17
Maternal consistency							-0.10	-0.12
Maternal reasoning							0.04	0.02
Maternal harshness							0.01	**0.68***
Out-of-home activities							**-0.32***	0.14
Extra activities							**-1.08***	-0.99
Reading – Age 4–5							0.02	-0.08
PPVT – Age 4–5							**0.03***	-0.01
Who Am I? – Age 4–5							0.02	**0.10****
Constant	**4.49*****	**7.02*****	3.79	0.48	4.03	0.44	5.95	-2.06
R^2	0.002	0.01	0.01	0.02	0.02	0.03	0.03	0.04
N	1,485	1,459	1,485	1,459	1,485	1,459	1,485	1,459

Notes: ***p < .001, **p < .01 and *p < .05. Covariates included in models II to IV: age (in months), birth order, whether the study child speaks a language other than English, mother's country of birth, Indigenous status, single-parent household. Significance levels for socio-demographic controls are based on *F*-tests of joint significance.
Source: LSAC K cohort, Waves 1–6

Table 32 shows that, for boys and girls, average levels of depressive symptoms were significantly higher among those who spent less than 5 hours per week caring for a non-household member, with scores approximately 0.2 standard deviations higher, even after accounting for socio demographic characteristics, income support and the home environment. As was the case with anxiety for girls, it may be that spending time with a loved one who has a severe health condition or disability may increase levels of depressive symptoms.

For boys, average levels of depressive symptoms are significantly higher among those who spent some time caring for a non-household member (0.2 standard deviations higher); while for girls, depressive symptoms are higher (0.3 standard deviations) among those who spend less than 5 hours per week caring for a non-household member.[34]

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[34] All models were run with the inclusion of an indicator of whether the study child provided assistance with core activities. For all models, with the exception of depressive symptoms for girls, this indicator was statistically insignificant. For girls, estimates indicated that depression scale scores were 1.9 points higher among girls who provided assistance with core activities (significant at the 1% level), compared to those who did not help with core activities. However, carer status categories were no longer statistically significant. While a model including a measure of carer status interacted with an indicator of help with core activities would arguably be a better specification, this was not possible due to the small number of cell sizes for many of these combinations.

Table 32: OLS regressions estimating the association between carer status and depressive symptoms in Year 9

	I		II		III		IV	
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
Carer status (Reference = Does not provide care)								
Resident 5+ hours	1.44	1.42	1.47	1.51	1.02	1.42	1.05	1.41
Resident <5 hours	0.43	**1.89***	0.44	1.69	0.35	1.57	0.43	1.40
Non-resident 5+ hours	**1.53***	1.37	**1.72***	1.48	**1.65***	1.28	**1.49***	1.25
Non-resident <5 hours	**1.11****	**1.74*****	**1.16****	**1.62*****	**1.19*****	**1.59*****	**1.28*****	**1.47****
Cares for 4+ people	0.84	0.96	0.83	0.69	0.73	0.49	0.86	0.19
Socio-demographic controls			**	*	*	*	ns	*
Mother has a degree					-0.19	**-1.20****	-0.12	**-0.88***
Income support (waves)					**0.43***	0.31	0.35	-0.03
HH member has a health restriction (waves)					0.21	-0.01	0.15	-0.09
Primary carer cares for someone outside the household (waves)					-0.10	-0.02	-0.07	-0.12
Maternal consistency							-0.05	-0.69
Maternal reasoning							0.63	0.72
Maternal harshness							**0.86***	**1.02***
Out-of-home activities							-0.07	-0.01
Extra activities							-1.56	**-3.99*****
Reading – Age 4–5							0.20	0.31
PPVT – Age 4–5							0.01	-0.01
Who Am I? – Age 4–5							-0.01	0.06
Constant	**3.81*****	**5.88*****	-5.03	-7.37	-5.66	-7.22	-8.81	-8.65
R^2	0.01	0.01	0.02	0.03	0.03	0.04	0.04	0.04
N	1,485	1,457	1,485	1,457	1,485	1,457	1,485	1,457

Notes: ****p* < .001, ***p* < .01 and **p* < .05. Covariates included in models II to IV: age (in months), birth order, whether the study child speaks a language other than English, mother's country of birth, Indigenous status, single-parent household. Significance levels for socio-demographic controls are based on *F*-tests of joint significance.
Source: LSAC K Cohort Waves 1–6

The results in this section indicate that, in general, caring for a household member is not associated with significantly higher levels of social or emotional issues. Compared to young people with no caring responsibilities, there were generally no significant differences in terms of SDQ problem scores or levels of anxiety or depression for those who cared for household members. However, a somewhat unexpected result was that those who spend only a short amount of time caring for a non-household member experienced worse social-emotional outcomes.

6.3 The influence of caring on school engagement

The descriptive evidence in the previous section shows that, for boys, there were very few significant differences in levels of school engagement by carer status. For girls, there was no clear pattern of differences in school engagement in previous years, depending on carer status at age 14–15. At age 10–11, school engagement scores were generally lower for those who had some caring responsibilities at age 14–15, compared to those who didn't; and, by age 14–15, girls who were spending at least 5 hours per week caring for either a household member or someone who did not live with them and girls who reported caring for 4 or more people had significantly lower levels of school engagement than non-carers.

Estimates of the influence of caring on school engagement are presented in Appendix Table E1. The lack of significance of carer status, after accounting for socio-demographic characteristics, maternal education, income support and the health status of household members suggests that, in terms of school engagement, it is not necessarily the caring responsibilities themselves but other factors associated with caring, such as differences in maternal parenting style in the early years of childhood, that may result in lower levels of school engagement. Further, multivariate analysis shows that levels of school engagement at age 6–7 have a significant positive influence on school engagement at age 14–15. This result suggests that if children are highly engaged in the early years of school, they are more likely to continue to have a high level of engagement in the high school years. Therefore, policies aimed at encouraging school engagement in the early years are likely to result in long-term benefits in terms of school engagement in the middle years of school.

7. Conclusion

The analysis in this report has shown that there are significant differences in the early lives of those children who go on to become young carers by age 14–15.

7.1 Differences in the early home environment

In terms of their household financial situation, those who had caring responsibilities at age 14–15 were more likely to have experienced financial disadvantage throughout their childhood. Compared to young people who had no caring responsibilities at age 14–15, those who cared for a household member either daily or at least 5 hours per week:

- were more likely to live in a jobless household from a young age
- were more likely to live in a household where one or both parents relied on government payments as their main source of income
- had significantly lower levels of equivalised household income, on average, throughout their childhood
- were more likely to experience some type of financial hardship (e.g. parents were not able to pay bills, rent or mortgage on time).

These differences in the household financial situation of those who go on to have caring responsibilities, compared to those who do not, are important, as previous research has shown that children living in households experiencing financial disadvantage are more likely to have a poorer early home learning environment and this, in turn, is likely to result in poorer developmental outcomes (Warren, 2014; Warren & Edwards, 2017).

In terms of the early home learning environment, there were very few differences in terms of the activities that children did with their primary carer depending on their carer status at age 14–15. However, the one activity where there were significant differences, and arguably the most important of these at-home activities in terms of benefits for developmental outcomes, was how often the child was read to age 4–5. While 49% of children who had no caring responsibilities at age 14–15 were read to 6 or 7 days per week at age 4–5, only 40% of those who were caring for a household member at age 14–15 and 36% of those who reported caring for 4 or more people were read to at least 6 or 7 days a week.

These differences are likely to be at least partly due to either the primary carer having a long-term health condition or disability that restricts the amount of time they are able to spend doing cognitively stimulating activities with their child or caring responsibilities for another household member that limit the time the primary carer was able to spend engaging in cognitively stimulating activities, such as reading, with the study child. Looking at frequency of reading, depending on the disability status of household members, supports this conclusion to some extent, with those who had a sibling with a restrictive health condition or disability less likely to be read to 6–7 days per week (38%, compared to 46% of those who did not have a sibling with a restrictive health condition or disability). However, given that young carers are more likely to live in disadvantaged households in terms of income, parental employment and maternal education, we cannot rule out the possibility that these differences are due to other socio-economic characteristics.

Young people who were caring for a household member at age 14–15 also engaged in out-of-home activities (e.g. going to the library or museum) less frequently, from age 4–5 to age 12–13, than non-carers. These differences suggest that either having a household member with a disability that restricts their everyday activities or having a primary carer with caring responsibilities for another person, limits the amount of activities that the child is able to do outside the home, at least to some extent.

Further, compared to non-carers, those who had caring responsibilities were less likely to have engaged in paid extracurricular activities, such as music, dance or art classes, or team sports, throughout their childhood. This is likely to be due to the physical limitations or time constraints of their primary carers, and also due to financial considerations, given the differences in the household financial situation of those who became carers, compared to those who did not.

In terms of maternal parenting style, there were relatively few significant differences between those who became carers and those who did not. Young carers, on average, experienced lower levels of maternal consistency at ages 4–5 and 6–7, lower levels of indicative reasoning at age 6–7 and higher levels of maternal harshness at age 4–5. Again, these differences are likely to be either due to the health limitations of the mother or time limitations and stress due to caring responsibilities for another household member.

