



Growing Up In Australia

The Longitudinal Study of Australian Children

ANNUAL STATISTICAL REPORT 2018

Australian Institute of Family Studies



Australian Government
Department of Social Services



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Growing Up in Australia: The Longitudinal Study of Australian Children is conducted in partnership between the Australian Government Department of Social Services, the Australian Institute of Family Studies (AIFS) and the Australian Bureau of Statistics (ABS), with advice provided by a consortium of leading researchers from research institutions and universities throughout Australia.

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Foreword

I am thrilled to present the ninth volume of the Annual Statistical Report series for *Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC)*. This report, produced by the Australian Institute of Family Studies, provides valuable insights into family functioning and child development for researchers, policy makers and providers of services and support, as well as the community at large.

Using seven waves of LSAC data, this report investigates the ways in which Australian children's experiences and environment affect their prospects and progress, from birth to 17 years. It also casts light on the health and wellbeing of children as they grow.

The recent addition of the Child Health CheckPoint to LSAC provides a comprehensive physical assessment of LSAC children at 11–12 years of age. Using data from the CheckPoint, chapter 3 examines diet and physical activity, weight status, hypertension, and hearing and vision problems in 11–12 year olds. It also looks at their wellbeing as they transition from childhood to adolescence. Like diet, sleep is essential for physical and mental health, and chapter 4 examines sleep patterns of the study children from six to 17 years.

The challenges of difficult circumstances and stressful events are discussed in chapter 12, which is dedicated to children's worries. And, in a related analysis (chapter 10), we consider the factors that help and hinder resilience in teenagers. In particular, this chapter shows how family and friendship protect teenagers' mental health and wellbeing.

As the teens in the older cohort turn 16 and 17 years of age, we explore behaviours that can arise as teens grow into older adolescents, including risky driving (chapter 6), gambling (chapter 7) and sex (chapter 5). Finally, we cover young people's decisions about their education (chapter 9), money management (chapter 8) and volunteering (chapter 11). Decisions that in many cases will have significant repercussions well into our study teens' adult lives.

We hope that our research will prove enlightening and useful to interested readers. We also hope that our analyses will encourage others to tap into the wealth of insights offered by LSAC data, now 15 years in the making.



Anne Hollonds
Director
Australian Institute of Family Studies

Acknowledgements

The Australian Institute of Family Studies (AIFS) thanks the Australian Government Department of Social Services (DSS) for funding this report, and the DSS LSAC team for their valuable comments and contribution.

We wish to acknowledge the helpful feedback on earlier versions of specific chapters from AIFS staff reviewers including:

- Dr Rebecca Jenkinson, Senior Manager, Australian Gambling Research Centre
- Dr Antonia Quadara, Senior Manager, Sexual Violence Research
- Kelly Hand, Deputy Director Research.

We also gratefully acknowledge the enormous contribution of the families and teachers who participated in the study.

For more information about the study, see the LSAC website: growingupinaustralia.gov.au

This report has been compiled and written by staff at AIFS. The views expressed in this report are those of the individual authors and should not reflect those of DSS, AIFS or the Australian Bureau of Statistics (ABS).

1

Introduction

Galina Daraganova



Children born in the early years of this millennium are growing up in an Australian society different to that experienced by any previous generation. To ensure that each child has every chance to experience a happy and healthy start to life, it is essential that policy makers and researchers have access to quality data about children's development in contemporary society.

Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC) is Australia's first nationally representative longitudinal study of child development. The study was initiated and is funded by the Australian Government Department of Social Services (DSS) and is conducted in partnership with the Australian Institute of Family Studies (AIFS) and the Australian Bureau of Statistics (ABS). A consortium of leading researchers and experts from universities and research agencies provide advice to the study.

LSAC provides valuable data about children, their families and their wider environments, and enables researchers and policy makers to have a comprehensive understanding of children's development within Australia's social, economic and cultural environment.

Since 2004, thousands of children, their parents and their teachers have been interviewed. The study has an accelerated cross-sequential design, with two cohorts of children:

- the B ('baby') cohort, who were aged 0–1 year at the beginning of the study (born March 2003–February 2004)
- the K ('kindergarten') cohort, who were aged 4–5 years at the beginning of the study (born March 1999–February 2000).

The first wave of data collection was in 2004, with subsequent main waves every two years. The longitudinal nature of the study enables researchers to examine the dynamics of change as children develop, and to go beyond the static pictures provided by cross-sectional statistics. Table 1.1 summarises the ages and sample sizes for the two cohorts across seven waves of the study.

Table 1.1: Number of study children responding in each wave, B and K cohorts

	Wave 1 (2004)	Wave 2 (2006)	Wave 3 (2008)	Wave 4 (2010)	Wave 5 (2012)	Wave 6 (2014)	Wave 7 (2016)
B cohort	Age 0–1	Age 2–3	Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13
<i>n</i>	5,107	4,606	4,386	4,242	4,085	3,764	3,381
K cohort	Age 4–5	Age 6–7	Age 8–9	Age 10–11	Age 12–13	Age 14–15	Age 16–17
<i>n</i>	4,983	4,464	4,332	4,169	3,956	3,537	3,089

Source: LSAC Waves 1–7

This design means that from the third wave of the study, the children’s ages overlap. That is, children are aged 4–5 years in the first wave for the K cohort and in the third wave for the B cohort.¹

This is the ninth volume in the LSAC Annual Statistical Report (ASR) series. This series is designed to promote the LSAC study and make its findings accessible to a range of audiences. The aim of the series is to be a key resource for policy makers, researchers and other interested readers by:

- providing an overview of how the LSAC study children are faring across a range of developmental domains, with ‘snapshots’ of aspects of life, as experienced by Australian children and families, and information about how children’s lives are changing as they grow up
- covering topics that are relevant to current policy development and social policy debates
- showcasing the breadth of topics that LSAC addresses.

This volume presents initial findings on a number of key topics arising from the seventh survey (wave), carried out when B and K cohort children were 12–13 and 16–17 years of age, respectively. This volume also features the Child Health CheckPoint, a special one-off physical assessment offered to the B cohort children at 11–12 years. Together, the chapters in this report provide a multi-faceted picture of what is happening in the LSAC children’s lives at particular points in time; and of how the lives of the study children and their families are changing as children grow older. This report should be viewed only as ‘selected findings’; a cursory indication of the vast potential of the LSAC data.

Most of the analysis presented in this report consists of graphs and tables that are relatively easy to interpret. However, some tables contain estimates from regression models. These are less easy to interpret than the descriptive statistics but are included to provide a better understanding of the relationship between two factors, holding other factors constant. Brief explanations of how to interpret the models are provided in the Technical Appendix. The Technical Appendix also provides details on the LSAC sample, respondents and collection methods, sampling and survey design, and details of the weights supplied in the data to correct for non-response and attrition. Where appropriate, these weights are used in the analyses presented in this report.

Reference

Soloff, C., Lawrence, D., & Johnstone, R. (2005). *LSAC sample design* (Technical Paper No. 1). Melbourne: Australian Institute of Family Studies.

¹ See Soloff, Lawrence, and Johnstone (2005) for more information about the study design.

2

Key findings

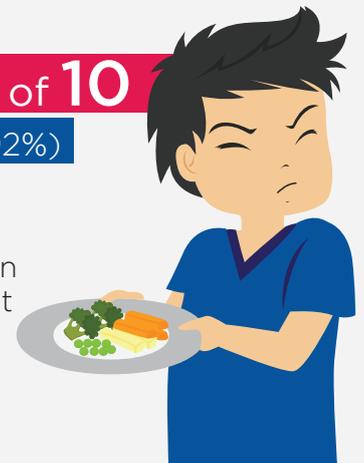


The physical health of Australian children

- One in seven children met the Australian guidelines for physical activity of at least 60 minutes per day (15% on weekdays and 16% on weekends).
- Around 7% of children had hypertension or pre-hypertension.
- According to their body mass index (BMI), 7% of children were underweight, 66% were of a normal weight, 21% were overweight (but not obese) and 6% were obese.
- Around 24% of children had some hearing loss in one or both ears.
- Around one in eight children (12%) had vision problems in one or both eyes.
- On average, children who did not have breakfast regularly or who ate less than the recommended two serves of fruit a day had lower levels of wellbeing, physical functioning and psychosocial functioning.
- Children who drank less than five cups of water a day had lower average physical functioning scores than those drinking five or more cups a day.

Nine out of **10**
children (92%)

were **not** meeting the recommendation of eating at least **five serves** of vegetables per day



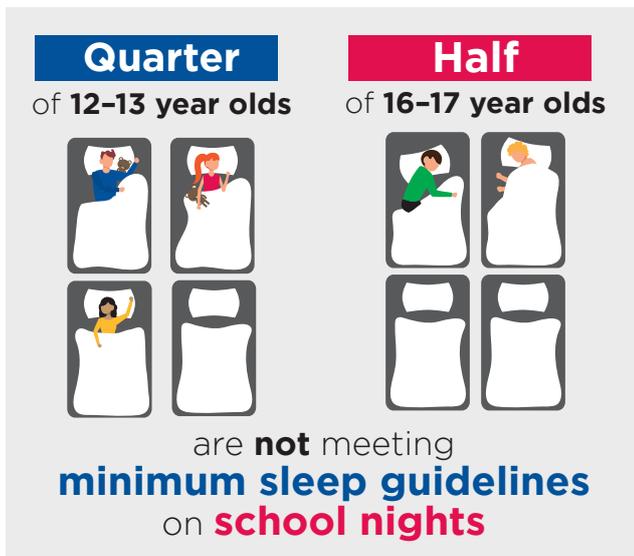
The most important meal of the day

Four in five children (82%) ate breakfast at least five times a week, with 72% consuming breakfast daily. Children who did not have breakfast regularly had poorer wellbeing, physical functioning and psychosocial functioning on average.



Are children and adolescents getting enough sleep?

- On school days, nearly all 6–7 year olds were getting the required minimum hours of sleep, but only half (50%) of 16–17 year olds were.
- Children aged 12–17 years were less likely to get the required minimum hours of sleep on school nights compared to non-school nights.
- 12–13 year olds who participated in sport and/or who had regular bedtimes were more likely to meet the minimum sleep guidelines for their age.



The downside of staying awake

The Australian Department of Health recommends between nine and 11 hours of sleep for children aged 5–13 years and between eight and 10 hours of sleep for adolescents aged 14–17 years.

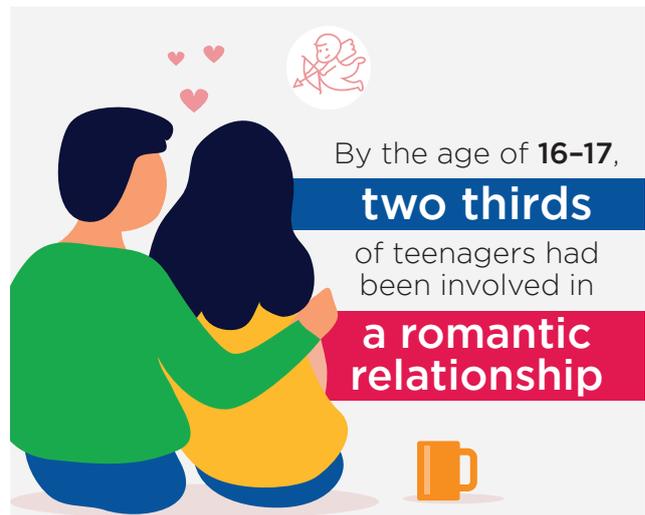


Examination of the LSAC data showed children and adolescents not meeting the minimum sleep guidelines were more likely to:

- show symptoms of poor mental health (e.g. anxiety, depression, unhappiness)
- be late for or absent from school
- spend more time (more than five hours per week) on homework
- have internet access in the bedroom or spend more time on the internet.

Teenagers and sex

- By the age of 16–17, around two thirds of teenagers had been involved in a romantic relationship and around one third had had sexual intercourse.
- Around one in five 16–17 year olds who were sexually active said that they had done nothing to prevent sexually transmitted infections the last time they had sex.
- Around one in 12 16–17 year olds who were sexually active said that they had done nothing to prevent pregnancy the last time they had sex.
- Condoms were the most common method to prevent pregnancy and sexually transmitted infections among sexually active teens.
- Boys were much more likely than girls to have intentionally viewed pornography.



Unwanted sexual behaviours

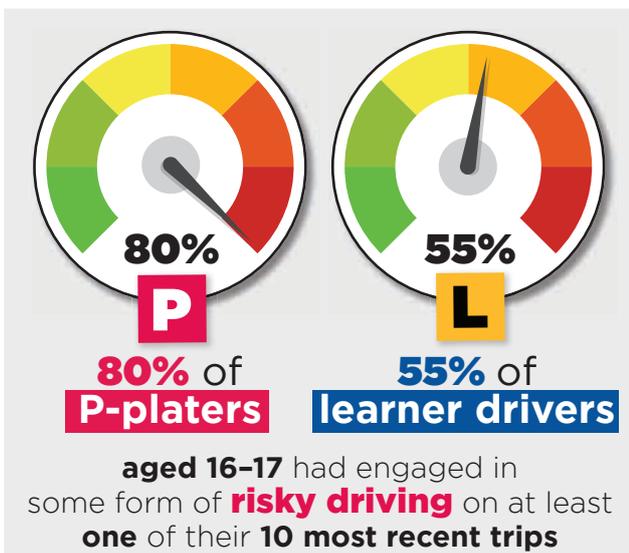
Almost half of girls and one third of boys aged 16–17 years said that they had experienced some form of unwanted sexual behaviour towards them in the past 12 months.



One in eight boys and around one in 12 girls reported that they had engaged in unwanted sexual behaviour towards someone else during the past 12 months (e.g. 'I told, showed or sent sexual pictures, stories or jokes that made someone feel uncomfortable' and/or 'I kept asking someone out on a date or asking them to hook up although they said "No"').

Risky driving among Australian teens

- Close to 80% of P-platers and 55% of learner drivers aged 16–17 had engaged in some form of risky driving on at least one of their 10 most recent trips.
- Speeding by up to 10 km/h over the limit and driving while tired were the two most common forms of risky driving.
- One in five teens who failed to wear a seatbelt when driving (or a helmet when riding a motorcycle) did so every trip.
- Learner drivers, P-platers and unlicensed drivers did not differ in their rates of seatbelt/helmet use.



Drinking and driving

- Almost 4% of teens had driven while ‘under the influence’ of alcohol or drugs during the past year.
- About one in 10 teens had been the passenger of a driver who was ‘under the influence’ during the past year.
- Teenagers who drank alcohol or used marijuana were more likely to engage in all types of risky driving.



Gambling activity among teenagers and their parents

- Despite it being illegal, one in six 16–17 year olds reported having gambled in the past year.
- More boys than girls reported having gambled on private betting, sports betting and poker.
- Although 65% of parents reported having gambled at least once in the past year, the majority (around 90%) were non-problem gamblers.
- Boys who had either been the victim or perpetrator of bullying at school were more likely to report having gambled.
- At age 16–17, around one in four boys (24%) and one in seven girls (15%) reported having played gambling-like games in the past 12 months.



Odds on

Teenagers who engaged in risky behaviours such as smoking and drinking, or had friends who smoked or drank, were more likely to report having gambled. For example, almost one in four boys who reported drinking alcohol in the past 12 months had also gambled during that time, compared to around one in eight boys who had not drunk alcohol.



Shop or save: How teens manage their money

- Girls were more likely than boys to find it easy to spend money, though gender made no difference when it came to saving money or avoiding debt.
- Teens who were saving or investing or who had savings accounts at age 12–13 were more likely to be savers at age 16–17.
- Teens aged 16–17 were more likely to be spenders if they had paid for their own mobile or internet data when they were 14–15 years old, than if they had not.

Teenagers who were **saving or investing** at age 12–13 were **more likely** to be **savers** at **age 16–17**



Pocket money

How teens managed money at age 16–17 was related to whether they received extra pocket money at ages 12–13 or 14–15 and also if they stopped receiving pocket money or had it taken away.



Shaping futures: School subject choice and enrolment in STEM

- Boys were more likely to choose Advanced Maths, Physics, Technology, Engineering, Business and Finance subjects than girls.
- Girls were more likely than boys to select Biology, Creative Arts, Health, Psychology, Legal Studies, and Society and Culture.
- Enrolment in Intermediate or Advanced Maths increased with higher Year 9 NAPLAN scores, and was significantly higher among students who expected to complete a degree.



Boys were more likely to choose **Advanced Maths, Engineering, Physics, Technology, Business and Finance** subjects **than girls**

Gender choices

Gender has been shown to strongly influence school subject choice, which may then influence career opportunities and earning potential. Even after taking aspirations, ability and socio-demographic characteristics into consideration, boys were still more likely to study STEM (Science, Technology, Engineering and Maths) subjects.



Adolescents' resilience

- At age 16–17, boys reported higher levels of resilience than girls.
- On average, resilience levels were higher among 16–17 year olds who had:
 - consistently close relationships with one or both parents
 - at least one close friend
 - friends they could trust and communicate with about problems
 - a strong sense of belonging at school.
- Average resilience levels were lower for 16–17 year olds who:
 - were more inclined to experience negative emotions, such as anger, anxiety or depression
 - experienced conflict between the ages of 12 and 15 with their parents
 - lacked family support between the ages of 10 and 13
 - had been the victim of bullying.



What is resilience?

There are many different aspects to resilience, including:

- the ability to cope and adapt with changes and challenges
- the capacity to deal and persist with problems without being overwhelmed
- self-belief in one's ability to deal with obstacles.



Here to help: How young people contribute to their community

- Approximately 40% of 12–13 year olds and 50% of 16–17 year olds reported volunteering in the last 12 months.
- Participation in volunteering was higher among:
 - females
 - older adolescents (16–17 year olds compared to 12–13 year olds)
 - adolescents whose parents also volunteered (particularly their mother)
 - adolescents whose parents had higher levels of education
 - adolescents attending a Catholic or independent school, compared to a government school
 - adolescents from non-English speaking backgrounds.
- Volunteering for activities related to arts, heritage, culture or music was higher among Indigenous adolescents and those from non-English speaking backgrounds.
- Volunteering for sport and recreation organisations was more common among adolescents living in inner regional and outer regional or remote areas.



Hands up

Adolescents most commonly volunteered for sport or recreation organisations, school and children's groups, and community or welfare organisations.



Tweens and teens: What do they worry about?

- Tweens and teens worried most about issues affecting their families.
- Two in three 10–11 year olds were worried about a family member becoming seriously ill or injured.
- Over half of 10–11 year olds were worried about fighting in their family.
- Just over two in five 10–11 and 12–13 year olds were worried about terrorism or war.
- Around a third of 10–11 and 12–13 year olds were worried about the environment.
- Family-related issues were particularly concerning for children from less advantaged and culturally and linguistically diverse (CALD) backgrounds.
- Children from CALD backgrounds were more likely to be concerned about global issues such as the environment, terrorism and war, as well as alcohol and drug use.
- Girls worry more when it comes to their appearance and fitting in with friends.



School worries

The transition to secondary school was an important area of concern for younger adolescents. Anxiety about changing schools was high among 10–11 year olds, while a similar proportion of 12–13 year olds were worried about not doing well at school.



3

The physical health of Australian children

Constantine Gasser, Tracy Evans-Whipp and Sonia Terhaag



Key findings

- One in seven children met the Australian guidelines for physical activity of at least 60 minutes per day.
- Around 90% were not eating the recommended five serves of vegetables per day.
- Children who did not have breakfast regularly or the recommended two serves of fruit per day had poorer wellbeing, physical functioning and psychosocial functioning on average.
- Children who drank less than five cups of water a day had lower average physical functioning scores than those drinking five or more.
- Around one quarter of children were overweight or obese.
- Around 7% of children had hypertension or pre-hypertension.
- Around 24% of children had some hearing loss in one or both ears and around 12% had vision problems in one or both eyes.

As children make the transition from childhood to adolescence, they undergo rapid developmental changes that affect their physical, emotional, mental and social wellbeing (Patton et al., 2016). Good physical health in adolescence is important to support the body's changes and development, and to allow full participation in learning, leisure and relationships. Adolescence is also a time to form habits that support long-term health and wellbeing. Being active, eating a varied and nutritious diet and getting a good night's sleep have been identified as important behaviours to support health into adulthood (Harris, King, & Gordon-Larsen, 2005).¹

Health in adolescence is also important in the longer term. Children and adolescents with poorer physical health markers such as being overweight, poor diet, lack of physical activity and hypertension have a greater risk of developing chronic diseases such as cancer, cardiovascular disease and diabetes leading to early mortality in adulthood (World Health Organization, 2014).

This chapter uses the data collected in the Child Health CheckPoint (Box 3.1), a LSAC biomarker

¹ Details around duration and quality of sleep among 6-17 year olds are presented in chapter 4 of the current edition.



module, and provides a snapshot of some basic dimensions of physical health of Australian children at age 11–12 years in the following areas:

- diet and physical activity
- physical health markers: weight status, hypertension, hearing and vision.

The Child Health CheckPoint focused on measures of non-communicable diseases (Clifford et al., 2019) (also known as chronic diseases, they are the result of a combination of genetic, physiological, environmental and behavioural factors). Most of these (physical activity, weight status, hypertension, hearing and vision) were measured by trained technicians and/or specialised equipment, providing an accurate assessment of these key aspects of children's physical health not previously available in LSAC. Together, these markers provide a broad overview of the health of Australia's 11–12 year olds.

It should be acknowledged that this is not a comprehensive or exhaustive overview of child physical health. There are many other important health indicators collected in the Child Health CheckPoint that are not examined in this chapter (e.g. bone health, respiratory health, dental health and allergies) (Clifford, Davies, & Wake, 2019), which would add to the overall picture of physical health. Therefore, this chapter should be viewed only as 'selected findings' – a taste of the vast potential of the CheckPoint data. In addition, the chapter examines the distribution of the physical health behaviours and markers across different demographic groups, as well as assessing the impact of these basic dimensions of physical health on children's general wellbeing and quality of life.

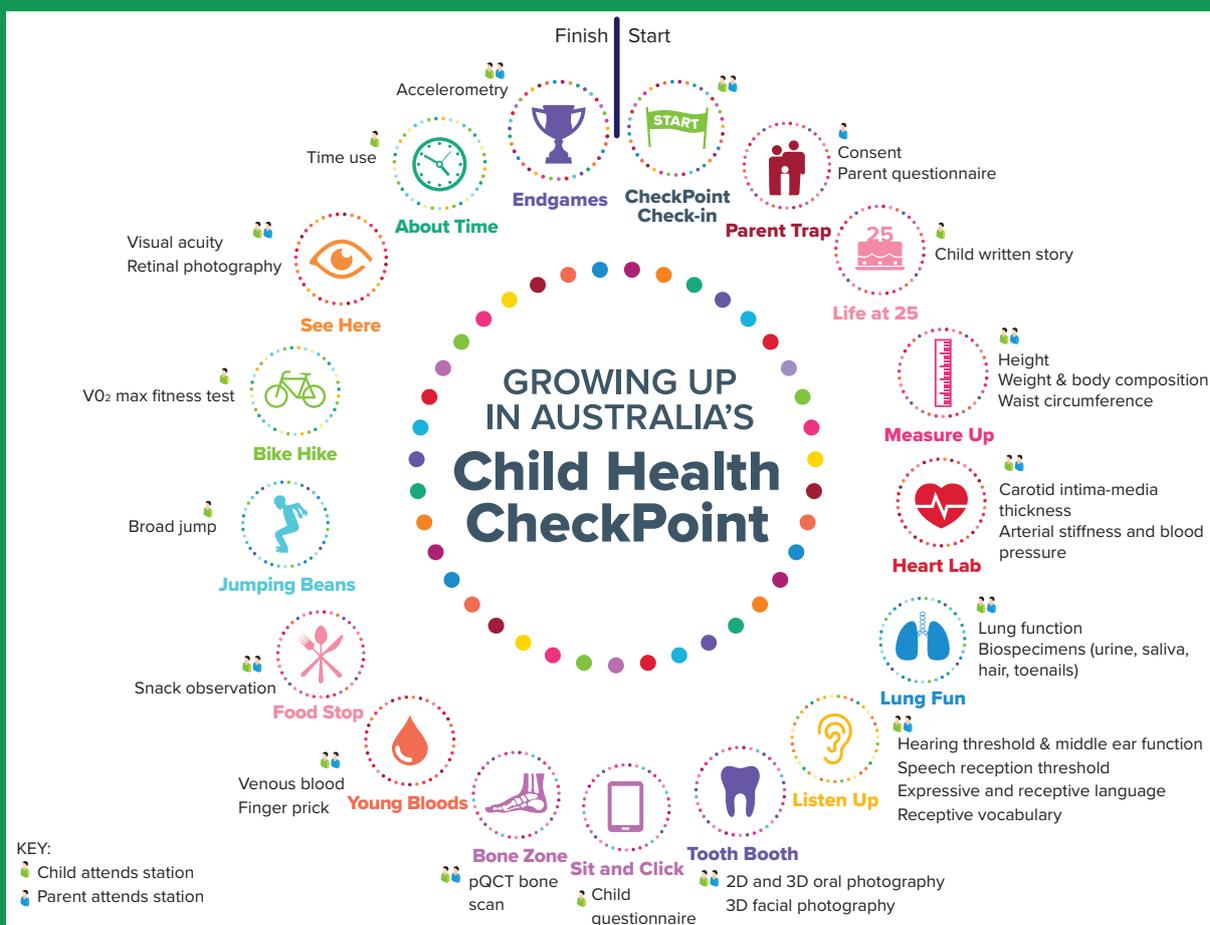
Box 3.1: What is CheckPoint?

The Child Health CheckPoint assessment was a comprehensive suite of direct physical measurements and biospecimen collection offered to the B cohort when they were 11–12 years old, conducted by the CheckPoint team at the Murdoch Children’s Research Institute. The main aim of the CheckPoint assessment was to take a comprehensive, objective and cross-sectional measure of child health during the transition from childhood to adolescence in order to explore the relationships between environmental, genetic and social factors and a wide range of health measures. All contactable and consenting LSAC families in the B cohort were invited to take part ($n = 3,513$). Recruitment began in December 2014, and data were collected between February 2015 and March 2016 (between LSAC Waves 6 and 7). A total of 1,874 children and their parents participated in the CheckPoint assessment (50% of the B cohort) (Clifford et al., 2019).

The CheckPoint assessment included data collection on key physical health markers (e.g. cardiovascular health, weight status, vision) and health indicators (e.g. physical activity, diet), using state-of-the-art equipment and self-report questionnaires. It also collected blood samples (stored for biochemical and genetic analyses), along with urine, saliva, toenail and hair samples.

Main Assessment Centres containing the required equipment were set up and moved around the country every few weeks. In total, the study visited over 30 cities across Australia. The one-day visit involved attending 15 different stations for data collection on different aspects of health (Figure 3.1). Where it was not possible for families to travel to the Main Assessment Centres in major cities, Mini Assessment Centres ($n = 153$, 8.2% of CheckPoint participants) were set up in regional cities where there was a concentration of LSAC participants, and home visits ($n = 365$, 19.5% of CheckPoint participants) were also conducted where needed.

Figure 3.1: Assessment stations in the Child Health CheckPoint



Source: Clifford, S., Davies, S., Gillespie, A., Lange, K., & Wake, M. (2018). *Longitudinal Study of Australian Children's Child Health CheckPoint Data User Guide - March 2018*. Melbourne: Murdoch Children’s Research Institute. doi: 10.25374/MCRI.5687590

See Clifford et al. (2019) for a comprehensive description of the rationale, methodology and equipment used in CheckPoint.

3.1 Diet and physical activity

Having a healthy diet and being physically active are related to a range of health outcomes. The types of food eaten and the physical activity undertaken in early adolescence is a result of a whole set of influences acting on an individual. These influences range from genetic factors to family, peer, school and societal environments (Viner et al., 2012).

Physical activity

For children, regular physical activity produces positive physical, psychosocial and cognitive health effects (Ahn & Fedewa, 2011; Poitras et al., 2016), as well as benefits to school functioning and academic achievement (Watson, Timperio, Brown, Best, & Hesketh, 2017). In Australia, it is recommended that children aged between five and 12 years participate in at least 60 minutes of moderate to vigorous physical activity per day, comprising mainly aerobic activities (Department of Health, 2019).

In CheckPoint, most children did not meet the current guidelines for 60 minutes of moderate to vigorous physical activity per day (85% on weekdays and 84% on weekends; Table 3.1). Children recorded an average of 32 minutes of physical activity on weekdays and 30 minutes per day on weekends. It has been previously reported that children in CheckPoint engaged in 32 minutes of moderate to vigorous physical activity per day, with only 15% meeting guidelines (Frayssé, Grobler, Muller, Wake, & Olds, 2019). However, the proportion of children not meeting physical activity guidelines was higher than that previously reported for children aged 9–12 in Australia, which showed that 82% of children did not meet the guidelines in 2011/12 (Australian Institute of Health and Welfare [AIHW], 2019). This suggests that the levels of child physical activity in Australia are declining.

More girls than boys were not meeting the guidelines for moderate to vigorous physical activity.

- On weekdays, 93% of girls and 76% of boys were not participating in the recommended amount of physical activity.
- On weekends, 89% of girls and 79% of boys were not doing enough physical activity.

This sex difference may be due to boys perceiving more peer and adult support or being provided with more opportunities to engage in physical activity than girls as they move into adolescence (Edwardson, Gorely, Pearson, & Atkin, 2013; Telford, Telford, Olive, Cochrane, & Davey, 2016). At this age, girls and boys,

who have often played sport and done physical education alongside each other, begin to diverge in some aspects of strength and speed (Tonnessen, Svendsen, Olsen, Guttormsen, & Haugen, 2015). This might cause some girls to think they are less competent than boys and to lose motivation for team activities (Telford et al., 2016).

Table 3.1: Percentage of children not meeting guidelines for moderate to vigorous physical activity, by key demographic characteristics

	% of children not meeting guidelines	
	Weekday	Weekend
All 11–12 year olds	84.6	83.7
Sex		
Male (<i>n</i> = 955)	76.4	78.8
Female (<i>n</i> = 919)	93.1*	88.7*
Language other than English at home		
English (<i>n</i> = 1,723)	84.1	83.0
Non-English (<i>n</i> = 151)	88.9	90.1
Parent education		
No degree (<i>n</i> = 817)	87.6	85.7
Degree (<i>n</i> = 1,049)	81.6*	81.3
Equivalentised parent income¹		
Bottom third (<i>n</i> = 387)	86.8	86.4
Middle third (<i>n</i> = 559)	83.9	84.1
Top third (<i>n</i> = 675)	82.4	79.0
Remoteness area		
Major cities (<i>n</i> = 1,318)	83.5	83.8
Inner regional (<i>n</i> = 379)	87.1	85.1
Outer regional or remote (<i>n</i> = 177)	85.3	80.5
Total (<i>n</i>)	1,374	1,323

Notes: * Statistically significant difference between categories for a demographic characteristic at $p < 0.05$ level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. Physical activity, sex and remoteness area were obtained from the CheckPoint dataset, and parent education, equivalentised parent income and language other than English at home were obtained from LSAC Wave 6. Parent education was defined according to (i) whether one or both parents had a degree or (ii) neither parent had a degree. Equivalentised parent income is the combined income of resident parents, adjusted for the number of people in the family using an equalising factor of 1 for the first adult + 0.5 for all other adults (over 15) in the immediate family + 0.3 for all children under the age of 15. Sample size was smaller due to missing observations on one of the measures comprising the equivalentised parent income, 1,200 and 1,156, for weekdays and weekends, respectively.

Source: CheckPoint dataset, weighted

Box 3.2: Physical activity – The ‘Endgames’ station

Domain	Subdomains	Measurement	Outcome(s)	
 Endgames	Physical activity	Activity tracking	Wrist-worn activity trackers (accelerometers) worn for 8 consecutive days	Minutes spent in moderate to vigorous activity were calculated for all weekdays and all weekend days using the Phillips cut points (Phillips, Parfitt, & Rowlands, 2013).

According to the Department of Health (2019) guidelines, children were divided into two categories:

- those who met physical activity guidelines; that is, engaged in 60 or more minutes of moderate to vigorous activity per day
- those who did less than 60 minutes of moderate to vigorous activity per day, and therefore did not meet the guidelines.

There were differences in physical activity on weekdays according to the child’s parents’ level of education. Eighteen per cent of children who had at least one parent with a degree met the guidelines for physical activity on weekdays. This was more than children of less-educated parents (where neither had a degree) for which 12% met the guidelines. This finding supports previous research showing that adolescents aged 15–16 with more highly educated parents were more physically active (Kantomaa, Tammelin, Nayha, & Taanila, 2007).

Although some Australian research has found that children and adolescents living in outer regional or remote areas were more likely to meet physical activity guidelines than those living in major cities (Australian Institute of Health and Welfare, 2018b; Bell et al., 2016; Dollman, Maher, Olds, & Ridley, 2012), the CheckPoint data found no difference between these groups (Table 3.1). This is likely due to the composition of the CheckPoint sample, which did not include children from very remote areas.

Adolescents’ diets

Poor diet in childhood and adolescence is related to worse health and increased risk of many diseases. The Australian Dietary Guidelines recommend that 11–12 year olds consume two serves of fruit and at least five serves of vegetables daily and drink plenty of water (National Health and Medical Research Council [NHMRC], 2013). This section examines four markers of a healthy diet: amount of fruit consumption and vegetable consumption, frequency of breakfast consumption and water intake.

Water is required for most bodily functions, including regulating body temperature and helping digestion, and regular intake is important for good health

(Department of Health and Human Services, 2014). It is recommended that children and young adolescents aged 9–13 years drink about 5–6 cups of fluid a day (NHMRC, Australian Government Department of Health and Ageing, & New Zealand Ministry of Health, 2006), preferably in the form of plain water (NHMRC, 2013). Fruit and vegetables contain fibre, vitamins and minerals, and both are an important part of a healthy diet (Department of Health and Human Services, 2011). Fruit and vegetable consumption can help to reduce obesity, maintain a healthy weight, lower cholesterol, and reduce the risk of cardiovascular disease, stroke, diabetes, high blood pressure and cancer (Department of Health and Human Services, 2011). Eating breakfast on a regular basis also provides health benefits, including better nutritional profiles, a lower likelihood of being overweight and better cognitive function (Rampersaud, Pereira, Girard, Adams, & Metz, 2005).

In the Child Health CheckPoint, children completed a questionnaire regarding their usual intake of various foods including fruit and vegetable consumption, water intake, and breakfast consumption, as part of a series of questions asked at the ‘Sit and Click’ station (Boxes 3.3–3.5).



Box 3.3: Fruit and vegetable consumption – the ‘Sit and Click’ station

Domain	Subdomains	Question
	Diet Vegetable consumption	A self-report questionnaire was used to assess diet. <ul style="list-style-type: none"> How many serves of VEGETABLES do you USUALLY eat each day? Do not include any potatoes, hot chips or fried potato. Include all fresh, dried, frozen and tinned vegetables.
	Fruit consumption	<ul style="list-style-type: none"> How many serves of FRUIT do you USUALLY eat each day? Do not include fruit juice. Include all fresh, dried, frozen and tinned fruit. Response categories were: 'I don't eat fruit/vegetables'; 'Less than 1 serve a day'; '1 serve'; '2 serves'; '3 serves'; '4 serves'; '5 serves'; '6 serves or more'.

According to the Australian Dietary Guidelines (NHMRC, 2013), children were divided into those who were meeting the guidelines and not.

For vegetables:

- those who consume five or more serves of vegetables a day
- those who consume less than five serves of vegetables a day, and therefore do not meet the guidelines.

For fruits:

- those who consume two or more serves of fruit a day
- those who consume less than two serves of fruit a day, and therefore do not meet the guidelines.

Box 3.4: Breakfast consumption – the ‘Sit and Click’ station

Domain	Subdomains	Question
	Diet Breakfast consumption	<ul style="list-style-type: none"> How often do you usually have something for BREAKFAST? Response categories were: 'Never'; 'Less than once a week'; 'About 1-2 times a week'; 'About 3-4 times a week'; 'About 5-6 times a week'; 'Everyday'.

Children were divided into two categories for breakfast consumption:

- those who reported having breakfast 5-6 times a week or everyday
- those who reported having breakfast four or less times a week.

Note: Children were not asked what they were eating for breakfast.

Box 3.5: Water intake – the ‘Sit and Click’ station

Domain	Subdomains	Question
	Diet Water intake	<ul style="list-style-type: none"> How much WATER do you USUALLY drink each day? This can be plain tap water, mineral water or bottled water. Response categories were: 'I don't drink water'; 'Less than one cup a day'; 'About 1 cup a day'; 'About 2 cups a day'; 'About 3 cups a day'; 'About 4 cups a day'; 'About 5 cups or more a day'.

Children were divided into two categories for water consumption:

- those who drank five cups or more a day
- those who drank four cups or less a day.

Table 3.2: Percentage of children with markers of an unhealthy diet, by key demographic characteristics

	Not meeting guidelines, %		Eating breakfast 4 times a week or less, %	Consuming 4 or less cups of water a day, %
	Fruit intake	Vegetable intake		
All 11-12 year olds	23.8	92.1	18.1	65.3
Sex				
Male (<i>n</i> = 955)	28.6	92.2	17.1	64.4
Female (<i>n</i> = 919)	18.6*	92.1	19.2	66.3
Child's main language spoken at home				
English (<i>n</i> = 1,723)	24.6	92.6	18.0	65.6
Non-English (<i>n</i> = 151)	17.4	88.4	19.3	62.6
Parent education				
No degree (<i>n</i> = 817)	27.8	93.1	23.7	63.6
Degree (<i>n</i> = 1,049)	18.9*	91.3	11.2*	67.1
Equivalised parent income				
Bottom third (<i>n</i> = 387)	23.0	93.5	18.3	65.1
Middle third (<i>n</i> = 559)	22.4	93.6	14.9	62.4
Top third (<i>n</i> = 675)	22.4	90.4	14.7	66.7
Remoteness area				
Major cities (<i>n</i> = 1,318)	23.7	91.9	16.8	66.1
Inner regional (<i>n</i> = 379)	23.8	92.9	21.3	65.2
Outer regional or remote (<i>n</i> = 177)	24.6	91.9	18.5	61.2

Notes: * Statistically significant difference between categories for a demographic characteristic at $p < 0.05$ level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. Fruit/vegetable consumption, breakfast consumption, water intake, sex and remoteness area were obtained from the CheckPoint dataset, and parent education, equivalised parent income and language other than English at home were obtained from LSAC Wave 6. Parent education was defined according to (i) whether one or both parents had a degree or (ii) neither parent had a degree. Equivalised parent income is the combined income of resident parents, adjusted for the number of people in the family using an equivalising factor of 1 for the first adult + 0.5 for all other adults (over 15) in the immediate family + 0.3 for all children under the age of 15. Sample size varied by demographics due to missing cases.

Source: CheckPoint dataset, weighted

More boys than girls were not meeting the guidelines for fruit consumption (Table 3.2). Almost three in 10 boys (29%) were not consuming the recommended number of servings of fruit, compared to less than two in 10 girls (19%). This finding is consistent with other research showing girls tend to consume fruit more frequently or in higher quantities than boys (Rasmussen et al., 2006), possibly because girls prefer eating fruit more than boys do (Bere, Brug, & Klepp, 2008).

Less than two in 10 children who had one or both parents with a degree were not meeting the guidelines for fruit consumption (19%), compared to almost three in 10 children who had both parents without a degree qualification (28%). Sufficient fruit consumption has also previously been related to parent education, with children whose parents are more educated being more likely to have healthy diets (including a high frequency of fruit and vegetable

consumption) in childhood and adolescence (Gasser, Mensah, Kerr, & Wake, 2017).

Over four in five children (82%) consumed breakfast at least five times a week, with 72% consuming breakfast daily. Children's frequency of breakfast consumption differed according to their parents' level of education (Table 3.2). Around one quarter of children who had both parents without a degree (24%) consumed breakfast four times a week or less, compared to around one in 10 (11%) who had one or both parents with a degree. This finding supports previous research that showed that compared to children whose mothers had low levels of education, children whose mothers were highly educated were more likely to eat breakfast every day (van Ansem, Schrijvers, Rodenburg, & van de Mheen, 2014).

In LSAC's Child Health CheckPoint, approximately

65% of children consumed four or less cups of water a day.² Although previous studies have found demographic differences in water consumption (Drewnowski, Rehm, & Constant, 2013; Jomaa, Hwalla, Constant, Naja, & Nasreddine, 2016), in CheckPoint, there were no differences in water consumption according to key demographic characteristics (Table 3.2).

3.2 Physical health markers

Physical health markers are direct measurements taken on children in the CheckPoint assessment. Since they are objectively measured and do not rely on information gathered from the children, their parents or other adults, they provide an accurate picture of the current physical health status of 11–12 year olds. The Child Health CheckPoint collected data on a large number of key health markers, of which weight status, hypertension, vision and hearing are examined here.

Weight status

Body mass index (BMI) is a commonly used way to estimate a person’s weight status that takes into consideration the person’s height. In children and adolescents, BMI is used to find out if a child or adolescent is underweight, of a healthy weight, overweight or obese (Box 3.6).

In LSAC’s Child Health CheckPoint, 7% of children were underweight, 66% were of a normal weight, 21% were overweight (but not obese) and 6% were obese. These findings are similar to those from the AIHW, which estimated from BMI measurements that approximately one in three (31%) children aged 10–13 in Australia in 2015 were overweight or obese, with no

differences by sex (AIHW, 2017a; AIHW, 2017b). Being overweight or obese during puberty increases the risk of being overweight or obese in adulthood, and is related to a range of poorer health outcomes including diabetes, cardiovascular disease, hormonal imbalances and cancer (Jasik & Lustig, 2008; Sanders, Han, Baker, & Cobley, 2015).

Among the 27% of children classified as overweight or obese in CheckPoint, there were differences according to parent education and income (Figure 3.2).

- Around one in three (32%) children who had neither parent with a degree were overweight or obese, compared to around one in five (21%) children who had one or both parents with a degree.
- Around one in three (31%) children in the lowest third of equivalised parent income were overweight or obese, compared to around one in five (20%) in the highest third of equivalised parent income.

These findings are consistent with other research showing children from families with low educational attainment or low income are at higher risk of obesity (Brophy et al., 2009). There were no differences in being overweight or obese according to sex, remoteness area or speaking a language other than English at home.

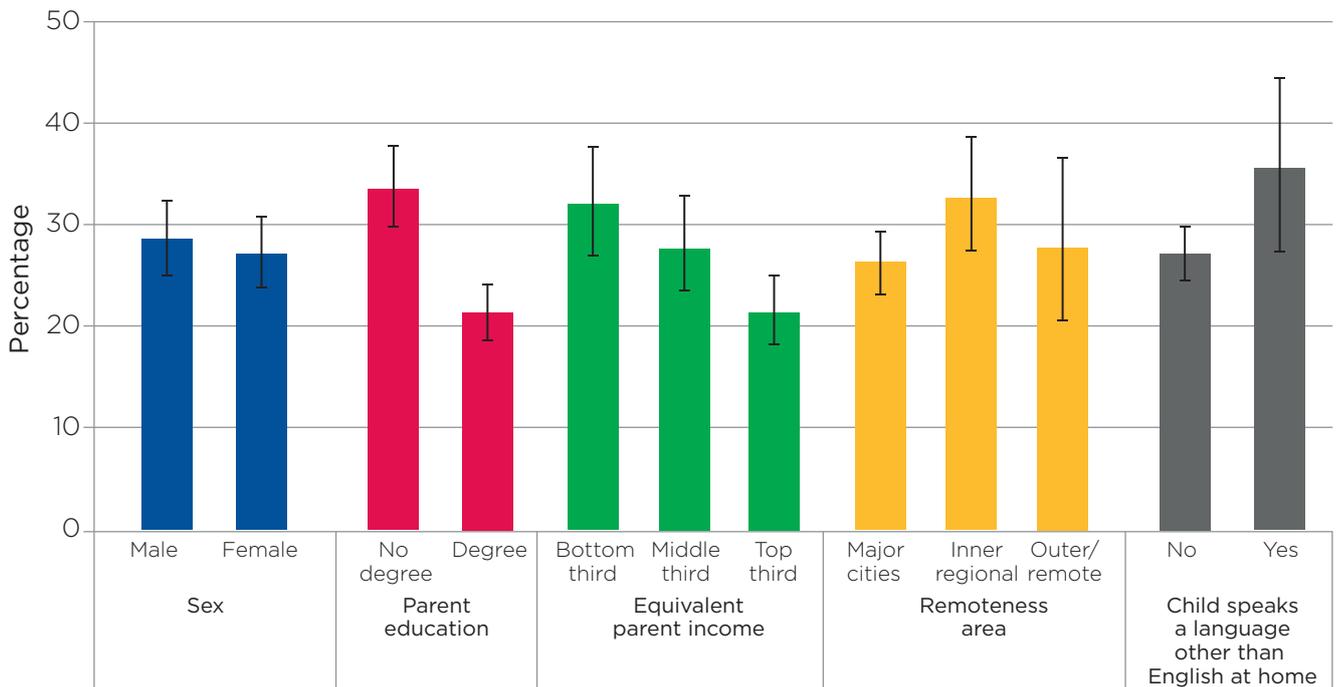
Not eating breakfast is related to being overweight and obese in adolescents (Szajewska & Ruszczynski, 2010). In CheckPoint, there was a difference in the proportion of children who were overweight or obese, according to the frequency at which they consumed breakfast. Over one third (35%) of children who consumed breakfast four times a week or less were overweight or obese, compared to around one quarter (25%) of children who consumed breakfast at least five times a week.

2 Forty-four per cent of Australian children are drinking three or less cups of water per day and 6% are drinking one cup or less per day.

Box 3.6: Overweight and obesity – ‘Measure Up’ station

Domain	Subdomains	Measurement	Outcome(s)
	Weight and obesity 1. Height 2. Weight 3. BMI	Invicta stadiometer (<i>height</i>) Bioelectrical impedance analysis (BIA) (<i>weight</i>)	BMI score classified as: <ul style="list-style-type: none"> underweight normal weight overweight obese.

Body mass index (BMI) is defined as weight (kg) divided by height (m²). For study children, underweight, normal weight, overweight and obese were defined according to International Obesity Task Force BMI cut-offs (Cole & Lobstein, 2012). These cut-offs account for age and sex. Children were divided into two categories for weight status: underweight or normal weight versus overweight or obese. Overweight is equivalent to adult BMI values of 25 to less than 30 and obesity is equivalent to adult BMI values of 30 or higher.

Figure 3.2: Percentage of children who were overweight or obese, by key demographic characteristics

Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. $n = 1,871$ for sex, remoteness area and language other than English at home; $n = 1,863$ for parent education and $n = 1,619$ for equivalised parent income. Overweight/obesity, sex and remoteness area were obtained from the CheckPoint dataset, and parent education, equivalised parent income and child's language other than English at home were obtained from LSAC Wave 6. Parent education was defined according to (i) whether one or both parents had a degree or (ii) neither parent had a degree. Equivalised parent income is the combined income of resident parents, adjusted for the number of people in the family using an equalising factor of 1 for the first adult + 0.5 for all other adults (over 15) in the immediate family + 0.3 for all children under the age of 15.

Source: CheckPoint dataset, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Hypertension

Hypertension or high blood pressure is a modifiable risk factor (Noubiap et al., 2017) associated with an increased risk of stroke, cardiovascular disease and death (Brunstrom & Carlberg, 2018; World Heart Federation, 2017). Children who are overweight or obese or do less physical activity are at a higher risk of hypertension (Karatzis et al., 2018; Larkins, Teixeira-Pinto, & Craig, 2018). High blood pressure in children is concerning because it is likely to continue into adulthood and is associated with damage to the heart at an early point in life (Theodore et al., 2015). It has been estimated that more than one in 10 Australian children aged 5–17 years (13%) have elevated or high blood pressure – 7% have pre-hypertension (elevated blood pressure) and 6% have hypertension (high blood pressure) (Larkins et al., 2018).

In the Child Health CheckPoint, children's blood pressure was measured at the 'Heart Lab' station (Box 3.7). Three per cent of children had pre-hypertension and 4% had hypertension. Differences

in the percentages of children with pre-hypertension or hypertension were observed according to parent education (Figure 3.3). Around one in 10 children (9%) with hypertension reported both parents did not have a degree, compared to around one in 25 children (4%) who reported that one or both parents had a degree. Socio-economic differences in another cardiovascular measure, carotid intima-media thickness, have also been found using Child Health CheckPoint data (Liu et al., 2019). Other research has shown that higher parent education or higher socio-economic status is associated with lower blood pressure (Larkins et al., 2018; Shi, de Groh, & Morrison, 2012).

In CheckPoint, there was a substantial difference in the proportion of children with hypertension or pre-hypertension, according to whether or not they were overweight or obese. Around one in six children (16%) who were overweight or obese had either pre-hypertension or hypertension, compared to around one in 25 (4%) who were underweight or of a normal weight.