7.2 Differences in cognitive, social and school outcomes

Compared to boys who had no caring responsibilities at age 14–15, those who spent at least 5 hours per week caring for a household member were 1.4 years behind in Reading and those who reported caring for 4 or more people were 2.8 years behind in Numeracy. For girls, average scores for reading were significantly lower among all carer groups, compared to non-carers, with the largest differences of around 1.3 years of schooling among those who cared for a household member or cared for at least 4 people. Average Numeracy scores for girls were also significantly lower among carers, compared to non-carers, with differences of up to 2.2 years for girls who cared for 4 or more people.

NAPLAN Reading and Numeracy trajectories from Year 3 to Year 9 show that cognitive outcomes were lower, on average, from a young age. Differences in cognitive outcomes were also evident in 'Who Am I?' (WAI) and PPVT scores at age 4–5. This result suggests that it is not only the caring activities that young carers are doing in their teens but aspects of their early home environment, such as having a household member with a disability or health condition that requires assistance and/or having a parent with a high level of caring responsibilities for another household member, and the associated consequences for the household financial situation and home learning environment, that have had a considerable negative influence on their cognitive outcomes.

The results in this report show that there are substantial differences in cognitive outcomes among young people with caring responsibilities, compared to those who are not carers at age 14–15. These differences are apparent even in early childhood, and continue throughout the primary school years and into high school. Given the lower starting point, in terms of academic achievement trajectories, of those who eventually have caring responsibilities, policies aimed at improving school readiness and early school outcomes of those children with household members with a restrictive health condition or disability will improve the future prosperity of young carers. Closing the achievement gap as early as possible will mean that more young carers will be able to finish school and gain employment or go on to further study, improving their lifetime outcomes.

For psycho-social outcomes, the findings are more positive. In fact, the evidence in this report shows that, compared to young people with no caring responsibilities, there were generally no significant differences in terms of SDQ problem scores, or levels of anxiety or depression for those who care for household members. The one exception was for depressive symptoms for girls who spent 5 or more hours per week caring for a household member.

A somewhat unexpected result was that those who spend only a short amount of time caring for a non-household member experienced worse social-emotional outcomes. It may be that for these people, the person they are caring for has a more severe illness or disability, and spending time with a loved one with a severe health limitation contributes to increased levels of anxiety and depression. It may be the case, that if they are visiting someone with severe health issues in a residential care facility, this is quite confronting and may contribute to depression and anxiety symptoms. Alternatively, for those who spend a considerable amount of time caring for a non-household member, this activity may limit their time available to engage in social activities with their peers, which may also contribute to symptoms of anxiety or depression.

7.3 What explains the gaps in cognitive, social and school outcomes?

The analysis in this report shows that even after accounting for previous ability levels and aspects of the home environment, as well as a range of socio-demographic characteristics, being a young carer limits young people's educational opportunities and, by extension, their life chances. Young carers have significantly lower performance in Reading and Numeracy in NAPLAN at Year 9 than their peers.

Given that a long-term health condition or disability in the family is likely to affect the capacity for mothers to provide a cognitively stimulating home environment, taking these factors into account may well be overly conservative. While the results from these statistical models are not causal, and further research is needed to unpack the precise causal pathways, estimates of differences between young carers and their peers on NAPLAN scores changed little after accounting for child and household characteristics, supporting the conclusion that caring has a detrimental impact on educational performance.

Estimates of the influence of caring responsibilities on SDQ Total Problem scores show that for boys, before controlling for other factors, scores were higher, on average, among those who reported spending at least 5 hours per week caring for either a household member or someone who did not live with them. However, after controlling for socio-demographic characteristics, income support receipt and disability status of household members, differences were only significant for boys who spent 5 or more hours per week caring for someone who did not live with them. After controlling for aspects of the home environment, parenting style and early social skills, carer status at age 14–15 was no longer statistically significant.

This suggests that, in terms of social problems, there are some aspects of the home environment that may be considered protective against the negative influence of caring responsibilities (such as extra activities), while other aspects of the home environment, such as maternal harshness, may have an additional negative influence, beyond that of caring responsibilities. However, for girls even after controlling for the home environment, maternal parenting style and early social skills, those who spent at least 5 hours per week caring for a non-household member had significantly higher scores than those of non-carers.

The results in this report indicate that, in general, caring for a household member is not associated with significantly higher levels of anxiety or depression. Compared to young people with no caring responsibilities, there were generally no significant differences in levels of anxiety or depression for those who cared for household members. However, a somewhat unexpected result was that those who spent only a short amount of time caring for a non-household member experienced higher levels of depressive symptoms than non-carers; and for girls who spent less than 5 hours per week caring for someone for who did not live in their household, anxiety levels were also significantly higher than those of non-carers.

While our estimates showed a clear negative influence on academic achievement and cognitive outcomes for boys and girls who spend a considerable amount of time caring for a household member at age 14–15, as well as a negative influence on psycho-social outcomes, particularly among those who were caring for a non-household member, the influence of carer status on school engagement was relatively weak. After controlling for socio-demographic characteristics, income support and disability status of household members, the relationship between carer status and school engagement was not statistically significant. However, there were aspects of maternal parenting style (particularly maternal consistency and harshness) that were different for those who became carers, compared to those who did not, that were also associated with school engagement levels.

7.4 Limitations

In LSAC, questions about caring responsibilities were first asked at age 14–15. Therefore, we don't know exactly when young people who had caring responsibilities at this age became carers, how long they have been doing caring activities at the current level, or even if they had been caring for someone in earlier years but no longer have these responsibilities. Further, while we know the overall types of caring activities that these young people engage in, we don't know the intensity of these activities, particularly for those who are caring for someone outside the home. For those caring for a household member, we were able to determine whether there was a household member with a health condition or disability that restricted their everyday activities but, again, this encompasses a wide range of health conditions and the measures are not consistent over waves. Therefore, we are not able to determine the onset or the intensity of caring responsibilities (in terms of types of activities or exposure to relatives with severe health issues).

Because of this limitation, it is important to keep in mind that not all of the differences in the cognitive and social outcomes of young people with caring responsibilities at age 14–15, compared to those with no caring responsibilities at that age, can be attributed to the influence of the caring role itself *at age 14-15*. For example, the analysis in this report shows that, among those who reported having caring responsibilities for a household member at age 14–15, NAPLAN outcomes were lower, on average, from a young age. This result suggests that among those who were undertaking caring activities at age 14–15, there are likely to have been aspects of their early home environment, such as having a household member with a disability or health condition that requires assistance, and/or having a parent with a high level of caring responsibilities for another household member, and the associated consequences for the household financial situation and home learning environment, that have had a considerable negative influence on their cognitive outcomes.

As we are not able to identify exactly when their caring responsibilities began, or how the intensity of their caring responsibilities have changed over time. There is no way to tell exactly how much of this achievement gap is due to differences in the home learning environment, as opposed to differences in caring responsibilities. What we can see from the LSAC data is that the shape of the NAPLAN trajectories is similar for those who subsequently took on caring responsibilities, compared to those who did not, with a lower starting point for those who eventually became carers – presumably due to differences in aspects of the early home learning environment as a result of having a household member with a long-term health condition or disability. Regardless of carer status at age 14–15, the average NAPLAN scores increased at a similar rate every 2 years but, overall, those who subsequently become carers generally did not catch up in terms of average NAPLAN scores.

7.5 Policy implications

The evidence in this report suggests that young carers' educational trajectories are severely limited by their caring responsibilities. This particularly affects those caring for 5 hours or more for someone living at home but can also affect those caring for others living outside the home. Moreover, the statistical modelling provides fairly strong evidence to suggest that it is the act of caring and living in a household with a person with a disability that is the factor, even taking into account school readiness and vocabulary at 4–5 years of age.

In terms of the numbers of carers that would likely be affected, we estimate that this would be approximately 11,482 young people who are caring for 5 or more hours at home, while those who are caring for 5 or more hours outside of the home are estimated to be 11,220 young people. These estimates are for 14–15 year olds only and, therefore, assuming the risk of caring is similar for older young people, this means that the true number of young carers most affected would be several times these numbers.

Given that the estimates of young carers as is being trialled in the Australian Priority Investment Approach to Welfare (estimated to be approximately 11,000 aged 24 and under) is based solely on those receiving Carers Payment, our estimates suggest that this number excludes a large number of young people in need of additional support. In other words, it is too restrictive to focus only on those young people receiving Carers Payment – many more are in need of additional support from a young age.

Identifying young carers is likely to be relatively straightforward. Given that Warren and Edwards (2017) found that living in a household with a family member with a disability and having a parent who is a carer to someone living outside of the household are risk factors for caring for young people, then existing administrative data can be used to identify children who may have caring responsibilities for a household member. In this context, any child living in a household of someone receiving a disability pension or carer payment or allowance could potentially benefit from a targeted support program.

Given that the young carer's education is primarily affected, another mechanism to identify those at risk could be to collect this information through school entry questionnaires (e.g. 'Sometimes children who live with a person with a disability need extra support in their schooling, do you or does any member of your household have a disability or chronic illness?'). With sufficient education provided to schools about the issues facing young carers, this information could be invaluable to support the learning outcomes of children from school entry.

The types of support that could be provided will be addressed next. However, identification of young carers is not the only issue – young carers can be hard to reach due to stigma and issues of privacy and consent. Some young people with caring responsibilities may not identify as a carer either because of a reticence to admit caring responsibilities within the family or because they do not consider themselves to be a young carer.

In terms of closing the gap in academic achievement, the statistical modelling provides some suggestions without being definitive. For example, there is some limited evidence that creating a more cognitively stimulating home learning environment – in particular, reading to children at age 4–5 – would play a role in closing this gap, especially for girls. However, in the context of an already high caregiving burden it seems unrealistic to expect parents to do more given that they themselves may well have a disability or chronic illness or they may have substantial caring responsibilities for another family member. Rather than burden parents with unrealistic expectations about creating an ideal early home learning environment, existing support mechanisms such as 3- and 4-year-old preschool could be one way to prepare children to be ready for school.

There is good evidence that high quality early childhood education and care for disadvantaged groups of children from age 3 is beneficial (Warren, O'Connor, Smart & Edwards, 2016). Providing encouragement for parents to send their children when eligible and consideration of support for those who are not eligible would be one way to support families caring for a disabled or ill member. In school, providing teachers with the information that young carers need additional support is one low-cost option.

While the Australian Government's Young Carer Bursary Program offers a one-off payment of $3,000 to assist with young people's education, the research in this report suggests that this program may have only limited success. Firstly, the real need is likely to be much greater than the 333 bursaries eligible to young carers. Many more young people will miss out who would likely benefit. Secondly, financial support alone cannot bridge the large educational gaps that open up between young carers and their peers at age 15 years as documented in this report.

Given the substantial impact that lower levels of educational success will mean over the life course, providing young carers with additional support through other means seems a wise public policy investment. In addition to the potential long-term social and economic benefits of supporting young carers in their education, the *Carer Recognition Act 2010* explicitly identifies young carers in the Statement for Australia's Carers: 'Children and young people who are carers should have the same rights as all children and young people and should be supported to reach their full potential' (Department of Social Services, 2011, p. 13).

Young carers can provide substantial benefits to society through the care they provide to others. The evidence in this report suggests that the psycho-social wellbeing of young carers is comparable to their peers despite the challenges young carers face. Moreover, caring also enables young people to develop skills, derive joy from caring and other positive benefits. However, this report finds that caring does impair academic achievement and, by extension, the life chances of these young people. Evidence in this report suggests that the current arrangements are not sufficient to address young carers learning needs and that more public investment in early childhood and throughout schooling in young carers will reap dividends for the future of these young people and for wider society.

References

Carer Recognition Act 2010

Aldridge, J., Cheesebrough, S., Harding, C., Webster, H., & Taylor, L. (2017). *The lives of young carers in England ominbus survey report: Research report*. London: Department of Education.

Alexander, C. (2014). *Time to be heard: A call for recognition and support for young adult carers. Final report*. Carers Trust and University of Nottingham carers.org/sites/files/carerstrust/time_to_be_heard_report_final.pdf

Angold, A., Costello, E., Messer, S., Pickles, A., Winder, F. & Silver, D. (1995). The development of a questionnaire for use in epidemiological studies of depression in children and adolescents. *International Journal of Methods in Psychiatric Research, 5*(4), 237–249.

Australian Bureau of Statistics (ABS). (2013). *Disability, ageing and carers 2013: Summary of findings Australia*. Catalogue 4430.0. Canberra: ABS.

Australian Bureau of Statistics. (2016). *Disability, ageing and carers in Australia: Summary of findings, 2015*. Catalogue 4430.0. Canberra: ABS.

Australian Curriculum Assessment and Reporting Authority (ACARA). (2008). *National Assessment Program, Literacy and Numeracy, Achievement in Reading, Writing, Language Conventions and Numeracy, 2008*. ACARA. www.nap.edu.au/_Documents/National%20Report/2ndStage.NationalReport_18Dec_v2.pdf

Australian Institute of Health and Welfare (AIHW). (2013). *Australia's welfare 2013* (Australia's welfare no. 11). Cat. no. AUS 174. Canberra: AIHW.

Becker, G. & Tomes, N. (1986) Human Capital and The Rise and Fall of Families, *Journal of Labour Economics 4*(3), pp S1-39.

Becker, S. (2007). Global perspectives on children's unpaid caregiving in the family. *Global Social Policy 7*(1), 23–50.

Bem, S. (1974). The measurement of psychological androgyny. *Journal of Counselling and Clinical Psychology, 42*(2), 155–162.

Bleakney, A. (2014). *Young Canadians providing care*. Catalogue no. 89-652-X _ No.003. Statistics Canada.

Carers New Zealand. (2017). *The youngest carers*. Carers New Zealand. www.carers.net.nz/blog/youngest-carers.

Carniero, P., & Heckman, J. (2003). Human capital policy. In J. J. Heckman, A. B. Krueger & B. M. Friedman (Eds.), *Inequality in America: What Role for Human Capital Policies?* Cambridge, MA: MIT Press.

Cass, B., Brennan, D., Thomson, C., Hill, T., Purcal, C., Hamilton, M. et al. (2011) *Young carers: Social policy impacts of the caring responsibilities of children and young adults*. Report prepared for ARC Linkage Partners, October 2011.

Cohen, D., Greene, J. A., Toyinbo, P. A., & Siskowski, C. T. (2012). Impact of family caregiving by youth on their psychological well-being: A latent trait analysis. *Journal of Behavioral Health Services & Research, 39*, 245–256.

Conti, G., & Heckman, J. (2012) *The economics of child well-being*, Discussion Paper Series, Forschungsinstitut zur Zukunft der Arbeit, No. 6930.

Cunha, F., & Heckman, J. (2007) The Technology of Skill Formation. *American Economic Review, 97*(2), 31–47.

Clay, D., Connors, C., Day, N., Gkiza, M. & Aldridge, J. (2016). *The lives of young carers in England*. Qualitative report to Department for Education.

Daraganova, G., Edwards, B., & Sipthorp, M. (2014). *Using National Assessment Program – Literacy and Numeracy (NAPLAN) data in the Longitudinal Study of Australian Children (LSAC)*, LSAC Technical Paper No. 8. Australian Institute of Family Studies.

de Lemos, M., & Doig. B. (1999). *Who Am I? Developmental assessment*. Melbourne: Australian Council for Education Research.

Department of Social Services. (2011). *National Carer Strategy*. Canberra: Commonwealth of Australia.

Doig, B. (2005). Developing formal mathematical assessment for 4-to 8-year-olds. *Mathematics Education Research Journal, 16*(3), 100–119.

Eagly, A. H., & Crowley, M. (1986). Gender and helping behavior: A meta-analytic review of the social psychological literature. *Psychological Bulletin, 100*(3), 283–308.

Early L., Cushway, D., & Cassidy, T. (2006) Perceived stress in young carers: development of a measure. *Journal of Child and Family Studies, 15*(2), 165–176.

Fenson, L., Dale, P., Reznick, J. S., Bates, E., Thal, D., & Pethick, S. (1994) *Variability in early communicative development*. Monographs for the Society for Research in Child Development 59 (5, Serial No. 242).

Gilligan, C., & Attanucci, J. (1988). Two moral orientations: Gender differences and similartities. *Merrill Palmer Quarterly, 34*, 223–237.

Gilligan, C., & Wiggins, G. (1988). *The origins of morality in early childhood relationships*. Cambridge, MA: Harvard University Press.

Goodman, R. (1999). The extended version of the Strengths and Difficulties Questionnaire as a guide to child psychiatric caseness and consequent burden. *Journal of Child Psychology and Psychiatry, 40*, 791–801.

Gray, M., & Smart, D. (2009). Growing Up in Australia: The Longitudinal Study of Australian Children: A valuable new data source for economists. *Australian Economic Review, 42*(3), 367–376.

Heckman, J. (2006). Skill formation and the Economics of investing in disadvantages children. *Science, 30*.

Hunt, G., Levine, C. & Naiditch, L. (2005). *Young caregivers in the U.S.: Report of findings*. National Alliance of Caregivers in Collaboration with United Hospital Fund, Washington.

Kalb, G. & van Ours, J. (2013). *Reading to young children: A head-start in life?* Melbourne Institute Working Paper No. 17/13.

Knudsen, E., Heckman, J. Cameron, J., & Shonkoff, J. (2006). *Economic, neurobiological, and behavioral perspectives on building America's future workforc*e. Proceedings of the National Academy of Sciences of the United States of America, 103, pp. 10155–62.

Lloyd, K. (2013) Happiness and well-being of young carers: Extent, nature and correlates of caring among 10 and 11 year old school children. *Journal of Happiness Studies, 14*(1), 67–80.

Maguire, B. (2012). Families with a child with a disability: Joblessness, financial hardship and Social Support. In *The Longitudinal Study of Australian Children Annual Statistical Report 2011*. Australian Institute of Family Studies.

Mayer, S. E. (2002). *The influence of parental income on children's outcomes*. Knowledge Management Group, Ministry of Social Development, Te Manatu Whakahiato Ora.