Box 3.7: Hypertension – ‘Heart Lab’ station

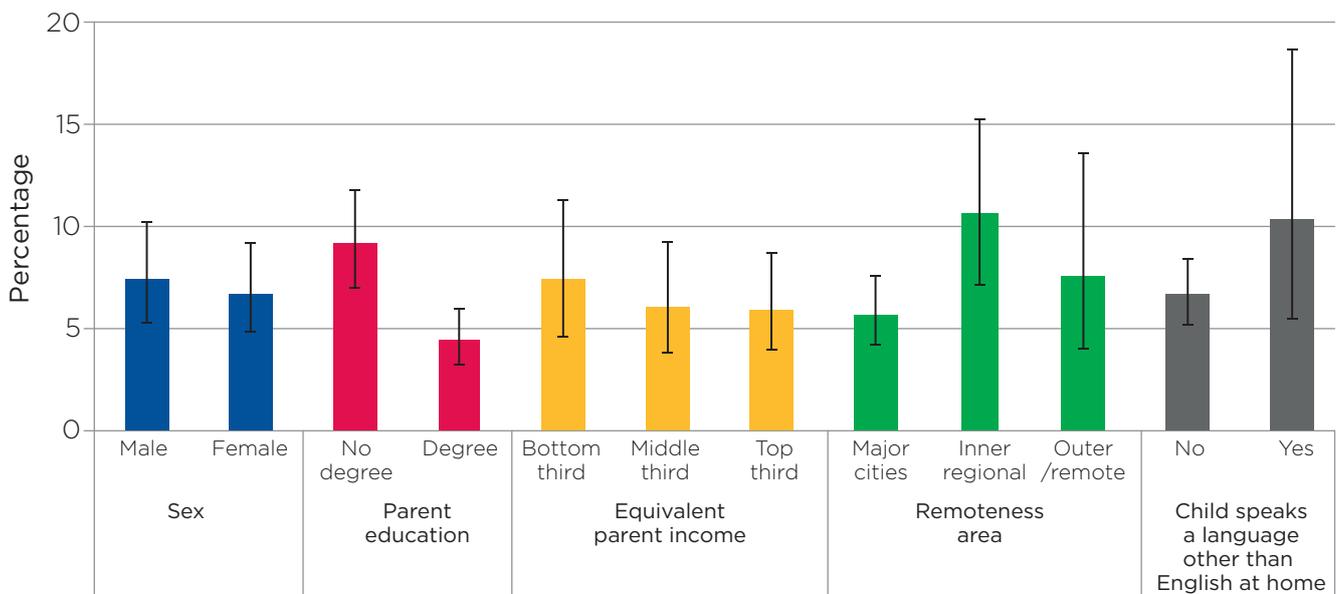
Domain	Subdomains	Measurement	Outcome(s)
 Cardiovascular health Heart Lab	Blood pressure	Pulse wave analysis (PWA) using a blood pressure cuff wrapped around the right upper arm	Systolic and/or diastolic brachial hypertension status that was converted to a standardised z-score and percentile, ¹ based on age, sex and height.

Note: ¹These percentiles were created using normative data from a sample of children in the United States (National High Blood Pressure Education Program Working Group on High Blood Pressure in Children and Adolescents, 2004).

LSAC children were divided into one of two categories:

- not hypertensive
- pre-hypertensive/hypertensive (scoring at the 90th or higher percentile for systolic and/or diastolic blood pressure).

Figure 3.3: Percentage of children with pre-hypertension or hypertension, by key demographic characteristics



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. $n = 1,776$ for sex, remoteness area and language other than English at home; $n = 1,768$ for parent education and $n = 1,535$ for equivalised parent income. Hypertension, sex and remoteness area were obtained from the CheckPoint dataset, and parent education, equivalised parent income and language other than English at home were obtained from LSAC Wave 6. Parent education was defined according to (i) whether one or both parents had a degree or (ii) neither parent had a degree. Equivalised parent income is the combined income of resident parents, adjusted for the number of people in the family using an equalising factor of 1 for the first adult + 0.5 for all other adults (over 15) in the immediate family + 0.3 for all children under the age of 15.

Source: CheckPoint dataset, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Hearing

Hearing loss can be caused by genetic factors, prenatal exposure to infectious disease, trauma, disease (e.g. obesity, cardiovascular disease, diabetes and meningitis), and exposure to noise (such as a one-time exposure to an extremely loud noise or repeated or continuous exposure to loud sounds). Hearing loss can be classified as slight (16–25 decibels (dB) hearing loss) through to profound (greater than 90dB loss).³ Substantial hearing loss at the upper end of this spectrum may lead to difficulties for children at school and in social settings, and children with hearing loss often report reduced quality of life, lower self-esteem and decreased motor skills (Rajendran, Roy, & Jeevanantham, 2012; Theunissen et al., 2014). Slight or mild hearing loss may have fewer implications for everyday life in childhood but may progress to greater hearing loss or indicate the first stage of age-related hearing loss.

Children's hearing was assessed at the 'Listen Up' station in the Child Health CheckPoint and any hearing loss in one or both ears, from slight to profound, was determined (Box 3.8).



The Child Health CheckPoint data show that around 14% of children had any hearing impairment in one ear and one in 10 children had a hearing impairment in both ears. This finding compares to previous research on hearing loss in a wide range of countries reporting that around 13% of children 18 years and younger have at least slight hearing loss in both ears within the speech frequencies (Wang et al., 2019b).

More children who spoke a language other than English at home, compared to those who only spoke English at home, had a hearing impairment in one or both ears (49% vs 21%) (Figure 3.4). This difference may be a reflection of known disparities in the prevalence of unilateral hearing loss between different ethnic groups (Su & Chan, 2017).

Box 3.8: Hearing – The 'Listen Up' station

Domain	Measurement	Outcome(s)
 Hearing	Air-conduction Pure Tone Audiometry (PTA)	Hearing thresholds at different frequencies (1, 2, 4 and 8 kilohertz (kHz)) were tested. Slight to profound hearing impairment (hearing thresholds ≥ 16 dB hearing loss in one or both ears) was derived from threshold data. Hearing impairment was based on the three-frequency pure tone average or 'Fletcher Index' because of its relevance to the speech spectrum (i.e. 1, 2 and 4 kHz).

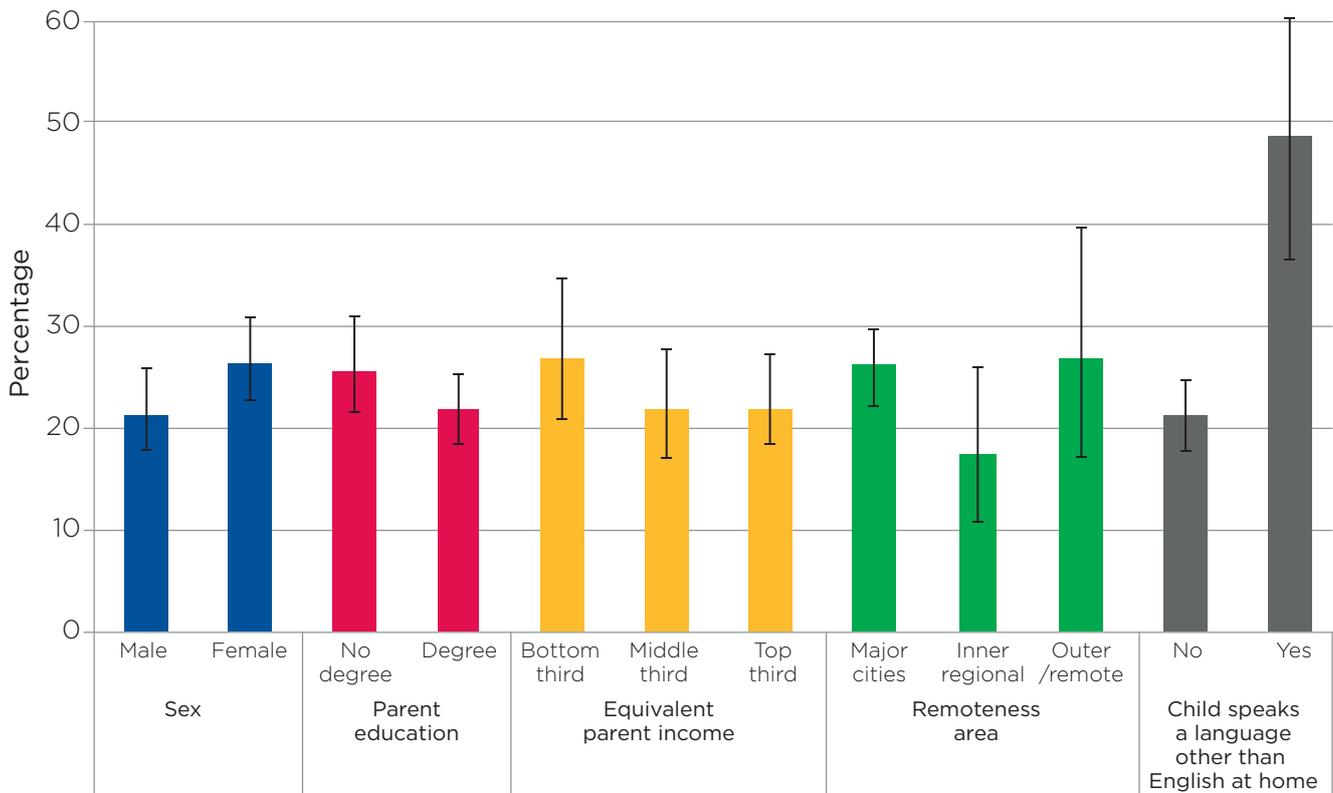
Children were divided into one of three categories:

- no hearing loss
- slight to profound hearing impairment in one ear
- slight to profound hearing impairment in both ears.

In figure 3.4, two of these categories were combined: 'slight to profound hearing impairment in one ear' and 'slight to profound hearing impairment in both ears'.

³ The term dB (decibel) and the dB scale are used worldwide for the measurement of sound levels. A soft whisper is around 30dB, ordinary conversation is around 60dB and city traffic is around 90dB.

Figure 3.4: Percentage of children with slight to profound hearing impairment in one or both ears, by key demographic characteristics



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. $n = 1,488$ for sex, remoteness area and language other than English at home; $n = 1,481$ for parent education and $n = 1,285$ for equivalised parent income. Hearing, sex and remoteness area were obtained from the CheckPoint dataset, and parent education, equivalised parent income and language other than English at home were obtained from LSAC Wave 6. Parent education was defined according to (i) whether one or both parents had a degree or (ii) neither parent had a degree. Equivalised parent income is the combined income of resident parents, adjusted for the number of people in the family using an equalising factor of 1 for the first adult + 0.5 for all other adults (over 15) in the immediate family + 0.3 for all children under the age of 15.

Source: CheckPoint dataset, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Vision

The degree of visual impairment ranges from near-normal vision/mild impairment (some difficulty reading street signs or newspaper print) through moderate visual impairment (difficulty reading large print text or loss of facial feature discrimination) to total impairment (blindness) (Welp, Woodbury, McCoy, & Teutsch, 2016). Vision problems can affect a young person’s mobility, independence, quality of life and performance or engagement at school (Welp et al., 2016). Identification and treatment of vision impairments with proper visual acuity screenings, preventive eye-care services and proper eye-protection practices may be of great help to children. In the Child Health CheckPoint, children’s sharpness or clarity of vision, or visual acuity (VA),⁴ was measured at the ‘See Here’ station (Box 3.9).

In LSAC’s Child Health CheckPoint, 12% of children aged 11–12 years had a visual impairment in one or both eyes. This is consistent with previous research on Australian children that found that around 11% of 12 year olds had mild or worse visual impairment in one or both eyes. Of these cases, 18% were non-correctable with glasses or contact lenses (Robaei, Huynh, Kifley, & Mitchell, 2006), which is of concern because non-correctable visual impairment has been shown to reduce quality of life in adults, even when the impairment is mild (Chia et al., 2004).

More children who spoke a language other than English at home, compared to those who only spoke English at home, had a visual impairment (21% vs 11%) (Figure 3.5). This difference could be due to known differences in the prevalence of vision problems between ethnic groups (Theophanous et al., 2018; Xiao, Morgan, Ellwein, & He, 2015).

4 Visual acuity is a measure reflecting the distance between the eye and object at the point where the object becomes blurry (Welp et al., 2016).

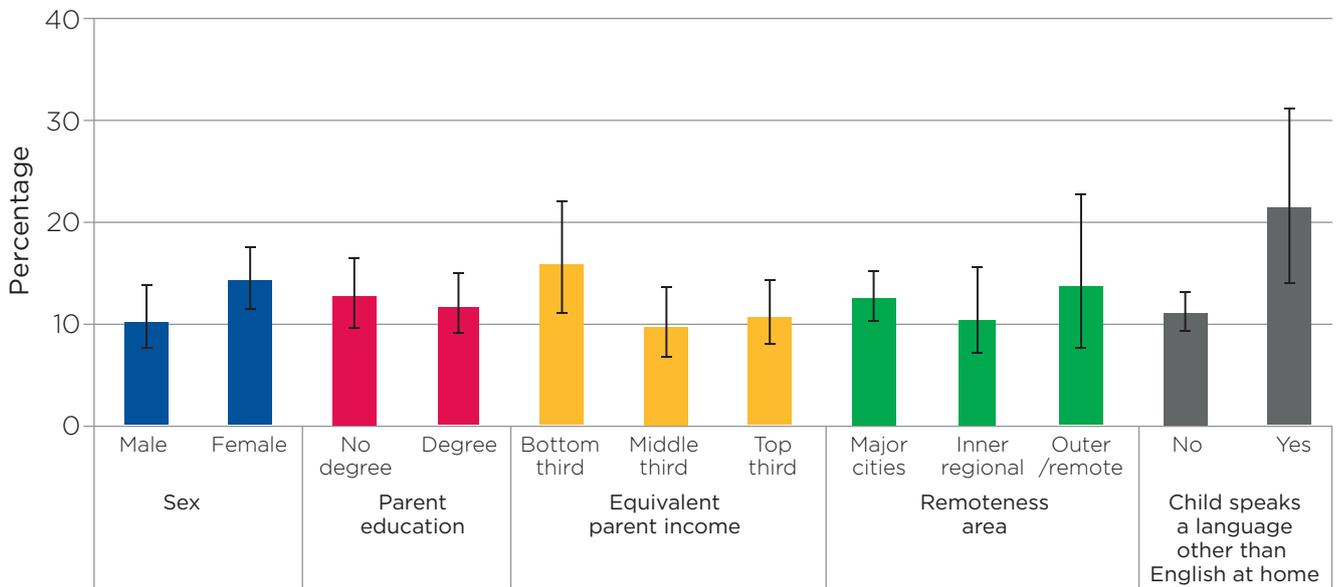
Box 3.9: Vision – The ‘See Here’ station

Domain	Subdomains	Measurement	Outcome(s)
	Vision Visual acuity (VA)	Computerised adaptive Freiburg Visual Acuity and Contrast Test (FrACT 3.8.2) (Bach, 2007)	Visual acuity was tested for each eye separately, without glasses with VA scores calculated for each eye.

Children were divided into two categories for visual acuity:

- no visual impairment
- any visual impairment (in one or both eyes).

Figure 3.5: Percentage of children with a visual impairment in one or both eyes, by key demographic characteristics



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. $n = 1,486$ for sex, remoteness area and language other than English at home; $n = 1,479$ for parent education and $n = 1,284$ for equalised parent income. Vision, sex and remoteness area were obtained from the CheckPoint dataset, and parent education, equalised parent income and language other than English at home were obtained from LSAC Wave 6. Parent education was defined according to (i) whether one or both parents had a degree or (ii) neither parent had a degree. Equalised parent income is the combined income of resident parents, adjusted for the number of people in the family using an equalising factor of 1 for the first adult + 0.5 for all other adults (over 15) in the immediate family + 0.3 for all children under the age of 15.

Source: CheckPoint dataset, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

3.3 Wellbeing

Wellbeing is characterised by the psychological, cognitive, social and physical functioning and capabilities that children need to live a happy and fulfilling life (Organisation for Economic Cooperation and Development [OECD], 2017), and is strongly related to physical health (Gu, Chang, & Solmon, 2016; Poitras et al., 2016). Children who experience physical health problems often report feeling that their wellbeing

and quality of life are reduced (Anderson et al., 2017; Varni, Seid, & Kurtin, 2001; Wang et al., 2019a).

The Child Health CheckPoint data showed that there were some differences in certain aspects of the wellbeing of children according to dietary indicators, physical activity and physical health markers described in this chapter (Table 3.3):

Box 3.10: General wellbeing - The 'Sit and Click' station

Domain	Measure
 Sit and Click	The Generic Core Scale of the Paediatric Health Related Quality of Life Inventory (PedsQL) V.4.0. (Varni et al., 2001) was used to assess general wellbeing, physical and psychological functioning. For each scale, response options on a five-point scale, ranging from never to almost always, were transformed to a 0-100 scale, with higher scores indicating higher wellbeing.

General wellbeing

Study children were asked how much each of the following statements sounded like them in the last month:

- I feel happy.
- I feel good about myself.
- I feel good about my health.
- I get support from my family or friends.
- I think good things will happen to me.
- I think my health will be good in the future.

Physical functioning

Study children were asked how often the following activities have been difficult for them in the last month:

- walk about 100 metres
- run
- play sport or do exercise
- lift something heavy
- have a bath or shower by myself
- help around the house.

As well as how often they:

- get aches and pains
- have low energy.

Psychosocial functioning

Study children were asked how often a series of activities relating to how difficult emotional, social and school functioning have been for them in the last month. For example:

- I feel afraid.
- I have trouble sleeping.
- I have trouble getting along with other kids.
- other kids do not want to be my friend.
- it is hard to pay attention in class.
- I have trouble keeping up with my school work.

Table 3.3: Mean general wellbeing, physical and psychosocial functioning scores, by all health measures

Health measure	General wellbeing, Mean	Physical functioning, Mean	Psychosocial functioning, Mean
Mean (SD)	82.2 (13.6)	83.1 (13.6)	75.7 (14.6)
Total (n)	1,823	1,846	1,846
Moderate to vigorous physical activity (weekdays)			
Does not meet guidelines (n = 1,143)	81.4	82.6	75.6
Meets guidelines (n = 231)	84.5*	84.8	77.0
Moderate to vigorous physical activity (weekends)			
Does not meet guidelines (n = 1,091)	81.3	82.5	75.4
Meets guidelines (n = 232)	85.3*	84.7	77.6
Fruit consumption			
Does not meet recommendations (n = 414)	79.1	79.7	71.9
Meets recommendations (n = 1,428)	83.2*	84.3*	77.1*
Vegetable consumption			
Does not meet recommendations (n = 1,709)	82.2	83.0	75.8
Meets recommendations (n = 133)	83.7	85.6	76.9
Breakfast consumption			
Four times a week or less (n = 282)	78.4	80.6	71.6
Five or more times a week (n = 1,551)	83.8*	84.3*	77.5*
Water intake			
4 cups or less a day (n = 1,222)	81.5	81.7	75.3
5 or more cups a day (n = 622)	83.8	86.1*	76.9
Weight status			
Not overweight/obese (n = 1,433)	83.2	84.0	76.3
Overweight or obese (n = 438)	79.6*	80.6*	74.3
Hypertension			
Not hypertensive (n = 1,671)	82.5	83.3	75.8
Hypertensive or pre-hypertensive (n = 105)	80.8	82.5	76.0
Hearing			
No impairment (n = 1,151)	82.4	83.9	76.3
Hearing loss in one ear (n = 198)	80.8	81.2	74.1
Hearing loss in both ears (n = 139)	82.5	79.2	75.2
Vision			
No impairment (n = 1,327)	82.6	83.2	76.4
Vision problems in one or both eyes (n = 162)	79.9	82.0	72.6

Notes: * Statistically significant difference between categories for a particular health measure at $p < 0.05$ level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant.

Source: CheckPoint dataset, weighted

Diet and physical activity

There were small to moderate differences in the mean levels of general wellbeing between children who did not meet the guidelines for physical activity or fruit consumption or who skipped breakfast at least four times a week and other children (0.2 to 0.4 standard deviation (SD) lower for those who did not meet the guidelines for physical activity and fruit consumption or who skipped breakfast at least four times a week; Table 3.3, second column). While Table 3.3 shows some statistically significant differences, it is worth noting that no other factors have been taken into account and further research is required to establish the causal relationship (if any) between the variables. For instance, while it is plausible that physical activity leads to greater wellbeing and psychosocial functioning, the reverse case, in which poor psychosocial functioning (in the form of stress and lack of sleep, for example) leads to reduced physical activity, is also possible.

There were small differences in the mean levels of physical functioning between children who did not eat a regular breakfast or eat enough fruit, or who drank four or less cups of water a day and other children (approximately 0.3 SD lower for those did not eat a regular breakfast or eat enough fruit, or who drank four or less cups of water a day) (Table 3.3, third column). These findings highlight the importance of a healthy diet for growth and physical capabilities (Department of Health & Human Services, 2012).

There were small to medium differences in the mean levels of psychosocial functioning between children who did not eat breakfast or enough fruit and those who did (approximately 0.4 SD lower for children who did not eat breakfast or enough fruit) (Table 3.3, fourth column). These results suggest that a poor diet affects emotional and social aspects of children's lives.

Physical health markers

There were small differences in the mean levels of general wellbeing and physical functioning between children who were overweight or obese and those who were not overweight (approximately 0.3 SD lower for overweight or obese children). This result is supported by a large body of literature, which demonstrates that obesity is associated with poorer mental health, low HRQoL and psychological problems (Anderson et al., 2017; Tevie & Shaya, 2015), with one study showing that the reduction in HRQoL among severely obese 5–18 year olds was comparable to that of children diagnosed with cancer (Schwimmer, Burwinkle, & Varni, 2003).

There were no differences in general wellbeing, physical functioning or psychosocial functioning, according to hypertension status, vegetable consumption,⁵ hearing or vision status. It should also be noted that while regular breakfast consumption was associated with greater wellbeing, this did not account for breakfast quality, only frequency of consumption, and research suggests that the quality may change this relationship (Ferrer-Cascales et al., 2018).

⁵ It is probable that no statistically significant difference in wellbeing was found between vegetable eaters and non-eaters due to the small numbers of children meeting vegetable consumption guidelines (less than eight per cent of the sample).

Summary

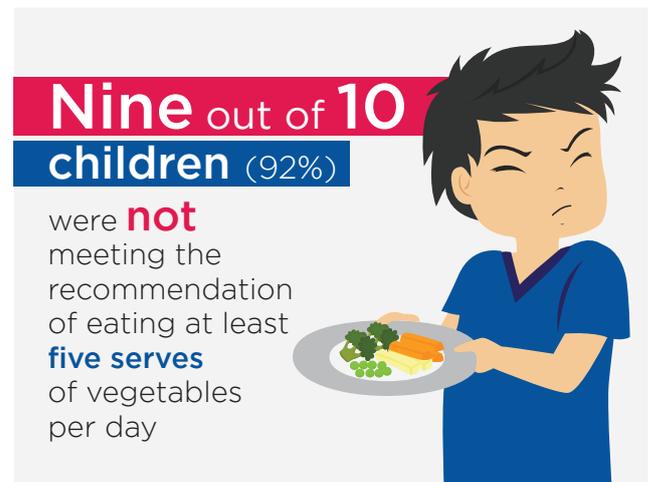
In 2015 and 2016, a sub-sample of the LSAC study population completed the Child Health CheckPoint, a one-off comprehensive physical health assessment, involving objective physical measurements and child and parent self-report. This chapter has used CheckPoint data to provide a picture of the physical health of Australian children at age 11–12.

The data showed that most Australian children at this age did not meet current recommendations for diet and physical activity. The chapter shows that diet and physical activity are linked to wellbeing. These findings confirm data published by the AIHW (2018a), highlighting the need for renewed strategies into effective policies and programs focusing on the health and wellbeing of children and adolescents that support their access to healthy foods and physical activity.

There is a growing understanding of how social, economic and cultural factors influence a child's diet and physical activity. Attempts to simply 'educate' individuals about the importance of health behaviours for long-term health are likely to have minimal impact if they are not embedded in a broader framework of structural policy changes (World Health Organization, 1986). For example, educational approaches alone have been ineffective in curbing the obesity epidemic (Gill & Boylan, 2012; Wake, 2018).

Supporting concerns raised by public health researchers for many years (Ng et al., 2014), the Child Health CheckPoint found that almost three in 10 Australian children were overweight or obese. Overweight and obese children reported lower levels of wellbeing and physical functioning on average than their normal or underweight peers and they were also substantially more likely to have hypertension or pre-hypertension. The negative long-term effects of being overweight or obese in childhood, and the related economic cost, make this issue a public health priority (e.g. Black, Hughes, & Jones, 2018). The higher prevalence of being overweight or obese in groups with lower levels of income and education suggests that policy efforts might be directed more towards addressing the effect of structural inequalities, although the high rates of being overweight or obese in the most advantaged groups (around one in five children) suggest universal efforts are also required.

Figure 3.6: 92% of children were not meeting the recommendation of eating at least five serves of vegetables a day



Credit: Longitudinal Study of Australian Children 2019
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Also of interest, the CheckPoint data showed that 24% of children had a hearing impairment and 12% had a vision impairment, although this had no significant effect on wellbeing. This may be due to ongoing advances in corrective technologies and devices, although future research could explore the implications of hearing and vision impairments on learning and schooling.

The Child Health CheckPoint has generated a valuable resource for researchers and policy makers, providing data on diet, physical activity and a range of physical health markers, including those presented in this chapter. These provide an important overview of the physical health and wellbeing of Australia's 11–12 year olds and information on the likelihood of future health issues developing later in life. There are many avenues for further research to investigate possible mechanisms or pathways by which structural, demographic, behavioural and social factors contribute to differences in these health measures (Clifford et al., 2019; Wake et al., 2014). Given the breadth of the Child Health CheckPoint dataset, additional research could examine some of the other health markers measured in this study. Further data collected in LSAC as this cohort of children grows older can be used to determine how the measures collected in the CheckPoint relate to good or poor health and social outcomes at later stages of life.

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4

Are children and adolescents getting enough sleep?

Tracy Evans-Whipp and Constantine Gasser



Key findings

- On school days, nearly all 6–7 year olds were getting the required minimum hours of sleep, but only half (50%) of 16–17 year olds were.
- Children aged 12–17 years were less likely to get the required minimum hours of sleep on school nights compared to non-school nights.
- Around four in five children thought they were getting enough sleep, when they were in fact not meeting minimum sleep guidelines for their age.
- Children not meeting minimum sleep guidelines were more likely to:
 - show symptoms of poor mental health (anxiety, depression, unhappiness)
 - be late for or absent from school
 - spend more time on homework
 - have internet access in the bedroom or spend more time on the internet.
- 12–13 year olds who participated in sport and/or had regular bedtimes were more likely to meet minimum sleep guidelines for their age.

Children and adolescents need adequate sleep for healthy growth, learning and development. Not getting enough sleep is associated with a range of physical and mental health problems that can interfere with current health and functioning and have consequences for health and wellbeing later in life (Astill, Van der Heijden, Van Ijzendoorn, & Van Someren, 2012; Becker, Langberg, & Byars, 2015; Chaput et al., 2016; Shochat, Cohen-Zion, & Tzischinsky, 2014). Poor quality or insufficient sleep can affect young people's performance at school due to its impact on attention, memory, creativity and learning (Gozal & Kheirandish-Gozal, 2007). Insufficient sleep has also been linked to poorer mental health and emotional regulation and greater risk taking and social problems, all of which may impact relationships with family, peers and others. In terms of physical health, inadequate sleep has been associated with poorer overall health and a greater current and future risk of young people becoming overweight (Landhuis, Poulton, Welch, & Hancox, 2008).

The amount of sleep required per 24 hours reduces as one ages: from 12–15 hours including naps for infants to 8–10 hours of uninterrupted sleep for teenagers (14–17 years) (Hirshkowitz et al., 2015).

Sleep patterns are known to change as children enter adolescence (Crowley, Acebo, & Carskadon, 2007). Biological changes associated with puberty, including brain development and hormonal changes lead to a natural tendency for teenagers to stay up later at night and sleep in later in the morning (Owens, Au, Carskadon, Millman, & Wolfson, 2014). Other changes in adolescence such as shifting peer and family relationships, increases in school work, possible commencement of part-time work and increased time spent on social media, may all affect sleep (Becker et al., 2015).

There is a commonly held view that the amount of sleep young people are getting has been declining since the late 1990s (Keyes, Maslowsky, Hamilton, & Schulenberg, 2015), although research evidence for this idea is mixed (Matricciani et al., 2017). The reduction in sleep over the past decade or two has been accounted for by later bed times caused by increased use of technology and other changes associated with busy, modern lifestyles (Matricciani, Olds, & Williams, 2011). However, since children and adolescents need to get up early for school, any delays in bedtime on school nights lead to a loss of sleep.

Also, while getting enough sleep is important, good sleep quality is essential (Pilcher, Ginter, & Sadowsky, 1997). Poor sleep quality is associated with poorer physical and mental health outcomes, including anxiety, depression, fatigue and anger (Pilcher et al., 1997). How an individual rates their sleep quality most probably relates to sleep duration but also other aspects including difficulty falling asleep or staying asleep, troubled sleep, and how rested they feel when they wake up. Poor sleep quality is longitudinally associated with many of the same poor health, behaviour and performance outcomes as reduced sleep duration (Becker et al., 2015; Shochat et al., 2014).

Box 4.1: LSAC data examined in this chapter

This chapter uses data from B cohort children aged 6–7 (Wave 4), 8–9 (Wave 5) and 10–11 (Wave 6) years old, and K cohort children aged 12–13 (Wave 5), 14–15 (Wave 6) and 16–17 (Wave 7) years old, as shown below.

Year	B cohort	K cohort
2010	6–7 years	
2012	8–9 years	12–13 years
2014	10–11 years	14–15 years
2016		16–17 years

This chapter provides a comprehensive picture of children’s and adolescents’ sleep patterns in Australia today. Using the LSAC data collected between 2010 and 2016 from the B and K cohorts (Box 4.1), the chapter describes the times that children and adolescents went to bed and woke up, and the amount and quality of their sleep as they grew. The characteristics of adolescents who do not get enough sleep, including whether they thought they got enough sleep, are also described.

4.1 Bedtime

During adolescence, biological rhythms change in response to puberty causing sleep patterns to shift towards later times (Owens et al., 2014). The LSAC data showed that on both school and non-school nights (such as weekends and holidays) bedtimes got later as children got older (Figure 4.1). At all ages, bedtimes were approximately an hour later (44–75 minutes) on non-school nights than on school nights. Bedtimes may be more flexible on non-school nights as parents may be more relaxed about bedtime or the child or family may schedule more activities or social events. The average bedtime on school nights for 6–7 year olds was the same for boys and girls at around 8 pm. On non-school nights, the average bed time for 6–7 year olds was also the same for both sexes at around 8.40 pm. Bedtimes for boys and girls were similar for all other age groups and the average bedtime increased by approximately 15 minutes per year for children (from 6–7 years up to 10–11 years), and then by 30 minutes per year for adolescents (from 12–13 years up to 16–17 years). The average 16–17 year old went to bed at around 10.15 pm on school nights and between 11.00 and 11.30 pm on non-school nights.

Looking at the proportion of children going to bed at certain times, on school nights early bedtimes became less common as children got older. For example, nearly all 6–7 year olds (91%) went to bed before 9 pm, compared to only 6% of 16–17 year olds. Late bedtimes became more common as children got older. Very few children (less than 1%) under the age of 12–13 years went to bed after 11 pm, compared to 28% of adolescents at 16–17 years old (data not shown).

When considering the percentage of children going to bed at certain times on non-school nights, late bedtimes also became more common as children got older. Around 12% of 10–11 year olds and 70% of 16–17 year olds went to bed after 11 pm. Almost a third of 16–17 year olds (32%) regularly went to bed after midnight (data not shown).



Box 4.2: Timing of sleep

Details of usual bed, sleep and wake times were asked of the primary carer for younger children aged 6–7 and 8–9 years. At ages 10–11, 12–13, 14–15 and 16–17, study children/adolescents reported on their own bed, sleep and wake times. Parents or study children were asked to respond separately for both a usual school night, and a non-school night:

- About what time do you/does study child usually go to bed at night?
- About what time do you/does study child usually go to sleep at night?
- About what time do you/does study child usually wake up in the morning?

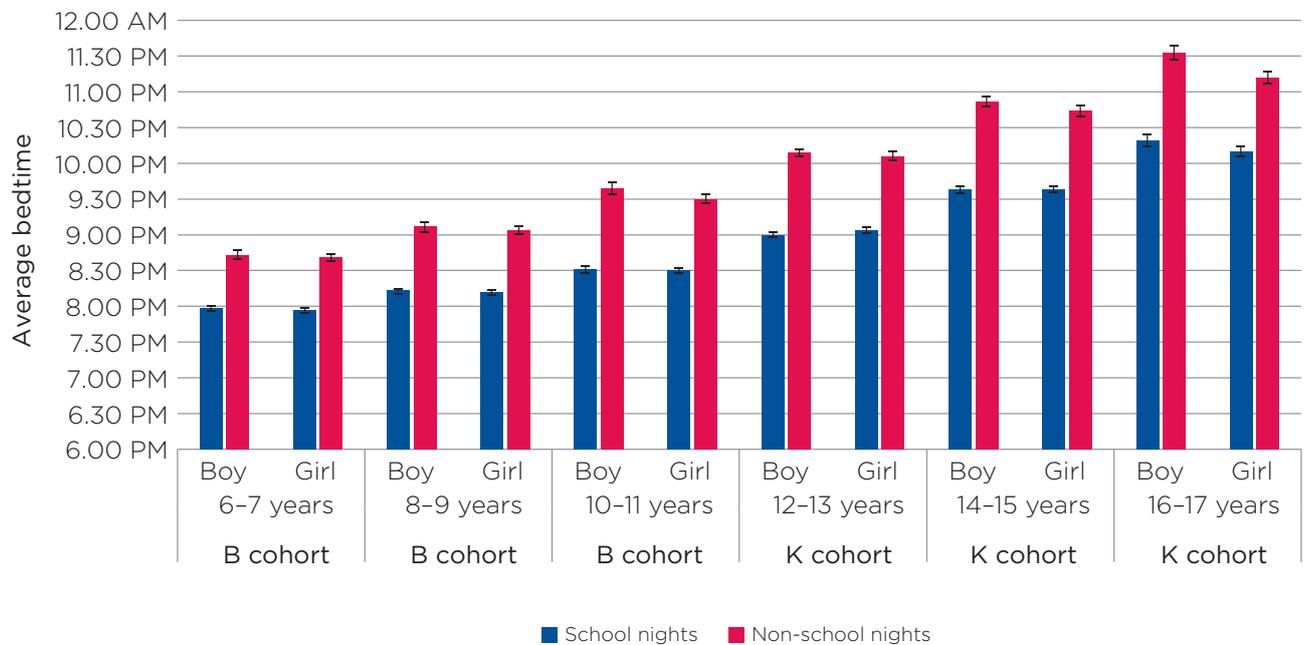
The time was recorded to the nearest 15 minutes.

Sleep duration is calculated as the time between going to sleep and waking up.

Sleep latency is calculated as the time between going to bed and falling asleep.

Parent-reported questions on bed time were adapted from the Early Childhood Longitudinal Study ECLS-K: 2007 (National Center for Education Statistics, 2019). All other questions were designed in LSAC.

Figure 4.1: Average bedtime on school nights and non-school nights, by age and sex



Notes: 6–7 year olds: *n* (boys) = 2,184; *n* (girls) = 2,054. 8–9 year olds: *n* (boys) = 2,082; *n* (girls) = 1,966. 10–11 year olds: *n* (boys) = 1,828; *n* (girls) = 1,754. 12–13 year olds: *n* (boys) = 1,959; *n* (girls) = 1,890. 14–15 year olds: *n* (boys) = 1,686; *n* (girls) = 1,631. 16–17 year olds: *n* (boys) = 1,498; *n* (girls) = 1,450. 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values within each age category are statistically significant. Data were parent-reported at ages 6–7 and 8–9 years and self-reported at all other ages.

Source: LSAC Waves 4–7, B and K cohorts, weighted. B cohort: Waves 4 (6–7 years), 5 (8–9 years) and 6 (10–11 years). K cohort: Waves 5 (12–13 years), 6 (14–15 years) and 7 (16–17 years)

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4.2 Sleep-onset latency

Sleep-onset latency (SOL) is the time it takes to fall asleep after going to bed (Box 4.2). According to the US National Sleep Foundation, there is no ‘right’ amount of time for falling asleep although longer SOL periods are likely to lead to shorter sleep durations and reduced satisfaction with sleep (Mellor, Hallford, Tan, & Waterhouse, 2018). The LSAC data showed that SOL averaged between around 20 and 40 minutes and did not differ greatly by sex, age or whether it

was a school or non-school night (Table 4.1). Girls had slightly longer SOL than boys at age 14–15 years (38 vs 34 minutes on school nights; 35 vs 30 minutes on non-school nights). Although there is little prior population data available on the SOL of Australian adolescents, these durations are similar to those found for US 11–17 year olds in 2006 (National Sleep Foundation, 2006).

Table 4.1: Average sleep-onset latency in minutes, by age and sex

	School nights		Non-school nights		
	Boys (mean, minutes)	Girls (mean, minutes)	Boys (mean, minutes)	Girls (mean, minutes)	
B cohort	6–7 years	26.5	26.9	18.9	20.1
	8–9 years	31.0	29.9	21.7	20.6
	10–11 years	34.6	32.1	30.5	28.4
K cohort	12–13 years	32.0	32.5	26.5	27.8
	14–15 years	33.6	38.3*	29.5	35.4*
	16–17 years	35.6	39.6	31.8	35.5

Notes: 6–7 year olds: *n* (boys) = 2,158; *n* (girls) = 2,038. 8–9 year olds: *n* (boys) = 2,081; *n* (girls) = 1,965. 10–11 year olds: *n* (boys) = 1,594; *n* (girls) = 1,577. 12–13 year olds: *n* (boys) = 1,957; *n* (girls) = 1,890. 14–15 year olds: *n* (boys) = 1,682; *n* (girls) = 1,626. 16–17 year olds: *n* (boys) = 1,495; *n* (girls) = 1,449. * Statistically significant difference between sexes in the same age category at *p* < 0.05 level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. Data were parent-reported at ages 6–7 and 8–9 years and self-reported at all other ages.

Source: LSAC Waves 4–7, B and K cohorts, weighted. B cohort: Waves 4 (6–7 years), 5 (8–9 years) and 6 (10–11 years). K cohort: Waves 5 (12–13 years), 6 (14–15 years) and 7 (16–17 years)

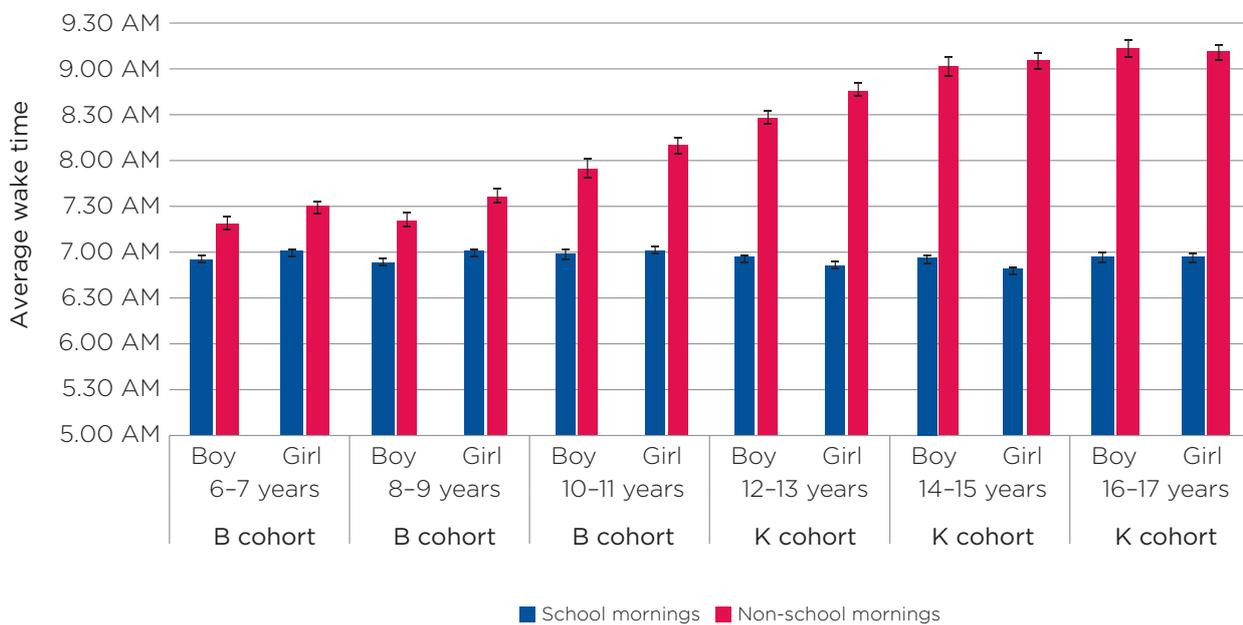


4.3 Wake time

On average, children and adolescents of all ages woke up at around 7 am on school mornings (Figure 4.2). On non-school mornings they woke up later and the difference between wake times on school and non-school mornings increased with age. Six to seven year olds woke up around 40–45 minutes later on non-school mornings than on school mornings, while 16–17 year olds slept in an extra 2–2.5 hours on average on non-school mornings.

Looking at the proportion of children waking up at certain times, on school mornings the majority of children of all ages (around 56–66%) woke up between 6.30 and 7.30 am. On non-school mornings, late wake times became more common as children got older. For example, less than 2% of 6–7 year olds and around 25% of adolescents 16–17 years old woke up between 10 and 11 am on non-school days. Around 14% of adolescents 16–17 years old woke up after 11 am on non-school days.

Figure 4.2: Average wake times on school days and non-school days, by age and sex



Notes: 6-7 year olds: *n* (boys) = 2,184; *n* (girls) = 2,054. 8-9 year olds: *n* (boys) = 2,082; *n* (girls) = 1,966. 10-11 year olds: *n* (boys) = 1,827; *n* (girls) = 1,754. 12-13 year olds: *n* (boys) = 1,956; *n* (girls) = 1,889. 14-15 year olds: *n* (boys) = 1,686; *n* (girls) = 1,631. 16-17 year olds: *n* (boys) = 1,498; *n* (girls) = 1,450. 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values within each age category are statistically significant. Data were parent-reported at ages 6-7 and 8-9 years and self-reported at all other ages.

Source: LSAC Waves 4-7, B and K cohorts, weighted. B cohort: Waves 4 (6-7 years), 5 (8-9 years) and 6 (10-11 years). K cohort: Waves 5 (12-13 years), 6 (14-15 years) and 7 (16-17 years).

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

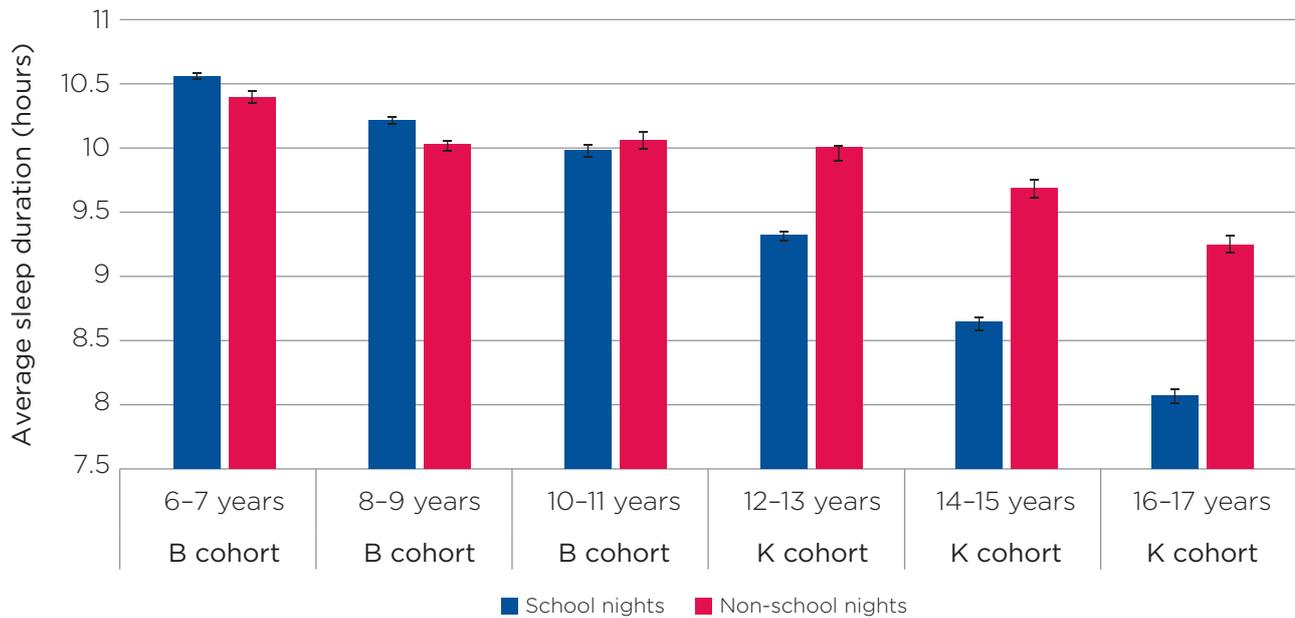
4.4 How much sleep do children and adolescents get?

Getting the right amount of sleep is important for the maintenance of health, regulating emotions and school functioning. The average sleep duration (number of hours between falling asleep and waking up) of children and adolescents varied by age and days of the week (Box 4.2). On school nights, 6–7 year olds slept for an average of 10.5 hours each night (Figure 4.3). As children got older the total number of hours slept was reduced by about 15 minutes in each increasing child age category (6–7 years, 8–9 years and 10–11 years). In the adolescent age categories (12–13, 14–15 and 16–17 years), sleep duration was reduced

by over 30 minutes in each increasing age category, with the 16–17 year age group obtaining 8.1 hours sleep on average on school nights.

Non-school nights provide opportunities for adolescents to choose their own sleep timing as they do not need to get up for school, allowing them to catch up on sleep that may have been missed throughout the school week. On non-school nights, 6–7 and 8–9 year olds had slightly less sleep on average than on school nights – about 10.4 and 10 hours, respectively (Figure 4.3).

Figure 4.3: Average sleep duration in hours, by age



Notes: 6-7 year olds: $n = 4,237$. 8-9 year olds: $n = 4,048$. 10-11 year olds: $n = 3,578$. 12-13 year olds: $n = 3,845$. 14-15 year olds: $n = 3,316$. 16-17 year olds: $n = 2,944$. 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values within each age category are statistically significant. Data were parent-reported at ages 6-7 and 8-9 years and self-reported at all other ages.

Source: LSAC Waves 4-7, B and K cohorts, weighted. B cohort: Waves 4 (6-7 years), 5 (8-9 years) and 6 (10-11 years). K cohort: Waves 5 (12-13 years), 6 (14-15 years) and 7 (16-17 years)

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Table 4.2: Average sleep duration in hours, by age and sex

	School nights		Non-school nights		
	Boys (mean, hours)	Girls (mean, hours)	Boys (mean, hours)	Girls (mean, hours)	
B cohort	6-7 years	10.5	10.6*	10.3	10.5*
	8-9 years	10.1	10.3*	9.9	10.2*
	10-11 years	9.9	10.0	9.9	10.2*
K cohort	12-13 years	9.4*	9.2	9.6	10.2*
	14-15 years	8.7*	8.5	9.6	9.7
	16-17 years	8.0	8.1	9.1	9.4*

Notes: 6-7 year olds: n (boys) = 2,183; n (girls) = 2,054. 8-9 year olds: n (boys) = 2,082; n (girls) = 1,966. 10-11 year olds: n (boys) = 1,825; n (girls) = 1,753. 12-13 year olds: n (boys) = 1,956; n (girls) = 1,889. 14-15 year olds: n (boys) = 1,685; n (girls) = 1,631. 16-17 year olds: n (boys) = 1,496; n (girls) = 1,448. * Statistically significant difference between sexes in the same age category at $p < 0.05$ level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. Data were parent-reported at ages 6-7 and 8-9 years and self-reported at all other ages.

Source: LSAC Waves 4-7, B and K cohorts, weighted. B cohort: Waves 4 (6-7 years), 5 (8-9 years) and 6 (10-11 years). K cohort: Waves 5 (12-13 years), 6 (14-15 years) and 7 (16-17 years)

However, for the older age categories (12-13, 14-15 and 16-17 years), adolescents obtained substantially more sleep on non-school nights than on school nights. On average, 16-17 year olds slept over an hour longer on non-school nights than on school nights.

There were some differences in sleep duration between boys and girls (Table 4.2). At younger ages

(6-7 years and 8-9 years), girls slept for slightly longer (9-32 minutes on average) than boys on both school nights and non-school nights. At older ages (10-11, 12-13, 14-15 and 16-17 years), girls slept for longer than boys on non-school nights although not on school nights. Sleep duration on non-school nights is likely to be more reflective of actual sleep needs, given young people are most probably able to sleep

for as long as they require (without being artificially woken up). The longer sleep duration in girls may reflect a sex difference in sleep requirements with females requiring more sleep than males, although this difference is not well established (Olds, Blunden, Petkov, & Forchino, 2010). The exceptions to these differences were seen at ages 12–13 and 14–15 years where boys obtained more sleep than girls on school nights.

4.5 How many children and adolescents do not meet the minimum sleep guidelines?

The amount of sleep needed varies across the lifespan and from person to person. The Australian Department of Health recommends between nine and 11 hours of sleep for children (aged 5–13 years) and between eight and 10 hours of sleep for adolescents (aged 14–17 years) (Box 4.3). Examination of the LSAC data showed that the majority of children at ages 6–7, 8–9 and 10–11 years (at least 88% at all ages) met the minimum sleep requirements on school nights (Figure 4.4). However, during the high school years (from ages 12–13 to 16–17 years), smaller percentages of adolescents met the minimum sleep requirements. Around one in four 12–13 year olds and 14–15 year olds did not get enough sleep, and around half of 16–17 year olds did not get enough sleep on school nights (Figure 4.4).

Box 4.3: Sleep guidelines for children and adolescents

The exact amount of sleep needed varies from person to person and also within individuals according to age and daily variations in physical activity, illness and recent sleep patterns. Guidelines therefore provide maximum and minimum ranges for the number of hours of uninterrupted sleep in each 24-hour period as indicated in the table below.

Life stage	Age	Recommended
Children	5–13 years	9–11 hours
Adolescents	14–17 years	8–10 hours

Consistent bed and wake-up times are recommended.

Source: Department of Health (2019). Based on guidelines produced by the US based National Sleep Foundation (Hirshkowitz et al., 2015)

On non-school nights, fewer children at younger ages (6–7, 8–9 and 10–11 years) met minimum sleep guidelines than on school nights. For example, at 10–11 years of age, one in four boys and one in eight girls did not get the required amount of sleep on non-school nights. It is possible that children at this age were allowed to stay up later on non-school nights but did not compensate, as older adolescents did, by waking up later in the morning, and therefore lost sleep. For the older age categories, 12–13 years and over, generally more adolescents met the sleep guidelines on non-school nights than on school nights. Older adolescents woke up later on non-school days and therefore increased their sleep duration on these nights. This suggests a common weekly sleep pattern in which older adolescents did not get enough sleep on school nights but they ‘caught up’ by sleeping longer on non-school nights.