McCain, M., & Mustard, F. (1999). *Reversing the brain drain: Early study. Final report*. Ontario Children's Secretariat, Toronto.

Melhuish, E. C., Sylva, K., Sammons, P., Siraj-Blatchford, I., Taggart, B., & Phan, M. (2008). Effects of the Home Learning Environment and preschool center experience upon literacy and numeracy development in early primary school. *Journal of Social Issues, 64*, 95–114.

Nagl-Cupal, M., Daniel, M., Koller, M., & Mayer, H. (2014). Prevalence and effects of caregiving on children. *Journal of Advanced Nursing, 70*(10), 2314–2325 doi: 10.1111/jan.12388.

Office of National Statistics. (2013). *A summary of unpaid care by 5 to 17-year-olds in England and Wales*. Office of National Statistics. www.ons.gov.uk/ons/rel/census/2011-census-analysis/provision-of-unpaid-care-in-england-and-wales--2011/sty-unpaid-care.html

Price Waterhouse Coopers. (2016). *Valuation Report 30 June 2015: Baseline Valuation*. Final Report. Department of Social Services. www.dss.gov.au/sites/default/files/documents/09_2016/baseline_valuation_results_report_accessible_version_12_july_2016_2pwc._2.pdf

Redmond, G., Huynh, J., & Maurici, V. (2016). How big is the gap in wellbeing between marginalised and non-marginalised young people as they approach adolescence? Evidence from a National Survey of 9–14 year old Australians. *Child Indicators Research*, 1–27. doi:10.1007/s12187-016-9432-9

Rothman, S. (2005). *Report on Adapted PPVT-III and Who Am I?*, Data Issue Paper No. 2. Australian Institute of Family Studies.

Rowe, M., Raudenbush, S., & Goldin-Meadow, S. (2012). The pace of vocabulary growth helps predict later vocabulary skill. *Child Development, 83*(2), 508–525.

Shonkoff, J. P., & Phillips, D. A. (Eds.). (2000). *From neurons to neighbourhoods: The science of early childhood development*. Washington, DC: National Academy Press.

Siskowski, C. (2006). Young caregivers: Effect of family health situations on school performance. *The Journal of School Nursing, 22*(3), 163–169

Spence, S. H. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy, 36*(5), 545–566. doi: 10.1016/s0005-7967(98)00034-5. PMID: 9648330.

The Children's Society. (2013). *Hidden from view: The experiences of young carers in England*. The Children's Society.

Trinick, R., Ledger, G., Major, K., & Perger, P. (2016). More than counting beats: Connecting music and mathematics in the primary classroom. *International Journal for Mathematics Teaching and Learning, 17*(3).

Victorian Curriculum and Assessment Authority (VCAA). (2010). *National Assessment program – Literacy and Numeracy (NAPLAN) Reference Guide: Analysing NAPLAN Data*. VCAA. www.vcaa.vic.edu.au/vcaa/prep10/naplan/schools/analysingnaplandata.pdf

Warren, D. (2014). *Low income and poverty dynamics: Implications for child outcomes*. Draft report to the Department of Social Services. Australian Institute of Family Studies.

Warren, D., & Edwards, B. (2017). *Young Carers. In The Longitudinal Study of Australian Children Annual Statistical Report 2016*. Australian Institute of Family Studies.

Warren, D., & Haisken de New, J. (2013). *Early bird catches the worm: The casual impact of pre-school participation and teacher qualifications on Year 3 National NAPLAN Cognitive Tests*. Melbourne Institute Working Paper No. 31/13. Melbourne Institute of Economic and Social Research, The University of Melbourne.

Warren, D., O'Connor, M., Smart, D., & Edwards, B. (2016). *A critical review of the early childhood literature*. Melbourne: Australian Institute of Family Studies.

Warren, J. (2007). Young carers: Conventional or exaggerated levels of domestic and caring tasks. Children and Society, 21, 136–46Yeung, W.-J. J., & Pfeiffer, K. M. (2009). The black-white test score gap and early home environment. *Social Science Research, 38*(2), 412–437.

Young Carers NSW. (2018). *About young carers – impacts. Young Carers NSW*. www.youngcarersnsw.org.au/for-professionals/about-ycs/impacts

Appendix A: Differences in health status of household members across waves of LSAC

The questions about restrictive health conditions used in this report are taken from the LSAC Household Form, a component of the interview that contains questions asked about every member of the study child's household. It is important to note that these questions are not consistent across waves and therefore cannot be used to examine changes in the health status and restrictive health conditions of household members over time.

In Wave 1, the study child's primary carer was asked: Does [person] have any medical conditions or disabilities that have lasted, or are likely to last, for six months or more? The interviewer note stated: 'This refers to physical, psychological and emotional conditions that have lasted or a likely to last for six months or more. Often these conditions need medical treatment or assistance and affect everyday life.'. However, in Wave 1, respondents are not asked if these conditions caused any restriction in the household members' everyday activities.

The prompt card provided with this question listed the following conditions:

Sight problems (not corrected by glasses or contact lenses)

Hearing problems

Speech problems

Blackouts, fits or loss of consciousness

Difficulty learning or understanding things

Limited use of arms or fingers

Difficulty gripping things

Limited use of legs or feet

Nervous or emotional conditions that require treatment

Any disfigurement or deformity

Chronic or recurring pain

Any condition that restricts physical activity or physical work (e.g. back problems, migraines)

Shortness of breath or difficulty breathing

Any mental illness for which help or supervision is required

Long-term effects as a result of head injury, stroke or other brain damage

Any other long-term condition such as arthritis, asthma, heart disease, dementia etc.

Any other long-term condition that requires treatment or medication.

From Wave 2 onwards, these questions are separated into 2 components, the first asking about health conditions or disabilities that have lasted for 12 months and the second asking about conditions that restrict everyday activities. The following 2 questions were asked in relation to each household member:

1. Does [person] have any medical conditions or disabilities that have lasted, or are likely to last, for six months or more?

In Waves *2*, *5* and *6*, the conditions listed on the prompt card for this question were:

Sight problems (not corrected by glasses or contact lenses)

Hearing problems (where communication is restricted, or an aid to assist with or substitute for hearing is used)

Speech problems

Blackouts, fits or loss of consciousness

Difficulty learning or understanding things

Limited use of arms or fingers

Difficulty gripping things

Limited use of legs or feet

Any condition that restricts physical activity or physical work.

Any disfigurement or deformity.

In Waves *3* and *4*, the conditions listed on the prompt card for this question were:

Loss of sight (not corrected by glasses or contact lenses)

Loss of hearing (where communication is restricted, or an aid to assist with or substitute for hearing is used)

Speech difficulties

Blackouts, fits or loss of consciousness

Difficulty learning or understanding things

Incomplete use of arms or fingers

Difficulty gripping or holding things

Incomplete use of legs or feet

Restriction in physical activities or doing physical work

Disfigurement or deformity.

2. Still thinking of conditions lasting six months or more, is [person] restricted in everyday activities because of any of the following?

In Waves 2, 5 and 6, the conditions listed on the prompt card for this question were:

- ***Shortness of breath*** or breathing difficulty
- Chronic or recurring pain
- A nervous or emotional condition (requiring treatment)
- Any mental illness for which help or supervision is required ***long-term***
- Long-term effects as a result of a head injury, stroke or other brain damage
- Any ***other long-term condition, such as arthritis, asthma, heart disease, Alzheimer's, dementia***, etc.
- Any other long-term disease or condition ***that requires treatment or medication.***

In Waves *3* and *4*, the conditions listed on the prompt card for this question were:

- Shortness of breath or breathing difficulties ***causing restriction***
- Chronic or recurring pain or discomfort ***causing restriction***
- A nervous or emotional condition ***causing restriction***
- Mental illness or condition requiring help or supervision
- Long-term effects of head injury, stroke or other brain damage ***causing restriction***
- ***Receiving treatment or medication for any long-term conditions or ailments and still restricted***
- Any other long-term conditions ***resulting in a restriction.***

The separation of this question into 2 parts from Wave 2 onwards, and the differences in the wording on the prompt cards between waves result in substantial variation in the percentages of household members reported as having long-term health conditions, disabilities and restrictive health conditions that limit their everyday activities, as shown in Table A1.

Table A1: Household member (other than the study child) has a disability or is restricted in everyday activities, K cohort, Waves 1–6 (%)

	Age of Study Child					
	Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Household member has a disability	24.7	22.1	18.3	14.4	27.8	27.6
Household member is restricted in everyday activities	37.9	21.2	16.0	12.6	20.9	23.7
Household member has a disability and is restricted in everyday activities	7.9	8.2	6.7	5.4	11.0	12.1
No family member has a disability or restricted in everyday activities	55.7	69.8	75.6	80.4	67.3	65.4
N	4,983	4,464	4,331	4,164	3,956	3,537

Notes: Sample weights used. Columns do not total 100.0 as study child may have more than one household member with a health condition or disability. For Wave 1, measures of disability and restrictive health conditions are calculated by separating the conditions listed in the show cards into 2 groups, corresponding to those from Wave 2 onwards. (Note the other option is to remove W1 from the analysis of restrictive health conditions throughout the report.)
Source: LSAC K cohort, Waves 1–6

Appendix B: Parenting style

Description of the parenting style variables

Four measures of maternal parenting style (warmth, consistency, irritability and inductive reasoning) are calculated from the mother's responses to a series of questions about her relationship with the child. Parents were asked to rate each item on a 5-point Likert scale with 1 meaning 'never/almost never' and 5 meaning 'always/almost always'. Responses to these items are then averaged to create a 0 to 5 scale.

Warmth: The indicator for warm parenting was based on the following 6 questions. The average was computed for parents who answered more than 4 questions:

1. How often do you express affection by hugging, kissing and holding this child?
2. How often do you hug or hold this child for no particular reason?
3. How often do you tell this child how happy he/she makes you?
4. How often do you have warm, close times with this child?
5. How often do you enjoy listening to this child and doing things with him/her?
6. How often do you feel close to this child both when he/she is happy and when he/she is upset?

Consistency: The indicator for consistency was based on the following 5 questions. The average was computed for parents who answered more than 3 questions and answers to questions 3, 4 and 5 were assigned reversed values:

1. When you give this child an instruction or make a request to do something, how often do you make sure that he/she does it?
2. If you tell this child he/she will get punished if he/she doesn't stop doing something, but he/she keeps doing it, how often will you punish him/her?
3. How often does this child get away with things that you feel should have been punished?
4. How often is this child able to get out of punishment when he/she really sets his/her mind to it?
5. When you discipline this child, how often does he/she ignore the punishment?

Harsh parenting: The indicator for harsh parenting was based on the following 4 questions. The average was computed for parents who answered more than 2 questions and answers to question 1 were assigned reversed values:

1. Of all the times that you talk to this child about his/her behaviour, how often is this praise?
2. Of all the times that you talk to this child about his/her behaviour, how often is this disapproval?
3. How often are you angry when you punish this child?
4. How often do you feel you are having problems managing this child in general?

Inductive reasoning: The indicator for inductive reasoning was based on the following 2 questions.

1. How often do you explain to this child why he/she is being punished?
2. How often do you talk it over and reason with this child when he/she misbehaves?

Table B1: Maternal consistency, by carer status at age 14–15

Carer status at age 14–15	Maternal consistency (Average)					
	Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Does not provide care (reference group)	4.1	4.2	4.2	4.2	4.1	4.1
Cares for a household member:	**3.9****	**4.0****	4.1	4.1	4.1	4.1
Daily or at least 5 hours per week	**3.9***	4.1	4.12	4.0	4.1	4.1
Less than 5 hours per week	**4.0***	**4.0****	4.1	4.1	4.1	4.1
Cares for non-household members only:	4.1	4.2	4.2	4.1	4.1	4.1
Daily or at least 5 hours per week	4.0	4.1	4.2	4.1	4.1	4.1
Less than 5 hours per week	4.1	4.2	4.12	4.2	4.1	4.1
Cares for 4 or more people	**3.8*****	**3.9*****	4.0	4.0	4.0	3.9
All	4.07	4.15	4.16	4.14	4.11	4.08
SD	0.67	0.62	0.63	0.68	0.68	0.70
N	3,071	3,010	2,809	3,034	2,986	2,964
Mother restricted in everyday activities						
Yes	4.01	4.08	**4.15***	**3.89***	4.05	4.06
No	4.02	4.11	4.07	4.11	4.10	4.09
Father restricted in everyday activities						
Yes	4.03	4.11	4.13	4.08	4.06	4.05
No	4.02	4.11	4.14	4.11	4.10	4.09
Sibling restricted in everyday activities						
Yes	3.98	4.10	4.13	4.11	4.09	4.01
No	4.03	4.11	4.14	4.11	4.10	4.09
Grandparent restricted in everyday activities						
Yes	**3.82***	**3.92***	4.26	4.19	4.06	3.87
No	4.02	4.11	4.14	4.11	4.10	4.09
Household member restricted in everyday activities						
Yes	4.00	4.09	4.11	4.11	**4.11***	4.04
No	4.03	4.11	4.15	4.06	4.06	4.10
Parent cares for someone outside the household						
Yes	-	-	4.14	4.11	4.11	4.08
No	-	-	4.14	4.08	4.09	4.08
All	4.02	4.11	4.14	4.11	4.09	4.08
SD	0.69	0.64	0.63	0.68	0.67	0.69
N	4,902	4,287	3,742	4,024	3,733	3,274

Notes: Sample weights used. Statistical significance is tested against the reference category (‘Does not provide care’), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K Cohort, Waves 1–6

Table B2: Maternal warmth, by carer status at age 14–15 (means)

Carer status at age 14–15	Maternal warmth (Average)					
	Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Does not provide care (reference group)	4.42	4.44	4.33	4.25	4.13	4.01
Cares for a household member:	**4.51****	4.47	4.30	4.32	4.23	4.07
Daily or at least 5 hours per week	4.48	4.45	4.28	4.33	4.18	4.07
Less than 5 hours per week	**4.55***	4.50	4.32	4.30	4.29	4.06
Cares for non-household members only:	4.46	4.44	4.35	4.28	**4.19***	4.06
Daily or at least 5 hours per week	4.46	4.41	4.29	4.22	4.10	4.03
Less than 5 hours per week	4.46	4.45	4.36	4.30	**4.21***	4.07
Cares for 4 or more people	4.39	4.4	4.29	4.16	4.01	4.08
All	4.44	4.44	4.33	4.26	4.14	4.03
SD	0.46	0.49	0.57	0.62	0.66	0.72
N	3,072	3,010	2,810	3,034	2,988	2,965
Mother restricted in everyday activities						
Yes	4.47	4.46	4.37	4.28	**4.24***	4.05
No	4.44	4.45	4.33	4.24	4.14	4.03
Father restricted in everyday activities						
Yes	4.43	4.45	4.38	4.35	4.08	4.09
No	4.44	4.45	4.33	4.27	4.16	4.03
Sibling restricted in everyday activities						
Yes	4.43	4.43	4.42	4.28	4.12	4.06
No	4.45	4.45	4.32	4.28	4.15	4.03
Grandparent restricted in everyday activities						
Yes	4.54	4.60	4.47	4.45	4.23	**4.25***
No	4.44	4.45	4.33	4.27	4.15	4.03
Household member restricted in everyday activities						
Yes	4.45	4.46	4.39	4.27	4.18	4.08*
No	4.44	4.45	4.32	4.31	4.14	4.02
Parent cares for someone outside the household						
Yes	-	-	**4.43*****	4.28	4.20	**4.10***
No	-	-	4.32	4.27	4.14	4.01
All	4.44	4.45	4.33	4.28	4.15	4.03
SD	0.46	0.49	0.56	0.61	0.65	0.71
N	4,905	4,287	3,745	4,024	3,736	3,274

Notes: Sample weights used. Statistical significance is tested against the reference category (‘Does not provide care’), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K cohort, Waves 1–6

Table B3: Maternal inductive reasoning, by carer status at age 14–15

Carer status at age 14–15	Inductive reasoning (Average)					
	Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Does not provide care (reference group)	4.25	4.24	4.15	4.19	4.01	3.82
Cares for a household member:	4.29	**4.12***	4.10	4.11	3.97	3.79
Daily or at least 5 hours per week	4.25	**4.08***	4.08	4.11	3.89	3.74
Less than 5 hours per week	4.33	4.16	4.12	4.10	4.08	3.85
Cares for non-household members only:	4.25	4.23	4.15	4.13	4.04	3.85
Daily or at least 5 hours per week	4.30	4.28	4.15	4.10	4.03	3.88
Less than 5 hours per week	4.24	4.22	4.15	4.14	4.04	3.85
Cares for 4 or more people	4.26	4.20	4.11	4.05	4.04	3.78
All	4.26	4.23	4.15	4.16	4.01	3.83
SD	0.61	0.66	0.68	0.75	0.83	0.96
N	3,072	3,010	2,809	3,034	2,986	2,964
Mother restricted in everyday activities						
Yes	4.26	4.28	4.17	4.26	**4.18*****	**4.00*****
No	4.25	4.23	4.14	4.17	4.00	3.81
Father restricted in everyday activities						
Yes	**4.18****	4.23	4.20	4.28	4.02	3.81
No	4.27	4.23	4.14	4.17	3.99	3.84
Sibling restricted in everyday activities						
Yes	4.25	**4.30***	4.25	4.20	4.11	**4.02***
No	4.26	4.23	4.13	4.17	4.01	3.82
Grandparent restricted in everyday activities						
Yes	4.26	4.40	4.40	**4.60****	4.06	3.91
No	4.25	4.23	4.14	4.17	4.01	3.84
Household member restricted in everyday activities						
Yes	4.24	**4.27***	4.21	**4.25****	**4.11*****	**3.96*****
No	4.26	4.22	4.13	4.16	4.00	3.80
Parent cares for someone outside the household						
Yes	-	-	4.23	4.25	4.09	3.93
No	-	-	4.13	4.17	4.01	3.83
All	4.25	4.23	4.14	4.18	4.02	3.84
SD	0.61	0.66	0.68	0.73	0.81	0.94
N	4,905	4,282	3,745	4,024	3,734	3,274