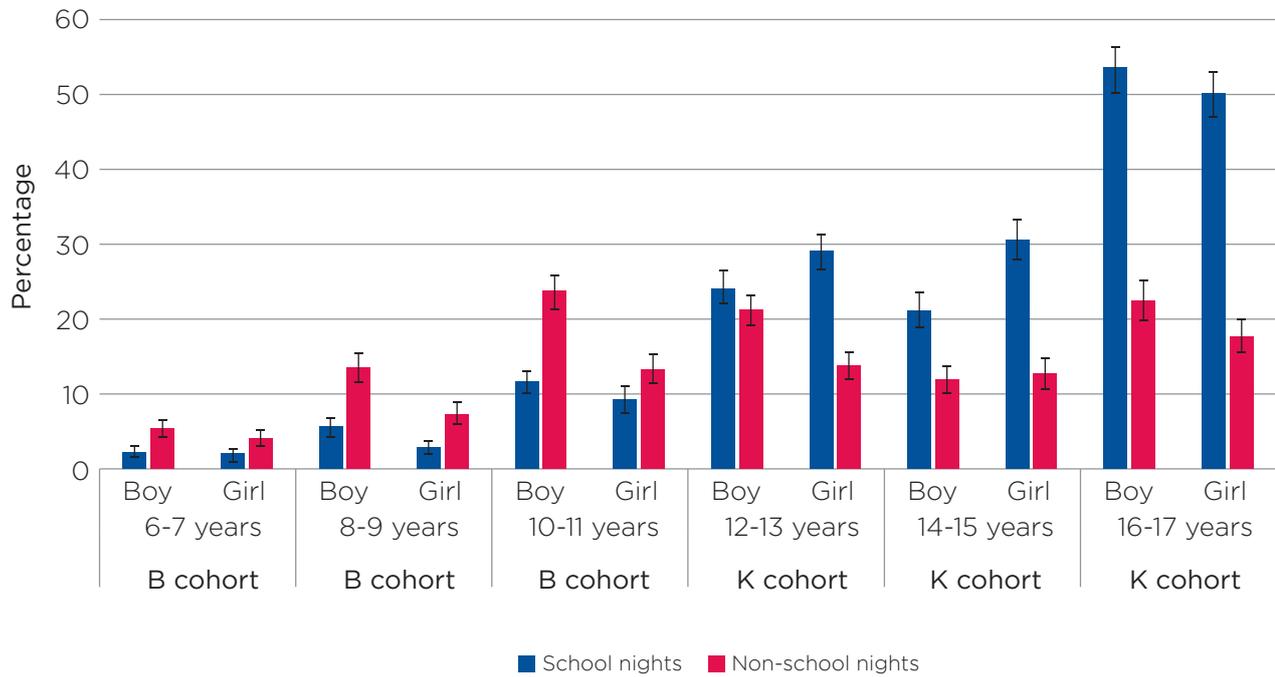
The following sections focus on three ages:

- at 12–13 years, as they enter secondary school and are going through puberty, when 27% are not meeting the minimum sleep guidelines
- at 14–15 years, as they transition through secondary school, when 26% are not meeting the minimum sleep guidelines
- at 16–17 years, as they enter the senior secondary school years and over half (52%) are not meeting the minimum sleep guidelines.

The sections below focus only on adolescents aged 12 years and older because the proportions of adolescents not meeting the sleep guidelines are higher than those for children aged 6–11 years (see Figure 4.4).



Figure 4.4: Proportion of children and adolescents not meeting minimum sleep guidelines on school and non-school nights, by age and sex

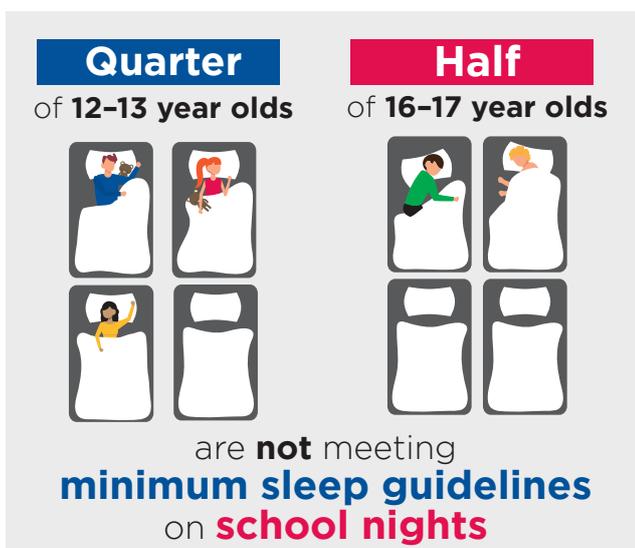


Notes: 6-7 year olds: *n* (boys) = 2,183; *n* (girls) = 2,054. 8-9 year olds: *n* (boys) = 2,082; *n* (girls) = 1,966. 10-11 year olds: *n* (boys) = 1,825; *n* (girls) = 1,753. 12-13 year olds: *n* (boys) = 1,956; *n* (girls) = 1,889. 14-15 year olds: *n* (boys) = 1,685; *n* (girls) = 1,631. 16-17 year olds: *n* (boys) = 1,496; *n* (girls) = 1,448. 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values within each age category are statistically significant. Data were parent-reported at ages 6-7 and 8-9 years and self-reported at all other ages.

Source: LSAC Waves 4-7, B and K cohorts, weighted. B cohort: Waves 4 (6-7 years), 5 (8-9 years) and 6 (10-11 years). K cohort: Waves 5 (12-13 years), 6 (14-15 years) and 7 (16-17 years)

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Figure 4.5: A quarter of 12-13 year olds and a half of 16-17 year olds are not meeting minimum sleep guidelines on school nights



Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

4.6 Adolescent self-reported sleep quality and quantity

How adolescents rate the quantity and quality of their sleep is likely to reflect a combination of their experience during the night and how rested they feel the next day.

LSAC data showed that the numbers of boys and girls thinking that they did not get enough sleep increased with age (Table 4.3). Around one in 10 boys reported not getting enough sleep at age 12-13 years, one in eight at 14-15 years and one in five at 16-17 years. At all ages, more girls than boys thought they did not get enough sleep. At age 16-17, over one third of girls felt that they did not get enough sleep.



Box 4.4: Self-reported sleep quality and quantity

At Waves 5, 6 and 7 study adolescents in the K cohort (ages 12–13, 14–15 and 16–17 years) were asked to report on their sleep quantity and quality.

For *sleep quantity*, adolescents were asked to nominate ‘plenty’, ‘just enough’, ‘not quite enough’ and ‘not nearly enough’ in response to the question, ‘During the last month, do you think you usually got enough sleep?’

Adolescents were classified as not getting enough sleep if they selected ‘not quite enough’ or ‘not nearly enough’.

For *sleep quality*, adolescents were asked, ‘During the last month, how well do you feel you have slept in general?’

Response options were: ‘very well’, ‘fairly well’, ‘fairly badly’ and ‘very badly’.

Adolescents were classified as having poor quality sleep if they selected ‘fairly badly’ or ‘very badly’.

Items on sleep quality and quantity were designed in LSAC.

Comparisons of adolescents not getting enough sleep according to the national sleep guidelines against those self-reporting not getting enough sleep showed that substantial proportions of adolescents thought they were getting enough sleep when they were in fact not meeting guidelines (Table 4.3). For example:

- Among 12–13 year olds not getting the required minimum amount of sleep on school nights according to professional guidelines (25% of boys and 29% of girls), 86% of boys (21% of all boys) and 76% of girls (22% of all girls) felt that they were getting enough sleep.
- Among 14–15 year olds not getting the required minimum amount of sleep on school nights

according to professional guidelines (21% of boys and 31% of girls), 79% of boys (17% of all boys) and 58% of girls (18% of all girls) felt that they were getting enough sleep.

- Among 16–17 year olds not meeting the required minimum amount of sleep on school nights according to professional guidelines (54% of boys and 50% of girls), 71% of boys (38% of all boys) and 53% of girls (27% of all girls) felt that they were getting enough sleep.

Seventy-one to 86% of boys and 53–76% of girls not meeting minimum sleep guidelines felt they got enough sleep; this difference was more apparent at younger ages. It appears that adolescents may become habituated to or unable to recognise daytime tiredness, especially at younger ages. Higher numbers of boys than girls were in this group.

Adolescents also reported on their sleep quality. The percentage of children reporting poor sleep quality increased with age from 4% at age 12–13 years to 16% at age 16–17 years. Girls at 14–15 and 16–17 years were more likely than boys to report poor quality sleep (Table 4.4). At 16–17 years, one in five girls and one in eight boys felt that they had poor quality sleep in the past month.

Comparisons of adolescents not getting enough sleep according to the national sleep guidelines against those self-reporting poor quality sleep showed that only a minority of adolescents who did not get enough sleep reported poor quality sleep (Table 4.4). For example:

- Among 12–13 year olds not getting the required minimum amount of sleep on school nights according to professional guidelines (25% of boys and 29% of girls), 6% of boys (1% of all boys) and 8% of girls (2% of all girls) felt that they had poor quality sleep.
- Among 14–15 year olds not getting the required minimum amount of sleep on school nights according to professional guidelines (21% of boys and 31% of girls), 13% of boys (3% of all boys) and 23% of girls (7% of all girls) felt that they had poor quality sleep.
- Among 16–17 year olds not getting the required minimum amount of sleep on school nights according to professional guidelines (54% of boys and 50% of girls), 18% of boys (10% of all boys) and 26% of girls (13% of all girls) felt that they had poor quality sleep.

Table 4.3: Adolescent self-reported sleep quantity, by meeting minimum sleep guidelines on school nights, age category and sex

Self-reported sleep	Boys			Girls		
	Meets guidelines (%)			Meets guidelines (%)		
	No	Yes	Total	No	Yes	Total
Age 12-13						
Not enough	3.5	5.7	9.2	6.9*	6.0	13.0*
Enough	21.0	69.8	90.8	22.2	64.8*	87.0*
Totals	24.5	75.5	100.0	29.2*	70.8*	100.0
Age 14-15						
Not enough	4.6	8.1	12.7	12.9*	10.8	23.7*
Enough	16.7	70.6	87.3	18.0	58.4*	76.4*
Totals	21.3	78.7	100.0	30.9*	69.1*	100.0
Age 16-17						
Not enough	15.8	5.8	21.5	23.8*	11.1*	34.8*
Enough	38.0	40.5	78.5	26.6*	38.6	65.2*
Totals	53.8	46.2	100.0	50.3	49.7	100.0

Notes: 12-13 year olds: n (boys) = 1,956; n (girls) = 1,889. 14-15 year olds: n (boys) = 1,685; n (girls) = 1,631. 16-17 year olds: n (boys) = 1,496; n (girls) = 1,448. Percentages may not total exactly 100.0% due to rounding. * Statistically significant difference between sexes in the same age category at $p < 0.05$ level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant.

Source: LSAC K cohort, weighted: Wave 5 (12-13 years), 6 (14-15 years) and 7 (16-17 years)

Table 4.4: Adolescent self-reported sleep quality, by meeting minimum sleep guidelines on school nights, age category and sex

Self-reported sleep	Boys			Girls		
	Meets guidelines (%)			Meets guidelines (%)		
	No	Yes	Total	No	Yes	Total
Age 12-13						
Poor quality	1.4	2.5	4.1	2.4	1.7	4.1
Good quality	23.1	73.0	95.9	26.8	69.1	95.9
Totals	24.5	75.5	100.0	29.2*	70.8*	100.0
Age 14-15						
Poor quality	2.7	3.8	6.5	7.1*	5.5	12.6*
Good quality	18.7	74.8	93.5	23.8*	63.7*	87.4*
Totals	21.4	78.6	100.0	30.9*	69.1*	100.0
Age 16-17						
Poor quality	9.9	3.1	13.0	13.1	6.4*	19.5*
Good quality	43.9	43.1	87.0	37.2*	43.3	80.5*
Totals	53.8	46.2	100.0	50.3	49.7	100.0

Notes: 12-13 year olds: n (boys) = 1,956; n (girls) = 1,889. 14-15 year olds: n (boys) = 1,685; n (girls) = 1,631. 16-17 year olds: n (boys) = 1,496; n (girls) = 1,448. Percentages may not total exactly 100.0% due to rounding. * Statistically significant difference between sexes in the same age category at $p < 0.05$ level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant.

Source: LSAC K cohort, weighted: Wave 5 (12-13 years), 6 (14-15 years) and 7 (16-17 years)

4.7 Characteristics of children not getting enough sleep

This section examines the characteristics of adolescents not getting enough sleep at ages 12–17 years.

Demographic and family characteristics

At ages 12–13 and 14–15 years, there were some differences in the proportions of adolescents meeting minimum sleep guidelines by demographic and family characteristics (Table 4.5). However, no differences were apparent at age 16–17 years.

- More girls than boys were not meeting the minimum sleep guidelines (29% of girls vs 25% of boys at age 12–13 years; 31% of girls vs 21% of boys at 14–15 years). This is likely to be due to girls at these ages waking up slightly earlier than boys on school days (Figure 4.2). At 16–17 years, there was no difference in the proportions of girls

and boys meeting minimum sleep guidelines.

Girls and boys at this age were waking up at similar times (Figure 4.2).

- At 12–13 years, approximately 31% of youngest children compared to 23% of first borns were not meeting sleep guidelines. The fact that these differences were not observed for 14–15 year olds and 16–17 year olds may reflect changes in parents' involvement in bedtimes and sleep as children grow up.
- The importance of regular bedtimes is highlighted by the fact that far more younger adolescents (12–13 years) whose parents always enforced regular bedtimes were meeting sleep guidelines (79% vs 55% of those with less strict bedtimes).

The proportions of adolescents at ages 12–13, 14–15 and 16–17 not meeting minimum sleep guidelines did not differ by parent education, income or lone parent household status (Table 4.5).

Table 4.5: Percentage of adolescents at ages 12–13, 14–15 and 16–17 years not meeting minimum sleep guidelines on school nights, by demographic and family characteristics

Characteristic	% not meeting sleep guidelines		
	12–13 years	14–15 years	16–17 years
Sex	<i>n</i> = 3,845	<i>n</i> = 3,316	<i>n</i> = 2,944
Female	29.2*	30.9*	50.3
Male	24.5	21.3	53.8
Birth order	<i>n</i> = 3,841	<i>n</i> = 3,309	<i>n</i> = 2,902
Oldest child (ref.)	23.1	25.0	52.3
Middle child or twin	24.9	23.3	50.8
Youngest child	31.1*	27.2	52.5
Only child	28.8	30.1	52.4
Parent education	<i>n</i> = 3,765	<i>n</i> = 3,233	<i>n</i> = 2,812
Year 12 or lower	29.8	26.8	45.2
Certificate or diploma	25.5	26.0	51.5
Degree or higher	27.4	26.0	55.0
Parent income	<i>n</i> = 2,575	<i>n</i> = 2,397	<i>n</i> = 2,882
Bottom 25%	25.3	24.0	49.9
Middle 50%	26.2	24.3	53.6
Top 25%	28.2	27.6	51.9
Lone-parent household	<i>n</i> = 3,840	<i>n</i> = 3,309	<i>n</i> = 2,902
No	26.1	25.2	51.6
Yes	29.1	29.0	54.1
Regular bedtimes^a	<i>n</i> = 3,833	-	-
Always (ref.)	21.0 ^b	-	-
Usually	25.9 ^b	-	-
Sometimes, rarely or never	44.7*	-	-

Notes: * Statistically significant difference from reference category at $p < 0.05$ level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. ^a A parent of the study child was asked, 'Does the study child go to bed at regular times?' ('Regular' means at a similar time each night, not whether it is early or late). ^b Only available for age 12–13 years (Wave 5, K cohort). Sample sizes correspond to the number of study children with complete data on (i) each characteristic (shown in the left-hand column) and (ii) whether or not they met minimum sleep guidelines at a particular age.

Source: LSAC K cohort, weighted: Wave 5 (12–13 years), 6 (14–15 years) and 7 (16–17 years)

Mental health characteristics

Poor sleep quality and insufficient sleep have been linked to poor mental health in adolescents (Shochat et al., 2014). These links may be especially relevant in adolescence since sleep problems, such as lack of sleep, and mental health problems are both known to increase during these years. At 12–13, 14–15 and 16–17 years, adolescents not meeting the minimum sleep guidelines were more likely to show symptoms of anxiety and depression and were less likely to report being happy (Table 4.6).

Box 4.5: Symptoms of anxiety and depression

At ages 12-13, 14-15 and 16-17 years, adolescents reported on various aspects of their mental health, including symptoms of depression and anxiety.

Depressive symptoms were measured using the Short Mood and Feelings Questionnaire (Angold et al., 1995).

Anxiety symptoms were measured using the Spence Children’s Anxiety Scale (Spence, 1998).

On both measures, adolescents can be categorised as either having symptoms or having no symptoms of these mental health difficulties. For depression, adolescents’ scores ranged from 0 to 26, with scores of 8 or more indicating that the adolescent had symptoms of depression (Angold et al., 1995).

For anxiety, adolescents’ scores ranged from 0 to 24, with scores of 9 or more for boys and 11 or more for girls indicating that the adolescent had symptoms of anxiety (Spence, 1998).

- Of adolescents with symptoms of anxiety, 35% (at 12–13 years), 40% (at 14–15 years) and 59% (at 16–17 years) did not meet the minimum sleep guidelines. This is considerably more than for those without anxiety symptoms (25%, 22% and 49%, respectively).
- Thirty-five per cent of 12–13 year olds, 38% of 14–15 year olds and 58% of 16–17 year olds with depressive symptoms did not meet the minimum sleep guidelines, significantly more than for those without depressive symptoms (25%, 22% and 48%, respectively).
- Greater proportions of adolescents who rated themselves ‘not happy’ compared to ‘happy’ did not meet the minimum sleep guidelines (59% compared to 48% of 16–17 year olds, 31% compared to 24% of 14–15 year olds and 35% compared to 24% of 12–13 year olds).

Table 4.6: Percentage of adolescents at 12–13, 14–15 and 16–17 years not meeting minimum sleep guidelines on school nights, by mental health characteristics

Characteristic	% not meeting sleep guidelines		
	12–13 years	14–15 years	16–17 years
Anxiety	<i>n</i> = 3,822	<i>n</i> = 3,287	<i>n</i> = 2,916
Low	25.0	21.5	49.2
High	34.3*	39.6*	59.0*
Depression	<i>n</i> = 3,821	<i>n</i> = 3,285	<i>n</i> = 2,916
Low	25.0	21.6	48.3
High	34.6*	38.1*	57.6*
Happiness^a	<i>n</i> = 3,825	<i>n</i> = 3,291	<i>n</i> = 2,926
Not happy	34.6*	30.5*	59.4*
Happy	24.4	23.9	48.4

Notes: * Statistically significant difference from reference category at *p* < 0.05 level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. ^a Participants were asked to rate their agreement to the following statement, ‘I am happy with how things are for me in my life right now’. Those rating ‘strongly agree’ or ‘agree’ were classified as happy and those rating ‘strongly disagree’, ‘disagree’ or ‘neither agree nor disagree’ were classified as not happy. Sample sizes correspond to the number of study children with complete data on (i) each characteristic (shown in the left-hand column) and (ii) whether or not they met minimum sleep guidelines at a particular age.

Source: LSAC K cohort, weighted: Wave 5 (12–13 years), 6 (14–15 years) and 7 (16–17 years)

Sleep deprivation, anxiety and depression often occur sequentially within individuals (Becker et al., 2015) but it would be of great interest to explore LSAC data across multiple waves to unpack whether lack of sleep leads to poor mental health or if poor mental health predisposes adolescents to lack of sleep.



Physical health characteristics

Sleep and physical health are intimately related. Poor physical health may affect sleep quantity and quality, and poor sleep may contribute to a range of negative physical health outcomes. For example, adequate sleep has been linked to physical activity levels and body composition.

Body fat is associated with sleep duration in adolescents, with overweight and obese adolescents having shorter sleep duration (Chaput et al., 2016). In LSAC, around one in 13 12–13 year olds, one in 11 14–15 year olds and one in nine 16–17 year olds were obese. Obese 12–13 year olds were more likely than adolescents in the normal weight range to not meet minimum sleep guidelines (37% compared to 26% of normal weight adolescents) (Table 4.7). However, at 14–15 and 16–17 years, there was no difference between the proportions of obese and normal weight adolescents not meeting the minimum sleep guidelines, suggesting a different relationship between weight status and sleep duration at older ages. There is less evidence for a causal relationship between obesity and sleep in adults than there is for children (McAllister et al., 2009).

Caffeine intake in the form of soft drinks and coffee may have a profound effect on sleep due to its stimulatory properties and is known to affect sleep quality in adolescents (Orbeta, Overpeck, Ramcharran, Kogan, & Ledsy, 2006). More 14–15 year olds who consumed caffeine failed to meet the minimum sleep guidelines on school nights (33% compared to 24% for adolescents who did not consume caffeine on the previous day), suggesting caffeine intake directly affected sleep duration. Adolescents may consume caffeine as a strategy to stay up later or simply because they enjoy consuming these drinks. No differences were observed among 16–17 year olds.

Participation in sport activities might have mixed effects on sleep. It may add an extra component to the range of things adolescents do between school and bedtime (including extracurricular activities, homework, part-time jobs, downtime/relaxing and socialising) and thereby delay bedtime and reduce sleep duration. On the other hand, sports participation might provide physiological and psychological benefits to good sleep and increase sleep quantity and quality. The Australian 24-hour movement guidelines suggest that for greater health benefits, sedentary time should be replaced with additional moderate to vigorous physical activity, while preserving sufficient sleep (Department of Health, 2019). In LSAC, 12–13 year olds and 14–15 year olds who participated

in sport were more likely to meet the minimum sleep guidelines (76% vs 70% who did not participate in sport for 12–13 year olds and 79% vs 69% for those who did not participate in sport for 14–15 year olds) (Table 4.7), suggesting that physical activity is associated with longer sleep durations.

Having a medical condition might also impair children’s abilities to fall asleep. However, in LSAC, there were no differences in the proportions of 12–13, 14–15 and 16–17 year olds not meeting minimum sleep guidelines, according to whether or not they had a medical condition.

Table 4.7: Percentage of adolescents at 12–13, 14–15 and 16–17 years not meeting minimum sleep guidelines on school nights, by physical health characteristics

Characteristic	% not meeting sleep guidelines		
	12–13 years	14–15 years	16–17 years
Weight status^a	<i>n</i> = 3,788	<i>n</i> = 3,224	<i>n</i> = 2,842
Underweight	18.5	19.0	50.9
Normal weight (ref.)	25.5	25.1	51.8
Overweight	29.2	28.5	52.9
Obese	36.6*	28.1	51.1
Has medical condition^b	<i>n</i> = 3,833	<i>n</i> = 3,302	<i>n</i> = 2,915
No	26.7	25.8	51.9
Yes	25.6	29.0	53.6
Caffeine intake yesterday (energy drinks/coffee)	-	<i>n</i> = 3,290	<i>n</i> = 2,924
No	-	24.0 ^c	50.4 ^c
Yes	-	33.0* ^c	56.0 ^c
Participation in sport^d	<i>n</i> = 3,831	<i>n</i> = 3,302	-
No	30.4 ^e	30.9 ^e	-
Yes	24.1* ^e	21.0* ^e	-

Notes: * Statistically significant difference from reference category at *p* < 0.05 level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. ^aBased on body mass index (BMI) calculated from height and weight measurements using established cut-offs (Cole, Flegal, Nicholls, & Jackson, 2007). ^bA parent was asked if the study child has any medical conditions or disabilities that have lasted, or are likely to last, for six months or more. ^cOnly available for ages 14–15 and 16–17 years (Waves 6 and 7, K cohort). ^dA parent was asked if the study child had participated in team (i.e. football, cricket or netball) or individual (individual sport, coached or lessons, e.g. swimming, tennis, karate or gymnastics) sport in the past week. ^eOnly available for ages 12–13 and 14–15 years (Waves 5 and 6, K cohort). Sample sizes correspond to the number of study children with complete data on (i) each characteristic (shown in the left-hand column) and (ii) whether or not they met minimum sleep guidelines at a particular age.

Source: LSAC K cohort, weighted: Wave 5 (12–13 years), 6 (14–15 years) and 7 (16–17 years)

Screen use characteristics

Adolescents today are surrounded by information and entertainment on screens, and screen use is a major part of social lives and education. As of 2017, almost all Australian teenagers and two-thirds of primary school-aged children have their own mobile screen-based device and almost half of all children regularly use screen-based devices at bedtime (Rhodes, 2017). Adolescents and their parents recognise that distractions from electronic devices are often a barrier to sleep (Godsell & White, 2019). More screen use is related to delayed sleep onset and shorter adolescent sleep duration (Bartel, Richardson, & Gradisar, 2018; Stiglic & Viner, 2019), and many paediatric authorities now advise that children of all ages should have no screen time for one hour before bed (Radesky & Christakis, 2016; Viner, 2019).

The LSAC data did not find any difference in the proportion of adolescents not meeting the minimum sleep guidelines at either 12–13 or 16–17 years of age according to the amount of TV they watched or time spent on electronic gaming. TV viewing has been found to be the least likely media device to be related to lack of sleep (Hale & Guan, 2015). However, internet access was related to the likelihood of not meeting minimum sleep guidelines with over 28% of those in the 12–13 year age group and 27% of those in the 14–15 year age group with internet access in their bedrooms not meeting guidelines, compared to 23% and 15%, respectively, of those without bedroom internet (Table 4.8). For 16–17 year olds, the likelihood of not meeting sleep guidelines increased with increasing time spent on the internet. Almost two-thirds of 16–17 year olds who spent eight or more hours a day on the internet were not meeting sleep guidelines, compared to just over a third who spent less than two hours a day on the internet. Almost one in five 16–17 year olds (18%) spent eight or more hours per day on the internet. Two thirds (68%) spent between two and eight hours per day, and over half of this group were not meeting minimum sleep guidelines.

Further analysis of data at multiple waves could reveal whether internet use contributes to reduced sleep durations or whether adolescents who have difficulty sleeping use the internet to deal with sleep difficulties, or simply have more time to spend on media use because they are sleeping less. There have been several reports of adolescents using media to help them to fall asleep (Eggermont & Van den Bulck, 2006; Noland, Price, Dake, & Telljohann, 2009), despite the established links between increased media

use and less sleep. It should be kept in mind that these analyses do not adjust for potential confounders. For example, physical activity might relate to children spending less time on screens and also sleeping longer.

Table 4.8: Percentage of adolescents at 12–13, 14–15 and 16–17 years not meeting minimum sleep guidelines on school nights, by screen use characteristics

Characteristic	% not meeting sleep guidelines		
	12–13 years	14–15 years	16–17 years
TV duration (average week)	<i>n</i> = 3,782	-	<i>n</i> = 2,943
Less than 2 hours per day	25.3 ^a	-	54.1 ^a
2 or more hours per day	27.5 ^a	-	49.6 ^a
TV access in bedroom	<i>n</i> = 3,832	<i>n</i> = 3,301	-
No	25.5 ^b	23.4 ^b	-
Yes	28.0 ^b	27.6 ^b	-
Electronic games duration (average week)	<i>n</i> = 3,831	-	<i>n</i> = 2,390
Less than 2 hours per day	25.8 ^a	-	51.9 ^a
2 or more hours per day	31.2 ^a	-	56.7 ^a
Electronic games access in bedroom	<i>n</i> = 3,709	<i>n</i> = 3,113	-
No	28.4 ^b	24.5 ^b	-
Yes	25.8 ^b	25.9 ^b	-
Internet duration (average week)	-	-	<i>n</i> = 2,943
Less than 2 hours per day (ref.)	-	-	38.6 ^c
2 to 8 hours per day	-	-	52.2 ^{*c}
8 or more hours per day	-	-	62.8 ^{*c}
Internet access in bedroom	<i>n</i> = 3,735	<i>n</i> = 3,249	-
No	23.2 ^b	15.0 ^b	-
Yes	28.4 ^{*b}	27.4 ^{*b}	-

Notes: * Statistically significant difference from reference category at $p < 0.05$ level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. ^a Only available for ages 12–13 and 16–17 years (Waves 5 and 7, K cohort). ^b Only available for ages 12–13 and 14–15 years (Waves 5 and 6, K cohort). ^c Only available for age 16–17 years (Wave 7, K cohort). Sample sizes correspond to the number of study children with complete data on (i) each characteristic (shown in the left-hand column) and (ii) whether or not they met minimum sleep guidelines at a particular age.

Source: LSAC K cohort, weighted: Wave 5 (12–13 years), 6 (14–15 years) and 7 (16–17 years)

School characteristics

Australian school students face increasing homework demands as they progress through secondary school. LSAC data showed that the percentage of students spending five hours per week or more on homework increased from 9% at 12–13 years through 13% at 14–15 years to 27% at 16–17 years. At all three ages, adolescents spending more than five hours on homework per week were more likely to not meet the minimum sleep guidelines than those doing 1–3 hours per week. Homework may displace sleep time, especially when adolescents have a busy schedule after school. It may also be relevant that today nearly all homework activities are completed on a PC, laptop or mobile device and exposure to blue light from screens in the evening may affect sleep duration (Lissak, 2018). Yet another factor may be that time spent on homework may increase adolescents' stress and depressive symptoms (Kouzma & Kennedy, 2002), which may negatively affect sleep.

Lack of sleep in adolescents has been linked to increased absenteeism and being late for school (Drake et al., 2003; Hysing, Haugland, Stormark, Boe, & Sivertsen, 2015). The LSAC data showed that 14–15 and 16–17 year olds who had been absent from or late for school recently were more likely to not meet the minimum sleep guidelines but whether absenteeism is a cause or a consequence of not meeting minimum sleep guidelines cannot be disentangled from the current analyses.

Table 4.9: Percentage of adolescents at 12–13, 14–15 and 16–17 years not meeting minimum sleep guidelines on school nights, by school characteristics

Characteristic	% not meeting sleep guidelines		
	12–13 years	14–15 years	16–17 years
Hours per week on homework	<i>n</i> = 3,845	<i>n</i> = 3,316	<i>n</i> = 2,440
Less than 1 hour	25.2	25.3	53.1
Between 1 and 3 hours (ref.)	25.7	23.6	44.3
More than 3 but less than 5 hours	27.3	27.8	48.6
More than 5 hours	37.0*	31.9*	57.3*
Absent without parental permission in the last 6 months	-	<i>n</i> = 3,259	<i>n</i> = 2,903
Never (ref.)	-	25.2 ^a	51.3 ^a
1–2 times	-	37.0 ^{a*}	54.6 ^a
3 or more times	-	36.1 ^a	65.4 ^{a*}
Late for school in the last 6 months	<i>n</i> = 3,828	<i>n</i> = 3,258	<i>n</i> = 2,904
Never (ref.)	25.8	21.1	46.6
1–2 times	26.1	25.8	54.0
3 or more times	29.6	31.6*	55.4*

Notes: * Statistically significant difference from reference category at $p < 0.05$ level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. ^a Only available for ages 14–15 and 16–17 years (Waves 6 and 7, K cohort). Sample sizes correspond to the number of study children with complete data on (i) each characteristic (shown in the left-hand column) and (ii) whether or not they met minimum sleep guidelines at a particular age.

Source: LSAC K cohort, weighted: Wave 5 (12–13 years), 6 (14–15 years) and 7 (16–17 years)



Summary

This chapter has provided a picture of the sleep patterns of children and adolescents between the ages of 6 and 17 years. The LSAC data showed that on school nights large numbers of Australian young people slept less than current sleep duration recommendations, supporting earlier Australian research conducted on 9–18 year olds between 2001 and 2007 (Olds, Maher, Blunden, & Matricciani, 2010). This observation is particularly concerning given the known associations between shorter sleep duration and poorer health and wellbeing, some of which, such as higher rates of anxiety, depression and obesity, are shown in this chapter. It is also a concern that the majority of those children and adolescents not getting enough sleep, particularly at younger ages, appear to be unaware that they were lacking in sleep as defined by the guidelines.

However, the picture is not all negative. The majority of children between 6 and 11 years of age were getting enough sleep (i.e. met minimum sleep guidelines). The high numbers of adolescents in the older age groups (12–13, 14–15 and 16–17 years) missing out on sleep suggests that policy attention should be directed towards this issue. However, it is not yet possible to determine the true amount of sleep needed by any one individual. The US National Sleep Foundation has introduced a ‘may be appropriate’ window into their guidelines to acknowledge that for some 6–13 year olds, 7–8 hours might be enough sleep and for some 14–17 year olds, seven hours might be enough sleep. Because of individual variation in the amount of sleep that adolescents may require, it is therefore important to consider self-reported sleep quality and quantity, as was done in this chapter.

Another key observation in this chapter was the difference in the times children and adolescents went to bed and woke up between school and non-school nights. These findings support previous Australian research, which showed that wake times were around 82 minutes later and bedtimes were around 34 minutes later on non-school days than on school days (Olds, Maher et al., 2010). Older adolescents often develop sleep patterns where they under-sleep on school nights and catch up on non-school nights. The tendency for this ‘yoyo’ pattern of sleep across the week increases with age. Although oversleeping on non-school nights can provide some temporary relief from sleepiness built up during the school week, it also leads to disrupted sleep–wake cycles and is in contradiction to the sleep guidelines, which advise regular sleep and wake-up times.

This chapter highlights areas where intervention may be beneficial. The group most at risk of not getting enough sleep is older adolescents on school nights. Although many researchers and public health advocates have suggested later morning start times for high school in order to increase the opportunity for later wake times and more sleep – and trials of this have shown promising effects on health and education outcomes (Minges & Redeker, 2016) – implementing such changes are often difficult for school communities and families to organise. Although beyond the scope of this chapter, an examination of the wake times of absentees on school days could indicate whether later high school start times would reduce absenteeism. Another strategy would be sleep interventions aimed at teaching school students about the importance of sleep and what they can do to improve their sleep (such as reducing caffeine intake, limiting screen use before bedtime, keeping a consistent sleep routine and getting plenty of physical activity). Such programs have been shown to increase sleep-related knowledge, but achieving sleep-related behavioural change has been less consistent (Blunden, Chapman, & Rigney, 2012).

Another group that appears to be at risk of not getting enough sleep is younger-aged children, especially boys, on non-school nights. Although perhaps of less concern because there are fewer non-school nights in the year, it may be worthwhile highlighting to parents the importance of regular bedtimes, even on weekends and holidays for younger children.

There are many possible avenues of further research using LSAC data that would directly inform policy and practice around child and adolescent sleep. Aspects of sleep other than insufficient sleep, which has been the focus of this chapter, could be examined. For example, the prevalence and effects of too much sleep could be explored, as could subjective sleep quality and the timing of sleep within the day. All of these features of sleep relate to a general concept of ‘sleep health’ (Buysse, 2014), in which sleep and wakefulness are adapted to individual, social and environmental demands providing sustained alertness in the day, as well as ongoing satisfaction and physical and mental wellbeing.

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5

Teenagers and sex

Diana Warren and Neha Swami



Key findings

- By 16-17, around two thirds of teenagers had had a romantic relationship and around one third had had sexual intercourse.
- Of 16-17 year-olds who were sexually active, around one in five said that they had done nothing to prevent sexually transmitted infections and around one in 12 said that they had done nothing to prevent pregnancy the last time they had sex.
- Condoms were the most common method to prevent pregnancy and sexually transmitted infections (around 75%).
- Boys were much more likely than girls to have intentionally viewed pornography.
- Almost half of girls and one third of boys aged 16-17 years said that they had experienced some form of unwanted sexual behaviour towards them in the past 12 months.
- One in eight boys and around one in 12 girls reported that they had engaged in unwanted sexual behaviour towards someone else.

As young people move from early to late adolescence, they develop both physically and psychologically, which also includes their sexual development. During this time, teens experience and explore different feelings and behaviours as aspects of their sexual growth. They may also begin dating which, while often short-lived, plays an important role in their day-to-day lives and ongoing development of how they see themselves and their exploration of sexual identity (Furman, Ho, & Low, 2007; Furman & Schaffer, 2003; Meier & Allen, 2009).

Many young people may not become sexually active until their late teenage years (Fisher et al., 2019); however, exploring sexual feelings, including thinking and talking about them, can occur much sooner. At this time, teenagers receive different information from parents, peers, social media and the internet about sex. This can shape their attitudes about sex and can influence their own sexual behaviours (Marston & King, 2006).

How young people approach their sexual development is personal, and so understanding their own sexuality and making informed decisions about their behaviours is essential for healthy sexual development into adulthood (Frayser, 1994). Parents and schools can play a pivotal role to enable a supportive environment so that teenagers can explore their feelings and

behaviours in a respectful way for themselves and towards each other (Albert, 2007; Department for Education and Child Development, 2013; Dittus et al., 2015; Smith et al., 2011).

This important period in young people’s sexual and psychosocial development – and the supportive role that parents and schools can play – is increasingly recognised with the delivery of respectful relationships education in schools and other child-focused settings.¹

This chapter provides a snapshot of insights into sexual experiences and behaviours of teenagers aged 14–17 years. This includes sexual attraction and relationships, sexual intercourse, contraception choices, pornography viewing, and unwanted sexual behaviours.

5.1 Sexual attraction and relationships

From late childhood into early adolescence, many teenagers start to explore and discover their sexuality and who they are attracted to. Throughout this time teenagers can also start dating. In adolescence, sexual attraction and feelings are not always aligned – an adolescent primarily attracted to girls may also have sexual contact with boys and may or may not identify as heterosexual, lesbian, gay, bisexual or other sexual-orientation groups (e.g. asexual, pansexual, demisexual). This fluidity may be true of both adolescents and adults, and is reported more frequently by girls (Perales & Campbell, 2019).

Box 5.1: Sexual attraction

At the age of 14–15, LSAC study participants (K cohort, 2014) were asked, ‘Which of these statements best describes your sexual feelings at this time in your life:

- I’m attracted only to girls
- I’m attracted only to boys
- I’m attracted to girls and boys
- I’m not sure who I am attracted to
- I don’t feel any attraction to others.’

Note: Sexual orientation might change as children grow up, but 16–17 year olds were not asked who they were attracted to.

Items on sexual attraction were designed in LSAC.

At the age of 14–15, LSAC children were asked about their sexual attraction (Box 5.1):

- The majority (93% of boys and 85% of girls) reported being attracted only to the opposite sex.
- Two per cent of boys and 4% of girls said that they were attracted to both boys and girls.
- Less than 1% said they were attracted only to people of the same sex.
- Some teenagers were still in the process of understanding their sexual identity, with 2% of girls and 4% of boys reporting that they were not sure who they were attracted to, and 5% of girls and 4% of boys reporting that they were not attracted to anyone.



Box 5.2: Relationships

In Wave 6, when the LSAC K cohort children were aged 14–15, they were asked if they currently have a boyfriend or girlfriend.

At age 16–17, study children were asked if they currently have a boyfriend or girlfriend, and whether they had gone out with anyone since their last LSAC interview.

Those 16–17 year olds who said that they currently have a boyfriend or girlfriend were asked:

- ‘How do you regard your relationship?’ (The options were ‘Casual’, ‘Exclusive/committed’, ‘Engaged to be married’ and ‘Married’.)
- ‘Do you and your boyfriend/girlfriend that you feel more serious about or have been going out with the longest, regularly stay over at each other’s place?’

Items on relationships were designed in LSAC.

¹ Over the last two decades, Respectful Relationships curricula have been developed and delivered in Australian schools as a key plank in reducing family, domestic and sexual violence. Under the fourth action plan to reduce violence against women and their children, two of the key national priorities are: implement community-led and tailored initiatives to respect, listen and respond to the diverse lived experience and knowledge of women and their children affected by violence; and respond to sexual violence and sexual harassment through specialised and consistent support as well as through targeted initiatives that promote informed consent, bodily autonomy and respectful relationships (for details see www.dss.gov.au/sites/default/files/documents/08_2019/fourth_action-plan.pdf).

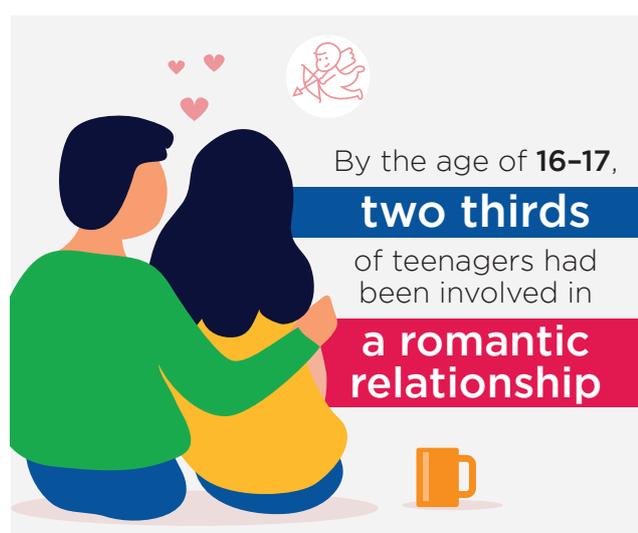
From 14–15 years old LSAC young people were asked whether they had a boyfriend or girlfriend. Around one in seven 14–15 year olds (15% of boys and 16% of girls) said they had a boyfriend or girlfriend at the time of the interview. Among those who had a boyfriend or girlfriend ($n = 673$), most (81% of boys and 77% of girls) said that they went out together to places such as the movies, without anyone else.

By the age of 16–17, around two-thirds (67% of boys and 62% of girls) reported having had at least one relationship. One in five boys and one in four of girls said that they currently had a boyfriend or girlfriend ($n = 673$). This is slightly lower than statistics reported in the National Survey of Secondary Students and Sexual Health (Fisher et al., 2019). According to this survey, in 2018, around 77% of 14–18 year olds reported having a relationship at some point in their lives but only around 40% reported being in a relationship at the time of the survey.

Among those 16–17 year olds who reported having a boyfriend or girlfriend in the LSAC survey:

- Around 4% reported dating someone of the same sex.
- More than four in five (84%) considered that they were in committed/exclusive relationships while the rest considered their relationships casual.
- Around half (51%) reported regularly staying over at each other's place.

Figure 5.1: By the age of 16–17, two thirds of teenagers had been involved in a romantic relationship



5.2 Sexual behaviours

While the majority of LSAC children at age 16–17 reported having a boyfriend or girlfriend, a much smaller proportion reported being sexually active.² It is worth acknowledging that sexual behaviours are not limited to sexual intercourse but also include genital touching, deep kissing and oral sex (although LSAC respondents were not asked about these behaviours).

Box 5.3: Sexual intercourse

In Waves 6 and 7 of LSAC, when the K cohort children were aged 14–15 and 16–17, they were asked if they had ever had sex (with the question specifying 'by sex we mean sexual intercourse').

Those who said they had had sex at least once were asked how old they were the first time they had sex.

Items on sexual intercourse were designed in LSAC.

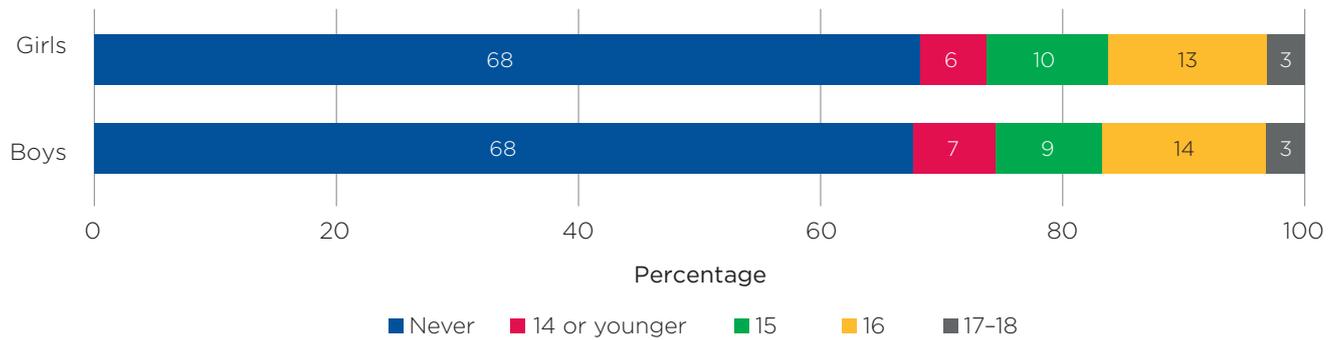
At the age of 16–17 years old, two thirds (68%) reported they had not yet had sexual intercourse by this age, with no significant differences in the age that girls and boys had sex for the first time:

- Just over one in 15 (7% of boys and 6% of girls) said that they had sex for the first time at age 14 or younger.
- Around one in 10 (9% of boys and 10% of girls) said they first had sex at age 15.
- One in six (17% of boys and 16% of girls) reported having sex for the first time at age 16 or 17 (Figure 5.2).

According to the 2018 National Survey of School Student and Sexual Health, touching one's own genitals was the most common sexual behaviour (89%), followed by deep kissing (74%), being touched on the genitals (66%) or touching a partner's genitals (65%), and around half reported having engaged in oral sex at least once (Fisher et al., 2019).

² Being sexually active is defined as in Fisher et al. (2019) - 'young people are defined sexually active if they had ever engaged in sexual intercourse (anal and/or vaginal sex)'.

Figure 5.2: Age first had sexual intercourse, 16–17 year olds in 2016



Notes: *n* = 1,469 boys and 1,434 girls. At Wave 7 interview, 54.4% of the study children in the K cohort were aged 16 years and 45.3% were aged 17 years. Ten children were aged 18 at the time of their Wave 7 interview.

Source: LSAC Wave 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

5.3 Contraception and safe sex



Box 5.4: Contraception and prevention of sexually transmitted infections (STIs)

In Waves 6 and 7 of LSAC, study participants in the K cohort (aged 14–15 and 16–17) who reported having sex at least once were asked about the methods they had used to prevent pregnancy and sexually transmitted infections the last time they had sex.

In the question about methods used to prevent pregnancy, the options at age 14–15 (Wave 6) were: ‘None’, ‘Birth control pills’, ‘Condoms’, ‘Other’ and ‘Not sure’.

At Wave 7 (age 16–17), a wider range of options was provided that included ‘None’, ‘Birth control pills’, ‘Condoms’, ‘Morning after pill’, ‘Contraceptive implant’, ‘Contraceptive injection’, ‘Intrauterine device (IUD)’, ‘Diaphragm’, ‘Vaginal ring’, ‘Other’, and ‘Not sure’.

In the question about methods used to prevent sexually transmitted infections, the options were the same at ages 14–15 and 16–17: ‘None’, ‘Condoms’, ‘Other’ and ‘Not sure’.

The sexual experience and contraception concepts were derived from the 2014 Ontario Child Health Study (OCHS) self-complete questionnaire.

Among teenagers who were sexually active, the majority were using either condoms or birth control pills to prevent pregnancies; and most were taking precautions to prevent sexually transmitted infections (STIs) (Table 5.1).

Of the 5% of 14–15 year olds who reported being sexually active in 2014:

- Three out of four (76% of boys and 73% of girls) said they had used a condom to prevent pregnancy the last time they had sex.
- While around one in three girls (30%) and one in 10 boys (10%) said that they (or their partner) had used birth control pills to prevent pregnancy. The number of observations was too small for these estimates to be considered reliable.
- Around three in four (75% of boys and 77% of girls) said they had used a condom to prevent STIs the last time they had sex.
- Almost one in five (19%) said they did not use any method to prevent STIs.

Among the 32% of 16–17 year olds who reported having had sexual intercourse at least once in 2016 (Table 5.1):

- Around three in four (78% of boys and 71% of girls) said that they had used a condom to prevent pregnancy the last time they had sex.
- Around one in four boys (27%) and one in two girls (46%) said that they (or their partner) had used birth control pills to prevent pregnancy.

Table 5.1: Methods used to prevent pregnancy and STIs, by age and gender

Method of contraception	14–15 year olds		16–17 year olds	
	Boys %	Girls %	Boys %	Girls %
Pregnancy prevention				
Condom	75.9	73.0	78.3	70.5
Birth control pills	#11.7	28.9*	26.5	45.5***
Contraceptive implant	na	na	7.8	12.6*
Morning pills	na	na	7.7	6.2
Nothing	#	#	8.0	8.4
Total (n)	71	67	445	439
Sexually transmitted infections (STI)				
Condom	75.4	77.4	79.2	71.9
Nothing	16.6	21.8**	17.1	25.7**
Total (n)	71	67	445	439

Notes: na - not asked. #Estimate not reliable (cell count < 10). Due to very small numbers of observations, for methods used to prevent pregnancy, the following categories were not reported even at aggregated level: Contraceptive injection, Intrauterine device (IUD), Diaphragm, Vaginal ring. Asterisks (marked in the second column of each age group) indicate statistically significant differences in proportions between boys and girls, from chi-square tests: * $p < .05$, ** $p < .01$, *** $p < .001$.

Source: LSAC Waves 6 & 7, K cohort, weighted

Other methods of birth control were less common:

- One in eight (13%) girls said they had used a contraceptive implant; and one in 12 (8%) boys said their partner had done so.
- Fewer than one in 10 (8% of boys and 6% of girls) said that they, or their partner, had used the morning after pill.

While around three quarters of 16–17 year olds who were sexually active said that they had used a condom to prevent STIs the last time they had sex – one in four girls (26%) and nearly one in five boys (17%) had not taken any action for prevention. This finding highlights the importance of sex education in schools that covers aspects of safe sex by understanding what is preventing young people from using contraception to prevent unplanned pregnancies and STIs.

5.4 Viewing pornography

A review of the literature on the effects of pornography on young people reveals that young people can use pornography for a number of reasons; that is, as a source of sex education, for entertainment or for sexual stimulation (Quadara, El-Murr, & Latham, 2017). Viewing pornography can affect young people's sexual attitudes, expectations and practices (Quadara, El-Murr & Latham, 2017). While viewing pornography might be part of young people's sexual experience, what is concerning is the wrong message it can give to young people about control, pleasure and physical aggression.

Box 5.5: Viewing pornography

At Wave 7 of LSAC, study children in the K cohort (age 16–17) were asked about viewing pornography. They were asked:

- How old were you when you started viewing pornography?
- In the past 12 months, how often did you view pornography?
- Who do you usually view pornography with?

Items on the age of first viewing pornography and frequency of pornography viewing were adapted from the Burnet Institute Big Day Out Study (2017).

According to the LSAC data, at age 16–17, significantly more boys than girls had intentionally viewed pornography in the past 12 months; that is, almost three quarters of boys but only one in three girls saying they had viewed pornography in that time (Figure 5.3). Boys also reported viewing pornography far more frequently than girls:

- One in 10 boys (11%) and less than one in 100 girls (0.004%) said they watched pornography daily.
- One in four boys (24%) and less than one in 20 girls (4%) said they watched pornography weekly.

Among those who reported viewing pornography intentionally, the vast majority said that they usually did so alone. While it was less common for girls than boys to intentionally watch pornography; among those who did, it was more common for girls than boys to say that they viewed pornography with a partner or with friends:

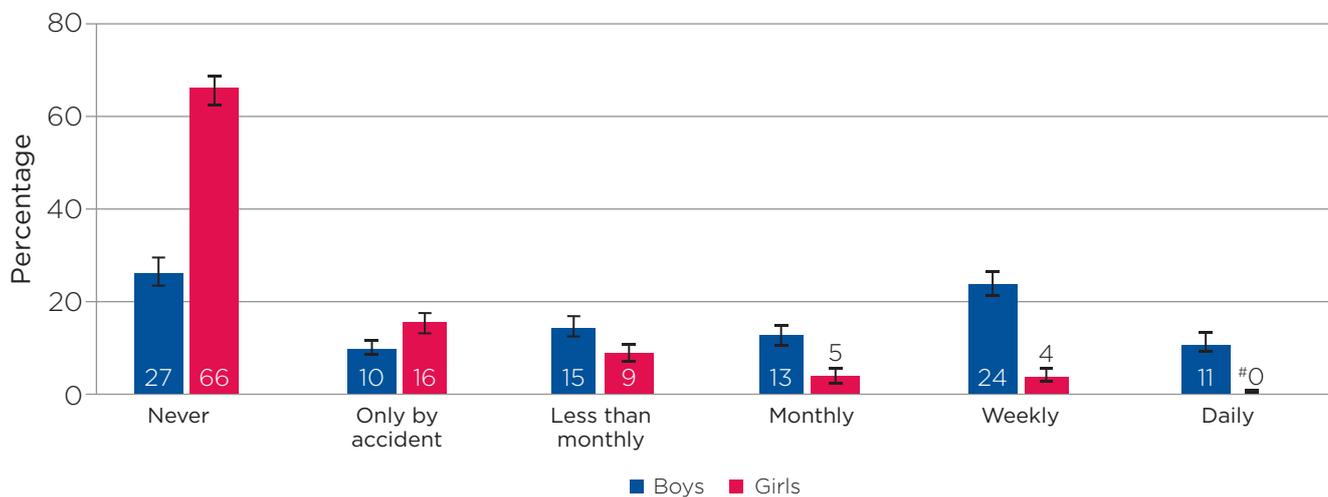
- Around nine in 10 boys and girls (96% of boys and 90% of girls) said they usually viewed pornography alone.
- Around one in 30 boys (3%) and one in eight girls (13%) said they usually viewed pornography with their boyfriend, girlfriend or partner.
- One in 25 boys (4%) and one in 10 girls (10%) said that they usually watched pornography with friends.
- One in 50 boys and girls (2%) said they usually viewed pornography with people other than a partner or friend.

Boys also start viewing pornography at a younger age than girls. At 16–17 years, more than half of

the boys (53%) and one in seven girls (14%) had viewed pornography intentionally before the age of 16 (Figure 5.4). Twelve per cent of boys and 3% of girls had viewed pornography before the age of 13; while 4% boys were aged 11 or younger when they had first seen pornography, compared to 2% of girls.

Teenagers who reported viewing pornography before the age of 15 years old were also more likely to report having sex for the first time before the age of 16 (23%) compared to teenagers who reported viewing pornography after they turned 15 (15% had sex before the age of 16) or who had never viewed pornography (11% had sex before the age of 16).

Figure 5.3: How often 16-17 year olds viewed pornography in past 12 months

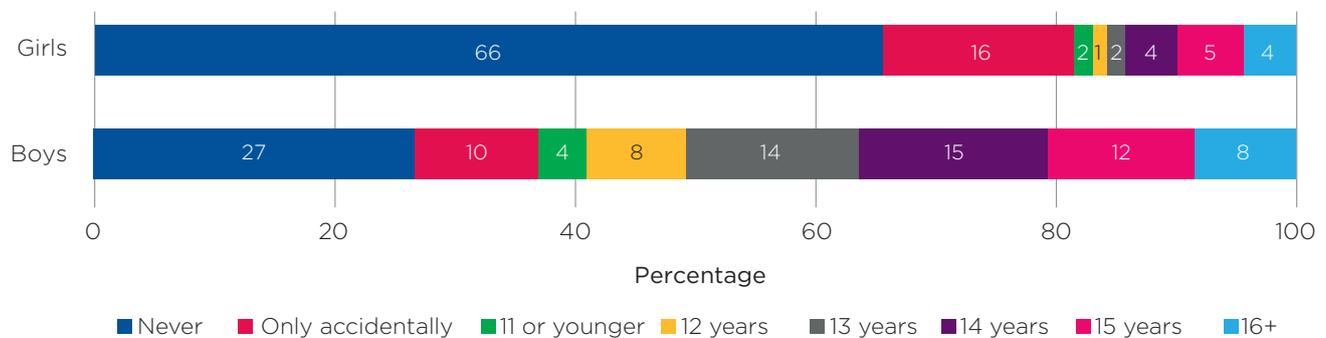


Notes: #Estimate not reliable (cell count < 20). n = 1,446 boys and 1,437 girls. 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values within each category are statistically significant.

Source: LSAC Wave 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Figure 5.4: Age first viewed pornography



Note: n = 1,430 boys and 1,434 girls.

Source: LSAC Wave 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

5.5 Unwanted sexual behaviours

It is normal for young people to express their sexuality to others, but not all sexual behaviours are wanted or welcomed. ‘An unwelcome sexual advance, unwelcome request for sexual favours or other unwelcome conduct of a sexual nature which makes a person feel offended, humiliated or intimidated, where a reasonable person would anticipate that reaction in the circumstances’, often also referred to as sexual harassment, is of great concern among young people (Australian Human Rights Commission, 2003). As a teen, the experience of unwanted sexual behaviours can impair romantic relationships. It is also related to symptoms of depression and anxiety (Bendixen, Daveronis, & Kennair, 2018).

Box 5.6: Unwanted sexual behaviours

At age 16–17, the LSAC study children were asked about their experiences of unwanted sexual behaviours, both of being harassed themselves and whether they had sexually harassed someone else (adapted from Clear et al. (2014)). More specifically, they were asked how often, in the 12 months prior to their LSAC interview, they had:

Experienced unwanted sexual behaviours:

- Someone told, showed or sent sexual pictures, stories or jokes that made me feel uncomfortable.
- Someone made sexual gestures, rude remarks, used body language, touched, or looked at me in a way that embarrassed or upset me.
- Someone kept asking me out on a date or asking me to hook up although I said ‘No’.

Engaged in unwanted sexual behaviours towards someone else:

- I told, showed or sent sexual pictures, stories or jokes that made someone feel uncomfortable.
- I made sexual gestures, rude remarks, used body language, touched, or looked at someone in a way that embarrassed or upset them.
- I kept asking someone out on a date, or asking them to hook up, although they said ‘No’.

The LSAC data show that (Table 5.2):

- One in two girls (49%) and one in three boys (31%) said that they had experienced some form of unwanted sexual behaviours in the past 12 months, though the gender of the person who had done this was not reported.

- Around one in 12 girls (8%) and one in eight boys (12%) reported having engaged in sexually unwanted behaviours towards someone else in the past 12 months, though the gender of the person at who such behaviour was directed was not reported.

Table 5.2: Experiences of unwanted sexual behaviours in the previous 12 months by 16–17 year olds

Experienced unwanted sexual behaviours		
1 in 3 girls (33%)	Someone told, showed or sent sexual pictures, stories or jokes that made me feel uncomfortable.	1 in 5 boys (20%)
3 in 10 girls (30%)	Someone made sexual gestures, rude remarks, used body language, touched, or looked at me in a way that embarrassed or upset me.	1 in 7 boys (15%)
Almost 3 in 10 girls (28%)	Someone kept asking me out on a date or asking me to hook up although I said ‘No’.	1 in 7 boys (15%)
1 in 2 girls (49%)	Any of the above happened.	3 in 10 boys (31%)
Engaged in unwanted sexual behaviours		
1 in 15 girls (7%)	I told, showed or sent sexual pictures, stories or jokes that made someone feel uncomfortable.	1 in 12 boys (8%)
1 in 33 girls (3%)	I made sexual gestures, rude remarks, used body language, touched, or looked at someone in a way that embarrassed or upset them.	1 in 15 boys (7%)
1 in 50 girls (2%)	I kept asking someone out on a date or asking them to hook up although they said ‘No’.	1 in 25 boys (4%)
1 in 12 girls (8%)	I did any of the above.	1 in 8 boys (12%)

Note: n = 1,486 boys and 1,444 girls.

Source: LSAC Wave 7, K cohort, weighted

Of those who reported having engaged in unwanted sexual behaviour, most said they had done so once or twice. However, among the 8% of boys who said they had showed or sent sexual pictures, or told stories or jokes that made someone feel uncomfortable, almost a quarter said they had done it three times or more in the past 12 months. Of the 7% of boys who reported that they had made sexual gestures, rude remarks, used body language, touched, or looked at someone in a way that embarrassed or upset them, one in five said they had done so three times or more in the past 12 months.

5.6 Pornography and unwanted sexual behaviours

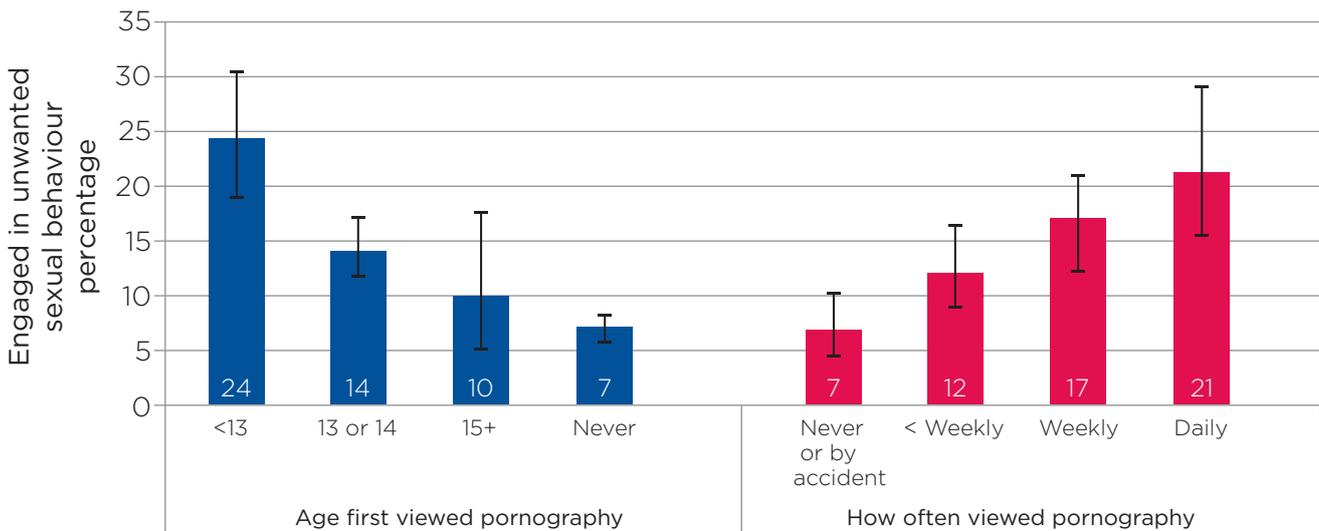
Studies have shown that boys who view pornography are more likely to engage in verbal and physical sexual aggression (Wright, Tokunaga, & Kraus, 2015). A 2012 review of the effect of internet pornography on adolescents found that adolescents who are intentionally exposed to violent sexually explicit material were six times more likely to be sexually aggressive than those who were not exposed (Owens, Behun, Manning, & Reid, 2012). Another study found exposure to pornography was associated with greater acceptance of stereotyped and sexist notions about gender and sexual roles, including notions of women as sexual objects (Peter & Valkenburg, 2007).

The LSAC data show that the percentage of boys who reported unwanted sexual behaviours in relation to

someone else at the age of 16–17 was significantly higher among those who had viewed pornography for the first time before the age of 13 compared to boys who said they had never viewed pornography; that is, one in four (24%) versus less than one in 10 (7%) (Figure 5.5).³

How often boys viewed pornography at age 16–17 was also associated with unwanted sexual behaviours (Figure 5.5). Among boys who reported watching pornography daily, more than one in five (21%) reported engaging in unwanted sexual behaviour, compared to less than one in 10 (7%) of boys who said they had never viewed pornography in the previous 12 months, or had done so by accident.

Figure 5.5: Association between viewing pornography and unwanted sexual behaviour, boys 16–17 years old



Notes: $n = 2,838$. 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values between age categories in the left graph and between frequencies of viewing pornography in the right graph are statistically significant.

Source: LSAC Wave 7, K cohort, weighted

³ Note that the analysis of associations between use of pornography and sexually unwanted behaviours was undertaken only for boys, as the number of observations for girls viewing pornography and reporting unwanted sexual behaviours were too small for reliable estimates.

Summary

Adolescence is an important time developmentally for teenagers in regard to their sexual behaviours and relationships. In the teenage years, young people are still exploring their sexual orientation; at age 14–15, while most reported being attracted only to the opposite sex, around 4% reported same-sex attraction.

As teenagers start exploring their sexual feelings and behaviours, they are likely to start dating – one in seven teenagers aged 14–15 reported having a boyfriend or girlfriend while two out of three reported being in a relationship by age 16–17.

By the age of 16–17, around one in three had engaged in sexual intercourse. These estimates are consistent with those of the Secondary Students Sexual Health Study, which showed that the age that Australian teenagers are first having sex has been declining and, in 2018, 34% of Year 10 students reported having had sexual intercourse (Fisher et al., 2019).

Estimates based on LSAC data show that most teenagers who were sexually active said they had used a condom to prevent sexually transmitted infections the last time they had sex; and research has shown that Australian secondary students are largely engaging in responsible behaviours and that they are accessing a diverse array of educational sources to learn about STIs (Fisher et al., 2019). However, of 16–17 year olds who were sexually active, around one in five said that they had done nothing to prevent sexually transmitted infections and around one in 12 said that they had done nothing to prevent pregnancy the last time they had sex.

Almost half of girls aged 16–17 and almost one third of boys said that they had experienced some form of unwanted sexual behaviours in the past 12 months; and one in 13 girls and one in eight boys reported having sexually harassed someone else during that time. Reports of engaging in unwanted sexual behaviours were significantly higher among boys who had viewed pornography for the first time before the age of 13, and those who viewed pornography daily at the age of 16–17.

Boys were much more likely than girls to have intentionally viewed pornography, and among those who did view pornography, boys did so much far more often than girls. More than half of boys aged 16–17 and one in seven girls had viewed pornography before the age of 16. There was a significant association between the age at which teenagers had viewed pornography

for the first time and the age at which they had sex for the first time, with 26% of those who reported having seen pornography for the first time before the age of 13 having had sex before the age of 16.

Improvements to internet downloading speeds and the use of handheld smart devices have made accessing pornography easier, faster and more anonymous. Children and young people are accessing pornography at increasing rates, with boys aged 14–17 years being the most common underage consumers of pornographic material (Campo, 2016). In Australia, just under half (44%) of children aged 9–16 reported encountering sexual images in the last month; and younger children (aged 9–12) were particularly likely to be distressed or upset by pornography (Quadara, El-Murr, & Latham, 2017).

This chapter has provided insights into the sexual behaviours of teenagers, as well as their experiences with unwanted sexual behaviours and pornography. It highlights that it is important to have supportive conversations with children to empower them to make informed decisions about their sexual behaviours. For example, school sexual health education programs can support teenagers, using a whole-school approach to address respectful relationships, sexual orientation and navigating the online environment (including sexting and pornography).



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6

Risky driving among Australian teens

Suzanne Vassallo



Key findings

- Close to 80% of P-platers and 55% of learner drivers aged 16–17 had engaged in some form of risky driving on at least one of their 10 most recent trips.
- More than one in 10 teens without a licence or learner's permit had taken risks while driving a car or riding a motorbike.
- Speeding by up to 10 km/h over the limit and driving while tired were the two most common forms of risky driving.
- One in five teens who failed to wear a seatbelt when driving (or a helmet if riding a motorcycle) did so every trip.
- Learner drivers, P-platers and unlicensed drivers did not differ in their rates of seatbelt/helmet use.
- Almost 4% of teens had driven while under the influence of alcohol or drugs in the past year.
- About one in 10 teens had been the passenger of a driver who was under the influence in the past year.
- Teenagers who drank alcohol or used marijuana were more likely to engage in all types of risky driving.

Although the road toll has significantly decreased in recent decades, more than 1,000 people are killed on Australian roads each year; and over 30,000 are seriously injured (Bureau of Infrastructure, Transport and Regional Economics [BITRE], 2018). Young drivers continue to be over-represented among road crash victims – more than one in five drivers killed in 2016 were aged 17–25 years (BITRE, 2018), and one in four drivers seriously injured belonged to this age group (BITRE, 2019).

Drivers are at their highest risk of being involved in a crash during their first year of driving unsupervised (Lee, Simons-Morton, Klauer, Ouimet, & Dingus, 2011; VicRoads, 2005). A range of factors have been linked to the higher rate of injuries and deaths among young drivers. These include driver inexperience (Braitman, Kirley, McCartt & Chaudhary, 2008), risky driving behaviours such as speeding and driving without a seatbelt (Ivers et al., 2009), driving more frequently at high-risk times (e.g. at night), and driving smaller and/or older vehicles with fewer safety features (CARRS-Q, 2017).

Research suggests that the areas of the brain concerned with impulse control, planning and decision making are still developing in teenagers,

which may contribute to their engagement in risky or impulsive behaviours (Paus, 2005; Sowell, Thompson, Holmes, Jernigan, & Toga, 1999). Inexperienced drivers commonly underestimate the risks associated with particular driving behaviours or situations and overestimate their capacity to deal with them, which can result in them driving in a dangerous manner (Braitman et al., 2008, Cavallo & Triggs, 1996). As peer relationships are particularly important to teens, young drivers may also perceive greater peer pressure to take risks on the road compared to older drivers (Scott-Parker, Watson, King, & Hyde, 2014).

While a number of Australian studies have looked at risky driving among young drivers (e.g. Department of Infrastructure, Regional Development and Cities, 2018; Ivers et al., 2009; Scott-Parker & Oviedo-Trespalacios, 2017), each study has examined different age groups and used different measures, making it difficult to obtain a consistent picture of how common risky driving is among young drivers. Few studies have specifically looked at the prevalence of risky driving among learner drivers, presumably because crash rates are lower among this group, as most learner drivers are driving in low-risk supervised conditions (Williams, 2006). Nevertheless, this is an important period in young people's driving careers – when driving habits and attitudes are being formed and they may be more receptive to change.

In 2016, when aged 16–17, LSAC study teenagers (K cohort) were asked about their experiences of risky driving. At this age, many would be expected to be learning to drive, or just starting to drive independently, as many teenagers take up the opportunity to learn to drive as soon as they are permitted to. This chapter provides a snapshot of adolescents' engagement in risky driving behaviours, with comparisons made between learner, provisional and unlicensed drivers. Four main types of risky driving are examined: (1) speeding; (2) driving when fatigued ('drowsy driving'); (3) driving when affected by alcohol or illegal drugs ('drink or drug driving'), and (4) driving without a seatbelt/helmet (if riding a motorcycle). Characteristics associated with the engagement in risky driving behaviours are also examined. Study teenagers' experiences of being a

passenger of a driver under the influence of alcohol or drugs are also investigated.

6.1 Getting a licence

In most Australian states and territories, young people can start learning to drive a car under supervision at age 16, and can obtain a provisional or probationary car licence (P-plates) at age 17. The exceptions to this are the Australian Capital Territory, where teenagers can start learning to drive a car at 15 years 9 months; the Northern Territory where drivers can get their P-plates as early as 16 years 6 months; and Victoria, where drivers cannot obtain their P-plates until age 18.

Box 6.1: Licensing

In 2016, when the K cohort were aged 16–17, they were asked whether they held a licence or permit to drive a car or other vehicle (including a motorcycle or moped). Respondents were asked to choose the option that applied best to them:

- I have a learner driver's permit (i.e. Ls, L1s, L2s).
- I have a provisional/probationary driver's licence (i.e. Ps, P1s, P2s).
- I have a full driver's licence.
- I do not hold any driver's permit/licence.

This item was designed for LSAC.

The LSAC data show that for 16–17 year olds in 2016 ($n = 2,929$):

- more than two thirds (68%) had their learner's permit (or L-plates)
- one in 10 (11%) held a probationary or provisional driver's licence (hereafter referred to as P-plates)
- about one in five (21%) did not hold a driver's permit or licence of any type
- less than 1% had a full licence.^{1,2}

Young people's age, where they lived, whether they had a job and if they were still at school were related to the type of licence they held (Table 6.1). Compared to those who were not employed, a higher proportion of teenagers who had a job had their P-plates or were learning to drive.

1 All Australian states and territories have graduated licensing schemes. While these differ, drivers in each state and territory are required to progress through three common stages. These are: (1) a learner driver stage (L-plates, or Ls), during which novice (car) drivers learn to drive under supervision, (2) a provisional or probationary licence stage (P-plates or Ps), when drivers are able to drive independently, subject to certain restrictions, and (3) a full licence stage, when drivers are able to drive independently, without these restrictions. In some states and territories, the learner and provisional/probationary stages are further divided into different stages (e.g. L1, L2, P1, P2).

2 A very small number ($n = 54$) reported that they had a full licence. Given that all respondents were below the minimum legal age for a full licence, due to the ambiguity around their licence status, these participants were excluded from analyses where drivers were compared by licence type.

Table 6.1: Licence status of 16–17 year olds by demographic characteristics

Characteristics	No licence/ permit %	Learner driver's permit %	Provisional/ probationary licence %	Total %
Sex				
Female	19.7	68.0	12.3	100.0
Male	22.3	67.5	10.3	100.0
School attendance				
Attending school	19.7	69.3	11.0	100.0
Not attending school	27.8	56.0*	16.1	100.0
Employment				
Not in paid employment	29.0	64.9	6.0	100.0
In paid employment	12.2*	71.0*	16.9*	100.0
Jurisdiction				
Victoria (ref.)	24.6	74.6	0.8#	100.0
New South Wales	24.4	61.8*	13.7*	100.0
Queensland	16.3	68.6	15.1*	100.0
South Australia	12.2*	63.6*	24.3*	100.0
Western Australia	19.2	71.4	9.4*	100.0
Tasmania	20.4#	74.1	5.5# *	100.0
Northern Territory	17.9# *	51.4# *	30.7# *	100.0
Australian Capital Territory	13.1#	73.1	13.8# *	100.0
Rural/urban location				
Major cities (ref.)	23.5	67.0	9.5	100.0
Inner regional	17.1	68.4	14.5*	100.0
Outer regional/remote	14.7*	70.4	14.9	100.0
Age (in years)				
	16.9 (ref.)	16.9	17.3*	

Notes: $n = 2,929$ for all measures except education ($n = 2,863$) and employment ($n = 2,880$). Percentages may not add exactly to 100% due to rounding. ref. = reference category. * indicates significant difference (at the 5% level) in the percentage of drivers within a licence status category (e.g. learner drivers) that reported a particular characteristic compared to the reference category, based on confidence intervals. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. # Estimate not reliable (cell count <20).

Source: LSAC Wave 7, K cohort, weighted

The percentage of learner and P-plate drivers in each state or territory differed in line with their licensing schemes, with the highest percentage of P-plate holders from the Northern Territory (which has the lowest minimum licensing age), and the highest percentage of learner drivers from Victoria (which has the highest minimum licensing age). It is important to note that as the proportion of P-plate holders and learner drivers from each state and territory differed, the findings reported in this chapter may be more representative of drivers in some states or territories than others.³

The area in which a teen lived was also related to the type of licence they held. One in seven teens living in inner regional areas had their P-plates compared to about one in 10 teens in major cities, and about one

in four teens living in major cities were unlicensed compared to only one in seven in outer regional or remote areas. Poorer access to public transport in regional and remote areas (Rosier & McDonald, 2011) may have contributed to these differences.

6.2 Risky driving

Risky driving behaviours often contribute to road crashes (Scott-Parker & Oviedo-Trespalacios, 2017). As mentioned earlier, given the lack of research, there is a need for more studies examining the prevalence of risky driving among young Australian drivers, and more specifically, those in the very early stages of their driving careers.

³ Although LSAC was designed to be nationally representative, and estimates can be obtained for larger states/territories, caution should be exercised when interpreting findings for states/territories with smaller numbers.

Three risky driving behaviours that place young people at particularly *high risk of being involved in serious crashes* are:

- **speeding**, which affects a driver's ability to react to unexpected road events and take evasive action if needed (Aarts & Van Schagen, 2006; Liu, Chen, Subramanian, & Utter, 2005)
- **driving when fatigued** ('drowsy driving'), which can affect driver attention, judgement, reaction time and, in some cases, cause a driver to fall asleep and crash (Dobbie, 2002)
- **driving under the influence of alcohol or other drugs** ('drink or drug driving'), which affects how a driver thinks and feels, the speed at which they react, as well as their hand–eye coordination (Drummer, 2008; Moskowitz & Fiorentino, 2000).

Additionally, **driving without a seatbelt** (or helmet if riding a motorcycle), places drivers and passengers at *greater risk of being injured or killed*, if they are in a crash. An American study found that almost half of all 16-year-old drivers involved in a fatal motor vehicle crash had not been wearing a seatbelt (Gonzales, Dickinson, DiGiuseppi, & Lowenstein, 2005).



Box 6.2: Risky driving

In 2016, LSAC study teenagers in the K cohort (aged 16–17) were asked: 'Try to remember the last 10 times you drove a car or other vehicle. On how many occasions have you done any of the following?'

- Drove up to 10km/h over the limit
- Drove between 10 and 25km/h over the limit
- Drove more than 25km/h over the limit
- Drove when probably affected by alcohol
- Did not wear a seat belt at all (or helmet if riding a motorbike)
- Did not wear your seat belt for part of the trip (or helmet if riding a motorbike)
- Drove when very tired
- Drove when probably affected by an illegal drug.'

Items taken from the Australian Temperament Project (Vassallo et al., 2007).

Prevalence of risky driving by licence type

Most P-platers (almost eight in 10) and more than half of learner drivers aged 16–17 had engaged in some form of risky driving on at least one of their 10 most recent driving trips (Table 6.2).

P-platers were significantly more likely than learner drivers to engage in most forms of risky driving, which is not surprising when you consider that learner drivers (except motorcyclists) are required to drive under supervision and typically have less exposure to high-risk driving situations (e.g. driving at night, or when distracted by friends or mobile phones) that may lead to them engaging in dangerous driving behaviours (Whelan & Oxley, 2007).

Additionally, more than one in 10 teenagers without a licence or permit had engaged in some form of risky driving behaviour on a recent driving trip, although rates of most behaviours were low among this group. This group may have included teenagers who had never held a licence or learner's permit and those whose licence or permit had been cancelled or suspended.⁴

The most common types of risky driving among drivers aged 16–17 years were speeding and driving when very tired (Table 6.2). About seven in 10 P-platers and four in 10 learner drivers said that they had exceeded the speed limit by up to 10 km/h on at least one recent trip, as had one in 15 unlicensed drivers. Speeding – even by low margins – places drivers at increased risk of being involved in a crash (Alavi, Keleher, & Nieuwesteeg, 2014). While this behaviour may be deliberate, it may also result from driver inattention (Department for Transport, Energy and Infrastructure, 2010) or difficulties maintaining vehicle speed – an issue more common among inexperienced drivers (Cavallo & Triggs, 1996).

Speeding by moderate levels (10–25 km/h) was also relatively common. About one in three P-platers and one in six learner drivers aged 16–17 had exceeded the speed limit by this margin. However, few unlicensed drivers (less than one in 20) reported that they had.

One in two P-platers and one in four learner drivers reported having driven when very tired on a recent trip. Once again, this may not be due to deliberate risk-taking on the part of these drivers. It may reflect their busy lifestyles, with many young people juggling work, study and/or extracurricular commitments, and driving at night to get to and from work or to socialise (CARRS-Q, 2017). 'Drowsy driving' was very uncommon among unlicensed drivers.

4 As data was not collected on driver history (including violations), it was not possible to distinguish between different types of non-drivers.

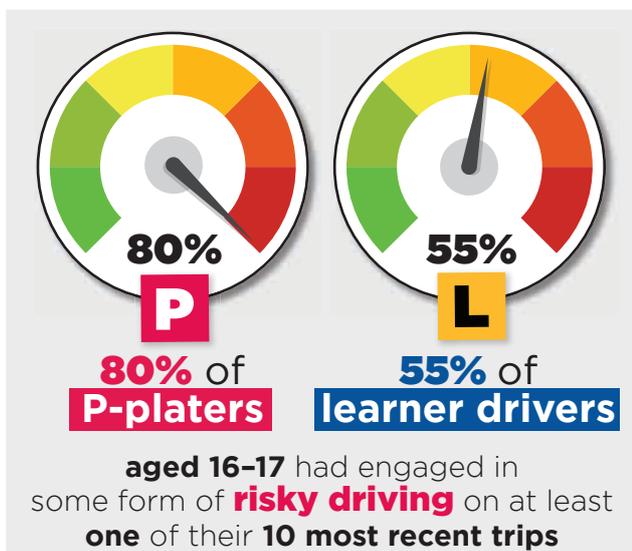
Table 6.2: Risky driving behaviours (in past 10 trips) among learner, P-plate and unlicensed drivers at 16–17 years

Risky driving behaviour	No licence/ permit (n = 531) %	Learner drivers (n = 2,050) %	P-platers (n = 343) %	All 16-17 year olds (n = 2,924) %
Speeding				
Drove up to 10km/h over the limit	6.6	44.3 ^a	69.7 ^{a,b}	39.4
Drove between 10 and 25km/h over the limit	4.7	15.1 ^a	34.3 ^{a,b}	15.1
Drove more than 25km/h over the limit	4.0 [#]	6.8	20.3 ^{a,b}	7.7
Any speeding	7.1	44.6 ^a	69.7 ^{a,b}	39.7
Drowsy driving				
Drove when very tired	1.6 [#]	26.7 ^a	50.0 ^{a,b}	24.1
Drink and drug driving				
Drove when probably affected by alcohol	2.7 [#]	3.0	7.4 ^b	3.5
Drove when probably affected by an illegal drug	2.0 [#]	2.5	4.4 [#]	2.6
Any drink or drug driving	3.0 [#]	4.2	9.1 ^{a,b}	4.5
Driving without a seatbelt or helmet				
Did not wear a seat belt at all (or helmet if riding motorbike)	7.7	7.0	5.9	7.0
Did not wear your seat belt for part of the trip (or helmet if riding motorbike)	6.3	7.9	8.6	7.7
Any non-seatbelt/helmet use	8.6	9.9	9.7	9.7
Any risky driving	12.1	55.3 ^a	78.0 ^{a,b}	49.0

Notes: Sample was restricted to those respondents who answered all eight risky driving questions. ^a Indicates significant difference (at the 5% level) in the percentage of learner drivers or P-platers who reported engaging in the risky driving behaviour (as compared to the percentage of those without a licence/permit), based on confidence intervals. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. ^b Indicates significant difference (at the 5% level) in the percentage of P-platers and learner drivers who reported engaging in the risky driving behaviour, based on confidence intervals. [#] Estimate not reliable (cell count <20).

Source: LSAC Wave 7, K cohort, weighted

Figure 6.1: 16–17 year olds who engaged in risky driving on at least one of their 10 most recent trips



Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

While most 16–17 year olds reported wearing their seatbelt when driving (or helmet if riding a motorcycle), 6–8% had driven without a seatbelt (or helmet) at all; and a similar percentage (6–9%) had driven without a seatbelt (or helmet) for part of a trip. Although it is difficult to make comparisons between the LSAC findings and other studies due to sample and measure differences, these rates are similar to those found in other Australian studies. For instance, 8% of Queensland drivers reported not wearing seatbelts (Department of Transport and Main Roads, 2015) as did 9% of Victorian drivers aged 19–20 (Vassallo et al., 2007).

While failure to wear a seatbelt or helmet may indicate deliberate risk-taking by the driver, seatbelt use is largely considered to be habitual (CARRS-Q, 2016). It was interesting to note that P-platers, learner drivers and teenagers without a licence or learner’s permit did not significantly differ in their rates of seatbelt (or helmet) use. Unfortunately, information was not collected on the contexts in which these

risky behaviours occurred; that is, whether parents or friends were present when this behaviour took place. Research suggests that parents and peers influence a young person's involvement in risky driving behaviour (Scott-Parker et al., 2014).

Other forms of risky driving such as drink and drug driving were uncommon, particularly among learner and unlicensed drivers, which is understandable given that alcohol and other drug use are prohibited among this age group, as is driving under the influence of these substances.

Half of 16–17 year olds (51%) had engaged in no risky driving behaviour.

Number of trips risky drivers engaged in these behaviours

The following section focuses on the frequency with which teens who engaged in a particular form of risky driving (e.g. drowsy driving), did so. As the percentage of 16–17 year olds who engaged in each behaviour varied greatly, so do the sample sizes for each item (see Table 6.2).

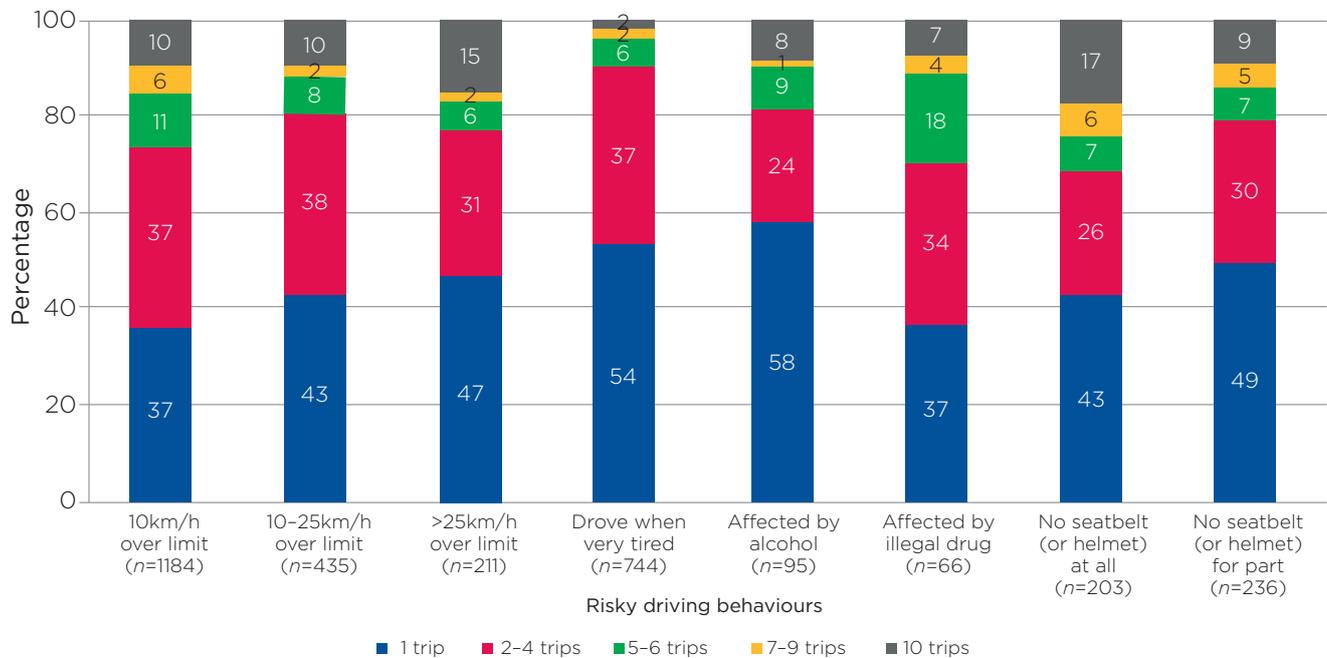
A considerable proportion of those who engaged in each risky driving behaviour (generally between 40% and 50%) only did so on one of their 10 most recent trips (Figure 6.2).

In contrast, a small but notable proportion engaged in these risky driving behaviours on every trip. For example, close to one in five teens who failed to wear a seatbelt at all when driving (or helmet if riding) had done so on all of their past 10 trips, as had one in six teens who had exceeded the speed limit by over 25 km/h. These findings suggest that engagement in risky driving behaviours such as speeding and driving without a seatbelt may be habitual for some.

Teens who engaged in low-level speeding and driving when affected by an illegal drug most commonly reported doing so on multiple trips.

While it would have been interesting to compare frequency of risky driving by licence type, we had concerns about the accuracy of the resulting estimates due to the small number of unlicensed and P-plate drivers who had engaged in some forms of risky driving. Nevertheless, the information presented here is still valuable given the relative lack of Australian prevalence data on risky driving among this age group.

Figure 6.2: Number of trips (in past 10) by those who engaged in each risky driving behaviour



Note: Sample numbers varied between items, with the sample for each item being restricted to respondents who had engaged in the behaviour of interest at least once in their past 10 trips.

Source: LSAC Wave 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Characteristics of risky drivers

Previous research suggests that young people who take risks on the road tend to differ from other drivers on various characteristics. A study of 1,135 young Australian drivers found that young people aged 19–20 who engaged in risky driving were more likely to be male; have a less persistent temperament style; be more aggressive and hyperactive; be less cooperative; engage in antisocial behaviour and have friends that also did so; react explosively or use drugs to cope with stress; and have experienced more problems at school and in their relationships with their parents (Vassallo et al., 2007).

Using LSAC data, the characteristics of 16–17 year olds who engaged in different types of risky driving (speeding, drowsy driving, not wearing a seatbelt or helmet while driving/riding and drink and drug driving) were examined. The findings discussed relate to all 16–17 year olds, regardless of licence type, due to concerns about the precision of separate estimates by licence type.⁵ Such information is nonetheless valuable, given the need for more Australian research on risky driving among teenagers.

While acknowledging that characteristics not available in the LSAC dataset may also be associated with risky driving behaviour (e.g. vehicle type, amount and type of driving exposure), the LSAC data suggest that a range of demographic characteristics, personal attributes and peer and family characteristics are associated with teens' engagement in risky driving behaviour at 16–17 years.

Even after taking into account a range of other factors, alcohol and marijuana use were significantly linked to all types of risky driving behaviour, but particularly drink and drug driving (Table 6.3). Alcohol use was also strongly linked with drowsy driving and speeding among 16–17 year olds, while marijuana use was strongly related to failure to wear a seatbelt (or motorcycle helmet). These findings are consistent with a large body of research which suggests that many young people who take risks when driving also engage in other forms of risky behaviour, and that the use of alcohol and drugs often contributes to their risky driving behaviour (Mallick, Johnston, Goren, & Kennedy, 2007; Vassallo et al., 2008).

Licence type was also related to engagement in risky driving behaviour. Compared to learner and unlicensed drivers, P-plate holders had odds 2.5 to 3.5 times higher of engaging in all forms of risky driving except driving without a seatbelt or helmet. As noted earlier, rates of non-seatbelt use did not significantly differ between learners, P-plate holders and unlicensed drivers.

Where drivers lived also mattered. Compared to teens living in major cities, those living in outer regional and remote areas had odds 2.6 times higher of driving without a seatbelt (or helmet, if riding), while those in inner regional areas had higher odds of speeding. These findings are consistent with prior research that suggests that the non-use of restraints is a greater issue among rural than metropolitan drivers (Department of Transport, Planning and Infrastructure, 2014; Steinhardt, Sheehan, Siskind, & Edmonston, 2012).

Focusing on specific types of risky driving, lifestyle factors seemed particularly pertinent for drowsy driving, with young people who were employed and/or attending school having a higher likelihood of driving when very tired. As discussed earlier, it is likely that the pressures of juggling school, work and extracurricular demands and, for some, the need to drive at night to get to and from work, contributed to these findings. Unfortunately, information was not collected about the times at which teens drove, so we are not able to test these hypotheses with the LSAC data.

In contrast, parent legal problems were uniquely associated with not wearing a seatbelt (or motorcycle helmet). Teenagers whose parents had problems with the police or appeared in court during the past year had odds 2.5 times higher of driving without a seatbelt (or helmet, if riding a motorcycle).

Teens with high levels of conduct problems (e.g. stealing, lying) had a higher likelihood of engaging in risky driving behaviours that were likely to be intentional, namely, failing to wear a seatbelt or helmet, and/or drink and drug driving. These findings are consistent with other studies that have found that young people who engage in disruptive or antisocial behaviours are more likely to engage in risky driving behaviour as well (Jessor, Turbin, & Costa, 1997; Vassallo et al., 2008).

After controlling for other factors, gender was significantly associated with speeding, but not with other forms of risky driving. Males had somewhat higher odds than females of exceeding the speed limit (OR = 1.3). This finding is interesting, given that gender has been strongly linked to risky driving in many studies (CARRS-Q, 2017; Ivers et al., 2009). Another unique predictor of speeding was neuroticism. Young people who scored highly on neuroticism had lower odds of speeding (about 26% lower). These findings differ from some other studies, which have shown neuroticism to be a risk factor for risky driving (Dahlen & White, 2006; Wang, Qu, Ge, Sun, & Zhang, 2018).

⁵ Future research in this area could be undertaken by interested data users.

Table 6.3: Factors associated with different types of risky driving (in past 10 trips) among 16–17 year olds

	Odds ratios			
	Speeding	Driving without a seatbelt or helmet	Drowsy driving	Drink or drug driving
Licence status				
Have a provisional or probationary licence (ref. = No licence/learner's permit)	3.3***	0.9	3.0***	2.5**
Demographic characteristics				
Male (ref. = Female)	1.3**	1.0	0.9	1.4
Live in an inner regional area (ref. = Major city)	1.4**	1.1	1.2	1.6
Live in an outer regional or remote area (ref. = Major city)	1.1	2.6***	1.1	1.9
Not attending school (ref. = Attends school)	0.8	1.4	0.6*	1.7
In paid employment (ref. = Not in paid employment)	1.5***	1.0	1.4**	1.1
Personality				
High on extraversion (ref. = Low-moderate)	1.0	1.0	0.8	0.8
High on agreeableness (ref. = Low-moderate)	0.8	0.9	1.1	0.7
High on conscientiousness (ref. = Low-moderate)	0.9	0.9	1.0	0.7
High on neuroticism (ref. = Low-moderate)	0.7**	0.8	1.1	0.8
Behaviour problems				
Conduct problems (ref. = 'Average' range)	1.0	2.2***	1.3	2.3**
Hyperactivity (ref. = 'Average' range)	1.1	1.3	1.3	1.4
Alcohol and other substance use				
Have consumed alcohol in the past 12 months (ref. = No)	2.3***	1.6*	2.8***	4.1**
Have used marijuana in the past 12 months (ref. = No)	1.5**	2.4***	1.4*	4.0***
Peer and parent characteristics				
Have some friends who engage in risky behaviour (ref. = none/one or two friends)	1.0	1.2	1.0	4.0***
Parent had problems with the police or a court appearance in past 12 months (ref. = No)	1.2	2.5*	1.4	1.4

Notes: Odds ratios estimated using logistic regression. *** $p < .001$, ** $p < .01$, * $p < .05$. Sample restricted to respondents who had answered all eight risky driving questions ($n = 2,699$). ref. = reference category. Personality traits were assessed using the 10 item Big Five Inventory (BFI-10; Rammstedt & John, 2007). Personality traits included in these analyses included extraversion ('I see myself as someone who is outgoing, sociable'); agreeableness ('I see myself as someone who is generally trusting'); conscientiousness ('I see myself as someone who does things carefully and completely'), and neuroticism ('I see myself as someone who gets nervous easily'). Openness was not included in these analyses as it was not found to be significantly related to any forms of risky driving. Behaviour problems were assessed using the conduct problems and hyperactivity subscales of the Strength and Difficulties Questionnaire, Self-Report Version (SDQ; Goodman, 2001). Participants were classified as having conduct problems or being hyperactive if they had elevated scores on these measures as per scale cut-offs (4+ for conduct problems, 6+ for hyperactivity) compared to participants whose scores were within the 'average' range (i.e. below these cut-offs).

Source: LSAC Wave 7, K cohort, weighted

6.3 Driving under the influence

Driving under the influence of illicit drugs is prohibited within Australia, and limits are in place regarding the amount of alcohol drivers may have in their bodies. These limits are particularly strict for learner and P-plate drivers who are required, by law, to have a zero blood alcohol concentration (BAC). Nevertheless, young drivers are over-represented among those seriously injured or killed in crashes where alcohol is a contributing factor (Centre for Road Safety, 2017).

Approximately 4% of 16–17 year olds in the LSAC K cohort reported driving under the influence of alcohol or drugs (hereafter referred to as DUI) within the past 12 months. This finding is noteworthy given that the majority of respondents were learner drivers, who are required to drive under supervision (if driving a car), or unlicensed.



Box 6.3: Driving under the influence

When LSAC study teenagers in the K cohort were aged 16–17 they were asked: ‘During the last 12 months ...

- Did you drive a car or other vehicle while under the influence of alcohol or drugs (Yes/No)?
- Have you been a passenger in a car or other vehicle when the driver was under the influence of alcohol or drugs (Yes/No)?

If they answered ‘yes’ to having been a passenger of a driver who was under the influence, they were asked: ‘Was the driver:

- A friend about the same age
- A brother/sister/relative about the same age
- An older friend
- An older brother/sister/relative
- A parent
- Another adult
- Other.’

More than one of the options above could be selected.

Respondents were advised that under the influence meant that their behaviour, or that of the person driving, may have been affected by their use of alcohol or drugs.

This item was designed for LSAC.

A significantly higher percentage of males (6%) than females (2%) reported DUI (Table 6.4). These findings are consistent with previous research that suggests that risky driving behaviour, including DUI, is generally more common among males (Evans-Whipp et al., 2013; Ivers et al., 2009; Romano, Kelley-Baker, & Lacey, 2012).

Teens who reported DUI were significantly older on average (17.1 vs 16.9 years), and there was a higher percentage of P-plate holders than learner drivers reporting DUI. School attendance was also significantly related to DUI behaviour. About one in seven (14%) teens who were not attending school reported this behaviour compared to only 3% of those who still attended school. These findings align with other studies that show that young people who leave school at an early age are at higher risk of a range of problematic outcomes (Fernández-Suárez, Herrero, Pérez, Juarros-Basterretxea, & Rodríguez-Díaz, 2016; Hancock & Zubrick, 2015).

Table 6.4: Characteristics of 16–17 year olds who had driven while under the influence in the past 12 months

Characteristics	Had driven under the influence %
Sex (n = 2,932)	
Female	2.2
Male	5.6*
School attendance (n = 2,865)	
Attending school	3.0
Not attending school	14.0*
Employment (n = 2,883)	
Not in paid employment	3.5
In paid employment	4.3
Licence status (n = 2,927)	
Learner’s permit (ref.)	3.6
No licence/permit	2.2#
Provisional/probationary licence	9.2*
Rural/urban location (n = 2,932)	
Major cities (ref.)	3.4
Inner regional	4.0
Outer regional/remote	6.4#

Notes: ref. = reference category. # Estimate not reliable (cell count <20). * Indicates significant difference (at the 5% level) in rates of DUI among 16–17 year olds who reported a particular characteristic compared to the reference group, based on confidence intervals. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant.

Source: LSAC Wave 7, K cohort, weighted

Being a passenger of a driver under the influence

Adolescents often rely on others to drive them places and research has shown that it is relatively common for teens to report having been a passenger of a driver who was under the influence of alcohol or drugs. For example, Evans-Whipp and colleagues (2013) found that about a third of Victorian teenagers in their study (aged 12–17 years) had travelled in a car with a driver who was under the influence of alcohol within the past year.

The LSAC data show that of 16–17 year olds, one in 10 reported having been a passenger of a driver who was under the influence of alcohol or drugs in the past year (hereafter referred to as a ‘DUI driver’). When considering these findings, it is important to note that adolescents may have differed in their interpretation of what it meant to drive while under the influence. It is possible that some may have considered driving after the consumption of any alcohol (e.g. a glass of wine with dinner) as indicative of this behaviour, while others may have interpreted it to mean that the driver was over the legal BAC limit.

When asked who the DUI driver had been, the most common responses were:

- a friend about the same age (45%)
- an older friend (25%)
- or a parent (25%).

Of those 16–17 year olds who reported having been a passenger of a DUI driver, a higher percentage lived in outer regional or remote areas than in major cities. About one in six teens living in outer regional or remote areas had been a passenger of a DUI driver compared to less than one in 10 teens living in major cities (Table 6.5). Research suggests a link between drink driving and level of remoteness, with rates of crashes involving alcohol being higher in more remote areas (Steinhardt et al., 2012).

School attendance was also linked with being a passenger of a DUI driver. Close to one in five teens (18%) who did not go to school reported such passenger experiences, compared to less than one in 10 who attended school. Research suggests that early school leavers are more likely to have friends who engage in risky behaviours (Wang & Fredricks, 2014), possibly explaining this association.

Young people’s own DUI behaviour was significantly related to their experiences of having been a passenger of a DUI driver. One in four 16–17 year olds who had been a passenger of a DUI driver had

driven under the influence themselves during the past 12 months (compared to only one in 50 who had not been a passenger of a DUI driver). These findings highlight the important influence that family and peers may have on risky driving behaviours such as driving under the influence.

Table 6.5: Characteristics of young people who had been a passenger of a driver under the influence in the past 12 months

Characteristics	Had been a passenger of a DUI %
Sex (n = 2,933)	
Female	9.7
Male	10.7
School attendance (n = 2,867)	
Attending school	9.2
Not attending school	17.8*
Employment (n = 2,886)	
Not in paid employment	9.1
In paid employment	11.3
Licence status (n = 2,928)	
Learner’s permit (ref.)	9.7
No licence/permit	9.4
Provisional/probationary licence	14.2
Location (n = 2,933)	
Major cities (ref.)	9.3
Inner regional	9.8
Outer regional/remote	15.8*

Notes: ref. = reference category. * Indicates significant difference (at the 5% level) in rates of having been a passenger of DUI driver among 16–17 year olds who reported a particular characteristic and those in the reference category, based on confidence intervals. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant.