Notes: Sample weights used. Statistical significance is tested against the reference category ('Does not provide care'), ***$p < .001$, **$p < .01$ and *$p < .05$.
Source: LSAC K cohort, Waves 1–6

Table B4: Maternal angry/hostile parenting, by carer status at age 14–15

Carer status at age 14–15	Maternal hostility (Average)					
	Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Does not provide care (reference group)	3.83	3.83	3.85	3.85	3.84	3.93
Cares for a household member:	3.89	3.82	3.93	3.90	3.92	3.93
Daily or at least 5 hours per week	3.91	3.82	3.99	3.93	3.92	3.94
Less than 5 hours per week	3.86	3.84	3.86	3.86	3.91	3.92
Cares for non-household members only:	3.81	3.84	3.84	3.83	3.83	3.90
Daily or at least 5 hours per week	3.70	3.79	3.73	3.72	3.74	**3.71***
Less than 5 hours per week	3.83	3.85	3.86	3.86	3.85	3.93
Cares for 4 or more people	**3.68***	3.69	3.82	3.78	3.80	3.82
All	3.82	3.83	3.85	3.84	3.84	3.92
SD	0.59	0.59	0.62	0.66	0.68	0.71
N	3,071	3,010	2,809	3,034	2,988	2,964
Mother restricted in everyday activities						
Yes	3.80	3.81	3.85	**3.50****	3.77	**3.84***
No	3.81	3.82	3.85	3.83	3.84	3.92
Father restricted in everyday activities						
Yes	3.82	3.81	3.88	3.88	3.85	3.94
No	3.81	3.82	3.85	3.83	3.84	3.90
Sibling restricted in everyday activities						
Yes	3.79	3.79	3.90	3.84	3.75	3.82
No	3.81	3.82	3.85	3.83	3.84	3.91
Grandparent restricted in everyday activities						
Yes	3.79	3.81	3.98	3.88	3.73	3.92
No	3.81	3.82	3.85	3.83	3.84	3.91
Household member restricted in everyday activities						
Yes	3.81	3.81	3.88	3.82	3.79	3.87
No	3.81	3.82	3.85	3.83	3.85	3.92
Parent cares for someone outside the household						
Yes	-	-	3.90	3.82	3.85	3.89
No	-	-	3.84	3.83	3.83	3.91
All	3.81	3.82	3.85	3.83	3.83	3.91
SD	0.60	0.59	0.61	0.65	0.68	0.69
N	4,904	4,286	3,742	4,024	3,735	3,273

Notes: Sample weights used. Statistical significance is tested against the reference category (‘Does not provide care’), ***$p < .001$, ** $p < .01$ and *$p < .05$. Higher scores indicate lower levels of hostility.

Source: LSAC K cohort, Waves 1–6

Appendix C: Cognitive, psycho-social and school outcomes, by disability status of household members

Table C1: Average NAPLAN Reading scores, by disability status of household members, boys

Household member has a disability or health condition that restricts everyday activities	Average NAPLAN Reading score			
	Year 3 (2008)	Year 5 (2010)	Year 7 (2012)	Year 9 (2014)
Any household member				
Yes	395.66**	474.75**	538.80***	581.28*
No	412.69	495.91	553.61	592.06
Mother				
Yes	389.25*	473.63	539.66	585.39
No	411.51	493.50	551.73	590.15
Father				
Yes	397.01	474.18	538.28	585.22
No	410.52	494.54	551.26	589.82
Sibling				
Yes	405.49	477.43*	535.28*	563.18**
No	409.98	493.79	551.29	591.65
Grandparent				
Yes	400.87	#502.07	557.57	#573.77
No	409.84	492.99	550.30	589.82
Parent cares for someone outside the household				
Yes	392.34	469.73	515.83*	554.83
No	391.94	473.46	533.43	544.14
All	409.10	492.12	549.20	587.08
SD	87.21	80.91	71.711	73.29
N	1,405	1,352	1,225	1,022

Notes: Sample weights used. ***p < .001, **p < .01 and *p < .05. #Estimate not reliable (cell size < 20).

Source: LSAC K cohort, Waves 3–6

Table C2: Average NAPLAN Reading scores, by disability status of household members, girls

Household member has a disability or health condition that restricts everyday activities	Average NAPLAN Reading score			
	Year 3 (2008)	Year 5 (2010)	Year 7 (2012)	Year 9 (2014)
Any household member				
Yes	433.59	509.94	**554.94****	**600.59***
No	430.48	513.58	572.07	613.53
Mother				
Yes	428.49	512.84	**550.82****	**597.65***
No	431.13	542.27	570.73	612.41
Father				
Yes	449.03	501.71	549.36	607.53
No	430.07	513.99	569.74	610.92
Sibling				
Yes	419.20	511.10	565.14	618.62
No	431.48	513.26	569.09	610.23
Grandparent				
Yes	424.74	#564.29	537.10	#590.91
No	431.01	513.08	569.31	611.11
Parent cares for someone outside the household				
Yes	405.59	506.51	522.52	576.91
No	420.77	503.05	554.92	576.91
All	430.8	512.65	567.99	610.42
SD	83.6	84.65	70.53	68.05
N	1,323	1,301	1,164	1,014

Notes: Sample weights used. ***$p < .001$, **$p < .01$ and *$p < .05$. #Estimate not reliable (cell size < 20).
Source: LSAC K cohort, Waves 3–6

Table C3: Average NAPLAN Numeracy scores, by disability status of household members, boys

Household member has a disability or health condition that restricts everyday activities	Average NAPLAN Numeracy score			
	Year 3 (2008)	Year 5 (2010)	Year 7 (2012)	Year 9 (2014)
Any household member				
Yes	**401.1****	**488.3****	**546.3***	**600.0*****
No	420.4	506.9	563.03	615.9
Mother				
Yes	**392.4***	483.9	**545.9***	606.1
No	419.2	504.9	561.1	613.0
Father				
Yes	410.2	489.0	559.9	**599.0***
No	417.5	505.6	552.9	613.0
Sibling				
Yes	407.9	**488.1***	547.6	**587.8*****
No	417.5	505.2	560.1	614.1
Grandparent				
Yes	419.9	502.9	#541.5	593.8
No	417.1	504.5	559.7	612.5

Household member has a disability or health condition that restricts everyday activities	Average NAPLAN Numeracy score			
	Year 3 (2008)	Year 5 (2010)	Year 7 (2012)	Year 9 (2014)
Parent cares for someone outside the household				
Yes	396.5	479.8	__521.2*__	572.7
No	399.9	480.7	539.8	559.2
All	416.5	503.6	557.9	610.7
SD	77.0	77.1	77.5	72.5
N	1,422	1,345	1,218	1,013

Notes: Sample weights used. ***p < .001, **p < .01 and *p < .05. $^{\#}$Estimate not reliable (cell size < 20). Note that the ‘Other Relative’ category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 3–6

Table C4: Average NAPLAN Numeracy scores, by disability status of household members, girls

Household member has a disability or health condition that restricts everyday activities	Average NAPLAN Numeracy score			
	Year 3 (2008)	Year 5 (2010)	Year 7 (2012)	Year 9 (2014)
Any household member				
Yes	414.2	492.3	__539.1*__	__590.2***__
No	413.45	497.4	554.4	604.4
Mother				
Yes	402.2	488.1	__534.3*__	__586.6**__
No	414.5	496.9	553.3	603.2
Father				
Yes	435.78	485.2	545.4	600.2
No	412.5	497.7	551.8	601.3
Sibling				
Yes	408.0	496.6	540.5	600.8
No	413.9	501.1	552.12	601.3
Grandparent				
Yes	409.5	496.8	527.3	585.4
No	413.6	509.0	551.9	601.6
Parent cares for someone outside the household				
Yes	392.3	476.92	511.11	555.36
No	403.5	483.31	536.40	568.79
All	413.5	495.7	551.3	600.9
SD	70.7	73.4	72.3	69.4
N	1,323	1,288	1,162	1,017

Notes: Sample weights used. ***p < .001, **p < .01 and *p < .05. $^{\#}$Estimate not reliable (cell size < 20). Note that the ‘Other Relative’ category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 3–6

Table C5: Average 'Who Am I?' and PPVT scores, by disability status of household members, boys

Household member has a disability or health condition that restricts everyday activities	Average 'Who Am I?'(WAI) and PPVT scores			
	WAI Age 4–5	PPVT Age 4–5	PPVT Age 6–7	PPVT Age 8–9
Any household member				
Yes	**60.9*****	**63.1****	**73.2****	77.7
No	62.1	63.7	73.8	78.2
Mother				
Yes	**60.6****	63.0	73.7	77.6
No	61.9	63.6	73.7	78.1
Father				
Yes	61.3	63.9	73.8	77.4
No	61.7	63.4	73.7	78.1
Sibling				
Yes	**60.6****	**62.3*****	**72.0*****	77.7
No	61.8	63.6	73.9	78.1
Grandparent				
Yes	59.4	62.7	#73.3	#81.4
No	61.7	63.5	73.7	78.1
Parent cares for someone outside the household				
Yes	-	-	-	78.2
No	-	-	-	78.0
All	61.7	63.5	73.7	78.1
SD	7.6	6.1	5.1	5.1
N	2,473	2,230	2,193	2,156