Source: LSAC Wave 7, K cohort, weighted



Summary

The majority of 16–17 year olds were driving – two in three had their learner’s permit and one in 10 had a provisional or probationary licence (P-plates). Most P-plates (eight in 10) and more than half of learner drivers aged 16–17 had engaged in some form of risky driving during their 10 most recent driving trips. Also, more than one in 10 (12%) teenagers without a licence or permit had engaged in some form of risky driving behaviour on a recent driving trip, although rates of most behaviours were low among this group. The most common types of risky driving reported by 16–17 year olds were speeding at low (up to 10km/h over) or moderate (between 10–25km/h over) levels and drowsy driving. Many 16–17 year olds who had engaged in a particular form of risky driving behaviour, reported only doing so on one of their 10 most recent trips. However, almost one in five teens who had failed to wear a seatbelt when driving (or a helmet if riding a motorcycle) did so every trip, suggesting that this behaviour may be habitual for some.

As expected, risky driving behaviours were more common among P-plates than learner drivers and unlicensed drivers. However, one in six learners had exceeded the speed limit by between 10 and 25 km/h on a recent trip, and one in four had driven when fatigued – two behaviours commonly implicated in serious road crashes. Contrary to expectations, learner drivers, P-plates and unlicensed drivers did not significantly differ in their rates of seatbelt use (or helmet use, if riding a motorcycle). These findings suggest that habits relating to seatbelt or helmet use become established very early in a driver/rider’s driving career, so intervention efforts targeting this behaviour may need to target teens before they reach licensing age.

Teenagers who drank alcohol or used marijuana had higher odds of engaging in all types of risky driving, adding to a large body of research that suggests that young people who take risks on the road are more likely to engage in other risky behaviours, and vice versa (Terry-McElrath, O’Malley, & Johnston, 2014; Vassallo et al., 2008). While there was considerable overlap in the characteristics associated with different forms of risky driving, having parents who had experienced trouble with the police or appeared in court was a unique predictor of not wearing a seatbelt or helmet. Lifestyle factors (e.g. being employed, attending school) seemed particularly pertinent for drowsy driving, while conduct problems (e.g. lying, stealing) were associated with more intentional forms of risky driving (e.g. drink and drug driving).

Focusing more closely on drink and drug driving,

almost 4% of 16–17 years had driven while under the influence of alcohol or drugs during the past year, and about one in 10 had been the passenger of a driver who was under the influence. When teens were asked who had been driving under the influence, the most common responses were a friend of a similar age, an older friend or a parent. While this finding may seem alarming, it is important to note that teens may have differed in their understanding of what it meant to ‘drive under the influence’. Nevertheless, teens who had been a passenger of a driver under the influence of alcohol or drugs were much more likely to drive under the influence of alcohol or drugs themselves, highlighting the important influence that family and peers may have on young people’s driving behaviour.

This chapter provides a snapshot of the driving experiences of Australian teens in the very early stages of their driving careers. As the study children age, and more young people get their licence, it would be interesting to examine how rates of risky driving change, and to look back at factors in childhood and adolescence that may have influenced later engagement in risky driving.

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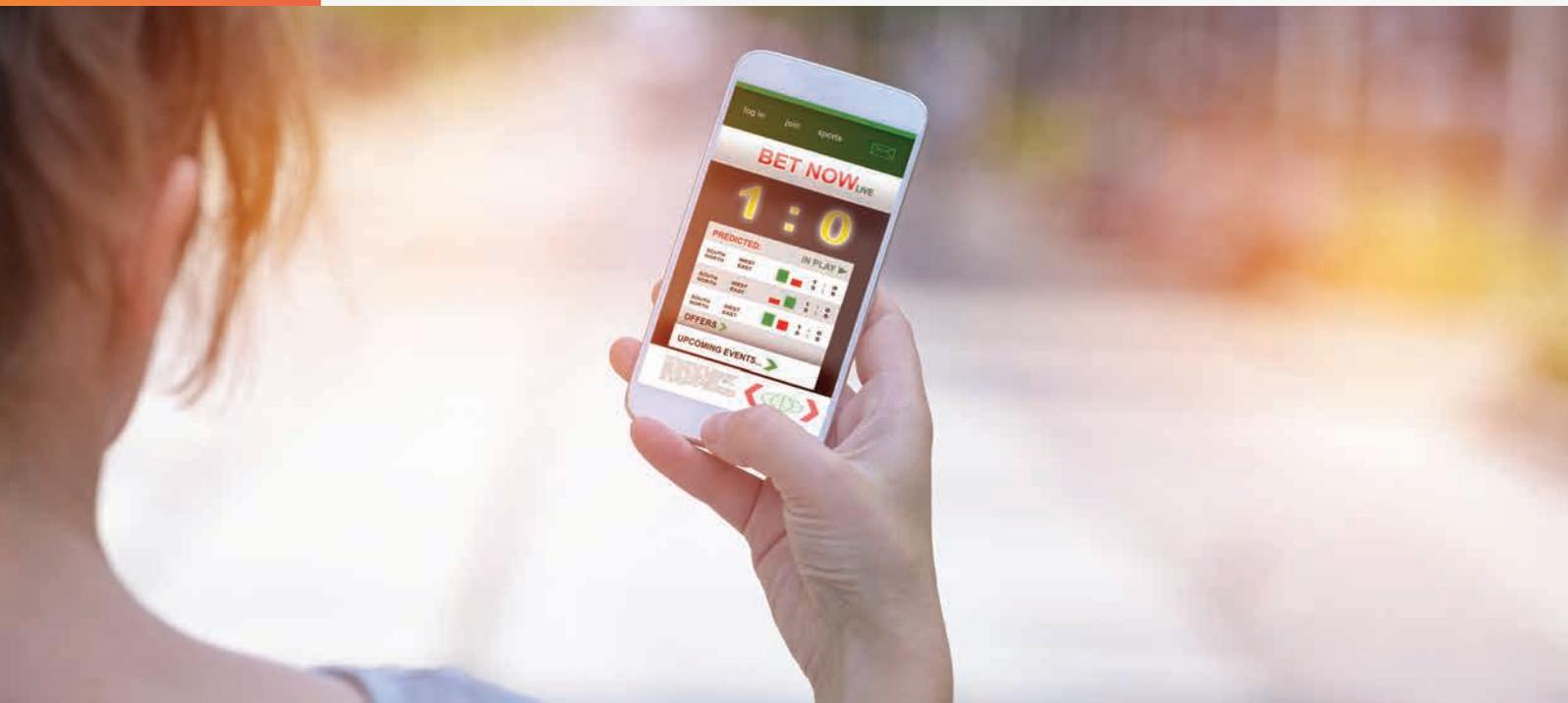
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7

Gambling activity among teenagers and their parents

Diana Warren and Maggie Yu



Key findings

- Despite being illegal, one in six 16–17 year olds reported having gambled in the past year.
- More boys than girls reported having gambled on private betting, sports betting and poker.
- Although 65% of parents reported having gambled at least once in the past year, the majority (around 90%) were non-problem gamblers.
- Boys who had either been the victim or perpetrator of bullying at school were more likely to report having gambled.
- At age 16–17, around one in four boys (24%) and one in seven girls (15%) reported having played gambling-like games in the past 12 months.
- Teenagers who engaged in risky behaviours such as smoking and drinking, or had friends who smoked or drank alcohol, were more likely to report having gambled.

Gambling participation is common in Australia. Estimates suggest that two in five Australian adults (6.8 million people) gambled in a typical month in 2015, with total annual gambling expenditure among regular gamblers estimated to be around \$8.6 billion (Armstrong & Carroll, 2017). The most common forms of gambling in Australia include lottery, instant scratch tickets (scratchies), Electronic Gambling Machines (EGMs i.e. ‘pokies’ or ‘poker machines’), race betting and sports betting (Armstrong & Carroll, 2017).

For some people, gambling participation can be associated with harm, including financial, relationship, social, health and emotional/psychological harm (Browne et al., 2017). In 2015, it was estimated that 8% of Australian adults (approximately 1.39 million people) had experienced one or more gambling-related problems (according to an instrument known as the Problem Gambling Severity Index), and that 1% or 193,000 adults could be classified in the high-risk category of ‘problem gambling’ (Armstrong & Carroll, 2017).

Although it is illegal for Australians under the age of 18 to gamble, research indicates that around half of all young people in Australia have participated in some type of gambling by age 15, increasing to around three quarters of young people by age 19 (Delfabbro,

King, Lambos, & Pugliese, 2009; Purdie et al., 2011). Compared to adults, adolescents may be even more vulnerable to the harmful effects of gambling, as their ability to assess risks is still developing (Miller, 2017). Regular involvement in gambling during adolescence can lead to a variety of issues including relationship problems, delinquency and criminal behaviour, depression, poor school outcomes and future unemployment (Derevensky & Gupta, 2004; Messerlian, Derevensky, & Gupta, 2005). Young people are often influenced by the gambling attitudes, beliefs and behaviours of family members, with adolescents in families that participate in gambling more likely to gamble themselves (Delfabbro & Thrupp, 2003).

Given the potential short-term and long-term consequences for adolescents, family members, and society at large, it is important to better understand the level and nature of gambling behaviours and experience of related harm at a family level. This chapter uses LSAC data to describe levels of gambling involvement and gambling-related problems among 16–17 year olds and their parents, as well as the role of selected gambling-related factors (e.g. risky behaviours, gambling-like ‘electronic games’, peers’ characteristics). These insights may help inform a range of policy and practice initiatives to prevent or address gambling-related harm for families and young people.

7.1 Gambling activities among teenagers

Box 7.1: Gambling activities

In Wave 7 of LSAC (2016), 16–17 year olds and their parents were asked whether they had spent money on the following activities in the past 12 months:

- instant scratch tickets (‘Scratchies’)
- bingo
- Lotto or lottery games (e.g. Powerball, Oz lotto)
- Keno
- private betting with friends or family (e.g. cards, mahjong, pool, sports)
- poker
- casino table games (e.g. blackjack (21), roulette)
- poker machines (‘pokies’) or slots
- betting on horse or dog races (but not sweeps)
- betting on sports (e.g. football, cricket, e-Sports, gaming tournaments).

Items on gambling participation were designed in LSAC in collaboration with the Australian Gambling Research Centre (AGRC).

The LSAC data ($n = 2,936$) show that around one in five boys and one in eight girls (aged 16–17 years) reported having spent money on at least one gambling activity in the past 12 months (Figure 7.2).

The most common gambling activity that 16–17 year olds reported engaging in was private betting with friends or family; around one in eight boys and one in 20 girls reported engaging in this in the past 12 months. Private betting included activities with no legal age restrictions, such as cards or mahjong.

Despite the legal age restrictions around race and sports betting in Australia, approximately 5% of 16–17 year olds reported gambling on these activities in the past 12 months:

- Six per cent of boys and 3% of girls had bet on sports.
- One in 25 (4% of boys and 3% of girls) had bet on horse or dog races.

Both sports and race betting can be done online, and teenagers may be able to get around age restrictions when placing bets online.

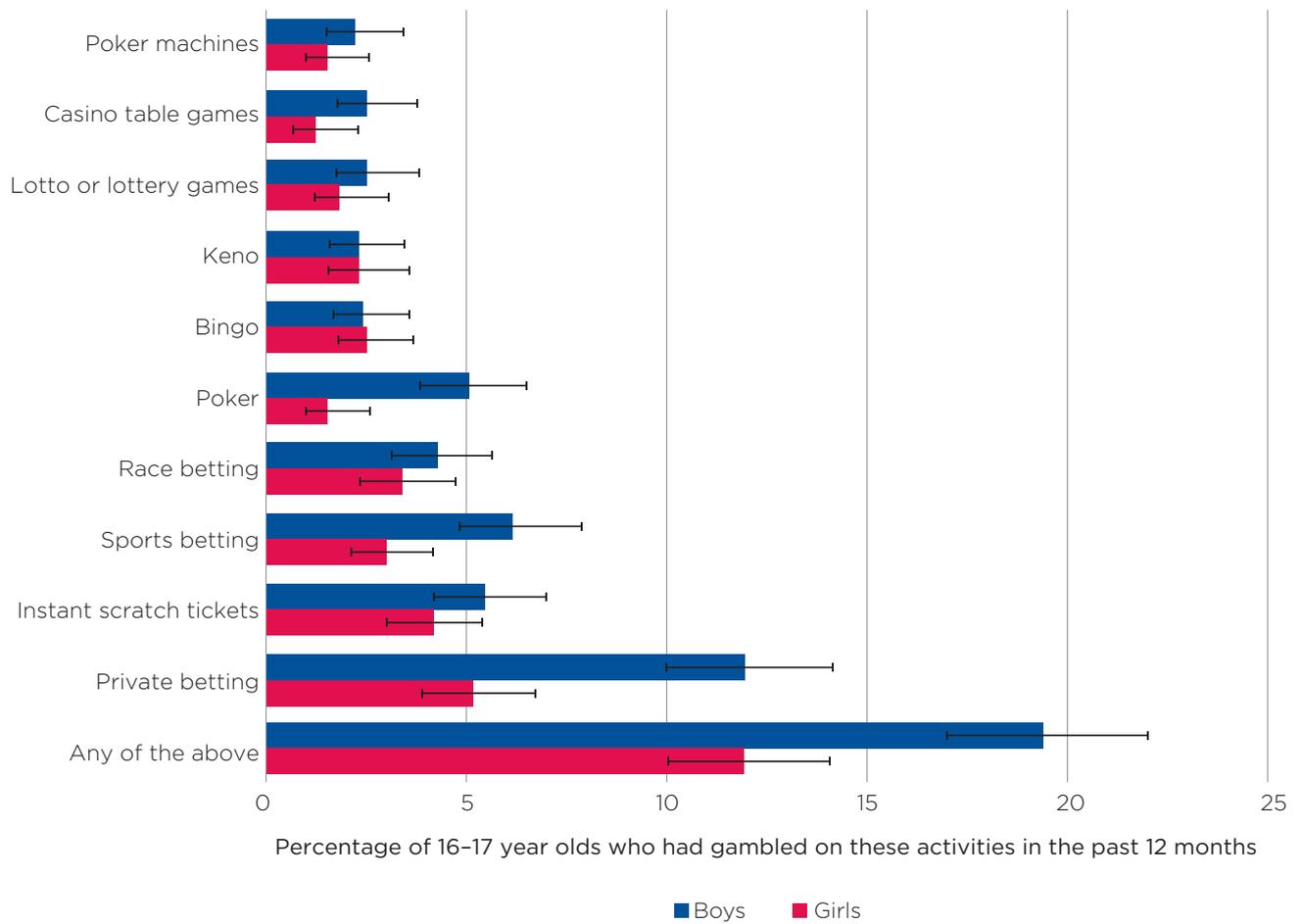
In a recent Australian study of the sports-betting motivations, attitudes and behaviours of young men aged 18–35, Jenkinson, de Lacy-Vawdon and Carroll (2018) found that 23% of bettors reported being under 18 when they first placed a bet on sports; and that sports betting had become normalised among this population of young men, facilitated by the growing accessibility of gambling and new technologies.

Figure 7.1: One in six 16–17 year olds reported having gambled in the past year



Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Figure 7.2: Gambling activities of 16–17 year olds in 2016



Notes: 95% confidence intervals are shown by the 'I' bars in each row. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. *n* = 1,491 boys and 1,445 girls.

Source: LSAC Wave 7 (2016), K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Instant scratchies and lottery games were reportedly less common gambling activities for 16–17 year olds:

- Around one in 20 (5%) had spent money on instant scratchies.
- Three per cent had spent money on lottery (e.g. Oz Lotto or Powerball).

This is likely due to age restrictions on the sale of these items. For example, under the Tattersalls retail code of practice in Victoria and Tasmania, ‘retailers should not knowingly sell Lottery products or pay prizes to minors’ (Victorian Commission for Gambling and Liquor Regulation, 2018).

Very few 16–17 year olds reported having spent money on gambling activities such as casino table games, EGMs or Keno. This is likely to be a result of the

legal age restrictions on entry to casinos and other public gaming venues, such as TABs, hotels and clubs. However, despite acceptable proof of age being required for entry into gaming venues, around 2% of 16–17 year olds had reported having spent money on EGMs in the past 12 months, and similar proportions had spent money on casino table games and Keno. This represents around 9,000 17 year olds across Australia who had played either Keno, poker machines or casino table games in 2016.¹

In order to better understand gambling-related problems among young people and their parents, the Problem Gambling Severity Index (PGSI) was administered to young people who reported having gambled at least once in the previous 12 months (Box 7.2).

¹ At Wave 7 of LSAC, study children were aged 16 or 17. Study children in the K cohort were born between March 1999 and May 2000, and the majority (54%) were aged 16 at the time of their Wave 7 interview.

Box 7.2: Gambling-related problems

The Problem Gambling Severity Index (PGSI) includes nine questions that capture problematic gambling behaviour and the extent to which a person’s gambling is likely to be problematic or causing harm (Ferris & Wynne, 2001). In Wave 7, LSAC study children in the K cohort, and their resident parents, were asked to rate how often their gambling activities had caused them the following problems:

- Have you bet more than you could really afford to lose?
- Have you needed to gamble with larger amounts of money to get the same feeling of excitement?
- When you gambled, did you go back another day to try to win back the money you lost?
- Have you borrowed money or sold anything to get money to gamble?
- Have you felt that you might have a problem with gambling?
- Has gambling caused you any health problems, including stress or anxiety?
- Have people criticised your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?
- Has your gambling caused any financial problems for you or your household?
- Have you felt guilty about the way you gamble or what happens when you gamble?

Responses were on a four-point scale where 0 meant ‘never’, 1 ‘sometimes’, 2 ‘most of the time’ and 3 ‘almost always’. These were summed to create the PGSI score, which ranged from 0 to 27, with higher scores indicating a greater risk that gambling is a problem. The scores were then divided into four categories:

- **Score of 0:** Non-problem gamblers
- **Score of 1-2:** Low level of problems with few or no negative consequences.
- **Score of 3-7:** Moderate level of problems leading to some negative consequences.
- **Score of 8 or more:** Problem gambling with negative consequences and a possible loss of control

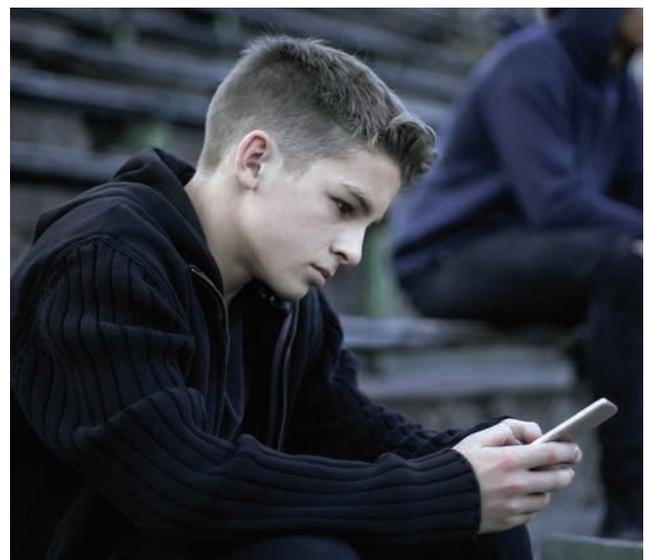
According to the PGSI score, of the 16% of 16–17 year olds ($n = 462$) who reported having gambled at least once in the previous 12 months, 17% of boys and 4% of girls would be classified as being at risk of, or already experiencing, gambling-related problems (i.e. a score of 1+ on the PGSI). Around 10% of boys who reported gambling would be classified as already experiencing moderate or high-level gambling problems (PGSI scores of 3 or higher, see Table 7.1). Numbers for girls are too small to be reliable; that is, seven girls scored 1+ on the PGSI.

Table 7.1: Young people who gamble who are at risk of gambling-related problems, by gender

	Girls % ($n = 164$)	Boys % ($n = 296$)	All % ($n = 460$)
Non-problem gambler	96.1	83.1	87.9
Low-risk gambler	#2.4	7.6	56.7
Moderate risk gambler	#1.6	4.8	3.6
Problem gambler	0.0	4.5	2.8
Total (%)	100.0	100.0	100.0

Notes: Sample restricted to young people who reported gambling in the past 12 months. #Estimate not reliable (cell count < 10).

Source: LSAC Wave 7 (2016), K cohort, weighted

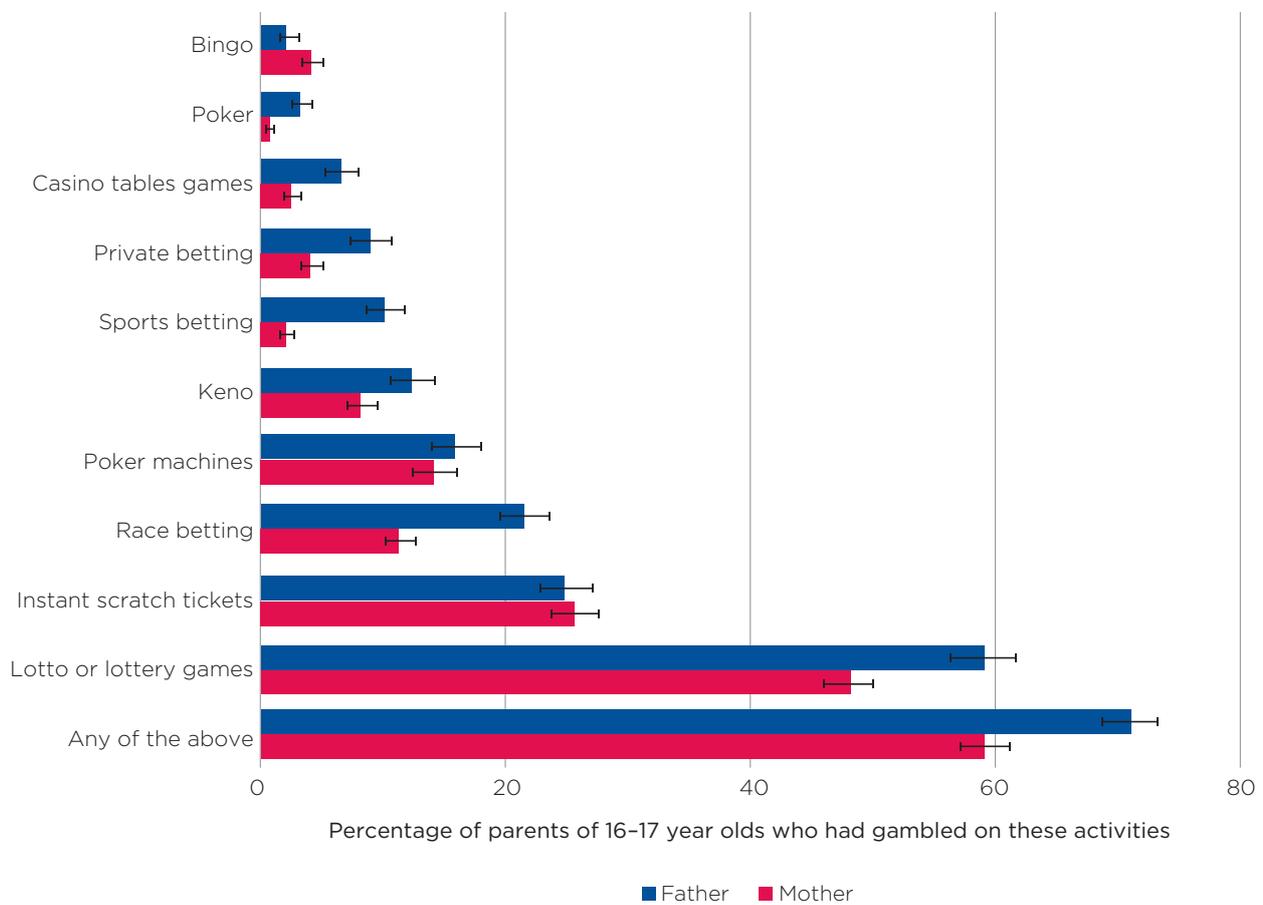


7.2 Gambling activities among parents

The LSAC data show that among parents of 16–17 year olds in 2016, six out of 10 mothers and seven out of 10 fathers reported having spent money on some type of gambling activity in the previous 12 months (Figure 7.3).² For most parents, this gambling activity was more likely to be the purchase of a lottery ticket or instant scratch ticket, rather than a gambling activity such as EGMs or casino table games, which may be associated with greater levels of harm (e.g. Armstrong & Carroll, 2017).

The gender differences in the patterns of participation in the gambling activities of parents were similar to those of the 16–17 year olds. Males were more likely than females to spend money across the entire range of gambling activities, except bingo and instant scratch tickets. This pattern of participation for different gambling activities has been found in previous studies, with males more likely than females to engage in gambling activities such as card games (Hing, Russell, Tolchard, & Nower, 2016; Holdsworth, Hing, & Breen, 2012).

Figure 7.3: Gambling activities of parents of 16–17 year olds



Notes: Sample restricted to resident parents, $n = 2,877$ mothers and 1,857 fathers. 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant.

Source: LSAC Wave 7 (2016), K cohort, weighted

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2 In Wave 7 of LSAC, parents who lived in the study child's main household were asked about whether they had engaged in any gambling activities in the past 12 months. While the majority of mothers (96%) responded to the questions about gambling, 29% of resident fathers either did not answer the questions about their gambling participation, or did not complete the questionnaire at all. Therefore, when interpreting the figures for fathers' gambling, it is important to keep in mind that the estimates of their gambling activities may not be representative of the national population.

For the purpose of this chapter, 'parents' include biological, step, foster and adoptive parents. Of the 3,034 study children in the K cohort in Wave 7, 2.8% had no resident mother in their primary household, 93.7% had a resident mother who responded to the gambling questions and 3.5% had a resident mother who either did not answer the question about their gambling participation or did not complete the questionnaire at all; 21.2% had no resident father in their primary household, 56.2% had a resident father who responded to the gambling questions and 22.7% had a resident father who either did not answer the question about their gambling participation or did not complete the questionnaire at all. Parents who did not live in the study child's primary household were not asked about their gambling activities.

Among mothers of 16–17 year olds:	Among fathers of 16–17 year olds:
<ul style="list-style-type: none"> The forms of gambling that were most common were lottery games and instant scratch tickets: <ul style="list-style-type: none"> Almost half (48%) had spent money on lotto in the past year. Around a quarter had spent money on scratchies. 	<ul style="list-style-type: none"> The forms of gambling that were most common were lottery games and instant scratch tickets: <ul style="list-style-type: none"> Three out of five (59%) had spent money on lotto in the past year. One quarter (25%) had spent money on scratchies.
<ul style="list-style-type: none"> Poker machines were the third most common gambling activity – around one in seven (14%) reported having spent money on these in the past year. 	<ul style="list-style-type: none"> Betting on horse or dog races was the third most common gambling activity – around one in five fathers (22%) reported having spent money on these in the past year.
<ul style="list-style-type: none"> Just over one in 10 (11%) reported having spent money on horse or dog races the past 12 months. 	<ul style="list-style-type: none"> Around one in six (16%) reported having spent money on poker machines in the past 12 months.
<ul style="list-style-type: none"> Around one in 12 (8%) reported having spent money on Keno in the past year. 	<ul style="list-style-type: none"> One in eight (12%) reported having spent money on Keno in the past year.
<ul style="list-style-type: none"> Gambling activities such as sports betting, casino table games, poker, bingo and private betting were much less commonly reported – less than 5% spent money on each of these activities in the past 12 months. 	<ul style="list-style-type: none"> Sports betting, private betting and casino table games were more common among fathers than mothers: <ul style="list-style-type: none"> One in 10 fathers (10%) reported having spent money on sports in the previous year. Almost one in 10 (9%) reported having spent money on private betting. Around one in 14 (7%) reported having spent money on casino table games.

Parents who reported having spent money on one or more gambling activities in the past 12 months were also administered the Problem Gambling Severity Index (PGSI). Among resident mothers who gambled, around 8% may were classified as being at risk of, or already experiencing, gambling-related problems, compared to 12% of resident fathers who reported having gambled in the past 12 months (Table 7.2).³ Using the 2015 Household Income and Labour Dynamics in Australia (HILDA) survey data, Armstrong and Carroll (2017) estimated that around 17% of Australian adults who reported having gambled regularly in the past 12 months (in a typical month) had experienced one or more gambling-related problems (PGSI scores of 1 or more).

Table 7.2: Parents who gamble who are at risk of gambling-related problems

	Resident mothers % (n = 1,677)	Resident fathers % (n = 1,099)
Non-problem gambler	92.1	88.3
Low-risk gambler	5.5	5.8
Moderate-risk gambler	2.0	4.1
Problem gambler	#0.1	1.8
Total	100.0	100.0

Notes: Sample restricted to resident parents who reported gambling in the last 12 months. #Estimate not reliable (cell count < 10).

Source: LSAC Wave 7 (2016), K cohort, weighted

7.3 Behaviours associated with teenagers' gambling

Research suggests that a range of factors may influence gambling attitudes and behaviours among adolescents, including individual differences, the family environment and friends' behaviours. For example, adolescents' mental health problems, poor academic performance, and personal and peers' drinking and drug use have been found to be associated with gambling involvement (Dickson, Derevensky, & Gupta, 2008; Dowling & Brown, 2010).

Family environment

Family characteristics such as socio-economic position, parents' employment status, whether the study child speaks a language other than English at home, family structure (whether they lived with two biological parents, lived in a single-parent household or had a step-parent), and whether they lived in a major city or a regional or remote area were also considered in this research. The LSAC data suggest that these family characteristics were not significantly associated with whether or not 16–17 year olds reported having gambled in the previous 12 months.⁴

³ It is important to keep in mind that for fathers, this figure may be an underestimate due to the relatively high percentage of resident fathers who did not provide information about their gambling activities.

⁴ These results differ from previous research (McComb & Sabiston, 2010).



Some differences were observed in young people’s gambling behaviour according to their parents’ gambling behaviour. Among 16–17 year olds in households where no resident parent reported having gambled in the previous 12 months, 11% reported having spent money on some type of gambling activity during that time, compared to 17% of 16–17 year olds in households where one or both resident parents had gambled.⁵ These differences were not statistically significant. However, it should be noted that the lack of statistical significance for these characteristics may be partly due to the small numbers of LSAC study children who reported having engaged in gambling activities, particularly for girls.

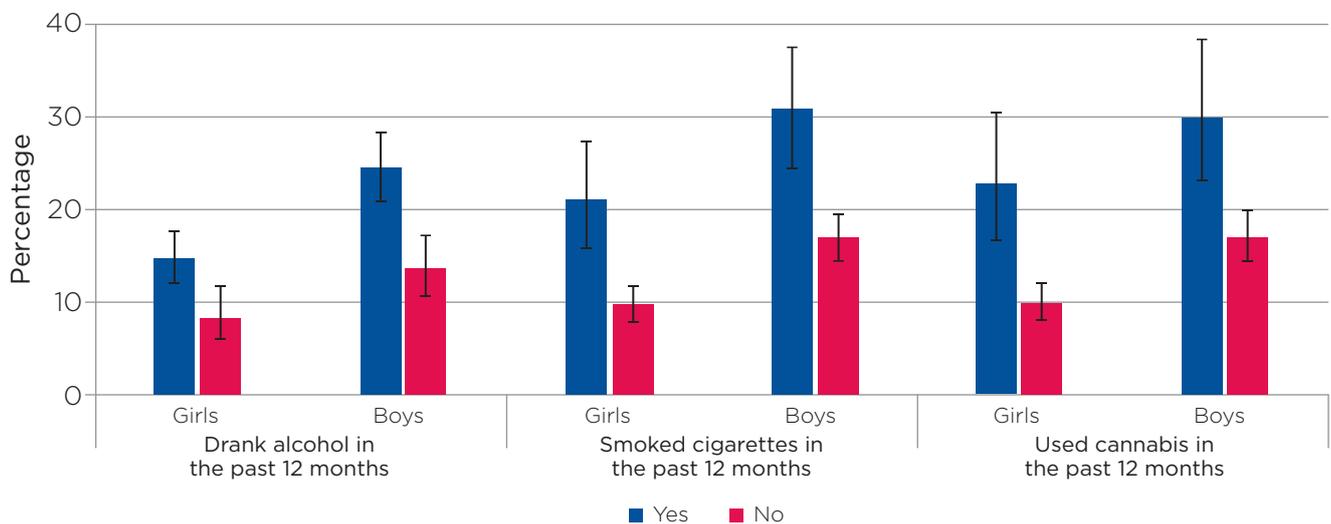
Smoking, drinking and gambling

Previous studies have reported a link between adolescent gambling and other types of risky behaviour, such as consuming drugs and drinking alcohol (e.g. Dowling et al., 2017). For some young people, engagement in these behaviours may reflect a broader underlying tendency towards risk-taking (Kryszajtys et al., 2018; Shead, Derevensky, & Gupta, 2010).

The LSAC data show that 16–17 year olds who reported drinking alcohol, smoking cigarettes or using cannabis in the past 12 months were more likely to also report having spent money on one or more forms of gambling in the past 12 months (Figure 7.4):

- Almost one in four boys, and around one in seven girls, who reported drinking alcohol in the past 12 months had also gambled during that time, compared to around one in eight boys and one in 12 girls who had not drunk alcohol.
- Three in 10 boys, and one in five girls, who reported smoking or using cannabis in the past 12 months had also gambled during that time, compared to around one in six boys and one in 10 girls who reported not smoking or using cannabis.

Figure 7.4: Percentage of 16–17 year olds who had gambled, by other types of risky behaviour



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. *n* = 1,487 boys and 1,444 girls.

Source: LSAC Wave 7 (2016), K cohort, weighted

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⁵ Includes two-parent households in which at least one parent had gambled; and single-parent households in which the parent had gambled.

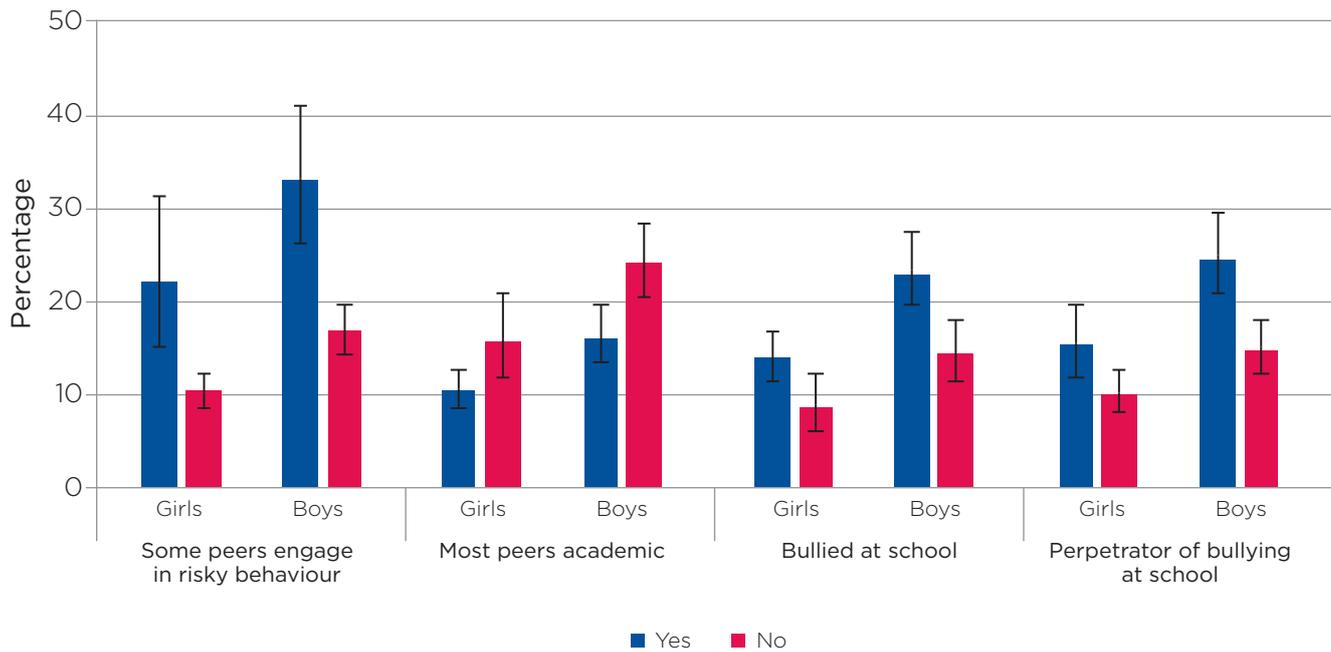
Role of peers

As teenagers get older, their friends may have a greater influence on their decisions about risky behaviour such as gambling. Research has shown that for young adults, friends can have a greater influence than family on their gambling behaviour (Fortune et al., 2013) as well as on their antisocial and delinquent behaviour (Farrington, Kazemian, & Piquero, 2018). The LSAC data suggest that at age 16–17, boys and girls were more likely to report having gambled if their friends had engaged in risky behaviours such as trying drugs, smoking cigarettes, breaking the law or getting into fights (Figure 7.5). On the other hand, they were less likely to report having gambled if their friends had a positive attitude towards academic achievement and were interested in doing well at school. Boys who had either been the victim or perpetrator of bullying at school were more likely to have gambled in the past year;⁶ however, the

association between gambling and experiences of bullying was not statistically significant for girls.

These results show that in addition to the influence of parents and family, friends can play an important role in teenagers’ decisions about gambling. Research suggests that while parents act as a dominant influence for the acquisition of gambling behaviours in adolescence, friends aid in the maintenance of gambling behaviours through adulthood (Gupta & Derevensky, 1997). A recent Australian study found that low- and moderate-risk gamblers were more likely to associate with friends who also gambled – and also smoked and drank alcohol – than non-gamblers and non-problem gamblers. This suggests that for gambling, there may be a role of either normalisation of behaviour through social influence or social selection, where people associate with others who share their interests (Russell, Langham, Hing, & Rawat, 2018).

Figure 7.5: Percentage of 16-17 year olds who had gambled, by peer behaviour



Notes: Peer group characteristics were measured using items adapted from the ‘What my friends are like’ questionnaire. Some peers engage in risky behaviours – some, almost all, or all of the study child’s peers were engaged in risky behaviours (e.g. kids you know drink alcohol). Most peers academic – most or all of the study child’s peers were academically oriented (e.g. kids you know work hard at school). 95% confidence intervals are shown by the ‘I’ bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. *n* = 1,491 boys and 1,445 girls.

Source: LSAC Wave 7 (2016), K cohort, weighted

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6 At 16–17 years, 80% of adolescents who said they had bullied others in the past 12 months also reported having been bullied during that time.

7.4 Gambling-like electronic games

Simulated gambling has been shown to be a risk factor that increases the likelihood of teenagers gambling with real money, and of developing gambling problems (Griffiths, 2015; Dickins & Thomas, 2016). In recent years the availability, interest in and use of gambling-like electronic games has increased sharply (Gainsbury, Hing, Delfabbro, Dewar, & King, 2015). Gambling-like electronic games, such as Zynga Poker and Big Fish Casino, imitate the characteristics of gambling but do not provide an opportunity to stake, win or lose real-world money. For this reason, these games are not currently classified as gambling. However, these games can lead to commercial gambling due to the blurred boundaries between the two, and exposure to gambling-like games at an early age may serve to normalise gambling as a suitable and acceptable activity (Griffiths & Parke, 2010).

Box 7.3: Gambling-like electronic games

In Wave 7 of LSAC, the K cohort children and their parents were asked:

‘Thinking about the last 12 months, how often have you played free games like these: for example, Zynga Poker, Slottomania, Big Fish Casino. Such games could be played on social network sites (e.g. Facebook), smartphones or tablet devices or gaming consoles (e.g. PlayStation, Xbox).’

Items on frequency of playing gambling-like games were designed in LSAC, in collaboration with the Australian Gambling Research Centre (AGRC).

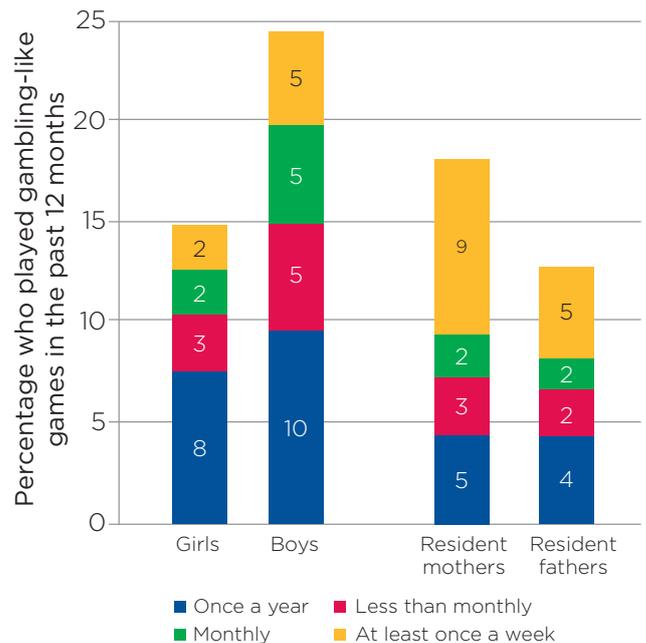
In addition to gambling-like games, where no real money is won or lost, micro-transactions for chance-based items in many popular video games are becoming an increasing concern. Many popular online multiplayer games, such as Overwatch and Counter-Strike, offer a variety of virtual items (e.g. more powerful weapons) in addition to standard game features. Players can obtain these items either through game play (i.e. winning or scoring), trading them with other players, or via in-game purchases of ‘loot boxes’ for real or in-game currency (Cleghorn & Griffiths, 2015). The widespread availability of loot boxes in modern video games has led to questions over whether they should be regulated as a form of gambling (Griffith, 2018), especially given findings from recent research that found that the more money an adult video game player spent buying loot boxes, the more likely they were

to be classified as experiencing gambling problems (Zendle, McCall, Barnett, & Cairns, 2018).

The LSAC data shows that, at age 16–17, around one in four boys (24%) and one in seven girls (15%) reported having played gambling-like games in the past 12 months. Boys played these types of games more often than girls did – with around one in 10 boys, and less than one in 20 girls, playing either monthly or weekly (Figure 7.6). Still, relatively few teenagers were frequent players – only 5% of boys and 2% of girls played weekly or more often.

While more fathers than mothers of 16–17 year olds reported spending money on gambling activities, a higher percentage of mothers, compared to fathers, reported playing gambling-like games (Figure 7.6).

Figure 7.6: How often 16–17 year olds, and their parents, played gambling-like electronic games, 2016



Note: $n = 1,446$ boys and $1,490$ girls, $2,879$ mothers and $1,861$ fathers.

Source: LSAC Wave 7 (2016), K cohort, weighted

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Almost one in 10 mothers reported playing gambling-like games at least weekly, compared to one in 20 resident fathers. One possible explanation for this difference is that mothers may be more risk averse, compared to fathers. That is, mothers may enjoy playing these games, but prefer not to risk money on them; while for fathers, the aim of these activities may be more about financial gain, winning, or enjoying the risk itself, rather than enjoyment of

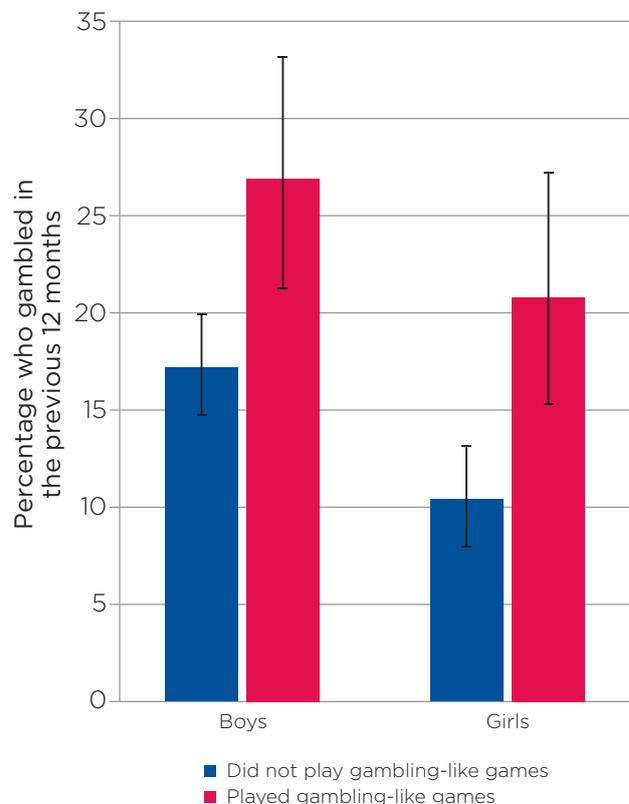
the game (Eckel & Grossman, 2008; Nelson, 2015). It is also important to keep in mind that we might be underestimating the percentage of fathers who have played gambling-like games, as non-resident parents were not asked these questions, and a relatively high proportion of resident fathers either did not answer the LSAC questionnaire or did not answer the questions about gambling and gambling-like games.⁷

The percentage of girls who reported having played gambling-like games was significantly higher if they had a parent who also played these types of games. However, this was not the case for boys:

- Twenty-one per cent of girls whose mothers played gambling-like games also played these games, compared to 13% of girls whose mother did not play.
- Twenty-two per cent of girls who had a resident father who played gambling-like games also played, compared to 13% of girls whose father did not play these games.
- For boys, the percentage who played gambling-like games ranged from 20–24% and there were no significant differences depending on whether or not their mother or father played these games.

The percentage of 16–17 year olds who reported having spent money on at least one gambling activity in the past 12 months was significantly higher among those who had also played gambling-like games during that time; three out of 10 16–17-year-old boys and one in five 16–17-year-old girls who had played gambling-like games in the past 12 months had also spent money on gambling during that time (Figure 7.7). These results support the theory that, for teenagers, playing gambling-like games may increase the likelihood of transitioning to commercial gambling in the future.

Figure 7.7: Percentage of 16–17 year olds who had gambled in the past 12 months, by playing of gambling-like games



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. *n* = 1,490 boys and 1,446 girls.

Source: LSAC Wave 7, K cohort, weighted

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⁷ This issue remains even after survey weights are applied as the weights are household specific rather than parent specific.

Summary

This chapter has provided a snapshot of gambling participation and related risk and experience of harm among Australian 16–17 year olds and their parents, and the association between parents' reported gambling activities and those of their children.

In 2016, 16% of 16–17 year olds – one in five boys and one in eight girls – reported having spent money on at least one gambling activity in the past 12 months. Just under 5% (one in 20), or around 9,000, 17 year old children in Australia reported having spent money on gambling activities that would be illegal due to age restrictions such as poker machines, poker, and casino table games.

There were some differences in gambling activities of young people by demographics. Boys were more likely to report having gambled than girls, and were more likely than girls to have gambled on private betting, sports betting and poker. Those who engaged in other risky behaviour such as smoking and drinking alcohol, or had friends who smoked or drank, were also more likely to gamble. Boys, but not girls, who had been either the victim or perpetrator of bullying at school were also more likely to report having gambled. On the other hand, teenagers who were more academically oriented and interested in doing well at school were less likely to have gambled. Universal school-based programs that target a number of risky behaviours might be effective in helping young people to develop an understanding of the potential risks and harms associated with gambling. However, more research is needed to test the effectiveness of school-based gambling education programs as evaluations of similar education programs about alcohol and tobacco have shown that, while they can raise awareness, they could have no, or even opposing, behavioural impacts (Productivity Commission, 2010).

Young people who reported playing gambling-like games in the previous 12 months were more likely to have also spent money on gambling. As with gambling activities, boys were more likely to engage in gambling-like games than girls over the last 12 months – one in four boys compared to one in seven girls had played these games. Some psychologists suggest that while gambling-like games and randomised 'loot-boxes' within online games are not currently classified as gambling, exposure to these activities at a young age may normalise gambling behaviour in the future (Griffiths, 2018). In Australia, while these activities are still legal, in a submission to the Senate Inquiry into gaming micro-transactions for chance-based

items, Deblaquiere, Carroll, and Jenkinson (2018) recommended the prohibition of micro-transactions for chance-based items in online games available in Australia in order to alleviate the public health risks and associated costs with further normalising gambling in the Australian community through the provision of these items.

Parents also played an important role in young people's engagement in gambling activities and gambling-like games. For girls, but not for boys, having a parent who played gambling-like games was associated with playing these games. These results suggest that there may be benefits in engaging parents in preventive initiatives – focusing on informing parents about the role that their gambling behaviour might play in influencing young people's decisions around gambling and gambling-like games; and raising awareness of the potential harms of gambling for parents and their children.

Future policy and practice initiatives aimed at reducing the health, social and economic harms to young people and their families might consider limiting the availability and marketing of gambling activities; ensuring that tailored and targeted health promotion messages are built into online games that include gambling-like features; and stricter enforcement of acceptable proof of age for entry into gaming venues.

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8

Shop or save: How teens manage their money

Diana Warren, Mabel Andalón and Constantine Gasser



Key findings

- Girls were more likely than boys to find it easy to spend money, though gender made no difference when it came to saving money or avoiding debt.
- How teens managed money at age 16-17 was related to whether they received extra pocket money at ages 12-13 or 14-15 and also if they stopped receiving pocket money or had it taken away.
- Teens who were saving or investing or had savings accounts at age 12-13 were more likely to be savers at age 16-17.
- Teens aged 16-17 were more likely to be spenders if they had paid for their own mobile or internet data when they were 14-15 years old, than if they had not.

Managing money day to day – keeping track of expenses and avoiding getting into debt – is an important life skill. Money management, along with financial information seeking and the ability to plan and save for important purchases and unexpected expenses, makes people financially capable (Australian Securities & Investments Commission (ASIC), 2018).¹ For many people, economic socialisation, the process of acquiring and building financial skills, knowledge and attitudes, including emotional attitudes, starts in childhood and continues to develop in adolescence (Rinaldi & Bonanomi, 2011). Money habits are difficult to change later in life (Hornýák, 2015) and can therefore influence financial behaviour in adulthood (Nagy & Tóth, 2012).

In many ways the economic world of adolescents is different from that of adults, most of whom are financially independent:

- Most adolescents are not responsible for their living costs. However, some adolescents begin to work and to live more independently, taking on greater responsibility for regular bills (e.g. food) and larger financial commitments (e.g. buying a car).

¹ The terms 'financial literacy' and 'financial capability' tend to be used interchangeably but financial capability is increasingly preferred internationally. In Australia, financial capability is used by the Australian Securities & Investments Commission (ASIC), which is Australia's corporate, markets, financial services and consumer credit regulator.

- Some parents offer their children opportunities to develop financial capability. For example, they might provide pocket money and expect their adolescent child to cover certain necessities, e.g. mobile phone bills (Otto, 2009).
- Adolescents' reasons to save might be different from those of adults. For example, saving money 'for a rainy day' might not be as important for adolescents living with parents who take responsibility for unexpected expenses (Luksander, Németh, & Zsótér, 2017), but 'precautionary savings' are important for many adults.
- Adolescents' financial freedom is somewhat limited – they are likely to be given some guidelines or rules on what they may spend their money on – and they are not 'contractually capable'. That is, they cannot legally buy certain things, such as cigarettes or alcohol, and cannot enter into a mobile phone contract without a parent's permission.
- Young people are growing up in a society where money is becoming invisible, making it harder for them to fully understand what things cost.

This chapter examines money management styles at age 16–17.² The analysis considers three groups of adolescents based on their approach to money management: 'savers' (adolescents with an inclination to saving), 'spenders' (adolescents with a tendency to spending), and adolescents with a more neutral money management style. The chapter contributes to the understanding of the determinants of money management styles in adolescence.³ In particular, the chapter describes how 16–17 year olds use and manage their money, and the degree of parental financial support provided. It then examines associations between money management styles and the opportunities that children might have had to practise money management throughout childhood. For example, are there differences in the money management styles of young people who received pocket money and had savings accounts when they were growing up?

8.1 How do teens use and manage their money?

At age 16–17, most study teenagers were still in secondary school and almost all were still living in their parents' home.⁴ While some 16–17 year olds have part-time jobs, the majority are likely to rely on their parents for everyday living expenses. At ages 16–17, some teens may save for major purchases such as a car or overseas travel, while others might prefer to spend on present-focused things such as clothes, phones, technology, games, or sports and social activities.

Box 8.1 Money management styles

In Wave 7 of LSAC, study children in the K cohort (aged 16–17) were asked: *'When dealing with your money on a day-to-day basis, how much does this statement sound like you?'*

1. *I like to look ahead and plan for the future financially.*
2. *I am cautious with my money and try to avoid getting into debt as much as possible.*
3. *I am present-focused and financially like to live for today.*
4. *I find it very easy to spend my money.*
5. *I like to save money and I would say that the phrase 'save for a rainy day' applies to me.*
6. *'Spend, spend, spend' is a phrase that applies to me.'*

These questions were adapted from the Financial Services Authority (FSA), 18–24 Ethnographic sessions recruitment questionnaire from 2004.

Study participants could choose from the following options: 1 'Not at all', 2 'A little', 3 'Somewhat', 4 'Quite a lot' or 5 'Very much'.

Responses to these questions were summed (with scores for the statements 3, 4 and 6 reversed) to create a standardised measure of money management behaviours (Cronbach's alpha 0.78). This scale, consisting of summed responses, was then divided into three groups of equal size (tertiles), representing 'spenders', 'savers' and those with a more neutral money management style.

2 The chapter does not examine young people's knowledge and understanding of financial language, as this information was not collected when LSAC children were 16–17 years old.

3 A summary of current understanding of financial skills, attitudes and money management among the Australian general population can be found in Worthington (2016).

4 Only 32 16–17 year olds in Wave 7 of LSAC were not living with their parents.

The LSAC data show that, while some 16–17 year olds were more cautious with their money than others, most had a reasonably cautious style towards money management. For example, around one in seven 16–17 year olds responded either ‘quite a lot’ or ‘very much’ to the statement, “*Spend, spend, spend*” is a phrase that applies to me’, while almost half (44%) responded ‘not at all’ (Figure 8.1). More boys than girls disagreed with this statement, with two out of five girls and three out of five boys saying that it did not apply to them.

Over 40% said that they found it very easy to spend their money (either quite a lot or very much). A higher percentage of girls than boys said that they found it very easy to spend their money – 18% of boys and 23% of girls responded ‘very much’ to this statement (results not shown).

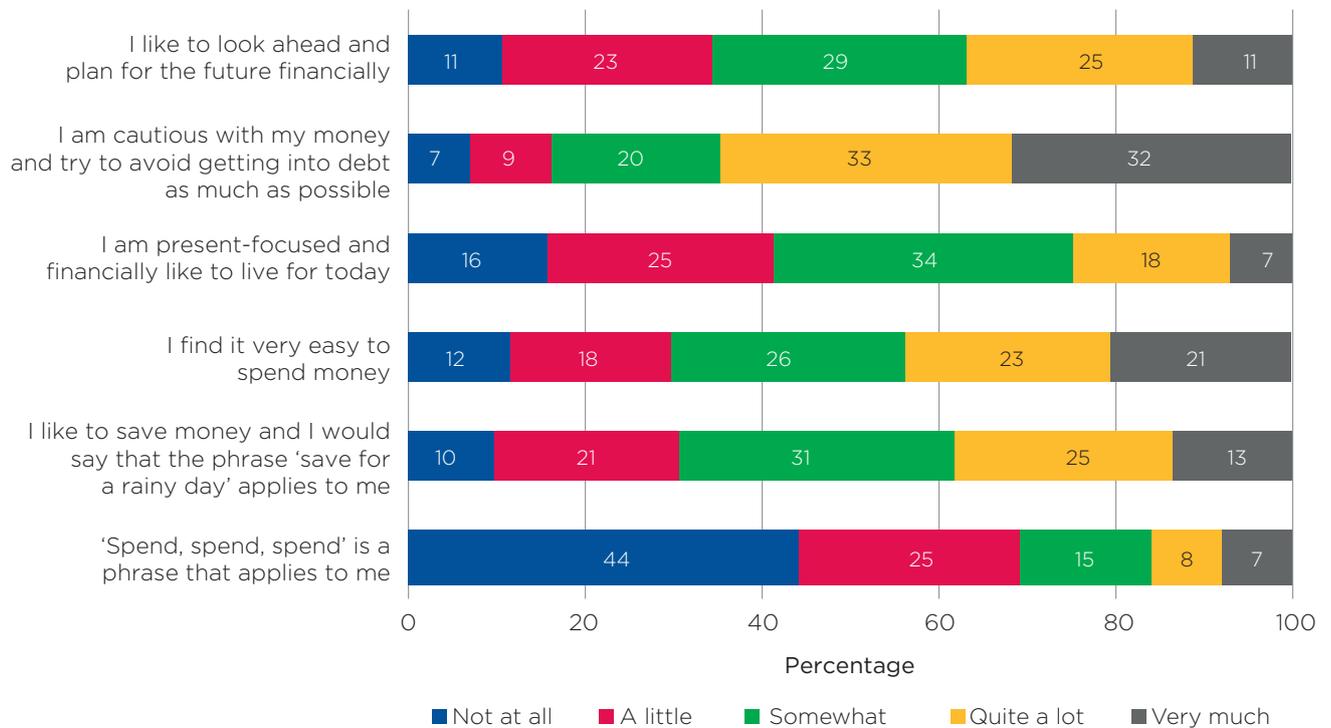
While there were differences in boys’ and girls’ responses to the statements about spending habits, with girls having a slightly higher preference for spending, there were no significant differences in boys’ and girls’ responses to the statements about

planning for the future financially, saving money and avoiding debt.

Responses to the statements, ‘I like to look ahead and plan for the future financially’ and ‘I like to save money and would say that “save for a rainy day” applies to me’ were relatively evenly spread across the scale, with just over one third of 16–17 year olds responding either ‘quite a lot’ or ‘very much’, around three out of 10 responding ‘somewhat’ and the remaining third saying ‘a little’ or ‘not at all’. Similarly, while one in four 16–17 year olds responded either ‘quite a lot’ or ‘very much’ to the statement, ‘I am present focused and financially like to live for today’, around two in five responded ‘not at all’ or ‘a little’, and around one third responded ‘somewhat’.

At this age, money management style is more about preferences rather than responsibility. While some teenagers have a preference for planning for the future, it is also not uncommon for 16–17 year olds with relatively few financial responsibilities and limited income, either from part-time work or pocket money, to be focused on the near future when it comes to money.

Figure 8.1: Money management behaviour, 16–17 year olds



Note: n = 2,947.

Source: LSAC Wave 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

In the matter of being cautious with money and avoiding getting into debt, almost two thirds of 16–17 year olds responded ‘quite a lot’ or ‘very much’. While this suggests that most 16–17 year olds are cautious when it comes to money, this result is likely to be at least partly because, for 16–17 year olds, opportunities for getting into debt are limited. In Australia, people under the age of 18 cannot legally apply for credit cards in their own name, but parents are able to add their children as supplementary cardholders to their credit card account – and remain legally responsible for all expenses. For young people in this age group, debt may be a result of borrowing money from friends or family members.

Responses to the six statements about money management, described above, were summed to create a scale that was subsequently divided into three groups of equal size (tertiles), representing adolescents (Box 8.1, above):

- who have an inclination to save – ‘savers’ (top 33%)
- those with a preference for spending – ‘spenders’ (bottom 33%)
- those with a more neutral money management style, with no strong preference for being either present-focused or future-focused when it comes to money – ‘neutral’ (middle 33%).

It is important to keep in mind when considering these three groups that these are money management ‘styles’ – being in the ‘spender’ category does not necessarily mean that they do not save any money at all; and while ‘savers’ were more cautious with their money and had a higher preference for saving than the ‘spender’ group, most said that they found it ‘a little’ easy to spend their money. Below, money management styles of 16–17 year olds are examined by financial support from parents and opportunities to practise money management, i.e. receipt of pocket money, spending habits and use of financial services.

8.2 Financial support from parents

Money management styles might be linked to the financial support that parents give to their children. LSAC has collected information about the types of financial support that parents give to the study child, above and beyond household expenses (Box 8.2). Adolescents who receive financial support from their parents may value the role that their parents play in their monetary matters and be inclined to budgeting (Kidwell, Brinberg, & Turrise, 2003). Alternatively, they might not feel responsible for managing their budget and could be inclined to spending more than saving (Kidwell et al., 2003).



Box 8.2: Financial support from parents

In Wave 7 of LSAC, adolescents in the K cohort were asked whether, in the last 12 months, their parents or other family members provided them with any of the following types of financial support:

- Purchasing real estate (including mortgage repayments, outright purchases and purchasing investment properties)
- Paying for accommodation (rent or board payments)
- Other household expenses (e.g. gas and electricity)
- Purchasing a car or similar (including car loans or outright purchases)
- Other motor vehicle costs (car insurance, motor vehicle running costs, registration, petrol)
- Education fees (e.g. university or TAFE fees or other study-related costs)
- Extracurricular activity costs (e.g. sports and sports gear, singing or music lessons, and musical instruments etc.)
- Personal bills or expenses (phone, credit card bills etc.)
- Paying fines
- Medical costs (including individual health insurance, dental expenses etc.)
- A general living allowance (e.g. pocket money)
- Ad hoc money as needed
- Allowing them to live in their or another family member’s investment property rent free or for low rent
- Other expenses.

Adolescents who lived at home at the time of the survey or at any time in the last 12 months were asked to exclude household expenses that were meant for all people in that household (e.g. rent or mortgage payments, electricity/gas, family health insurance etc.)

Information on financial support from parents was obtained from the Youth in Focus, Wave 2 Continuing Youth Respondents Questionnaire (Australian National University, 2018).

Most 16–17 year olds were still at school, and while almost half had part-time jobs, parents were still responsible for the majority of their children's day-to-day expenses. The amount of financial support that parents provided for their teenage children was substantial, ranging from helping with the purchase of a car to education and medical costs, as well as extracurricular activities, personal bills and general living expenses (Table 8.1). Around half of 16–17 year olds received a general living allowance (pocket money). On average, those who received regular pocket money were given around \$40 per week.

Money management style by parental financial support

The types and amounts of financial support that parents provided for their children at 16–17 years varied considerably, and there were relatively few significant associations between parental financial support and adolescents' money management styles. The only type of parental financial support that was associated with money management style in adolescents was support for medical expenses – the percentage of spenders was significantly higher among those who said they did receive parental support for medical costs (38% compared to 30% for those who did not receive this support).

Table 8.1: Parents financial support for their children aged 16–17 years

Parents or family provide support for:	Any Support (%)	One-off support		Irregular support		Regular Support	
		(%)	Average (\$)	(%)	Average (\$ per month)	(%)	Average (\$ per week)
Purchasing a car or similar (including car loans or outright purchases)	15.5	12.9	\$5,006	1.0	-	0.8	\$118
Other motor vehicle costs (car insurance, motor vehicle running costs, registration, petrol)	18.2	7.9	\$885	4.9	\$263	3.3	\$48
Education fees (e.g. university or TAFE fees or other study-related costs)	65.6	15.3	\$2,131	11.0	\$471	36.3	\$179
Extracurricular activity costs	71.5	12.2	\$1,814	25.4	\$248	30.3	\$43
Personal bills or expenses (phone, credit card bills, etc.)	72.1	10.1	\$479	26.3	\$145	29.3	\$28
Paying fines	3.4	1.8	\$104	0.2	\$62	0.4	\$18
Medical costs (including individual health insurance, dental expenses, etc.)	70.1	11.3	\$552	30.3	\$174	18.1	\$38
A general living allowance (e.g. pocket money)	51.6	5.3	\$183	17.3	\$107	22.4	\$43
Ad hoc money as needed	69.0	6.8	\$271	41.7	\$133	13.5	\$25
Purchasing real estate	0.8	0.1	-	0.0	-	0.0	-
Paying for accommodation (rent or board payments)	6.5	1.9	\$1,309	0.7	\$173	2.4	\$134
Other household expenses (e.g. gas and electricity)	8.8	2.0	\$422	2.3	\$95	3.2	\$42
Other expenses	48.9	5.1	\$357	27.0	\$99	10.2	\$29
Total	87.6	45.8	n.a.	63.8	n.a.	55.9	\$180

Notes: $n = 2,907$. Sample excludes 32 study participants who were no longer living with their parents.

Source: LSAC Wave 7, K cohort, weighted

8.3 Opportunities to practise money management at an early age

Parents are thought to play a key role in teaching children about money and money management (Gudmunson & Danes, 2011; Kim, LaTaillade, & Kim, 2011). Parents can provide opportunities for money management by providing pocket money or an allowance, by guiding them on how to spend the money and by opening a savings account for them from a young age (Lewis & Scott, 2000). These practices can be a starting point for conversations about money, a discussion that 84% of students in Australia have with their parents at least once a month (Thomson & De Bortoli, 2017). The opportunities to familiarise children with the concepts of owning money, spending money and saving money start them on the way to developing money management skills that can be carried through to adulthood.

Pocket money

Giving children and adolescents pocket money can improve their knowledge about money (Edwards, 2014), providing them with an opportunity to manage their own money and allowing them to practice delayed gratification – deciding whether to spend their money now or save it for something bigger in the future.

Data from the International Student Assessment (PISA) showed that around 76% 15-year-old Australian students received pocket money in 2012 (32% without having to do any chores at home and about 44% for regularly doing chores at home) (Organisation for Economic Cooperation and Development [OECD], 2014). In 2018, a survey by the Financial Planning Association of Australia (FPA, 2018) found that 73% of 14–18 year olds received pocket money, 46% of them got between \$10 and \$39 each week and one in seven got over \$40 each week.

From when children were aged 10–11 years of age, LSAC has collected information about whether children receive pocket money and how much they receive (Box 8.3). The LSAC data show that fewer adolescents received pocket money at earlier ages. Almost two in five 10–11 year olds (37%) received regular pocket money; and while approximately three out of five 12–13 and 14–15 year olds received some pocket money, less than four in 10 received it on a regular basis (Table 8.2). Among those who received pocket money, average weekly amounts ranged from \$8 for 10–11 year olds in 2010 to \$17 for 14–15 year olds in 2014. The amount of pocket money that young people received was not associated with their parents' income (Edwards, 2014).

Box 8.3: Pocket money

In Waves 4, 5 and 6 of LSAC, when children in the K cohort were aged 10–11, 12–13 and 14–15, parents were asked: 'Does the child receive pocket money on a regular basis?' (In Waves 5 and 6 they were first asked if the child received pocket money.)

The question on receiving pocket money was drawn from measures used in the Child Employment Survey 2006, by the Australian Bureau of Statistics (ABS) and National Institute of Child Health and Human Development (ABS, 2007).

The question on receiving pocket money on a regular basis was adapted from the Panel Study of Income Dynamics (PSID) that was conducted in 1997 (Survey Research Center, Institute for Social Research, 1997).

If the child received regular pocket money, parents were then asked: 'How much money does the child receive?'

This question was adapted from the Panel Study of Income Dynamics (PSID) that was conducted in 1997 (Survey Research Center, Institute for Social Research, 1997).

Parents who said that their child received pocket money (regular or irregular) were asked:

Does the child have to do any of the following to get his/her pocket money?

- Chores or tasks
- Follow household rules
- Homework.

Does the child get extra pocket money for:

- Good behaviour
- Following household rules
- Doing well at school
- Completing homework?

Does the child get any of his/her pocket money stopped or taken away for:

- Poor behaviour
- Not following household rules
- Not doing well at school
- Not completing homework?

These items were designed in LSAC.

Table 8.2: Receipt of pocket money, by age group

	Age 10-11 (2010)	Age 12-13 (2012)	Age 14-15 (2014)
Receives pocket money (%)	-	63.2	57.7
Receives pocket money on a regular basis (%)	37.2	38.8	36.3
Amount of pocket money received on a regular basis per week (%)			
None	62.8	61.4	64.1
<\$5	7.0	3.9	1.8
\$5 to <\$10	18.7	13.3	7.8
\$10 to <\$20	9.8	15.0	14.0
\$20 to <\$50	1.6	5.9	9.9
\$50 or more	#0.1	0.6	2.4
Total (n)	4,159	3,908	3,453
Average amount per week (\$)ª	\$7.92	\$10.77	\$16.70
Total (n)	1,584	1,537	1,248

Notes: ª Sample restricted to those who received regular pocket money. #Estimate not reliable (cell count <20).

Source: LSAC Waves 4-6, K cohort, weighted

Pocket money can be a way of teaching children the link between work and money. While some parents pay children for doing chores, others believe that children should do chores without being paid to contribute to the running of the household. For some, it may be a way of encouraging good behaviour – by giving extra money for good behaviour or doing well in school, or by withholding money or taking it away as a punishment for bad behaviour.

The LSAC data show that at age 10–11, more than three quarters of those who received pocket money were given this money for doing household chores. By age 14–15, pocket money was conditional on doing chores for around two thirds of those who received pocket money (Table 8.3). Making pocket money conditional on following household rules or doing homework was less common.

Overall, around eight out of 10 children at 10–11 and 12–13 years and seven out of 10 at 14–15 years who received pocket money were given money conditional on either chores, homework or following household rules.

Table 8.3: Conditions placed on pocket money, by age (%)

	Age 10-11 (2010) %	Age 12-13 (2012) %	Age 14-15 (2014) %
Pocket money conditional on:			
Doing chores or tasks	77.6	73.9	64.9
Following household rules	49.7	45.0*	40.6
Homework	34.4	30.7*	27.3
Any of the above	82.3	78.4	69.4
Extra pocket money for:			
Good behaviour	16.5	16.8	12.8
Following household rules	10.4	12.2	10.3
Doing well at school	17.5	19.2	20.1
Completing homework	6.8	8.0	7.6
Any of the above	28.2	29.1	27.5
Pocket money stopped or taken away for:			
Poor behaviour	40.1*	31.8	25.3
Not following household rules	34.2*	29.0	24.2
Not doing well at school	7.3	9.3	10.4
Not completing homework	10.1	10.8	10.3
Any of the above	50.4*	39.0	32.2
Total (n)	1,584	2,509	1,979

Notes: * Indicates differences between the 'regular' and 'irregular' groups at the 5% significance level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. Age 12-13: pocket money conditional on following household rules: 38% for irregular, 50% for regular; conditional on homework: 26% for irregular, 34% for regular; pocket money stopped or taken away: 32% irregular, 43% regular; for poor behaviour: 11% irregular, 21% regular; for not following rules: 23% irregular, 33% regular. Age 14-15: extra pocket money for following rules: 13% irregular, 9% regular; extra for completing homework: 10% irregular, 6% regular.

Source: LSAC Waves 4-6, K cohort, weighted

Across all three age groups, almost three in 10 young people who received pocket money received extra for good behaviour, following household rules, doing well at school or completing homework. Across all age groups, a greater proportion of those who received pocket money received extra for doing well at school, compared to good behaviour and following household rules. Having pocket money stopped or taken away became less common as adolescents got older, with half of the 10–11 year olds and one in three 14–15 year olds who received pocket money having it withheld or taken away for bad behaviour, not following household rules, not doing homework or not doing well at school.

Money management style by pocket money

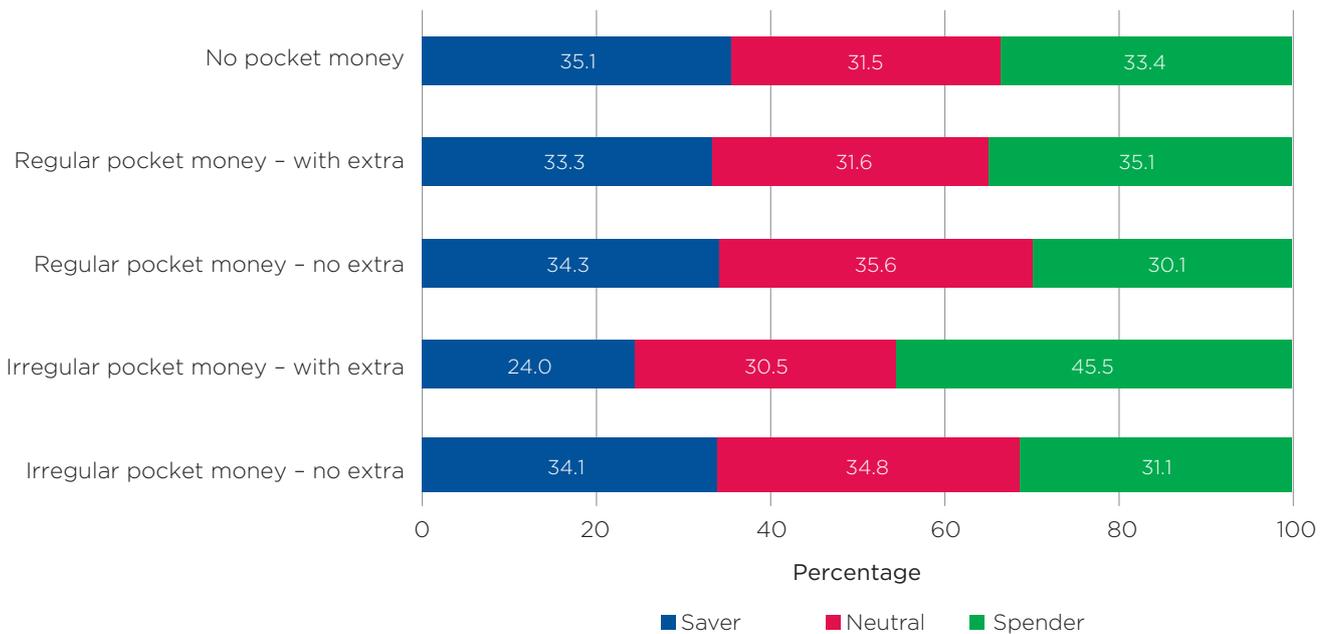
There were no significant associations between receiving pocket money at ages 10–15, or the amount of pocket money received, and money management style at age 16–17 (results not shown).⁵ There were also no significant associations between whether pocket money was given freely or conditional on doing chores or homework, or following household rules. However, money management style at age 16–17 was related to receipt of extra pocket money at ages 12–13 and 14–15; and also to having pocket money stopped or taken away.

Among those who were given irregular pocket money and received extra money for good behaviour, chores or doing well at school at age 14–15, the percentage

of 16–17 year olds in the ‘spender’ category was significantly higher than for those who did not receive extra pocket money, and those who received no pocket money at all (Figure 8.2). Almost half (46%) of those who received irregular pocket money ‘with extra’ were spenders, compared to around one third of other 16–17 year olds.

Among 16–17 year olds who received irregular pocket money at age 14–15, with money stopped or taken away under certain conditions, almost half (48%) had a ‘spender’ money management style, as did around two in five (39%) of those who received regular pocket money at age 14–15 and had it stopped or taken away (Figure 8.3). Among those who received regular or irregular pocket money at 14–15 and did not have it stopped or withheld, less than three in 10 were in the spender category.

Figure 8.2: Money management style, 16–17 year olds in 2016, by receipt of extra pocket money at age 14–15



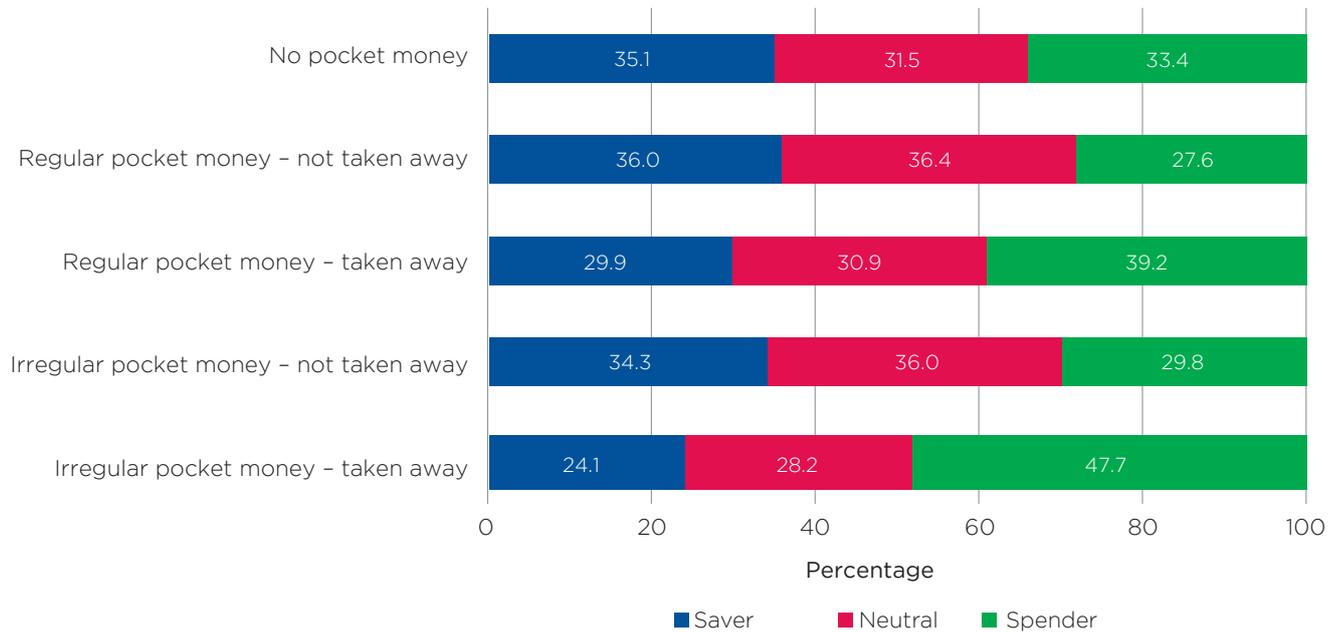
Notes: The proportions of children who are ‘savers’, ‘spenders’ and in the ‘neutral’ categories are compared between groups, e.g. proportion of savers is compared between those receiving ‘no pocket money’ and those receiving ‘regular pocket money - with extra’. The percentage of spenders in the ‘Irregular pocket money - with extra’ group is significantly higher (at the 5% level) than that of other groups. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. Similar associations were found for pocket money at age 12–13 and money management at age 16–17. *n* = 2,947.

Source: LSAC Waves 6 and 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

⁵ The 2018 FPA Survey showed similar results – parents stated that children were just as likely to save their pocket money for no particular reason (36%) as they were to spend it on small day-to-day purchases (36%), with the remaining 28% saving their money for larger items (FPA, 2018).

Figure 8.3: Money management style, 16-17 year olds in 2016, by whether pocket money was withheld or taken away at age 14-15



Notes: The proportions of children who are 'savers', 'spenders' and in the 'neutral' categories are compared between groups, e.g. proportion of savers is compared between those receiving 'no pocket money' and those receiving 'regular pocket money - taken away'. The percentage of spenders in the 'irregular pocket money - taken away' and 'regular pocket money - taken away' groups are significantly higher (at the 5% level) than those in other groups. Similar associations were found for pocket money at age 12-13 and money management at age 16-17. *n* = 2,947.

Source: LSAC Wave 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

These results suggest that while money management style at age 16-17 was not related to whether adolescents had received pocket money in early adolescence, how much they got or whether or not they received money for doing chores, it may be related to the way that parents gave pocket money to their children and, in particular, whether pocket money was used as a reward or a punishment. It is also possible that children may have tried harder to please their parents when they had something that they especially wanted to buy. When money is given as a reward, parents may also encourage adolescents to spend the money on something that they wanted, rather than save it. On the other hand, having money taken away or withheld, particularly if pocket money was not received on a regular basis, may create uncertainty about the amount of money that will be available from week to week, and this may influence adolescents' money management styles. This pattern of having money taken away or withheld could also be related to parental inconsistency over time and between the mother and father, which is associated with poor mental health in adolescents (Dwairy, 2010).

Figure 8.4: Teenagers who were saving or investing at age 12-13 were more likely to be savers at age 16-17



Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

8.4 What do teenagers spend their money on?

Money management styles in adolescence might also be associated with the way children spend their money earlier on, which in turn depends on the combination of how much money they have and what they want or need to pay for independently. According to parents' reports, most teenagers spent their money mainly on personal expenses – increasing from almost 70% for 12–13 year olds to 82% of 16–17 year olds (Table 8.4). Savings and investment also increased as teenagers got older, with just over 40% of 12–13 year olds and 52% of 16–17 year olds using their money for saving or investment.



Table 8.4: What teenagers spend their money on, parent reported, by age group (%)

Done any of the following in the past 12 months ...	Age 12-13 (2012) %	Age 14-15 (2014) %	Age 16-17 (2016) %
Saving and investment	41.4	43.2	52.8
Contribute to household	#0.8	#0.9	3.2
Mobile/internet usage	7.2	11.8	25.7
Other personal expenses	68.8	78.9	82.5
Contribute to accommodation	n.a.	n.a.	2.1
Car expenses	n.a.	n.a.	9.6
Other things	6.0	4.8	1.1
No income	4.9	2.0	3.2
Total (n)	3,908	3,453	2,832

Notes: Sample excludes 32 study participants who were no longer living with their parents. n.a. = not asked at age 12-13 and 14-15. #Estimate not reliable (cell size <20).

Source: LSAC Waves 5-7, K cohort, weighted

Money management style by spending habits

In terms of money management style at age 16–17, saving habits at age 12–13 and 14–15 were related to money management at age 16–17, with significantly more of those whose parents reported that they were saving or investing earlier in adolescence having a ‘saver’ money management style at age 16–17 (Table 8.5). On the other hand, compared to other 16–17 year olds, a significantly higher percentage of those who had been spending their money on personal expenses since early adolescence were spenders at age 16–17. Most 16–17 year olds had their own phone. Teens aged 16–17 were more likely to be spenders if they had paid for their own mobile or internet data when they were 14–15 years old, than if they had not.

Table 8.5: Spending habits and money management style at age 16-17 (%)

What adolescents spend their money on:			Money management style at 16-17			
			Saver %	Neutral %	Spender %	All %
Saving and investment	Age 12-13	Yes	41.7	33.6	24.6	100.0
		No	28.1*	32.9	39.1*	100.0
	Age 14-15	Yes	40.4	34.6	25.0	100.0
		No	28.9	31.9	39.2	100.0
	Age 16-17	Yes	45.9	34.4	19.6	100.0
		No	19.2*	32.1	48.7*	100.0
Personal expenses	Age 12-13	Yes	30.9	34.2	35.0	100.0
		No	39.7*	31.1	29.3	100.0
	Age 14-15	Yes	31.6	33.8	34.6	100.0
		No	42.4*	30.3	27.3*	100.0
	Age 16-17	Yes	29.3	34.2	36.5	100.0
		No	51.9*	29.3	18.8*	100.0
Mobile or internet expenses	Age 12-13	Yes	26.6	33.1	40.3	100.0
		No	34.1	33.2	32.7	100.0
	Age 14-15	Yes	27.0	31.9	41.2	100.0
		No	34.7*	33.3	32.0*	100.0
	Age 16-17	Yes	26.4	33.6	40.1	100.0
		No	35.7*	33.2	31.1*	100.0

Notes: * Indicates a significant difference from the 'Yes' category at the 5% level of significance. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. There were no significant differences in adolescents' money management styles according to other types of spending listed in Table 8.4. *n* = 2,879 at age 12-13, 2,821 at age 14-15 and 2,868 at age 16-17.

Source: LSAC Waves 5-7, K cohort



8.5 Use of financial services

Having a savings account from a young age can help to familiarise children with the concept of saving money, starting them on the way to developing money management skills. When children receive a bank statement, it provides an opportunity for parents to talk with their child about how much money they have saved and how much interest they have received. In the teenage years, having a bank account with an EFTPOS facility, or access to a credit card, provides young people with more opportunities for spending their money, and independence in making decisions about how to spend their money.

In LSAC, information about use of financial products was collected from age 12–13 (Box 8.4). At age 12–13, 41% of teenagers reported having a savings account in their own name and 7% had an account that allowed them to withdraw money (Table 8.6). By age 16–17, 79% of teenagers reported having a bank account with an EFTPOS facility and less than 3% had access to a credit card.

Box 8.4: Bank accounts and credit cards

In Waves 5 and 6 of LSAC, when children in the K cohort were aged 12–13 and 14–15, parents were asked: ‘Does study child have any of the following?’

- Use of a savings account in his/her own name
- Use of a credit card
- Use of an ATM pin number/account
- None of the above.’

In Wave 7, when study children were aged 16–17, the list of financial products was changed to:

- A bank account with a debit/ATM/EFTPOS card in their own name
- Use of a bank account with a debit/ATM/EFTPOS card in someone else’s name
- A bank account without a debit/ATM/EFTPOS card
- A credit card in their own name
- Use of a credit card in someone else’s name
- None of the above.

Information on bank accounts and credit cards was obtained from the Child Employment Survey 2006, and by the ABS and National Institute of Child Health and Human Development (ABS, 2007).

Table 8.6: Bank accounts, by age group (%)

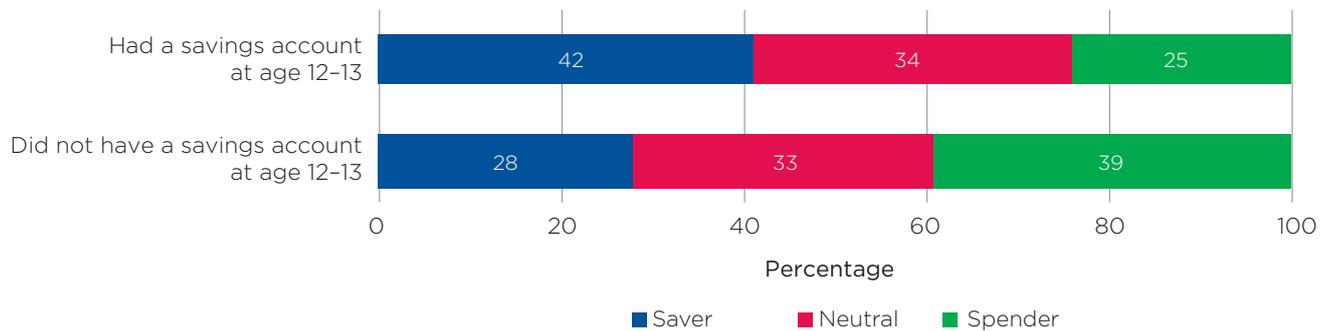
Account type	Age 12-13 (2012) %	Age 14-15 (2014) %	Age 16-17 (2016) %
Savings account in his/her name	41.4	66.9	
Use of a credit card	0.8	0.7	
Use of an ATM/Pin number account	7.2	33.7	
Bank account with debit/ATM/EFTPOS card - own name			78.8
Bank account with debit/ATM/EFTPOS card - other name			4.4
Bank account without a debit/ATM/EFTPOS card			17.0
Credit card in your own name			0.8
Credit card in someone else’s name			1.9
None of the above	58.6	30.1	8.5
Total (n)	3,908	3,453	2,991

Source: LSAC Waves 5–7, K cohort, weighted

Money management style by use of financial services

Having a savings account at age 12–13 was related to money management style at age 16–17. Among those who had a savings account at that age, just over two out of five had a ‘saver’ style of money management, and one in four had a ‘spender’ style (Figure 8.5). Of those who did not have a savings account at age 12–13, almost two in five were ‘spenders’ and almost three out of 10 were ‘savers’.

This difference in adolescents’ money management styles suggests that encouraging young people to save money early in adolescence is associated with their money management style in the teenage years. Having a savings account may also help young people resist the temptation to spend money that they have saved. It can also protect young people from ‘financial exclusion’ in adulthood. Financial exclusion is when ‘individuals lack access to appropriate and affordable financial services and products – the key services and products are a transaction account, general insurance and a moderate amount of credit’ (Connelly, 2014). In 2013, 17% of Australian adults (18+) were either fully excluded (with no financial services products) or severely excluded (with only one financial services product) from financial services. Rates of exclusion were substantially higher among those with incomes below \$15,000 (Connelly, 2014).

Figure 8.5: Money management style at age 16–17, by whether they had a savings account at age 12–13

Notes: The proportions of children who are 'savers', 'spenders' and in the 'neutral' categories are compared between those who did and did not have savings accounts. Differences between the percentage of spenders and the percentage of savers, according to whether they had a savings account are statistically significant at the 5% level. Where 95% confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. $n = 2,663$.

Source: LSAC Waves 5 and 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Summary

This chapter has provided a snapshot of money management behaviours of 16–17 year olds in 2016. It looked at the relationship between money management styles at age 16–17 and concurrent financial support from parents. It also examined the associations between money management styles at age 16–17 and receiving pocket money throughout childhood and early adolescence, how money was spent and use of a savings account.

Parents are thought to play a key role in teaching children about money and money management (Gudmunson & Danes, 2011; Kim, LaTaillade, & Kim, 2011). Understanding people's money management styles in adolescence and the characteristics that determine these styles may help reduce the risks associated with the financial decisions that young people face, especially in a climate where the accumulation of relatively large amounts of debt (e.g. credit card debt and bank loans) by early adulthood is relatively common (Hoeve et al., 2014; Lusardi, Mitchell, & Curto, 2010).

Most 16–17 year olds were supported by their parents and had no financial responsibilities. The money they had at their disposal was also relatively small. Receiving pocket money at ages 10–15, the amount of pocket money received and the conditions placed on receiving pocket money (e.g. doing household chores) were not related to money management styles at age 16–17. However, receiving pocket money irregularly 'with extra' and having pocket money stopped or taken away were associated with a higher inclination to spend money. Therefore, whether pocket money

is a useful tool for developing young people's money management skills is likely to depend on the regularity and freedom that parents give their children about how pocket money should be used.

While some parents might place no restrictions on what the pocket money is used for or give it to their children as 'spending money', others may encourage the idea of saving for a larger purchase in the future, donating to charity, or a combination of all three (i.e. no restrictions, saving and donating). For example, the Australian Securities & Investments Commission (ASIC) suggests that children have three jars for their pocket money – one for spending, one for saving and one for donating (ASIC, 2019). Another suggestion for teaching children about the importance of saving money is to save 50%, spend 40% and donate the remaining 10% to charity (ASIC, 2019). As teenagers get older, parents may be less likely to influence behaviours through pocket money.

Developing savings habits early in life was found to be important, with higher percentages of those who had savings accounts and who were saving or investing at age 12–13 reporting a 'saver' money management style at age 16–17.

Teaching adolescents about money is important for life. Money skills should be developed from an early age and fostered into young adulthood. The more financially knowledgeable children and adolescents are and the more opportunities they have to practice money management skills, the better spending and saving decisions they are likely to make throughout their lives.

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9

Shaping futures: School subject choice and enrolment in STEM

Maggie Yu and Diana Warren



Key findings

- Boys were more likely to choose Advanced Maths, Physics, Technology, Engineering, Business and Finance subjects than girls.
- Girls were more likely to select Biology, Creative Arts, Health, Psychology, Legal Studies, and Society and Culture than boys.
- Enrolment in Intermediate or Advanced Maths increased with higher Year 9 NAPLAN scores, and was significantly higher among students who expected to complete a degree.
- Even when accounting for a range of other factors, boys outnumbered girls two to one in Advanced Maths, three to one in Physics and Engineering and almost five to one in Design Technology.

Choosing school subjects is a pivotal decision for students in Years 11 and 12 because of the difference it makes to education and training pathways and future employment opportunities (Altonji, Blom, & Meghir, 2012; Joensen & Nielsen, 2012). For example, students who participate in particular subjects or subject combinations that lead to vocational education and training (VET) are more likely to enter the labour market without any further formal education or training (Thomson, 2005). On the other hand, students who choose other combinations of subjects, including Advanced Maths, Science and Social Sciences, are more likely to enter higher education courses – and higher education is often related to higher earning capacity (Joensen & Nielsen, 2012; Rose & Betts, 2004).

Subject choices in senior secondary school have been shown to be influenced by a range of personal and family factors. For example, students may have aspirations for future career and post-school education or training (Watt et al., 2012) that can be influenced by their self-perceived ability, talents and school achievements (Britner & Pajares, 2006; Louis & Mistele, 2012). Parental encouragement and language background have also been shown to influence subject choice (Ainley & Ainley, 2011; Fullarton & Ainley, 2000; Fullarton, Walker, Ainley, & Hillman, 2003).

Students' choices have been found to differ according to their families' socio-economic status (Shavit & Müller, 2000). Schools in regional and remote areas often have restricted subject choices compared to schools in major cities; and those in more advantaged schools may have a wider range of subjects to choose from than those in less advantaged schools (Sullivan, Perry, & McConney, 2013).

In particular, gender has been shown to strongly influence school subject choice, with boys more likely to participate in Advanced Maths, Physics and Chemistry, and girls more likely to participate in Biology and Health subjects (Fullarton et al., 2003; Riegle-Crumb & King, 2010). Evidence also shows that women are under-represented in tertiary education and high-paying jobs in Science, Technology, Engineering and Maths (STEM), and this gender imbalance can be traced back to students' choice of STEM subjects in secondary school (Ingrid, Andy, & Peter, 2007; Justman & Méndez, 2016; Lamb, Jackson, Walstab, & Huo, 2015).

School sector and type may also limit the availability of subjects on offer for students, potentially restricting choices. The school curriculum may differ depending on the school sector, as a result of differences in the teaching staff, facilities, and the amount and sources of funding the school receives. Students who attend single-sex schools, especially girls, have been shown to be more confident in taking male-dominated subjects such as Advanced Maths (Jeffrey, Forgasz, Leder, & Taylor, 2007; Mael, Alonso, Gibson, Rogers, & Smith, 2005).

This chapter uses the LSAC K cohort data from Wave 7, when children were 16–17 years old, to describe the patterns of subject selection by Year 11 and 12 students, with a particular focus on the individual, socio-economic and school characteristics of students selecting subjects in the Science, Technology and Engineering and Maths (STEM) study domain.

9.1 Subject choices in Years 11 and 12

Students in senior secondary schools in Australia have a variety of study options through which they can pursue their interests and build their skills. In Year 10, students select subjects they wish to study in Years 11 and 12 (Box 9.1). Different subject choices are often required for different educational and vocational pathways. If students wish to continue with tertiary education, they must choose academic subjects that count towards the Australian Tertiary Admission Rank (ATAR) – the primary criterion for entry into most university programs. Vocational Education and Training (VET) subjects are available for students wishing to do a trade, apprenticeship or traineeship; study at a registered training organisation; or enter the workforce after school.

Most 16–17 year olds (86%) were studying at a secondary school in 2016. Of those who were in secondary school the majority (71%) were in Year 11 and the remaining 29% were in Year 12.¹

Students were typically enrolled in five or six academic subjects. Most were enrolled in an English subject and a Maths subject. Participation in these subjects is likely to be driven by the requirement for completing school and accessing university courses. For example, English is a compulsory subject in New South Wales and Victoria. In Queensland, students must meet literacy and numeracy requirements, which can be satisfied by completing at least one semester in both an English and Maths subject.

Participation rates differed markedly across subject areas (Table 9.1). For some subjects, there were significant differences in the percentages of boys and girls enrolled:

- More boys than girls participated in Advanced Maths (and Maths overall), Physics, Technology, Business and Finance.
- More girls than boys studied Biology, Creative Arts, Health, Psychology, Legal Studies and Society and Culture.

These results are consistent with previous studies of subject participation in senior secondary school, which showed that STEM subjects, such as Physics, Advanced Maths and Technology classes were dominated by boys (Ainley, Kos, & Nicholas, 2008; Fullarton et al., 2003).

¹ Of the 14% of 16–17 year olds who were not at secondary school in 2016, 7% were studying at TAFE, 50% were working or looking for work, and 42% were travelling, looking after family members or doing something else. For the analysis in this chapter, the sample was restricted to secondary school students in Years 11 and 12.



Box 9.1: Subject choices in senior secondary school

In Wave 7 of LSAC, study participants in the K cohort (aged 16–17) were asked to name up to 10 Year 11 or Year 12 subjects they were studying at school. There is no common classification of Year 12 subjects in Australia (Thomson, 2005). For this chapter, responses were classified into eight study areas and 18 broad subject areas:

Study area	Subject	Subject examples
English	English	English, English as a Second Language, Literature
Maths	Basic Maths	General Maths, Maths A
	Intermediate Maths	Mathematical Methods, Mathematical Studies Stage 2
	Advanced Maths	Specialist Maths
Science	Biology Chemistry Physics	
	Life and Earth sciences	Geology, Agriculture, Earth Science, Nutrition
Technology and Engineering	Design Technology	Graphics, Textiles and Design
	Information and Communication Technology (ICT)	Software Development, Computer Science
	Industrial Technology	Industrial Technology, Building Construction
	Engineering	
Creative Arts	Art and Performance	Dance, Music, Drama, Theatre Studies
LOTE	Language other than English	French, German, Japanese, Chinese, Indonesian
Health and Physical Education	Physical Education	Physical Education, Outdoor Education, Sport
	Health	Health Education, Personal Development
Social Science	Business and Legal Studies	Economics, Business, Finance, Accounting, Legal Studies, Politics, Geography
	Humanities	Ancient or Modern History, Religion, Psychology, Philosophy, Society and Culture

VET in schools refers to subjects or programs taken as part of a senior secondary certificate that on completion provide credit towards a nationally recognised VET qualification. Students were also asked to indicate whether each of the subjects they listed was a VET subject.

Table 9.1: School subjects chosen by 16–17 year olds in Years 11 and 12, 2016

Subject	Boys %	Girls %	Total %
English	88.4	90.7	89.6
Maths*	88.9	83.3	86.0
Basic Maths	60.1	57.9	59.0
Intermediate Maths	25.8	23.5	24.6
Advanced Maths*	11.0	5.7	8.3
Science	56.7	58.2	57.4
Biology*	24.4	40.0	32.4
Chemistry	22.3	18.8	20.5
Physics*	22.1	8.2	15.0
Life Sciences	14.3	13.4	13.9
Technology*	32.1	11.6	21.7
Design Technology*	11.5	8.2	9.8
Information and Communication Technology (ICT)*	9.5	2.4	5.9
Industrial Technology*	9.6	#1.3	5.4
Engineering*	5.2	#0.5	2.8
Social Science*	63.8	76.0	70.0
Business and Legal Studies	37.2	38.7	38.0
Business and Finance*	27.2	22.6	24.8
Legal Studies*	12.0	15.5	13.8
Politics and Global Studies	#0.9	#1.3	1.1
Humanities*	46.7	60.8	53.9
History*	18.3	23.3	20.9
Geography	8.7	7.3	8.0
Psychology*	6.1	17.8	12.1
Religious Studies	22.5	25.3	23.9
Philosophy	#1.6	1.7	1.6
Society and Culture*	2.6	7.0	4.9
Creative Arts*	25.3	41.5	33.6
LOTE	12.7	15.6	14.2
Health and Physical Education	37.5	38.6	38.1
Physical Education	35.7	30.8	33.2
Health*	#2.3	11.0	6.8
Total (n)	1,138	1,196	2,334

Notes: Participation rates are based on students' enrolment in each subject. Students often enrolled in more than one subject in the same study area (e.g. two different Maths subjects). Therefore, the total percentages of each subject might exceed the overall percentage of enrolments in the study area. * Significant differences in the percentage of boys and girls enrolled (at the 5% significance level) are noted. # Estimate not reliable (cell count <20).

Source: LSAC Wave 7, K cohort, weighted

9.2 Factors influencing subject choice

There is a substantial body of evidence, including previous LSAC research, suggesting that the educational expectations and career aspirations of children are important factors in predicting their educational achievements (Baxter, 2017; Khattab, 2015; Yu & Daraganova, 2015). At age 14–15, when students were asked to think about the subjects they would study in Years 11 and 12, more boys than girls (17% vs 10%) said that they expected to get a trade or VET qualification; and more girls than boys said that they expected to complete an undergraduate degree (40% vs 32%). Similar proportions of boys (34%) and girls (36%) said that they expected to get a postgraduate degree (Table 9.2). Given less than 10% of Australians have postgraduate qualifications (Australian Bureau of Statistics [ABS], 2018), the observation that over a third of 14–15 year olds expected to reach this level of education is somewhat surprising. It is possible that LSAC respondents did not fully understand the distinction between undergraduate and postgraduate degrees or that these high proportions reflect the idealistic aspirations of students, which do not always align with realistic expectations (Khattab, 2015).

Career aspirations are an important consideration when choosing senior school subjects. However, LSAC data show that many 14–15 year olds (45%) still did not have a specific career that they aspired to (Table 9.2). Among those who did have a clear idea about their preferred career, there were some gender differences. For example, more boys than girls said they would like to be engineers, tradespeople or work in information and communication technology (ICT); while more girls than boys said they aspire to have a career as a health professional. These gender differences in career aspirations are likely to be reflected in school subject choices, at least to some extent.

Students tend to choose subjects that they are more proficient in (Fullarton & Ainley, 2000; Marks, 2013). For example, high performance in numeracy has been shown to be an important influence on participation in STEM subjects (Britner & Pajares, 2006; Louis & Mistele, 2012). The National Assessment Program – Literacy and Numeracy (NAPLAN) provides data on numeracy performance. According to the 2018 NAPLAN national report (Australian Curriculum Assessment and Reporting Authority, 2018), on average, boys have higher numeracy scores at all assessment points (Years 3, 5, 7 and 9) than girls.