Notes: Sample weights used. $^{***}p < .001$, $^{**}p < .01$ and $^{*}p < .05$. #Estimate not reliable (cell size < 20). Note that the 'Other Relative' category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 1–6

Table C6: Average 'Who Am I?' and PPVT scores, by disability status of household members, girls

Household member has a disability or health condition that restricts everyday activities	Average 'Who Am I?'(WAI) and PPVT scores			
	WAI Age 4–5	PPVT Age 4–5	PPVT Age 6–7	PPVT Age 8–9
Any household member				
Yes	**65.8***	**63.9***	**72.9***	77.8
No	66.7	64.5	73.4	77.8
Mother				
Yes	65.9	64.0	**72.3****	78.1
No	66.5	64.3	73.4	77.7
Father				
Yes	66.2	64.5	73.9	78.1
No	66.4	64.2	73.2	77.8
Sibling				
Yes	**65.5***	**63.3****	**72.4***	77.4
No	66.5	64.5	73.3	77.8
Grandparent				
Yes	64.3	61.9	72.1	76.8
No	66.4	64.3	73.3	77.8

Household member has a disability or health condition that restricts everyday activities	Average ‘Who Am I?’(WAI) and PPVT scores			
	WAI Age 4–5	PPVT Age 4–5	PPVT Age 6–7	PPVT Age 8–9
Parent cares for someone outside the household				
Yes	-	-	-	77.5
No	-	-	-	77.8
All	66.4	64.3	73.2	77.8
SD	7.9	6.4	5.1	4.8
N	2,407	2,176	2,104	2,074

Notes: Sample weights used. ***p < .001, **p < .01 and *p < .05. #Estimate not reliable (cell size < 20). Note that the ‘Other Relative’ category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 1–6

Table C7: Average Matrix Reasoning scores, by disability status of household members

Household member has a disability or health condition that restricts everyday activities	Average Matrix Reasoning score					
	Boys			Girls		
	Age 6–7	Age 8–9	Age 10–11	Age 6–7	Age 8–9	Age 10–11
Any household member						
Yes	**9.8***	10.0	**9.7****	10.1	10.7	**10.2***
No	10.2	10.3	10.4	10.4	10.8	10.6
Mother						
Yes	**9.7***	9.7	10.2	10.1	10.7	9.8
No	10.1	10.3	10.3	10.4	10.8	10.6
Father						
Yes	10.0	9.7	**9.5****	10.4	10.6	10.3
No	10.1	10.3	10.4	10.3	10.8	10.6
Sibling						
Yes	9.9	10.1	10.1	**9.8***	10.2	10.3
No	10.1	10.3	10.3	10.4	10.8	10.6
Grandparent						
Yes	9.9	#11.5	9.7	9.4	10.5	#12.5
No	10.1	10.3	10.3	10.4	10.8	10.6
Parent cares for someone not living in the same household						
Yes	-	9.9	10.5	-	10.7	9.9
No	-	10.3	10.3	-	10.8	10.3
All	10.1	10.3	10.3	10.3	10.8	10.6
SD	3.0	3.1	3.0	3.0	3.2	3.0
N	2,247	2,179	2,098	2,247	2,091	2,005

Notes: Sample weights used. ***p < .001, **p < .01 and *p < .05. #Estimate not reliable (cell size < 20). Note that the ‘Other Relative’ category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 2–4

Table C8: Average SDQ Total Problem scores, by disability status of household members, boys

Household member has a disability or health condition that restricts everyday activities	Average SDQ Total Problem score Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Any household member						
Yes	**11.02*****	**10.19*****	**10.76*****	**11.46*****	**10.10*****	**9.51*****
No	9.74	8.59	8.38	8.89	7.95	7.27
Mother						
Yes	**11.46*****	**10.84*****	**11.12*****	**14.61*****	**11.12*****	**9.70*****
No	9.93	8.71	8.57	9.07	8.08	7.53
Father						
Yes	10.55	9.45	**9.90****	**10.61*****	9.03	**9.12***
No	10.18	8.89	8.71	9.11	8.38	7.73
Sibling						
Yes	**11.51*****	**10.28****	**11.09****	**11.73*****	**10.54*****	**10.07*****
No	10.02	8.82	8.70	9.11	8.30	7.65
Grandparent						
Yes	**11.87***	#10.54	#9.97	#11.08	8.84	7.59
No	10.20	8.91	8.76	9.20	8.42	7.82
Parent cares for someone not living in the same household						
Yes	-	-	**10.14****	10.11	8.98	8.23
No	-	-	8.62	9.14	8.44	7.78
All	9.69	8.45	8.35	8.82	8.19	7.75
SD	5.38	5.28	5.67	5.96	5.67	5.52
N	2,525	2,205	1,917	2,066	1,916	1,644

Notes: Sample weights used. ***p < .001, **p < .01 and *p < .05. #Estimate not reliable (cell size < 20). Note that the 'Other Relative' category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 1–6

Table C9: Average SDQ Total Problem scores, by disability status of household members, girls

Household member has a disability or health condition that restricts everyday activities	Average SDQ Total Problem score Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Any household member						
Yes	**9.24***	**8.11*****	**8.18*****	**8.97*****	**8.05*****	**8.97*****
No	8.78	7.21	6.73	7.34	6.58	6.55
Mother						
Yes	**9.59****	**8.94*****	**9.00*****	**13.83*****	**8.12*****	**9.29*****
No	8.780	7.23	6.80	7.44	6.72	6.81
Father						
Yes	8.89	7.22	7.93	8.74	8.11	**7.97***
No	8.96	7.41	6.91	7.45	6.80	7.05
Sibling						
Yes	**9.42***	**8.50****	8.30	8.56	**8.02***	**9.71*****
No	8.87	7.31	6.89	7.48	6.78	6.92
Grandparent						
Yes	**10.97****	8.44	6.41	6.48	7.39	7.08
No	8.92	7.38	6.96	7.53	6.85	7.11

Household member has a disability or health condition that restricts everyday activities	Average SDQ Total Problem score					
	Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Parent cares for someone not living in the same household						
Yes	-	-	**7.75***	8.03	**7.69***	7.36
No	-	-	6.90	7.53	6.80	7.14
All	8.41	7.12	6.67	7.28	6.63	7.06
SD	4.91	4.69	4.98	5.42	5.07	5.55
N	2,273	2,113	1,848	1,976	1,837	1,613

Notes: Sample weights used. ***p < .001, **p < .01 and *p < .05. #Estimate not reliable (cell size < 20). Note that the 'Other Relative' category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 1–6

Table C10: Average anxiety scores, by disability status of household members

Household member has a disability or health condition that restricts everyday activities	Average anxiety score			
	Age 12–13		Age 14–15	
	Boys	Girls	Boys	Girls
Any household member				
Yes	5.5	6.5	**5.0***	**8.3****
No	5.1	6.4	4.5	7.3
Mother				
Yes	5.7	6.1	5.1	**8.7****
No	5.1	6.5	4.5	7.4
Father				
Yes	5.2	7.8	4.6	8.0
No	5.1	6.4	4.6	7.5
Sibling				
Yes	5.9	6.3	**5.4***	**8.6***
No	5.1	6.4	4.6	7.4
Grandparent				
Yes	5.6	6.6	4.2	6.5
No	5.1	6.4	4.6	7.5
Parent cares for someone not living in the same household				
Yes	5.2	6.4	4.5	8.2
No	5.1	6.4	4.6	7.5
All	5.1	6.5	4.6	7.6
SD	3.9	4.4	3.8	5.2
N	1,586	1,555	1,631	1,588

Notes: Sample weights used. ***p < .001, **p < .01 and *p < .05. #Estimate not reliable (cell size < 20). Note that the 'Other Relative' category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 5 and 6

Table C11: Average depression scores, by disability status of household members

Household member has a disability or health condition that restricts everyday activities	Average depression score			
	Age 12–13		Age 14–15	
	Boys	Girls	Boys	Girls
Any household member				
Yes	4.5	**4.9***	5.0	**8.2*****
No	3.7	4.2	4.2	6.2
Mother				
Yes	4.4	**4.7***	**5.3***	**8.1****
No	3.8	4.3	4.3	6.4
Father				
Yes	3.7	5.5	5.0	**8.1***
No	3.9	4.3	4.4	6.5
Sibling				
Yes	4.8	4.9	**5.3***	**8.4***
No	3.8	4.3	4.3	6.5
Grandparent				
Yes	6.6	3.2	2.5	6.0
No	3.8	4.4	4.4	6.7
Parent cares for someone not living in the same household				
Yes	3.7	5.0	5.0	**7.8***
No	3.9	4.3	4.3	6.6
All	3.8	4.3	4.4	6.7
SD	5.1	5.5	6.0	7.1
N	1,586	1,554	1,631	1,586

Notes: Sample weights used. ***$p < .001$, **$p < .01$ and *$p < .05$. *SD* larger than mean indicates that the data for the depression measure is not normally distributed – it is highly skewed towards the lower end of the scale.
Source: LSAC K cohort, Waves 5 and 6