Table 9.2: Educational expectations and career aspirations at age 14-15

	Boys %	Girls %	All %
Educational expectations^a			
No post-school qualification	18.4	14.7	16.5
Trade or VET qualification	16.6*	10.0	13.3
Undergraduate degree	31.2*	39.5	35.4
Postgraduate degree	33.8	35.9	34.9
Total	100.0	100.0	100.0
Total (n)	1,061	1,122	2,183
Career aspirations^b			
Don't know	44.2	45.6	44.9
Creative arts and media	6.0	9.5	7.8
Business and admin. professionals	#1.7	#0.6	1.1
Child care	#0.3	#1.3	0.8
Defence forces and emergency services	4.0	3.8	3.9
Engineering	6.5*	1.2	3.8
Farming, agriculture, working with animals	#0.8	#1.7	1.2
Hair and beauty services	#0.0	#1.5	0.8
Health professionals	2.4	*9.9	6.2
Hospitality and retail	1.8	2.6	2.2
Information and communication technology	5.9*	#0.3	3.1
Lawyers and judges	#1.5	1.9	1.7
Medical doctors and specialists	2.7	4.5	3.6
Tradespeople	*8.1	#0.1	4.1
Total (n)	1,061	1,122	2,183

Notes: *Indicates that the difference between the percentage of boys and girls is statistically significant at the 5% level.^a Study children were asked: 'Looking ahead, how far do you think you will go with your education?' ^bStudy children were also asked: 'As things stand now, do you know what career or occupation you would like to have in the future?' Those who answered 'yes' to this question were asked to name their desired occupation.

Source: LSAC Wave 6, K cohort

Table 9.3: Year 9 NAPLAN scores for numeracy, by gender

	Boys	Girls	All
Year 9 Numeracy scores			
Mean	616.9	603.4*	610.1
Total (n)	1,029	1,069	2,098

Note: * Indicates that the difference between the percentage of boys and girls is statistically significant at the 5% level.

Source: LSAC Wave 7, K cohort, weighted

The LSAC data confirm that, on average, Year 9 numeracy scores were higher for boys. Although the difference is small, this may be a contributing factor in the gender difference in subject choice due to self-efficacy; students are attracted to subjects that they think they will succeed in (Tellhed, Bäckström, & Björklund, 2017).

Subject choice is also shaped by the school students attend (Anders, Henderson, Moulton, & Sullivan, 2018). Schools may offer different selections of subjects or guide their students towards certain paths. In LSAC just over half of all secondary students at 16–17 years were attending a government school, around a quarter went to a Catholic school and the remaining quarter attended an independent school. There were no significant differences in the percentage of boys and girls by school sector. However, more girls than boys attended a single-sex school (22% vs 17%). If single-sex schools offer benefits in terms of students being more confident in taking on subjects traditionally dominated by the other sex, more girls than boys are exposed to this opportunity.

There were no significant differences in the percentage of students living in major cities, regional or remote areas, so place of residence is unlikely to account for the gender differences in subject selection.

In summary, preliminary examination of the LSAC data shows that differences in education and career aspirations and attendance at single-sex schools are likely to have a stronger influence on gender differences in subject choices than prior numeracy attainment, school sector and location. Section 9.1 found gender differences in subject selection to be particularly apparent in STEM subjects, with fewer girls than boys enrolling in Maths (particularly Advanced Maths), Physics, Technology and Engineering. The next section looks in closer detail at the characteristics of boys and girls enrolling in specific STEM subjects.

9.3 Characteristics related to enrolment in STEM subjects

Maths

Maths (particularly at the intermediate or advanced level) is a prerequisite for acceptance to most science, technology, engineering and business-related university courses in Australia, making it an important gateway into STEM learning and careers. As shown in section 9.1, Maths subjects were chosen by the majority of students (86%) in Years 11 and 12 with slightly higher proportions of boys than girls taking any maths subject (83% girls and 89% boys; Table 9.4). While the numbers of boys and girls taking Basic and Intermediate Maths were similar, substantially more boys took Advanced Maths (11% compared to 6% of girls).

Students' choices of Maths subjects were generally consistent with their educational expectations and career aspirations (Table 9.4). Enrolments in Intermediate and Advanced Maths were higher among boys and girls who expected to get a degree qualification, compared to those who expected to do no post-school study. On the other hand, the enrolments in Basic Maths was higher among those who expected to do no post-school study or complete a Trade or VET qualification, compared to those who expected to obtain a degree qualification. Students' career aspirations were a strong influence on their choice of Maths subjects. Boys aspiring to be engineers, ICT specialists or scientists and girls aspiring to be doctors, vets or zoologists were more likely to choose Intermediate or Advanced Maths.

Students generally chose a Maths subject in line with their ability levels. Enrolment in more complex maths subjects increased with maths ability, measured by

Year 9 NAPLAN numeracy scores. However, some students who scored in the top 25% for numeracy in Year 9 were taking a basic or intermediate level Maths subject in Year 11 or 12. For some, this might be because Advanced Maths was not required for their preferred university course, or intended career.

While there were no statistically significant differences in enrolment in Maths subjects according to school sector, enrolment in Advanced Maths was substantially higher among boys and girls attending single-sex schools, compared to those in co-educational schools. For example, less than 5% of girls attending co-educational schools chose Advanced Maths compared to 11% of girls attending all-girls schools. This finding is in line with research showing that students attending single-sex schools are more confident in taking on more academic subjects (Jeffrey et al., 2007).

Enrolment in Advanced Maths was also significantly higher among boys and girls who spoke a language other than English at home, compared to those who did not; and, for girls, enrolment in Basic Maths was lower among those who spoke a language other than English, compared to those who spoke English only.

Overall Maths enrolments did not differ according to region of residence, although boys in outer regional/remote areas were more likely to select Basic Maths than boys living in major cities (70% vs 57%). Boys living in households in the lowest 25% of socio-economic position (SEP) scale were also more likely to take Basic Maths, and less likely to take Intermediate Maths, compared to compared to boys in the top 25% SEP.



Table 9.4: Characteristics of students enrolled in Maths subjects

	Basic Maths %		Intermediate Maths %		Advanced Maths %		Any Maths subject %	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
All (n = 2,334)	60.1	57.9	25.8	23.5	11.0*	5.7	88.9*	83.3
Educational expectations at age 14-15 (n = 2,252)								
Year 12 or below (ref.)	68.7	64.1	14.0	10.6	#1.5	#0.7	82.8	74.7
Trade/VET	77.7*	60.5	10.2	7.8	#2.1	#0.0	85.7*	68.3
Undergraduate	58.9	55.5	28.9^	24.8^	11.9**	5.3^	91.9*	82.5
Postgraduate	47.7^	52.8	37.8^	33.9^	19.9**	10.9^	92.4^	90.8^
NAPLAN Year 9 Numeracy score (n = 2,224)								
Lowest 25%	66.7	62.9	#6.7^	#4.9^	#0.2	#0.0	72.7^	67.8^
Middle 50% (ref.)	69.9	66.1	18.7	19.7	5.8*	#1.5	89.1	85.5
Highest 25%	39.5^	36.7^	46.5^	52.6^	28.3	19.6^	95.8^	97.2^
School sector (n = 2,309)								
Government (ref.)	61.6	56.0	24.7	21.9	9.6	6.3	87.6	80.3
Catholic	59.7	60.7	27.3	25.9	10.7*	#2.9	89.1	86.7
Independent	57.0	61.1	28.3	24.3	14.9*	5.7	92.5	87.5
School type (n = 2,329)								
Single sex	51.8	53.3	27.1	28.1	24.8*	10.7	93.8	87.4
Co-educational	61.4	59.1	25.7	22.5	8.7**	4.5^	88.1	82.6
Main language spoken at home (n = 2,083)								
English	61.4	60.3	25.0	21.9	9.1*	4.0	88.4	83.2
Non-English	51.2	46.2^	31.1	32.8	23.0**	15.2^	91.5	86.3
Region of residence (n = 2,331)								
Major city (ref.)	56.6	54.9	28.7	24.7	12.7	6.8	89.4	82.0
Inner regional	65.8	64.4	19.7	20.7	7.6	#3.6	86.5	86.6
Outer regional/ remote	70.3^	62.9	18.9	21.6	#7.1	#3.4	89.9	85.0

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	Basic Maths %		Intermediate Maths %		Advanced Maths %		Any Maths subject %	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Socio-economic position (n = 2,288)								
Lowest 25% (ref.)	64.7	58.7	18.4	17.8	#6.9	#4.0	83.6	76.2
Middle 50%	63.0	61.0	24.1	20.9	9.6	4.7	88.6	83.2
Highest 25%	49.8 [*]	48.4	35.6 [*]	33.9	16.4	10.0	93.5 [*]	88.3 [*]
Top 3 career aspirations	Tradespeople Creative arts and Media Sportspeople and coaches	Health professionals Creative arts and media Teachers	Engineering #ICT #Medical doctors and specialists	Health professionals Medical doctors and specialists #Defence forces and emergency services	Engineering #ICT #Science careers	#Medical doctors and #specialists Vet or zoologist #Teachers	Tradespeople Engineering Creative arts and media	Health professionals Creative arts and media Teachers

Note: * Indicates the difference between the percentage of boys and girls enrolled is statistically significant at the 5% level. ref. Indicates reference category. ^ Indicates a significant difference from the reference category at the 5% significance level. # Estimate not reliable (cell count <20).

Source: LSAC Waves 6 and 7, K cohort, weighted

Science

Almost 60% of Year 11 and 12 students were enrolled in a science subject, with specific Science subjects having substantially different enrolment rates, ranging from 14% for Life Sciences and 15% for Physics to 32% for Biology (Table 9.5). These differences may be explained by differences in career aspirations related to particular subjects (e.g. Physics was popular among those who had aspirations to be engineers and ICT professionals, while common career aspirations among Biology students were health and medical professionals, vets and zoologists). While similar proportions of boys and girls selected Chemistry (around one in five students), more girls enrolled in Biology (40% vs 24% of boys) and more boys enrolled in Physics (22% vs 8% of girls).

Overall, participation in Science subjects was higher among students who expected to complete a degree qualification, and it increased with higher Year 9 numeracy scores. This is in line with other research showing academic achievement was one of the dominating characteristics in determining course participation in Advanced Maths and Sciences (Thomson, 2005). Participation was also higher among boys (but not girls) attending single-sex schools, compared to those attending co-educational schools, and boys and girls in families in the top 25% for socio-economic position, compared to those in the lowest 25%.



Table 9.5: Characteristics of students enrolled in Science subjects

	Biology %		Chemistry %		Physics %		Life Sciences %		Any Science subject %	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
All	24.4*	40.0	22.3	18.8	22.1*	8.2	14.3	13.4	56.7	58.2
Educational expectations (n = 2,252)										
Year 12 or below (ref.)	16.8	26.6	#8.4	#9.7	#6.7	#2.3	17.1	20.9	39.3	50.7
Trade/VET	12.1*	30.6	#3.7	#0.8	#6.4*	#0.5	20.7	15.1	36.2	42.6
Undergraduate	29.2**	43.0^	25.6^	17.4	28.6**	8.0	13.6	11.6	65.9^	58.1
Postgraduate	31.9**	46.5^	37.2^	31.8^	33.4**	13.3^	11.4	11.8	71.5^	67.4^
NAPLAN Numeracy score (Year 9) (n = 2,224)										
Lowest 25%	#8.2**	19.9^	#4.1^	#2.9^	#2.8	#1.0	15.5	17.2	26.3^	33.4^
Middle 50% (ref.)	26.2*	45.1	13.1	13.9	#12.6*	4.0	17.1	13.9	52.4	59.1
Highest 25%	31.8*	44.8	46.8^	45.2^	48.0*	23.1^	#8.9	9.4	80.7^	76.2^
School sector (n = 2,329)										
Government (ref.)	20.9*	40.3	20.7	17.2	19.5*	8.1	18.1	15.8	54.4	59.8
Catholic	29.4	37.2	22.3	18.4	23.0*	#5.1	12.7	11.8	60.9	53.2
Independent	27.1*	40.5	28.0	20.7	28.0*	10.8	7.5^	11.3	58.8	58.1
School type (n = 2,334)										
Single sex (ref.)	40.8	39.2	30.1	29.6	25.5*	9.7	#10.5	#7.7	70.3	57.1
Co-educational	21.7**	40.3	21.1	16.3^	21.6*	7.9	15.1	14.9^	54.5^	58.5
Main language spoken at home (n = 2,334)										
English ^a	22.7*	38.9	20.8	16.5	22.7*	7.6	14.8	14.6	55.8	57.7
Non-English	34.8^	47.1	31.5	32.7^	18.9	#11.5	#11.3	#7.5	61.9	62.4
Region of residence (n = 2,336)										
Major city (ref.)	26.0*	40.6	23.4	21.1	24.1*	7.3	13.0	12.8	58.6	57.8
Inner regional	21.9*	40.5	20.1	13.2^	19.9*	9.9	18.5	14.3	56.1	57.9
Outer regional/remote	18.7*	36.2	19.4	16.4	13.8	#10.2	14.8	15.3	46.5	60.4

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	Biology %		Chemistry %		Physics %		Life Sciences %		Any Science subject %	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Socio-economic position (at age 14-15) (n = 2,333)										
Lowest 25% (ref.)	22.0	29.9	17.2	12.3	13.3*	3.8	17.0	15.0	50.3	47.2
Middle 50%	22.3*	41.8	18.3	13.9	20.3*	8.3	16.5	14.7	54.5	59.1
Highest 25%	32.7*	45.4^	35.9^	34.7^	33.0**	11.7^	10.3	9.6	70.9^	65.3^
Top 3 career aspirations	Health professionals Medical doctors and specialists #Science careers	Health professionals Medical doctors and specialists Vet or zoologist Science careers	Engineering Medical doctors and specialists Science careers	Medical doctors and specialists Health professionals #Science careers	Engineering #ICT #Science careers	#Health professionals #Medical doctors and specialists #Engineering	Tradespeople #Creative arts and media #ICT	#Health professionals #Teachers #Vet or zoologist	Engineering ICT Tradespeople	Health professionals Medical doctors and specialists Vet or zoologist

Note: * Indicates the difference between the percentage of boys and girls enrolled is statistically significant at the 5% level. ref. indicates a significant difference from the reference category at the 5% significance level. # Estimate not reliable (cell count <20).

Source: LSAC Waves 6 and 7, K cohort, weighted

Technology subjects

Technology comprises a number of different subjects including Information and Communication Technology (ICT), Engineering, Design Technology (which includes Woodwork as well as Textiles and Design), Construction, and Industrial Technology. Overall, more than one in five (22%) Year 11 and 12 students were enrolled in a Technology subject, although there were significantly higher participation rates among boys than among girls across all four Technology subject groups (Table 9.6).

The relatively small numbers of observations for students (particularly girls) enrolled in specific technology subjects may account for the lack of statistically significant differences in enrolment by educational expectations, NAPLAN score, school type or socio-demographic characteristics. There was a trend for students expecting to go on to do a university or postgraduate degree to be less likely to select technology subjects than those with lower educational expectations. For example, 25% of boys expecting to get a postgraduate degree and 29% expecting to do an undergraduate degree enrolled in a Technology or Engineering subject, compared to 41% who expected to go no further than Year 12.

As expected, students who wanted to work as engineers, ICT professionals or tradespeople were more likely to be enrolled in Technology and Engineering subjects. Those who aspired to work in creative arts and media were also more likely to enrol in Technology and Engineering subjects such as Design Technology and Construction and Industrial Technology.

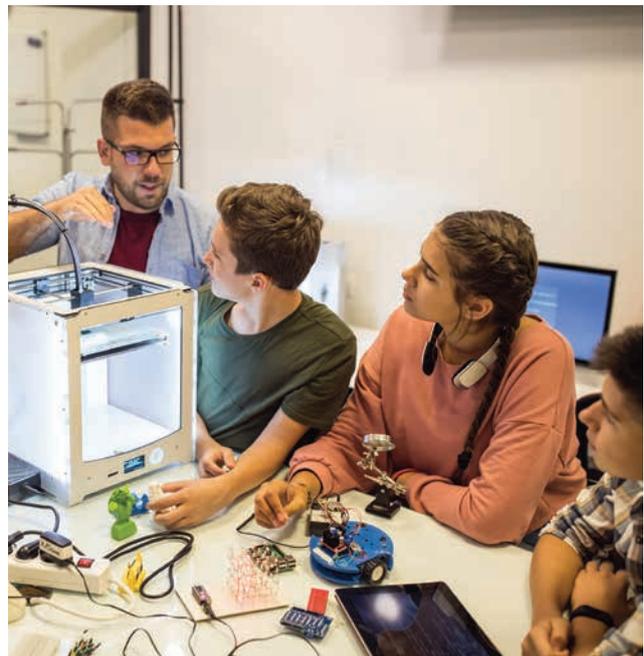


Table 9.6: Characteristics of students enrolled in Technology subjects

	ICT %		Engineering %		Design Technology %		Construction & Industrial Technology %		Any Technology or Engineering subject %	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
All	9.5*	2.4	5.2*	#0.5	11.5*	8.2	9.6*	#1.3	32.1*	11.6
Educational expectations (n = 2,336)										
Year 12 or below (ref.)	12.1	#4.2	#6.1*	#0.5	13.7	#10.9	15.0*	#0.1	41.4*	#15.9
Trade/VET	#7.9	#3.7	#4.8	#0.0	20.8	#9.9	17.0	#5.4	42.8*	#18.2
Undergraduate	8.4*	#1.6	#5.9	#0.5	11.1	9.0	6.1*	#0.6	29.3*	11.3
Postgraduate	9.1*	#2.5	#5.0	#0.8	6.5	6.6	6.7*	#1.3	25.1*^	9.8
NAPLAN Numeracy score (n = 2,224)										
Lowest 25%	8.6*	#2.6	#0.5	#2.0	11.9	7.9	13.4*	#1.1	32.1*	12.1
Middle 50% (ref.)	10.4*	#2.3	4.6*	#0.0	13.0	8.6	12.2*	#1.8	35.8*	11.8
Highest 25%	9.3	#2.1	8.0*^	#0.9	9.2	9.5	#3.3^	#0.6	25.9*	12.9
School sector (n = 2,329)										
Government (ref.)	12.0*	#2.1	5.9*	#1.1	11.7	9.0	12.0*	#1.8	36.3*	12.7
Catholic	#6.1	#2.8	#3.0	#0.0	9.6	7.4	8.5*	#0.4	25.5*	10.7
Independent	7.7*	#1.9	#4.5	#0.0	13.7	8.6	6.9	#1.4	30.0*	10.9
School type (n = 2,234)										
Single sex	#4.8	#3.8	#2.8	#0.0	#6.2	9.9	#7.6	#1.3	20.4	14.2
Co-educational	10.4*	#2.0	5.7*	#0.6	12.5*	7.8	10.0*	#1.3	34.4*^	11.0
Main language spoken at home (n = 2,334)										
English	10.0*	2.4	5.3	#0.4	12.1	8.3	9.6*	1.4	33.4*	11.6
Non-English	#6.6	#2.7	#4.4	#1.3	#8.1	#7.7	#10.1*	#0.5	24.7	#12.1
Region (n = 2,336)										
Major city (ref.)	9.8*	#2.2	#5.2*	#0.7	10.3	8.3	8.2*	#1.4	29.8*	11.5
Inner regional	8.5	#3.4	#5.3*	#0.3	13.4	#8.3	11.8*	1.2	36.7*	13.2
Outer regional/remote	#9.8	#1.9	#5.2*	#0.0	#15.3	#7.5	#14.2*	#0.9	37.7*	#9.3

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	ICT %		Engineering %		Design Technology %		Construction & Industrial Technology %		Any Technology or Engineering subject %	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Family socio-economic position (n = 2,333)										
Lowest 25% (ref.)	#9.5	#4.7	#7.5	#1.5	#9.9	#7.4	13.6*	#0.6	36.8*	13.0
Middle 50%	10.2*	#1.7	4.5	#0.4	13.2	8.7	9.4*	#1.4	32.7*	11.7
Highest 25%	7.0*	#2.3	4.5	#0.0	9.2	8.6	7.6*	#1.9	26.7*	11.8
Top 3 career aspirations	#ICT #Engineering and emergency services	#Creative arts and media #Teachers #Defence and emergency services	#Engineering #ICT #Science careers	#Engineering #Tradespeople	#Tradespeople #Creative arts and media #ICT	#Creative arts and media #Teachers #Defence and emergency services	#Tradespeople #Engineering #Creative arts and media	#Creative arts and media #Hospitality #Science careers	#Tradespeople #Engineering #ICT	Creative arts and media #Teachers #Defence and emergency services

Notes: * Indicates the difference between the percentage of boys and girls enrolled is statistically significant at the 5% level. ref. Indicates reference category. ^ Indicates a significant difference from the reference category is significant at the 5% significance level. # Estimate not reliable (cell count <20).

Source: LSAC Waves 6 and 7, K cohort, weighted

9.4 Gender participation in STEM subjects

The LSAC data show that fewer girls than boys select STEM subjects in Years 11 and 12, confirming previous Australian and international research (Ainley et al., 2008; Watt et al., 2012). This finding is no doubt related to the under-representation of girls in STEM-related education and occupations, and supports the argument that gender imbalances in tertiary education and high-paying jobs in STEM fields can be traced back to students' choice of STEM subjects in secondary school (Justman & Méndez, 2016; Lamb et al., 2015; Martin, 2007).

For some subjects, gender differences in the odds of enrolment remained even after accounting for educational expectations, career aspirations, earlier academic performance, characteristics of the school, language, socio-economic position and region of residence (Table 9.7).

Table 9.7: Odds of boys (vs girls) enrolling in secondary school subjects

Subject	Odds Ratio
Maths	1.2
Basic Maths	1.0
Intermediate Maths	1.1
Advanced Maths	2.0***
Science	1.0
Biology	0.7***
Chemistry	1.3*
Physics	3.3***
Life Sciences	0.9
Technology	2.3***
ICT	1.0
Engineering	2.9***
Design Technology	4.9***
Construction and Industrial Technology	5.7*

Notes: Logistic regression, year level, language spoken at home, Year 9 NAPLAN Numeracy scores, educational expectations and career aspirations, family socio-economic status, residential location, state, school sector and single-sex school. Odds ratios reported. **p* < .05; ***p* < .01; ****p* < .001. *n* = 2,001.

Source: LSAC Waves 6 and 7, K cohort, unweighted

Figure 9.1: Boys were more likely to choose STEM subjects than girls



Credit: Longitudinal Study of Australian Children 2019
(creativecommons.org/licenses/by/4.0/)

After accounting for other factors, compared to girls:

- The odds of enrolling in Advanced Maths were doubled for boys.
- The odds of studying Physics were 3.3 times higher for boys.
- The odds of studying Biology were 30 percentage points lower for boys.
- The odds of enrolling in a technology subject were more than doubled for boys.
- The odds of taking an engineering subject were almost tripled for boys.
- The odds of enrolling in Design Technology were almost five times higher for boys.
- The odds of participating in Construction and Industrial Technology were almost six times higher for boys.

Summary

While the secondary school educational system aims to offer equal and efficient education to Australian students, regardless of personal, family and social factors, significant differences exist in students' school subject participation in their final two years of school. These differences are an important influence on subsequent educational and occupational outcomes. This chapter presents the subject selections for study in Years 11 and 12 of Australian school students in 2016. Clear gender differences were observed for some subjects. Most notably, more boys than girls selected key STEM subjects. Boys outnumbered girls almost two to one in Advanced Maths, three to one in Physics and Engineering and five to one in Design Technology.

A range of individual, social, societal, school and geographical factors have been found to be related to school subject choice and many of these were examined in section 9.2. Differences in enrolments for certain subjects were observed according to educational expectations, career aspirations, prior numeracy attainment, and whether the school attended was single-sex or co-educational. Even when taking these factors into account, the gender bias in STEM subject enrolments remained: boys were significantly more likely to select STEM subjects.

Girl students' under-representation in STEM subjects in the final years of secondary school contributes to future gender segregation in tertiary education and, in the long-term, the gender gap in wage and career prospects (Gundert & Mayer, 2012; Justman & Méndez, 2016). More importantly, STEM education is vital for future economic and technological development in Australia – with STEM skills in high demand, the under-representation of girls will contribute to a shortage in the STEM-related workforce and competencies. For this reason, a broad range of programs promoting STEM for pre-school and school-aged girls have been established and delivered by government, industry and education providers (Australian Academy of Science, 2019; Department of Industry Innovation and Science, 2019).

Understanding the complex range of factors that lead to the under-representation of girls in STEM subjects is an important first step in addressing the gender imbalance. Recent Australian reviews of the issue have identified factors such as lack of role models, lack of understanding of career options, family/cultural expectations and disengagement from STEM education as key barriers (Australian Academy of Science, 2019; Hobbs et al., 2017). The National STEM School Education Strategy (2016–2026) agreed by all Commonwealth and state and territory education ministers highlights the need for action at all stages of education and emphasises the importance of reducing student disengagement from STEM in the primary and middle school years (Education Council, 2015). This is a particular problem for girls. The Academy of Science's Women in STEM Decadal Plan has an aspiration that: 'The Australian education system inspires, enables and encourages girls and women at all levels to study STEM courses and equips them with the skills and knowledge to participate in STEM and related careers of the future.' (Australian Academy of Science, 2019, p. 33). As widely recognised, and confirmed in this chapter, there is a long path ahead to achieve this vision as demonstrated by the stark gender imbalance in Australian secondary school students' STEM subject selection.

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10

Adolescents' resilience

Tracy Evans-Whipp and Constantine Gasser



Key findings

On average, resilience levels were higher among 16-17 year olds who had:

- consistently close relationships with one or both parents
- at least one close friend
- friends they could trust and communicate with about problems
- a strong sense of belonging at school.

On the other hand, average resilience levels were lower for 16-17 year olds who:

- were more inclined to experience negative emotions, such as anger, anxiety, or depression (were high in neuroticism)
- experienced conflict with their parents (between the ages of 12 and 15)
- lacked family support (between the ages of 10 and 13)
- had been the victim of bullying.

At age 16-17, boys reported higher levels of resilience than girls.

In the course of growing up, young Australians are likely to experience difficult circumstances and stressful life events. For adolescents, these difficult circumstances can include everyday challenges such as arguments with friends, sporting losses or disappointments with test results. More serious problems commonly encountered are family breakdown, illnesses or deaths of family members or friends, or being the victim of bullying. The ability to recover or 'bounce back' from setbacks, adapt to difficult circumstances that cannot be changed, and learn and grow from such experiences is termed 'resilience' (Connor & Davidson, 2003; Luthar, Cicchetti, & Becker, 2000; Masten, 2014; Rutter, 2006). Resilience is an important skill for navigating life's ups and downs, which would be beneficial to enhance in young people, as there are concerns that resilience in young Australians is in decline (Orygen, 2017).

Research suggests that a person's resilience is determined by a variety of factors, including individual, biological and psychological characteristics, relationships with family and peers, and environmental influences such as those in the school and broader community (VicHealth, 2015b). Throughout their lives, children and adolescents

might have different vulnerabilities and protective systems affecting their resilience. For example, adolescents may be particularly vulnerable to stresses relating to family, friends and schools (Wright & Masten, 2005). Significant changes in social environments in late adolescence and the transition to adulthood – including employment, tertiary education and/or leaving the family home – may also affect resilience (Burt & Paysnick, 2012; Masten et al., 2004).

Resilience can change as individuals interact with and respond to people in their lives and their environments. This creates opportunities to promote resilience in young people in different settings (Masten, 2009). This chapter explores levels of self-reported resilience at age 16–17 years and examines whether resilience differs according to characteristics of the individual and their family, peer and school environments. The insights in this chapter may help us to understand which aspects of adolescents' lives are related to their resilience and how policy and practice interventions can be designed to help prepare adolescents for the transition into adulthood.

10.1 How resilient are teenagers?

There are many different aspects to resilience, including the ability to cope and adapt with changes and challenges, the capacity to deal and persist with problems without being overwhelmed, and self-belief in one's ability to deal with obstacles (see Box 10.1).

Of all the resilience statements, boys and girls at 16–17 years old rated trying to see the humorous side of things most highly, reflecting a common ability to use humour when faced with problems (Figure 10.1). However, fewer boys and girls felt that coping with stress strengthened them or that they were not easily discouraged by failure. This suggests that many young people do not feel that they can persist when faced with adversity.

Overall, a significantly greater proportion of boys than girls reported higher levels of resilience, saying that they often (or nearly always) displayed characteristics related to being resilient. For example:

- Fifty-one per cent of boys and 37% of girls said that they were not easily discouraged by failure.
- Sixty-three per cent of boys and 45% of girls said that they can usually handle unpleasant feelings.
- Fifty per cent of boys and 39% of girls responded 'often or nearly always true' to the statement 'coping with stress can strengthen me'.
- Sixty-seven per cent of boys and 58% of girls felt that they could (often or always) deal with whatever comes.

On average, the total resilience score for adolescents was 26.5 out of 40.¹ This suggests that the 'average' 16–17 year old views themselves as displaying resilient characteristics 'often'. Boys had significantly higher resilience scores than girls – 27.6 out of 40 for boys compared to 25.5 for girls.²



Box 10.1: Resilience measures in LSAC

At age 16–17 (Wave 7), the LSAC K cohort reported for the first time on their perceptions of their resilience. This was measured using the Connor-Davidson Resilience Scale (CD-RISC-10) (Campbell-Sills & Stein, 2007). Study adolescents were asked to consider how true the following statements were for them in the past month:

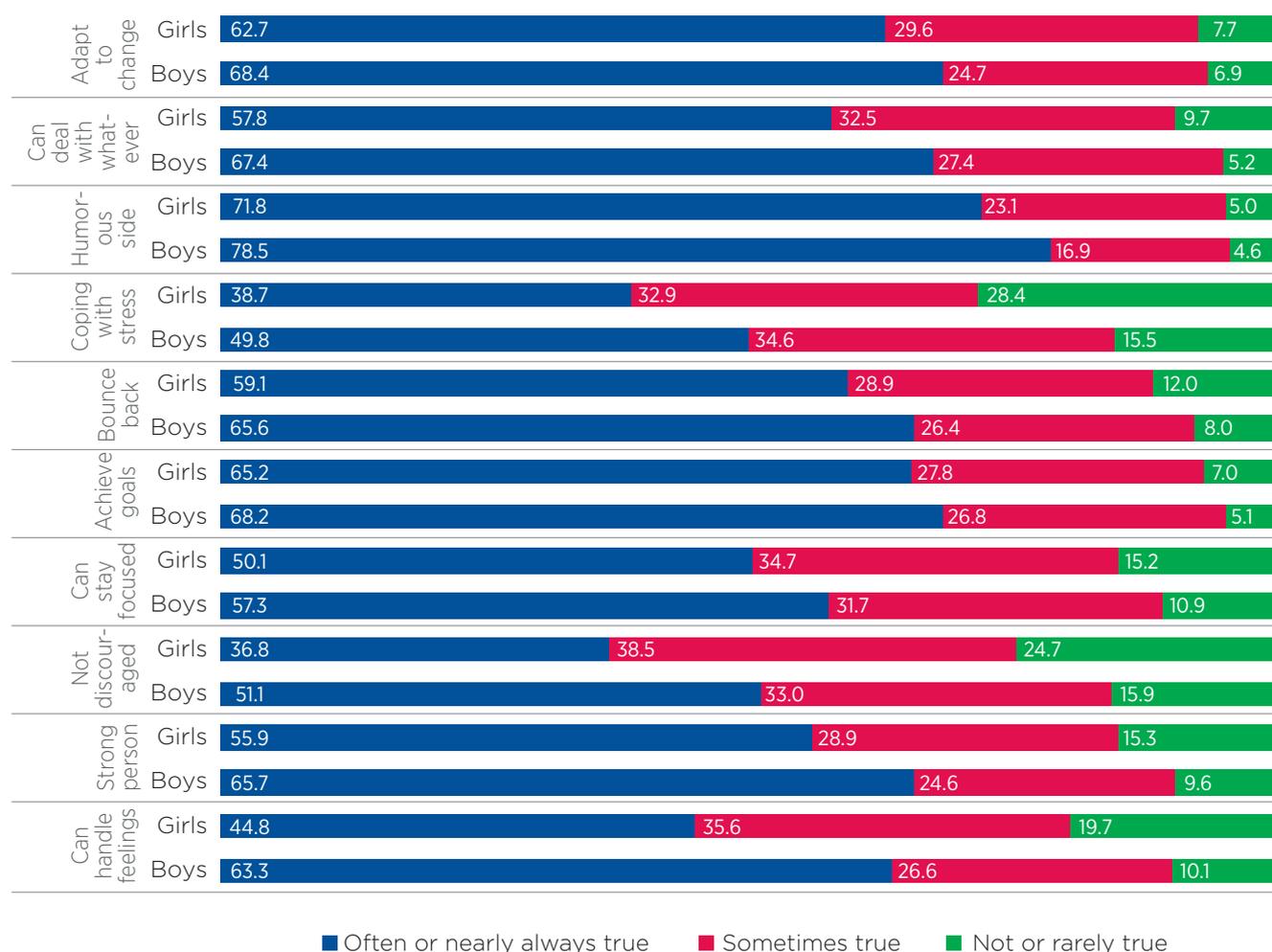
- Able to adapt to change
- Can deal with whatever comes
- Tries to see the humorous side of things
- Coping with stress can strengthen me
- Tend to bounce back after illness or hardship
- Can achieve goals despite obstacles
- Can stay focused under pressure
- Not easily discouraged by failure
- Thinks of self as strong person
- Can handle unpleasant feelings.

They could choose from 'Not true at all' (scored 1), 'Rarely true' (2), 'Sometimes true' (3), 'Often true' (4) and 'True nearly all of the time' (5). If a particular situation had not occurred recently, participants were instructed to answer according to how they think they would have felt.

A total resilience score was created by summing the response score of all 10 items (recoded 0–4). The possible range for the resilience scale was therefore 0–40, with higher scores indicating higher levels of resilience.

¹ Standard deviation (SD) = 7.1

² Standard deviation: Boys = 7.0; Girls = 7.1

Figure 10.1: Percentage of 16–17 year olds reporting aspects of resilience, by gender

Notes: With the exception of 'achieve goals', differences for girls and boys were significant at the 5% level (determined by non-overlapping 95% confidence intervals). $n = 1,445$ for girls and $1,483$ for boys.

Source: LSAC K cohort, Wave 7, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Higher levels of resilience among boys have been seen in other population studies that have measured resilience in the same way (Campbell-Sills, Forde, & Stein, 2009; VicHealth, 2015a). While it is possible that this may be due to reporting bias, with males perhaps being more likely to appear strong in the face of stress, other studies that have measured resilience in different ways have also shown significantly higher levels of resilience in males (Bonanno, Galea, Bucciarelli, & Vlahov, 2007). The finding that, on average, girls report lower levels of resilience than boys, is also in line with the observation that females have higher rates of psychiatric disorders, such as anxiety and phobias, which may have a stress-related component (Craske, 2003).

10.2 Personality and resilience

Personality traits may be related to successfully coping with negative or stressful life events (Box 10.2). For example, young people with high levels of neuroticism – which includes traits such as anxiety, insecurity, self-doubt, short temper and instability – may be more susceptible to stress and negative emotions, and so have lower resilience (Campbell-Sills et al., 2009).

For 16–17 year olds, there were large differences in average levels of resilience according to each of the Big 5 personality traits (Figure 10.2).

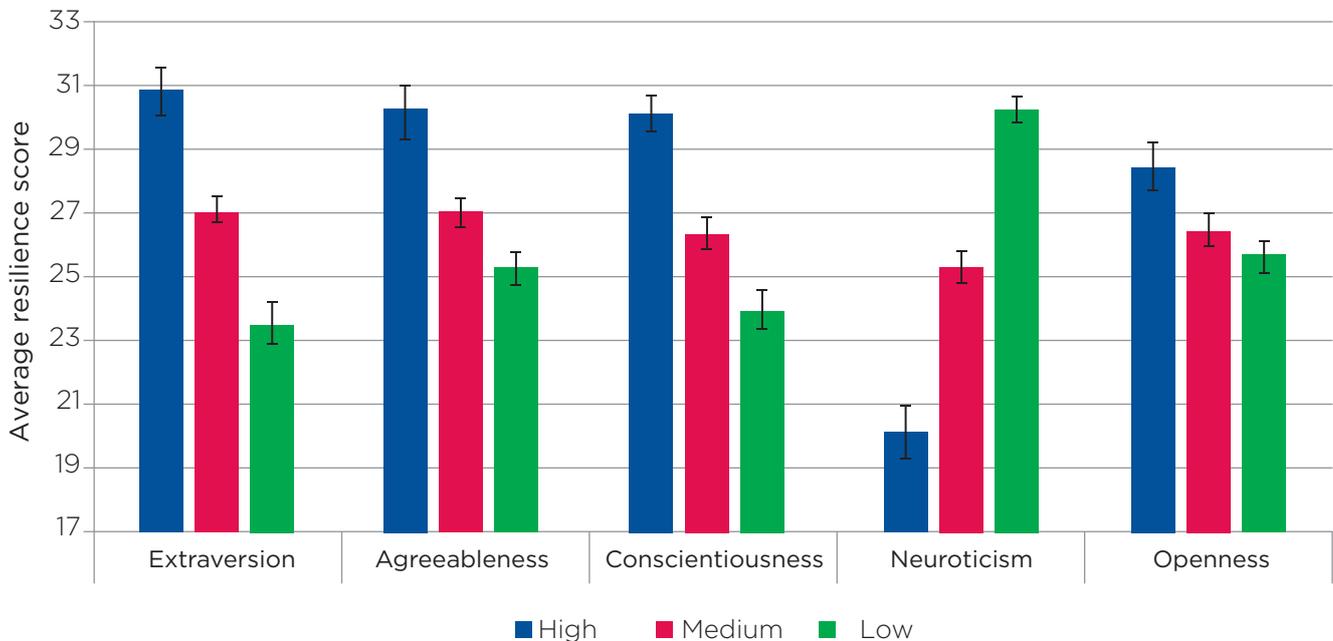
Box 10.2: Big 5 personality traits

Personality traits were measured in the LSAC K cohort at Wave 7 using the Big 5 Personality Inventory, (BFI-10) (Rammstedt & John, 2007). Adolescents were asked to rate how well the following 10 statements described their personality on a five-point scale from ‘1 = disagree strongly’ to ‘5 = agree strongly’:

1. Extraversion
 - *I see myself as someone who is reserved; keeps thoughts and feelings to self. (reversed)*
 - *I see myself as someone who is outgoing, sociable.*
2. Agreeableness
 - *I see myself as someone who is generally trusting.*
 - *I see myself as someone who tends to find fault with others. (reversed)*
3. Conscientiousness
 - *I see myself as someone who tends to be lazy. (reversed)*
 - *I see myself as someone who does things carefully and completely.*
4. Neuroticism
 - *I see myself as someone who is relaxed, handles stress well. (reversed)*
 - *I see myself as someone who gets nervous easily.*
5. Openness
 - *I see myself as someone who doesn't like artistic things (plays, music). (reversed)*
 - *I see myself as someone who has an active imagination.*

For each of the five personality traits, the average of the two items formed a scale ranging from 1 to 5. Each of the personality traits was then classified as High (top 25%), Medium (middle 50%) or Low (lowest 25%).

Figure 10.2: Average resilience scores, by Big 5 personality traits



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different. *n* = 2,933.

Source: LSAC Wave 7, K cohort, weighted

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On average, higher levels of extraversion, agreeableness, conscientiousness and openness were associated with higher resilience scores. However, those with higher levels of neuroticism had lower resilience scores – 16–17 year olds with high levels of neuroticism had average resilience scores that were 10 points (approximately 1.5 SD) lower than those with low levels of neuroticism (Figure 10.2). It is possible that this relationship may partly account for the observation that girls report lower levels of resilience than boys. Females consistently report higher levels of neuroticism than males (Schmitt, Realo, Voracek, & Allik, 2008) and the LSAC data show that at age 16–17, 19% of females were high in neuroticism, compared to 7% of boys.

These findings, which have also been observed in many other studies (Oshio, Taku, Hirano, & Saeed, 2018), support the idea that the main elements of resilience include a higher level of self-control and motivation towards accomplishments, a higher level of positive emotions and engagement with social activity, and a higher level of emotional stability or lower level of negative emotions.

10.3 Parent-child relationships and resilience

Close relationships between adolescents and their parents are known to promote and support positive development (Masten, 2018; Masten & Shaffer, 2006). Even though adolescents become less dependent on their parents as they grow, their relationship with their parents continues to be a major influence in their lives (Collins & Roisman, 2006; Smart, Sanson, & Toumbourou, 2008). Stable and supportive parent-child relationships can be protective in helping adolescents deal with stress and challenges (Bowes, Maughan, Caspi, Moffitt, & Arseneault, 2010; Garmezy, 1985). Growing up in a family environment characterised by instability, conflict or neglect has a well-documented negative effect on adolescent development and may compromise resilience (Walper & Beckh, 2006).

Using the same data, another study has shown that the proportion of adolescents reporting feeling 'very close' to mothers and fathers decreased between ages 12–13 and 14–15 (Yu & Baxter, 2018). When considering how many of the 16–17 year olds had been 'very close' with one or both parents when they were 12–13 and 14–15 years of age, approximately half reported very close relationships at both ages, 29% had been very close at one age only and 22% had not been very close at either age. Teenagers' resilience levels

differed depending on their relationship with their parents in early and mid-adolescence (ages 12–13 and 14–15). On average, teenagers who reported having a very close relationship with one or both of their parents during early and mid-adolescence had higher levels of resilience at age 16–17 (by almost 3 points, approximately 0.5 SD) compared to those who were not close to their parents at either age (Figure 10.3).

Box 10.3: Closeness with parents

At ages 12–13 and 14–15, the LSAC study children were asked:

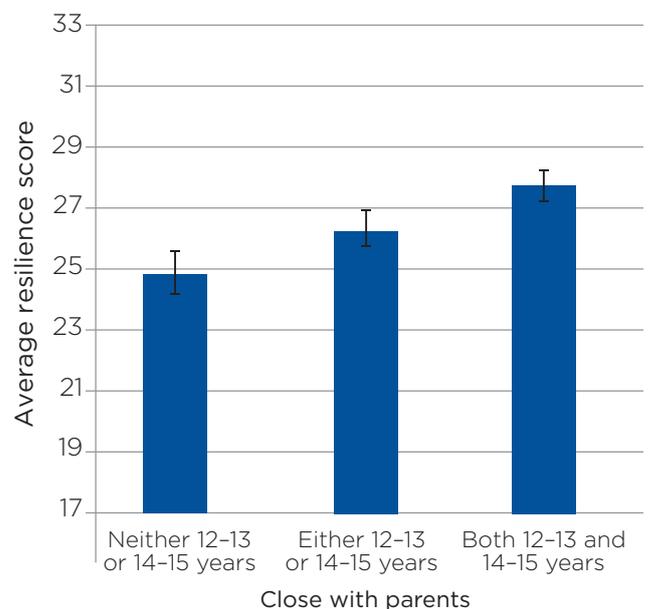
- 'How close do you feel to your mum?'
- 'How close do you feel to your dad?'

with the following response options: 'very close', 'quite close', 'not very close', and 'not close at all'.

At each age, children were rated as 'very close with at least one parent' if they responded 'very close' to either mum or dad or both.

These questions were adapted from the Adolescent Survey of the Longitudinal Study of Separated Families (Australian Institute of Family Studies, 2009).

Figure 10.3: Average resilience scores, by closeness with parents at 12–13 and 14–15 years



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different. $n = 2,542$.

Source: LSAC Waves 5–7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Box 10.4: Parent-child conflict

Parent-child conflict was assessed based on parent responses to a series of questions about different types of conflict when their child was aged 12-13 (Wave 5) and 14-15 (Wave 6). Mothers and fathers responded separately on how often they experienced the following situations on a five-point scale (1 = 'not at all', 2 = 'a little', 3 = 'sometimes', 4 = 'pretty often', 5 = 'almost all the time'):

- We disagree and fight.
- We bug each other.
- We yell at each other.
- We stay angry for a very long time.
- I refuse to talk to the study child.
- The study child stomps out of the house.

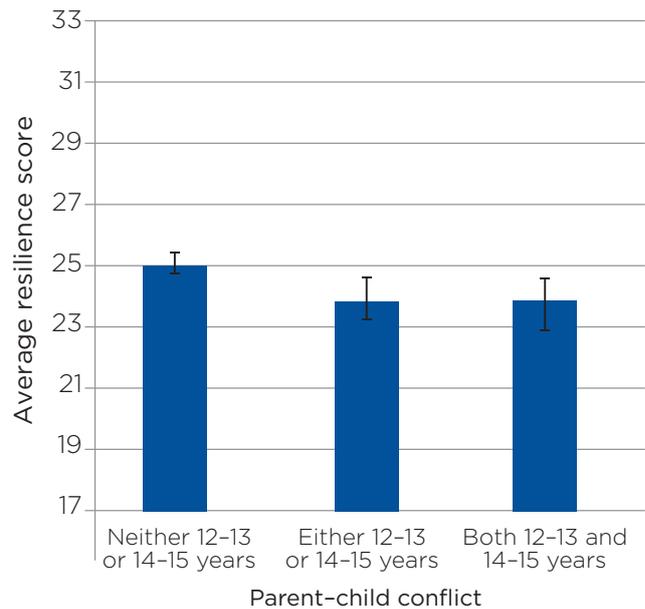
These items were adapted from the Canadian National Longitudinal Survey of Children and Youth (NLSCY) (Statistics Canada, 2000)

From these responses, average parent conflict scores were derived, ranging from 1 to 5, with higher scores indicating higher frequency of parent-child conflict. Parents were considered to have experienced no conflict if their average conflict score was less than 2 and to have experienced 'at least some' conflict if their scores were 2 or higher.

Adolescence can often be a time of increased parent-child conflict as adolescents develop their own identity and assert their independence from their parents. While a certain level of conflict might be considered normal during this period, high levels of conflict can have a negative effect on adolescents' psychological development (Steinberg, 2001). Based on parents' reports of parent-child conflict when the study child was aged 12-13 and 14-15, approximately 19% of 16-17 year olds had been exposed to parent-child conflict at one age only and 13% had experienced parent-child conflict at both ages. Two thirds of parents (67%) reported that they had not experienced conflict with their child when they were 12-13 or 14-15 years old.

On average, resilience scores were higher (1.6 points or 0.2 SD) among 16-17 year olds whose parents did not report any conflict, compared to those experiencing conflict in one or two waves (Figure 10.4). There was no difference in resilience scores between adolescents whose parents reported conflict at just one wave or at both, suggesting that *any* conflict, even non-sustained or episodic parent-child conflict, may be damaging to adolescent resilience.

Figure 10.4: Average resilience scores, by parent-child conflict at 12-13 and 14-15 years



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different. *n* = 2,608.

Source: LSAC Waves 5-7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

10.4 Family factors and resilience

Family factors beyond the parent-child relationship, such as family structure and demographic characteristics, may also influence adolescents' resilience. For example, socio-economic disadvantage has been associated with lower resilience in adults (Campbell-Sills et al., 2009).

Average resilience scores differed depending on family characteristics such as family structure, birth order, parents' combined income and parents' education levels (Figure 10.5). However, these differences were not as large as those related to parent-child closeness (Figure 10.3). Compared to 16-17 year olds whose parents' income was in the top 25%, those whose parents' income was in the lowest quarter had resilience scores that were, on average, over 1.4 points (0.2 SD) lower (Figure 10.5). Resilience also differed by parents' education levels, with those whose parents had a degree or higher having resilience scores that were 2.3 points (0.3 SD) higher than those with parents whose highest level of education was Year 12 or below. It is likely that higher levels of parent education and income provide cognitive and material

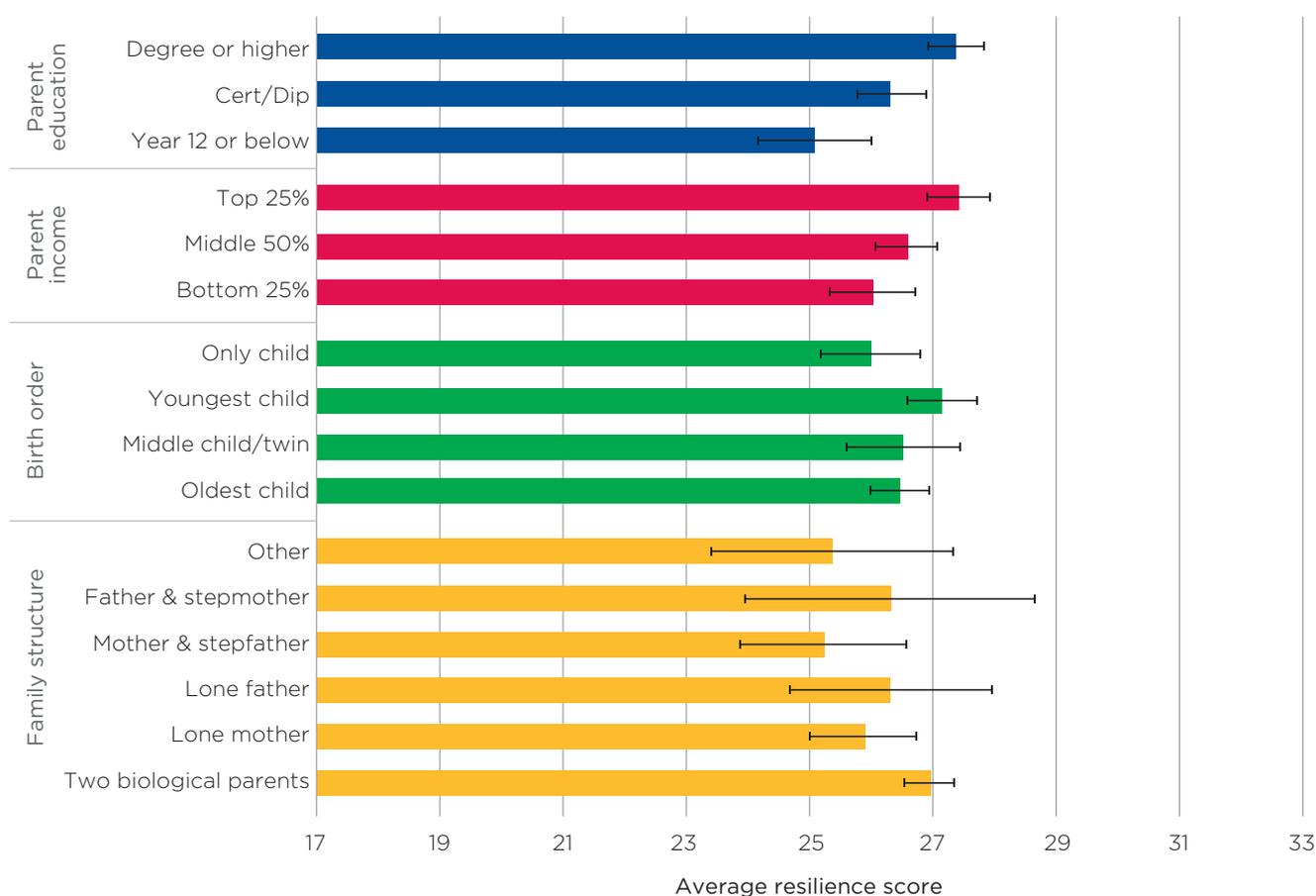
resources that help to lower stress and increase resilience in adolescents (Campbell-Sills et al., 2009).³

While parental separation can be a stressful and even traumatic experience affecting resilience (Schaan & Vögele, 2016), average resilience scores did not differ greatly between adolescents in different family types. There were no significant differences in average resilience scores among 16–17 year olds in single-parent households and those living with both their biological parents, though average resilience scores for those who were living with their mother and a stepfather were 1.8 points (0.25 standard deviations)

lower than those living with both biological parents.