Table C12: Parent reported absenteeism (means), by disability status of household members

Household member has a disability or health condition that restricts everyday activities	Number of days absent from school in the past 4 weeks (average)			
	Age 6–7	Age 8–9	Age 10–11	Age 12–13
Any household member				
Yes	**1.48****	**1.58*****	**1.54***	**1.76*****
No	1.15	1.15	1.25	1.27
Mother				
Yes	**1.51****	**1.67*****	1.37	1.58
No	1.19	1.18	1.28	1.36
Father				
Yes	1.31	1.46	**1.66***	1.58
No	1.21	1.21	1.26	1.36
Sibling				
Yes	**1.47***	1.51	1.49	**1.92****
No	1.20	1.21	1.27	1.34
Grandparent				
Yes	1.82	1.59	1.32	0.96
No	1.21	1.22	1.28	1.38

Household member has a disability or health condition that restricts everyday activities	Number of days absent from school in the past 4 weeks (average)			
	Age 6–7	Age 8–9	Age 10–11	Age 12–13
Parent cares for someone outside the household				
Yes	-	1.19	1.35	**1.72***
No	-	1.22	1.29	1.35
All	1.21	1.22	1.29	1.40
SD	2.06	2.18	2.22	2.36
N	4,447	4,307	4,139	3,780

Notes: Sample weights used. ***_p_ < .001, **_p_ < .01 and *_p_ < .05. _SD_ larger than mean indicates that the data for the depression measure is not normally distributed – it is highly skewed towards the lower end of the scale. In Wave 6, only teacher reported absenteeism is available. The percentage of teachers reporting that the study child is absent either often or very often is significantly higher if the study child has a household member with a health condition or disability that restricts their everyday activities (12.9% compared to 6.6%), particularly if the household member is their mother or sibling. There are no significant differences in teacher reported absences at age 14–15, depending on whether the primary carer cares for someone who does not live in their household, or if the study child has a father or resident grandparent with a restrictive health condition.
Source: LSAC K cohort, Waves 2–6

Table C13: Average school engagement scores, by disability status of household members, boys

Household member has a disability or health condition that restricts everyday activities	School engagement score				
	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Any household member					
Yes	**2.96***	**2.92****	**2.96****	**3.83****	**3.81****
No	3.06	3.04	3.07	3.95	3.91
Mother					
Yes	**2.90***	**2.78*****	**2.85***	**3.73*****	**3.71*****
No	3.05	3.05	3.07	3.95	3.91
Father					
Yes	3.39	3.07	3.01	3.93	3.88
No	3.03	3.02	3.06	3.93	3.96
Sibling					
Yes	3.04	3.01	**2.96***	3.82	3.88
No	3.04	3.03	3.07	3.93	3.92
Grandparent					
Yes	2.66	3.04	3.03	3.93	3.83
No	3.04	3.03	3.06	3.93	3.89
Parent cares for someone not living in the same household					
Yes	-	2.98	3.08	3.86	3.87
No	-	3.03	3.05	3.93	3.88
All	3.03	3.03	3.05	3.92	3.88
SD	0.73	0.73	0.73	0.63	0.63
N	1,814	1,822	1,650	1,534	1,263

Notes: Sample weights used. ***_p_ < .001, **_p_ < .01 and *_p_ < .05. #Estimate not reliable (cell size < 20). Note that the 'Other Relative' category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 2–6

Table C14: Average School Engagement Scores, by disability status of household members, girls

Household member has a disability or health condition that restricts everyday activities	School engagement score				
	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15
Any household member					
Yes	**3.32****	3.29	3.49	**4.11*****	**4.01*****
No	3.41	3.44	3.51	4.29	4.24
Mother					
Yes	**3.21*****	**3.20****	3.39	**4.11*****	**3.93*****
No	3.41	3.43	3.51	4.27	4.22
Father					
Yes	3.38	3.44	3.51	4.23	4.14
No	3.39	3.41	3.52	4.26	4.19
Sibling					
Yes	3.34	3.28	3.39	**4.00*****	**3.93****
No	3.39	3.42	3.51	4.27	4.20
Grandparent					
Yes	3.45	#3.17	3.50	4.28	4.21
No	3.39	3.42	3.51	4.25	4.19
Parent cares for someone not living in the same household					
Yes	-	**3.29****	3.49	4.27	4.21
No	-	3.44	3.51	4.25	4.18
All	3.39	3.41	3.51	4.25	4.19
SD	0.65	0.66	0.62	0.55	0.59
N	1,781	1,706	1,606	1,518	1,291

Notes: Sample weights used. ****p* < .001, ***p* < .01 and **p* < .05. #Estimate not reliable (cell size < 20). Note that the ‘Other Relative’ category has too few cases for reliable estimates.
Source: LSAC K cohort, Waves 2–6

Appendix D: The association between carer status and pro-social scores

Table D1: OLS regressions estimating the association between carer status and school engagement in Year 9

	I		II		III		IV	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Carer status (Reference = Does not provide care)								
Res-High	0.07	0.33	0.10	0.36	0.09	0.41	0.12	0.37
Res-Low	0.11	-0.06	0.15	-0.06	0.16	-0.01	0.15	0.04
Non-Res-High	0.08	0.06	0.10	0.09	0.11	0.11	0.24	0.19
Non-Res-Low	__0.36**__	-0.06	__0.35**__	-0.08	__0.37**__	-0.07	__0.30*__	0.02
Cares for 4+ people	0.37	-0.15	0.39	-0.16	0.38	-0.12	0.39	0.01
Socio-demographic controls			**ns**	**ns**	**ns**	**ns**	**ns**	**ns**
Mother has a degree					__0.25*__	0.15	0.10	-0.03
Income support (waves)					-0.05	-0.12	0.01	-0.02
HH member has a health restriction (waves)					0.03	-0.02	0.05	-0.01
Parent cares for someone outside the household (waves)					0.03	-0.05	0.03	-0.05
Maternal consistency							0.18	0.17
Maternal reasoning							__0.23*__	0.16
Maternal harshness							__-1.01***__	__-0.91**__
Out-of-home activities							0.01	0.04
Extra activities							0.14	__0.73**__
Reading – Age 4–5							0.11	0.08
Who Am I Score – Age 4–5							-0.01	-0.01
SDQ Total Score – Age 4–5							__-0.03**__	__-0.02*__
Constant	__7.69***__	__8.44***__	__6.51**__	__8.04***__	__6.46**__	__8.22***__	__6.19**__	__8.90***__
_R2_	0.01	0.01	0.02	0.02	0.03	0.03	0.14	0.14
_N_	1,342	1,320	1,342	1,320	1,342	1,320	1,342	1,320

Notes: ***_p_ < .001, **_p_ < .01 and *_p_ < .05. Covariates included in models II to IV: age (in months), birth order, whether the study child speaks a language other than English, mother's country of birth, Indigenous status, single-parent household. Significance levels for socio-demographic controls are based on _F_-tests of joint significance.
Source: LSAC K cohort, Waves 1–6

Appendix E: The association between carer status and school engagement

Table E1: OLS regressions estimating the association between carer status and school engagement in Year 9

	I		II		III		IV	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Carer status (Reference = Does not provide care)								
Res–High	-0.08	-0.03	-0.07	-0.01	0.01	0.05	-0.04	0.05
Res–Low	-0.13	-0.07	-0.14	-0.03	-0.10	-0.01	0.03	-0.05
Non-Res–High	-0.01	**-0.20***	-0.07	-0.16	-0.07	-0.15	-0.01	-0.20
Non-Res–Low	-0.02	-0.01	-0.01	0.03	-0.01	0.05	-0.02	0.04
Cares for 4+ people	**-0.21***	**-0.27****	-0.18	**-0.20***	-0.18	-0.17	0.03	0.01
Socio-demographic controls			***	***	***	***	*	***
Mother has a degree					**0.19***	**0.15*****	-0.03	0.07
Income support (waves)					**-0.08****	**-0.11*****	-0.02	-0.04
HH member has a health restriction (waves)					-0.02	**-0.03***	-0.01	-0.03
Parent cares for someone outside the household (waves)					-0.01	-0.03	-0.02	-0.01
Maternal consistency							**0.11***	**0.16*****
Maternal reasoning							-0.04	**-0.11*****
Maternal harshness							**-0.14****	**-0.15*****
Out-of-home activities							0.05	0.01
Extra activities							-0.08	0.03
Reading – Age 4–5							0.05	**0.10***
Who Am I Score – Age 4–5							0.01	**0.01*****
SDQ Total Score – Age 4–5							**0.23*****	**0.21*****
Constant	**3.97*****	**4.26*****	**5.18*****	**3.98*****	**5.33*****	**4.01*****	**4.74*****	**4.55*****
R2	0.01	0.01	0.07	0.08	0.09	0.13	0.16	0.19
N	970	979	970	979	970	979	970	979

Notes: ****p* < .001, ***p* < .01 and **p* < .05. Covariates included in models II to IV: age (in months), birth order, whether the study child speaks a language other than English, mother's country of birth, Indigenous status, single-parent household. Significance levels for socio-demographic controls are based on *F*-tests of joint significance.
Source: LSAC K cohort, Waves 1–6