There has been some anecdotal evidence to suggest that levels of resilience may differ depending on birth order, with middle children being more flexible and resilient than other children (Adler, 1964; Grose, 2003); however, the LSAC data show no significant differences in average levels of resilience at the age of 16–17 according to birth order. It is possible that certain characteristics typically found in first-born children (persistence and self-efficacy) and youngest or only children (affability and positive outlook) contribute to resilience in different but positive ways.

Figure 10.5: Average resilience scores, by family demographic factors



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different. $n = 2,893$ for birth order and family structure; $n = 2,876$ for parent income; $n = 2,803$ for parent education.

Source: LSAC Wave 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

³ Many theories have been put forward to explain the negative impact of low socio-economic status on child and adolescent health and wellbeing outcomes, including resilience (Warren, 2017). Particularly relevant here are the Investment Model and the Family Stress Model. According to the Investment Model (Becker & Tomes, 1986) low income has a direct effect on child outcomes by limiting investments by parents in material resources beneficial for their children's outcomes (e.g. education, health services, extra curricular activities) as well as their own time spent doing activities that benefit the child. According to the Family Stress Model poverty causes stress, which diminishes parents' ability to parent their child, leading to restricted social and emotional development (e.g. McLoyd, 1998). Severe or sustained stress may also affect parents' own resilience, leading to poor role modelling to their children of how to cope successfully with stressful situations.

Family support refers to having people in your immediate or extended family who you trust when you want to talk about things that upset or worry you. At ages 10–11 and 12–13, LSAC study children were asked who they would talk to if they had a problem (Box 10.5).

Box 10.5: Family support

At ages 10–11 and 12–13, LSAC study children were asked, ‘If you had a problem, who would you talk to about it?’ They were given a list of possible people including their mother, their father, a sibling and other relatives. They could choose as many people as they liked from the list (Gray & Daraganova, 2018).

Study children were classified as having no family support if they responded ‘no’ to all four family options (mother, father, sibling and other relative).

A significant minority of approximately 16% of young people who had a lack of family support; that is, have not had people in their immediate or extended family who they trusted when they wanted to talk about things that made them upset or worried them consistently through their early adolescent years (10–13 years old), reported lower resilience levels at age 16–17. The average resilience score at age 16–17 for this group who lacked family support in early or mid-adolescence was 25.3 (95% CI: 24.4 – 26.2), approximately 0.2 SD lower than for those who had support at one or both ages 26.8 (95% CI: 26.4 – 27.2).

10.5 Peer relationships and resilience

Peer relationships are very important in adolescence. During this time, adolescents develop autonomy from their parents and increasingly turn to their peers for social interaction, advice and support (del Valle, Bravo, & Lopez, 2010).

Box 10.6: Good friendships

Having at least one good friend was measured at age 16–17 using an item from the Strengths and Difficulties Questionnaire (SDQ) Peer Problems subscale (Goodman, 1997), in which adolescents rated their agreement to the statement, ‘I have one good friend or more’, on a scale of ‘1 = Not true’, ‘2 = Somewhat true’ and ‘3 = Certainly true’. Approximately 84% of 16–17 year olds indicated they had at least one good friend by responding ‘Certainly true’.

Figure 10.6: Resilience levels were higher among 16–17 year olds with at least one good friend



Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Box 10.7: Peer relationships

The quality of peer attachments was measured in LSAC using the Peer Trust and Peer Communication subscales of the Peer Attachment Scale of the Inventory of Peer and Parental Attachment (Gullone & Robinson, 2005).

- *Trust* reflects the degree of mutual understanding and respect between peers. Adolescents rated how well four statements such as ‘I feel my friends are good friends’ and ‘I trust my friends’ reflect their peer relationships on a five-point scale from ‘1 = Almost always true’ to ‘5 = Almost never true’.

High peer trust was indicated by a mean scale score lower than one standard deviation below the LSAC sample mean. At age 16–17, approximately 58% reported high peer trust.

- *Communication* reflects the extent and quality of communication in peer relationships. Adolescents rated how well four statements such as ‘My friends sense when I’m upset about something’ and ‘My friends encourage me to talk about my difficulties’ reflect their peer relationships on the same five-point scale as for the trust sub-scale.

Good peer communication was indicated by a mean scale score lower than one standard deviation below the LSAC sample mean. At age 16–17, approximately 58% reported good peer communication.

At age 16–17 (see Figure 10.7), average resilience scores were higher for young people who had:

- At least one good friend — average resilience scores were over 4 points (0.6 SD) higher than for those who did not have at least one good friend.
- High levels of trust in their friends — average resilience scores were 3 points (0.4 SD) higher than for those with low levels of trust in their friends.
- Good communication with their friends — average resilience scores were 3.5 points higher (0.5 SD), compared to those who reported poorer communication with their friends.

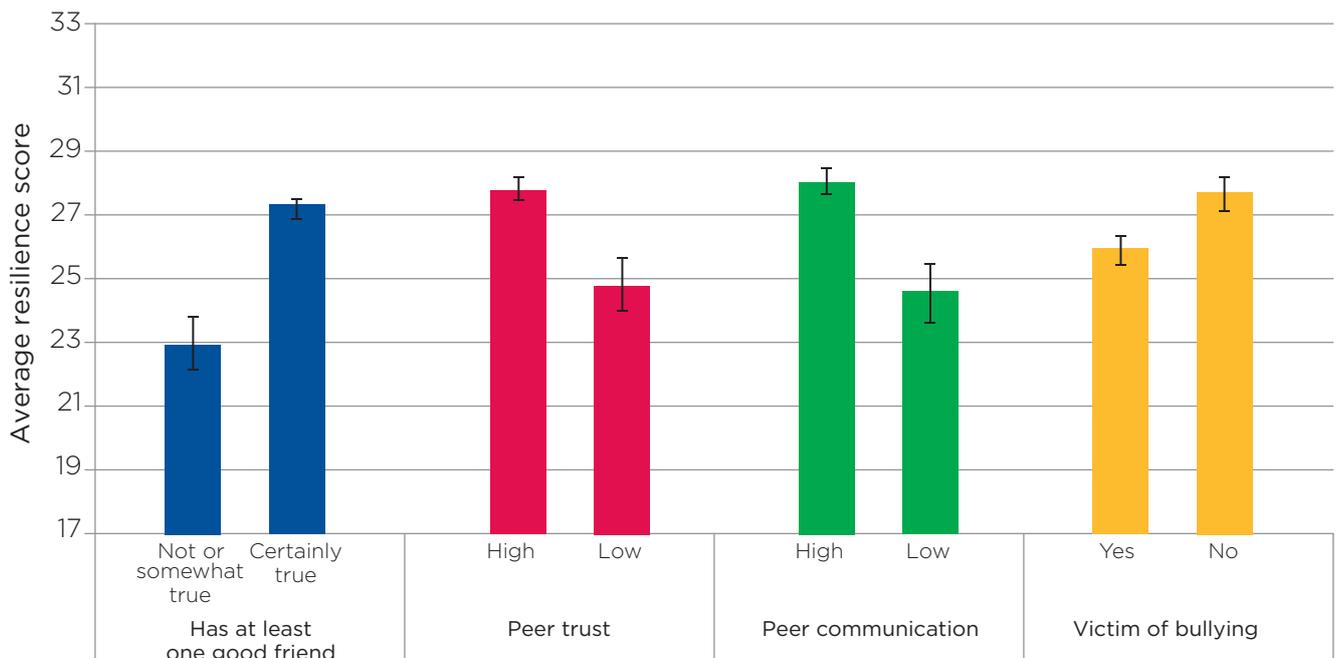
These results highlight the potential vulnerability of adolescents who do not have a close friend, or friends that they trust to talk with about any difficulties they may be facing. While positive relationships with peers can be a support for building resilience, the experience of being a victim of bullying can damage resilience (Box 10.8). Compared to those who had not experienced any form of bullying in the previous 12 months, those who had been the victim of some form of bullying had average resilience scores almost 2 points (0.25 SD) lower (Figure 10.7). This highlights the insidious nature of bullying and its potential to undermine mental health in the longer term (Vassallo, Edwards, Renda, & Olsson, 2014).



Box 10.8: Bullying

Bullying has been defined as intentional and repeated aggressive behaviour towards a peer that causes them harm (Smith et al., 1999). At age 16–17, LSAC study children were asked if they had experienced any of nine bullying behaviours such as ‘someone hit or kicked me on purpose’ and ‘someone said mean things to me or called me names’ in the past year (Brockenbrough, Cornell, & Loper, 2002). Teenagers were considered to have been the victim of bullying if they reported experiencing any act of bullying in the previous last 12 months. At age 16–17, approximately 58% indicated that they had been a victim of bullying.

Figure 10.7: Average resilience scores, by peer relationships



Notes: See Boxes 10.6, 10.7 and 10.8 for descriptions of measures. 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different. *n* = 2,925 for peer trust and peer communication; 2,934 for has at least one good friend and victim of bullying.

Source: LSAC Wave 7, K cohort, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

10.6. School belonging and resilience

Adolescents spend a large part of their lives at school, making it a very important social environment. It is where many of the peer interactions that affect resilience occur and it can play a key role in supporting young people.

Positive interactions with teachers and a feeling of being valued and supported at school may strengthen resilience, especially for adolescents who may show particular personality traits or lack family support (Tiet et al., 2010).

Box 10.9: School belonging

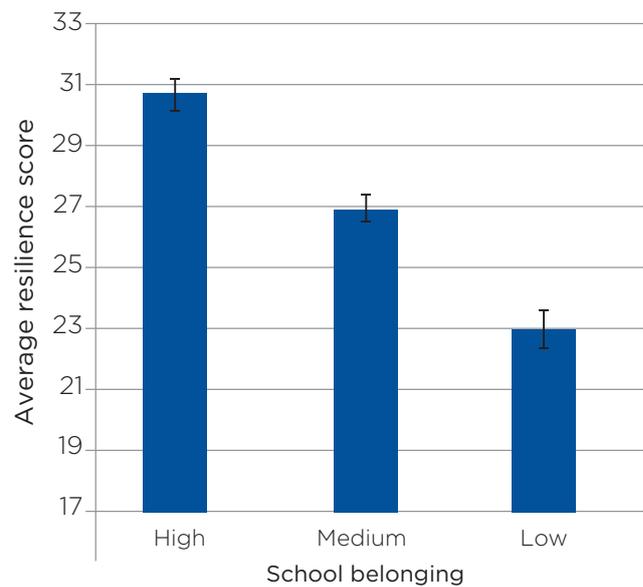
School belonging was measured in the LSAC study using the Psychological Sense of School Membership (PSSM) scale (Goodenow, 1993). This scale measures the extent to which students feel personally accepted, respected, included and supported by others in the school social environment. Students were asked to rate how true the following statements were for them on a five-point scale, ranging from 1 'not true at all' to 5 'completely true':

1. People here notice when I'm good at something.
2. It is hard for people like me to be accepted here.
3. Other students in this school take my opinions seriously.
4. Most teachers at this school are interested in me.
5. Sometimes I don't feel as if I belong here.
6. There's at least one teacher or other adult in this school I can talk to if I have a problem.
7. Teachers here are not interested in people like me.
8. I am included in lots of activities at this school.
9. I can really be myself at this school.
10. The teachers here respect me.
11. I wish I were in a different school.
12. Other students here like me the way I am.

A total score for school belonging was created by summing the score for all 12 items (items 2, 5, 7 and 11 were reverse coded). The scale score had a possible range of 12 (lowest school belonging) to 60 (highest school belonging). School belonging was classified as 'high' (top third of scores), 'medium' (middle third of scores) or 'low' (lowest third of scores).

At age 16–17, there were large differences in average resilience scores according to the level of school belonging that young people reported (Box 10.9). Resilience was highest among those who reported a high level of school belonging – around 4 points (0.6 SD) higher than for those with medium levels of school belonging and 7 points (1 SD) higher than for those who reported low levels of school belonging (Figure 10.8).

Figure 10.8: Average resilience scores at age 16–17, by levels of school belonging



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different. $n = 2,532$.

Source: LSAC Wave 7, K cohort, weighted

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These results confirm that, in general, the school environment, including relationships with teachers, is related to adolescents' resilience. It is not possible to know from these data if there is a direct causal relationship between school belonging and resilience, or whether another factor (e.g. depressive symptoms) is related to both school belonging and resilience. However, it is likely that a strong sense of belonging at school is especially important for adolescents from unstable or unsupportive families, and/or those with certain types of personality; for example, young people with higher levels of neuroticism who may be at risk of lower resilience.

Summary

This chapter has provided a snapshot of self-reported resilience among Australian 16–17 year olds. Resilience levels were related to individual characteristics, such as gender and personality. On average, males reported higher levels of resilience than females and young people with outgoing, conscientious, agreeable and emotionally stable personality traits reported higher levels of resilience. Young people with positive and supportive relationships with their parents and friends were shown to have significantly higher levels of resilience; and those who reported higher levels of school engagement also reported higher levels of resilience. This suggests that supports for teenagers in their family, peer and school networks may serve as opportunities for youth health and wellbeing policy and interventions.

The findings in this chapter raise suggestions for further research. Further analyses using longitudinal data will allow researchers and practitioners to understand how individual, family, peer, school and community factors act together over time to influence resilience. In this chapter resilience has been conceptualised as a character trait, measured by self-rating of resilience competencies. Broader concepts of resilience as a process of adaptation involve consideration and measurement of the internal and external resources available to an individual (Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003). These include those provided by family, friends or school as described in this chapter. Use of LSAC data to measure this form of resilience in young people will provide comprehensive guidance for policy makers as they assess who is at risk of low resilience and where interventions might best be targeted.

In addition, follow-up of the LSAC cohort at older ages will reveal how the self-rated measure of resilience examined in this chapter relates to more objective measures of resilience, such as coping with actual stressful life events as they arise. It will also allow researchers to study the effect of high versus low resilience in late adolescence on later life outcomes, such as employment, relationships, mental and physical health. A better understanding of resilience, along with its causes and effects on life outcomes, will help parents, teachers and others wishing to foster resilience in young people.

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Here to help: How young people contribute to their community

Constantine Gasser and Tracy Evans-Whipp



Key findings

- Approximately 40% of 12–13 year olds and 50% of 16–17 year olds reported volunteering in the last 12 months.
- Adolescents most commonly volunteered for sport or recreation organisations, school and children’s groups, and community or welfare organisations.
- Participation in volunteering was higher if adolescents:
 - were female
 - were older
 - had parents who also volunteered (particularly their mother)
 - had parents with higher levels of education
 - went to a Catholic or independent school, compared to a government school
 - were from non-English speaking backgrounds.
- Volunteering for sport and recreation organisations was more common among those living in regional or remote areas than those living in major cities.
- Volunteering for activities related to arts, heritage, culture or music was higher among Indigenous adolescents and those from non-English speaking backgrounds.

Youth engagement and community involvement has benefits for communities and young people alike. While the narrative about young people has often focused on deficits and risk behaviours, messages coming out of the Positive Youth Development (PYD) field since the early 1990s have stressed the importance of thinking about young people in terms of their developmental potential and positive outcomes (Benson, Scales, & Syvertsen, 2011; Catalano, Hawkins, Berglund, Pollard, & Arthur, 2002; Lerner, Almerigi, Theokas, & Lerner, 2005a). Participation in community-based activities is a key outcome of PYD since youth with social and emotional skills, a strong sense of self-worth and supportive relationships are more likely to become involved in their communities (Lerner, Lerner et al., 2005). Youth participation in community activities and civil society is also part of the *process* of PYD: when young people contribute, they are engaged as a source of change for their own and for their communities’ positive development (Hinson et al., 2016). One of the major ways that young people contribute to their community is through volunteering.

Australia has a strong culture of community volunteering – almost a third of Australian adults (5.8 million people) participated in voluntary work

in 2014 (Australian Bureau of Statistics [ABS], 2015a). In 2018, Australia was ranked sixth out of 146 countries worldwide for participation in volunteering activities (Charities Aid Foundation, 2018). The direct contribution of the volunteer workforce to the economy has been estimated at over \$17 billion (ABS, 2015c) and broader social and economic benefits have been estimated to be as high as \$200 billion (Volunteering Australia, 2015).

Volunteering is defined as ‘the provision of unpaid help willingly undertaken in the form of time, service or skills, to an organisation or group, excluding work done overseas’ (ABS, 2018).

As adolescents grow up, they are provided with volunteering opportunities that can enhance their mental and physical health (Moreno, Furtner, & Rivara, 2013; Schreier, Schonert-Reichl, & Chen, 2013) and improve social and academic outcomes (e.g. Elder & Conger, 2000; Moorfoot, Leung, Toumbourou, & Catalano, 2015). Beyond the direct contribution to the community, involvement in these activities is likely to benefit their development, personal growth, self-confidence and wellbeing, providing them with important life experiences and a feeling of being valued (e.g. Elder & Conger, 2000; Moreno et al., 2013). It allows adolescents to connect with new and different people, broadening their understanding of community diversity. The experiences and skills learned through voluntary

activities can also strengthen a young person’s career prospects (e.g. Walsh & Black, 2015) and volunteering has been associated with a lower involvement in crime (e.g. Ranapurwala, Casteel, & Peek-Asa, 2016).

There is little available data on youth volunteering in Australia, particularly under the age of 15 (Walsh & Black, 2015). Understanding volunteering trends in young people is important, given that there are clear individual and societal benefits. LSAC provides a unique opportunity to explore volunteering among young adolescents, and the association between parents’ and children’s involvement in volunteering activities. Using data collected in 2016, this chapter describes the types of voluntary activities that adolescents at 12–13 and 16–17 years and their parents participate in. The chapter also looks at the frequency and amount of time that adolescents spend volunteering, and the characteristics of adolescents who participate in these activities.

11.1 Participation in volunteering activities

Previous ABS data show that approximately two in five 15–17 year olds reported volunteering in 2014, which was the highest rate of involvement of all age groups. This group was most likely to participate in sport and physical recreation, education and training, welfare or community and religious group activities (ABS, 2015b).



Box 11.1: Volunteering activities and time spent volunteering

In Wave 7 of LSAC, study children in the B and K cohorts, aged 12–13 and 16–17, respectively, and their parents, were asked to indicate whether or not, in the last 12 months, they did any unpaid work for any of the following types of organisations:

- Church or religious groups
- Community or welfare organisations (e.g. Clean Up Australia, The Smith Family)
- School and children’s groups (e.g. canteen, teacher’s aide, play group, child care)
- Sport and recreation (e.g. coaching, refereeing)
- Arts, heritage, cultural or music activities (e.g. museum)
- Youth, student service, mentoring, leadership or adventure (e.g. scouts)
- Environment (e.g. conservation)
- Animal welfare (e.g. RSPCA)
- Emergency services (e.g. firefighting, search and rescue)
- Health or health care (e.g. volunteering in a hospital or clinic)
- Teaching or training (e.g. TAFE, community college, adult education classes)
- Immigrant or refugee assistance
- International aid or development (e.g. Oxfam)
- Law, justice, political or human rights (e.g. Amnesty International)
- Business or professional associations or unions
- Ethnic and ethnic-Australian societies
- Other

The questions were adapted from the Australian Bureau of Statistics General Social Survey (ABS, 2011).

At age 12–13 and 16–17 study participants who reported they had done some voluntary work were asked:

In the last 12 months, how often did you work for this organisation or these organisations on a voluntary basis?

Response options were: ‘at least once a week’, ‘at least once a fortnight’, ‘at least once a month’, and ‘at least once a year’. Interviewers were instructed to classify voluntary work done over a block of time (e.g. a three-month period) as ‘at least once a year’.

In total, how many hours did you do volunteer activities for this organisation or these organisations per week, fortnight, month or year?

Interviewers were instructed to enter whole hours. Hours given per week, fortnight or month were converted to number of hours per year.

The LSAC data in 2016 show that around four in 10 (43%) 12–13 year olds and over half (53%) of 16–17 year olds reported having participated in some type of voluntary work in the past year.

The most common types of volunteering activities, among 12–13 year olds and 16–17 year olds (Figure 11.1) were:

- sport and recreation – 16% at age 12–13 and 19% at age 16–17
- school and children’s groups – 12% at age 12–13 and 15% at age 16–17
- community or welfare organisations – 11% at age 12–13 and 13% at age 16–17.

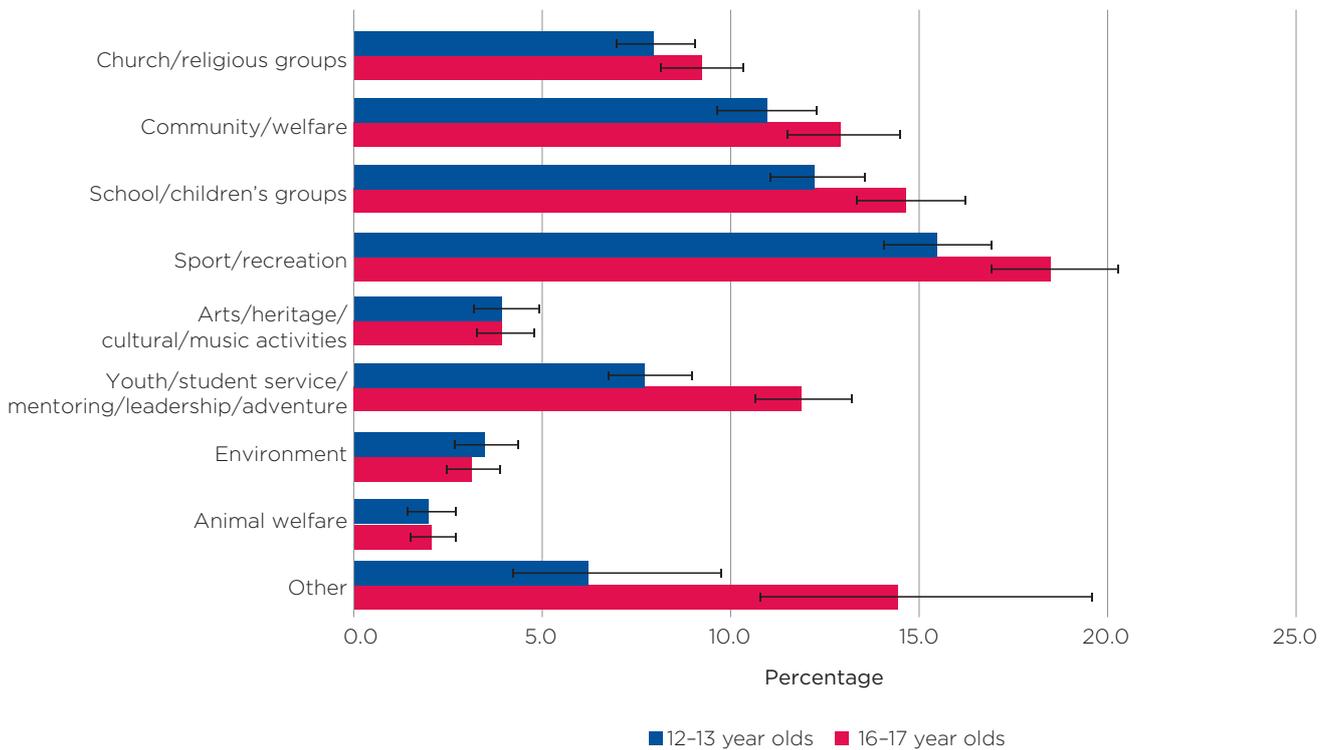
This may be because these types of volunteering activities are more readily available for young people at both age groups. Adolescents may also become involved in these activities at an early age and continue to participate in the same type of activities as they grow older. Additionally, adolescents might be connected to these activities through their schools or at least be encouraged by their schools to participate in these activities.

As adolescents become older, they may be more likely to take on leadership or mentoring roles while they decide on future education or employment opportunities (Figure 11.1). For example, more 16–17 year olds than 12–13 year olds participated in voluntary work related to youth, student service, mentoring, leadership or adventure (12% vs 8%). The LSAC data also show that more 16–17 year olds than 12–13 year olds volunteered for ‘other’ types of organisations (15% vs 6%), which may also suggest an increase in interest and opportunity to try a range of volunteering activities available to older adolescents. It is also likely that there are age restrictions for particular volunteering activities, limiting the choices of 12–13 year olds to participate in different volunteering activities.

Among those who volunteered, most (approximately three in five in both age groups) reported doing volunteer work for one organisation type.¹ Around a quarter of adolescents volunteered for two organisation types and around one in six volunteered for three or more organisation types. This suggests that when adolescents volunteer, many are involved in a range of volunteering activities.

¹ This does not necessarily mean that adolescents only volunteered for one organisation; they may have volunteered for multiple organisations of the same type.

Figure 11.1: Volunteering at age 12–13 and 16–17, by organisation type



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. The 'Other' category includes the following types of organisations: emergency services, health or health care, teaching or training, immigrant or refugee assistance, international aid or development, law, justice, political or human rights, business or professional associations or unions, and ethnic and ethnic-Australian societies, which all had very small (less than 1% in either cohort) numbers of adolescent volunteers. *n* = 3,222 for B cohort (age 12–13) and 2,950 for K cohort (age 16–17).

Source: LSAC Wave 7, B and K cohorts, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

11.2 Time spent volunteering

The LSAC data show that for 12–13 year olds and 16–17 year olds, there were two common patterns of volunteering – regular commitments (weekly or fortnightly) and involvement in less frequent occasions, which might range from a one-off activity on a single day to contributions that continue for a period of time and then discontinue (Figure 11.3). There was no difference in the frequency of volunteering by gender. Given volunteering at least once a week was a very common pattern for adolescents (35% of 12–13 year olds and 38% of 16–17 year olds), it is clear that there is a large number of adolescents giving a substantial amount of time to volunteer activities.

On average, 12–13 year olds who volunteered accrued 76 hours per year and 16–17 year olds engaged in 117 hours of volunteering per year. The contribution of the older cohort is similar to that reported by the

ABS, which found that volunteers aged 15 years and older contributed an average of 128 hours of voluntary work in the last 12 months (ABS, 2015b). This would be influenced by the level of support provided by organisations for adolescents to participate in volunteering activities – as young people become older they become more independent and need less supervision, allowing them to volunteer for longer periods of time. This would also be supported by school requirements, which would encourage their engagement in volunteering activities. There was no significant difference in the average hours of volunteering by gender.

For 12–13 year olds, there was a difference in the number of hours that adolescents spent volunteering according to the organisation that they volunteered for (Figure 11.4).

For example, 12–13 year olds who volunteered for community or welfare organisations spent an average of 53 hours per year.² This was the lowest of all organisation types and contrasts with those who volunteered for activities related to youth, student service, mentoring, leadership or adventure who volunteered double the amount of time (an average of 112 hours total volunteering per year). Among adolescents aged 16–17 years, there was no difference in the number of hours that young people volunteered for according to organisation type.

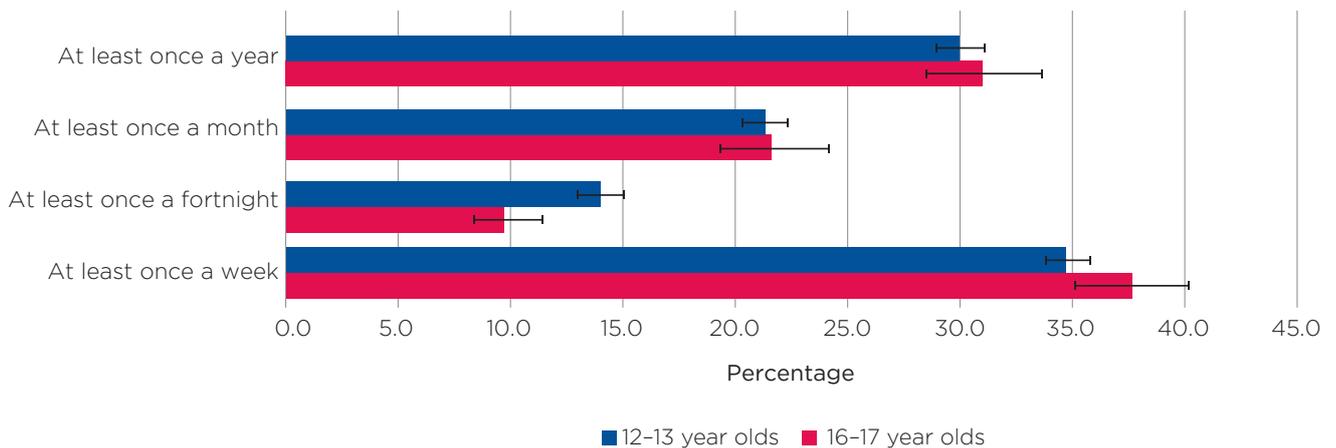
The average number of hours spent volunteering per week was related to the frequency of volunteering. Adolescents of both age groups who volunteered fortnightly volunteered for an average of almost two hours per week (or four hours per fortnight). This increased to an average of nearly three hours per week for those 12–13 year olds volunteering at least once a week (over four hours per week for 16–17 year olds). The LSAC data showed that adolescents at 12–13 years who volunteered less than monthly (at least once a year) did so for an average of six hours per year, or approximately three quarters of a working day. For 16–17 year olds this increased to 17 hours, or approximately two working days, over the course of a year.

Figure 11.2: Approximately 50% of 16–17 year olds had volunteered in the last 12 months



Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Figure 11.3: Frequency of volunteering among volunteers at ages 12–13 and 16–17



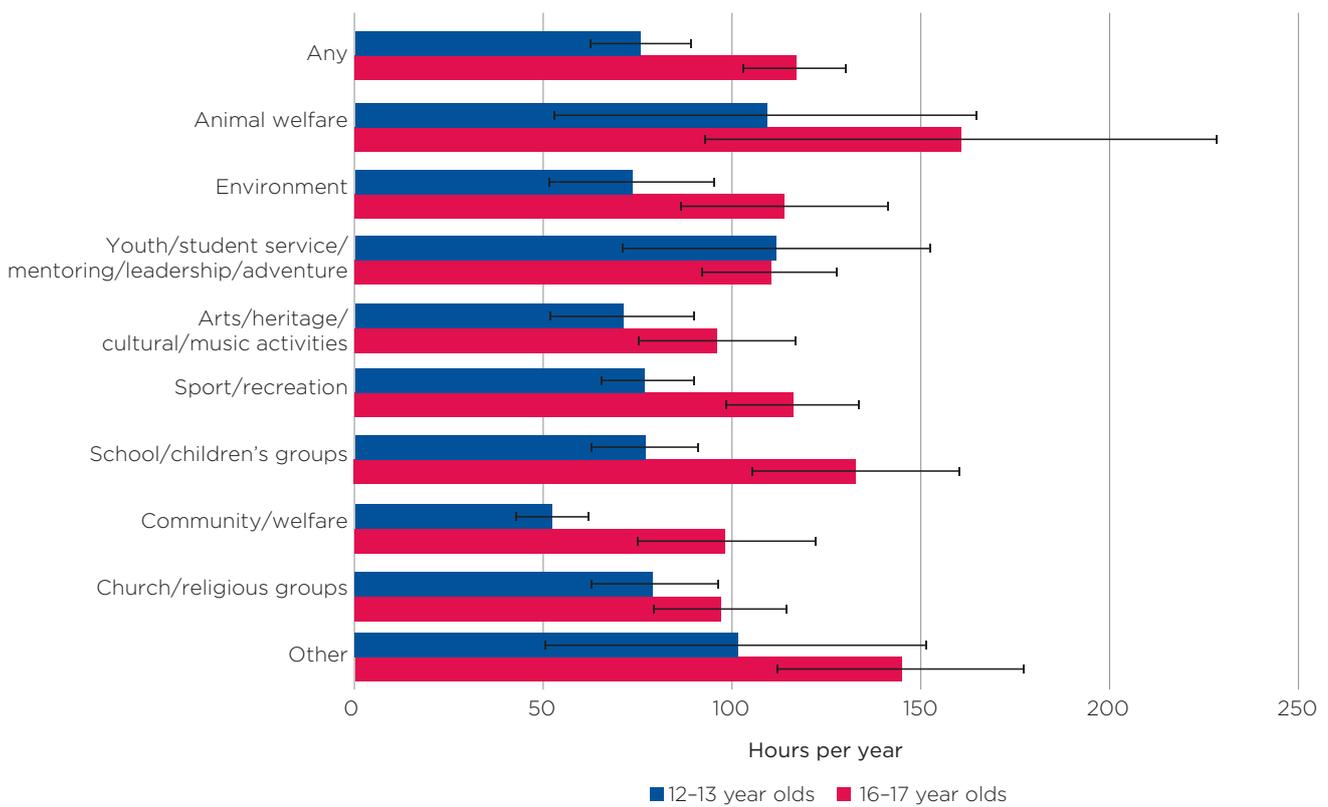
Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. B cohort: $n = 1,416$ volunteers only; K cohort: $n = 1,649$ volunteers only.

Source: LSAC Wave 7, B and K cohorts, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

² The number of hours is the total time spent volunteering for all organisation types. LSAC participants were not asked separately about the time spent volunteering for each organisation type. Individuals who volunteered for more than one type of organisation are represented in each category they volunteered for.

Figure 11.4: Average time spent volunteering in the past year for 12–13 and 16–17 year olds, by organisation type



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. 12–13 year olds: $n = 1,416$ volunteers only; 16–17 year olds: $n = 1,649$ volunteers only. The 'other' category includes the following types of organisations: emergency services, health or health care, teaching or training, immigrant or refugee assistance, international aid or development, law, justice, political or human rights, business or professional associations or unions, and ethnic and ethnic-Australian societies. The hours per year is for all voluntary work undertaken. This may have been for one or multiple organisations. Those volunteering for more than one organisation type are represented in each organisation category they volunteered for.

Source: LSAC Wave 7, B and K cohorts, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

11.3 Parents' participation in volunteering activities

Two thirds of volunteers report having at least one parent who participated in volunteer work (ABS, 2015b). This is not surprising as parents are role models for their children's values and social behaviours. The LSAC data show that around a half of mothers (53%) and a third of fathers (36%) of 12–13 year olds had volunteered in the past year (Figure 11.5). Similar numbers of fathers of 12–13 year olds and 16–17 year olds volunteered; however, fewer mothers of 16–17 year olds than 12–13 year olds volunteered (45% vs 53%) possibly reflecting changes in mothers' lives such as increased participation in the paid workforce and less volunteering at their child's school as their children grow older.

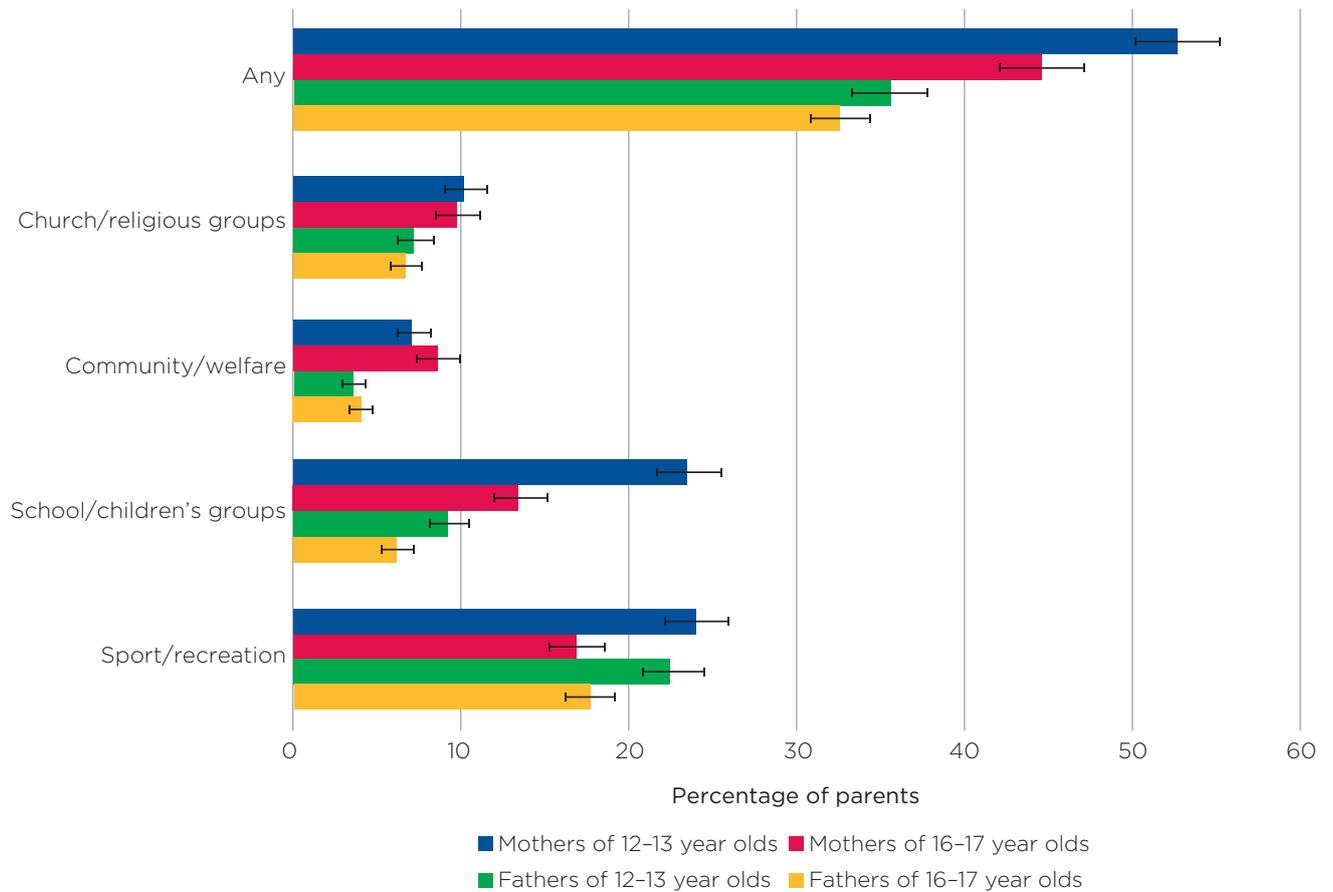
More parents of 12–13 year olds (24% of mothers and 23% of fathers) than 16–17 year olds (17% of mothers and 18% of fathers) volunteered for sport and recreation activities (Figure 11.5), possibly

due to lesser involvement and supervision in their children's sporting activities when their children are older. Similarly, involvement in school and children's groups was lower among parents of older adolescents. However, similar numbers of mothers and fathers of older and younger adolescents volunteered for church or religious groups and community or welfare organisations, suggesting that involvement in these types of volunteering is unrelated to the age of their child and more to do with family values and religious beliefs. Fathers were most likely to volunteer for sport and recreation organisations. Mothers most commonly volunteered for sport and recreation organisations and school and children's groups. Although similar numbers of mothers and fathers volunteered for sport and recreation organisations, more mothers than fathers volunteered for church or religious groups, community or welfare organisations, and school and children's groups.

The LSAC data show that adolescents were more likely to volunteer if their parents volunteered, particularly their mother. Among volunteers, 63% of 12–13 year olds and 54% of 16–17 year olds had a mother who volunteered (Figure 11.6). Fewer adolescent volunteers had a father who volunteered (26% of 12–13 year olds and 24% of 16–17 year olds). Adolescents whose parents volunteered for sport and recreation organisations or church or religious

groups were more likely to be volunteers compared to adolescents whose parents volunteered for school and children’s groups or community or welfare organisations. Presumably, this is because community service is a key aspect of most religions and sport and recreation may reflect a broader family involvement with a particular sporting interest that increases the likelihood of children also becoming involved.

Figure 11.5: Mothers and fathers of 12-13 year olds and 16-17 year olds volunteering

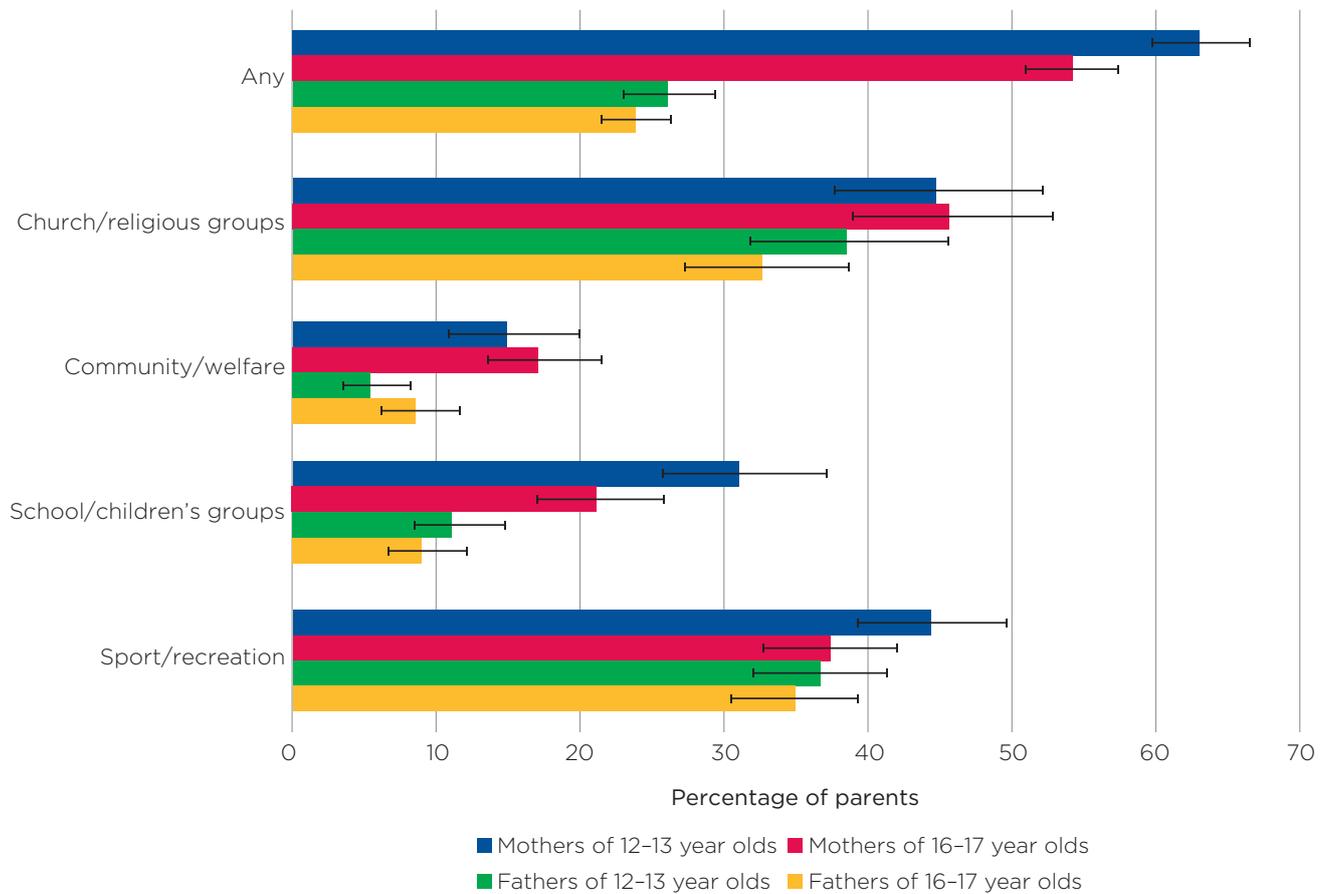


Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. $n = 3,237$ for B cohort mothers (age 12-13), $n = 2,905$ for K cohort mothers (age 16-17), $n = 3,319$ for B cohort fathers (age 12-13) and $n = 3,034$ for K cohort fathers (age 16-17). Church or religious groups, community or welfare organisations, school and children’s groups and sport and recreation organisations are the most common types of organisations parents volunteered for. Other categories are not shown.

Source: LSAC Wave 7, B and K cohorts, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Figure 11.6: Volunteers aged 12–13 and 16–17 years (any) who had a parent volunteering, by type of organisation parents volunteer for



Notes: 95% confidence intervals are shown by the 'I' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant. $n = 3,144$ for B cohort mothers (age 12–13), $n = 2,788$ for K cohort mothers (age 16–17), $n = 3,216$ for B cohort fathers (age 12–13) and $n = 2,908$ for K cohort fathers (age 16–17).

Source: LSAC Wave 7, B and K cohorts, weighted

Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

11.4 Characteristics associated with adolescent volunteering

Adolescents' involvement in volunteering varied according to their age, and to a lesser extent, their gender. After accounting for other personal and family characteristics, these characteristics continued to be significantly associated with adolescents' volunteering behaviour (Table 11.1):

- Young people aged 16–17 had almost double the odds of being involved in some form of volunteering compared to 12–13 year olds (odds ratio = 1.8). They also had higher odds of engaging in many types of volunteering (odds ratios ranging from 1.3 to 1.8), with the largest difference relating to voluntary activities in the youth, student service, mentoring, leadership or adventure areas (odds ratio = 1.8).
- Girls had higher odds of being volunteers than boys (odds ratio = 1.3). These findings are consistent with other Australian data showing higher rates of volunteering among females than males (PricewaterhouseCoopers Australia, 2016). Gender differences were most apparent for animal welfare organisations (girls had more than double the odds of volunteering with these groups; odds ratio = 2.1).

Table 11.1: Characteristics associated with adolescent volunteering

	Sport	School	Community	Church	Leadership	Culture	Environment	Animal Welfare	Any
Female	0.92	1.53***	1.14	1.24*	1.30**	1.73***	0.84	2.05***	1.27***
Age group of study child (ref. = age 12-13)									
16-17 years	1.51***	1.42***	1.47***	1.27*	1.77***	1.14	1.17	0.98	1.83***
Birth order (ref. = oldest child)									
Middle child or twin	0.86	0.83	0.90	1.00	0.66**	0.68	0.90	0.98	0.71***
Youngest child	0.82*	0.92	0.94	1.08	0.86	1.37	0.93	1.06	0.88
Only child	0.68**	0.84	0.85	0.90	0.81	1.28	1.22	1.09	0.82*
Special health care needs (ref. = no)^a									
Yes	0.73***	0.91	1.11	1.06	1.07	1.24	1.06	1.08	0.97
Mother volunteering									
	1.65***	1.50***	1.59***	2.23***	1.56***	1.35*	1.43*	1.60*	2.05***
Father volunteering									
	1.72***	1.07	0.87	1.83***	1.30*	1.35	1.07	0.84	1.44***
Either parent highest education (ref. = Year 12 or below)									
Certificate or diploma	0.95	1.11	1.56*	0.84	1.55*	1.73	0.81	0.96	1.16
Degree	0.87	1.21	1.83***	1.40	2.08***	1.78	1.47	0.82	1.31*
Third of equalised parental income (ref. lowest third)									
Middle third	1.21	0.97	1.02	0.85	0.94	1.00	0.92	0.77	1.04
Highest third	1.31**	1.04	1.14	0.55***	0.90	1.09	0.90	0.87	1.09
Region of residence (ref. = major city)									
Inner regional	1.38***	0.85	1.18	0.77*	0.85	1.01	0.99	1.03	1.05
Outer regional or remote	1.53***	0.82	1.09	0.73	0.98	0.82	1.00	1.00	0.94
School type (ref. = government)									
Catholic	1.21*	1.38***	1.45***	2.12***	0.98	0.88	0.96	0.90	1.36***
Independent	1.06	1.17	1.46***	2.25***	1.04	1.08	1.10	1.50	1.42***
Not in school	0.91	0.91	0.74	1.45	0.56	0.69	0.60	1.44	0.86
Language other than English at home									
	0.81	0.98	1.50**	1.75***	1.33	1.78**	1.16	1.10	1.25*
Indigenous									
	1.28	1.31	0.88	0.55	0.56	3.28***	0.53	0.34	1.06

Notes: Logistic regression models, odds ratios reported. * $p < .05$, ** $p < .01$, *** $p < .001$, $n = 5,845$. All models control for neighbourhood disadvantage (SEIFA), along with all of the other characteristics in the table. ^a In Wave 7 of both cohorts, the primary caregiver was asked whether the child has a condition which has lasted or is expected to last for at least 12 months, which causes him or her to use medicine prescribed by a doctor, other than vitamins, or more medical care, mental health or educational services.

Source: LSAC Wave 7, pooled data from B and K cohorts, unweighted

Birth order was also significantly related to volunteering. Compared to first-born children, adolescents who were a middle child, a twin or an only child had lower odds of engaging in voluntary work of any type (about 20–30 percentage points lower). Additionally, middle children and twins had lower odds of volunteering in youth, student service, mentoring, leadership or adventure roles, and adolescents who were the youngest or only child in the family had lower odds of volunteering for sport and recreation groups. Although it may be expected that younger siblings will follow the example set by older siblings, this idea was not supported by the data. This finding could be explained by the observation that first-born children tend to be ‘highly organised achievers’ (Grose, 2003), and may therefore want to participate in extracurricular activities such as volunteering. It is also possible that second-born or subsequent children may not have the same levels of access to parents’ time and resources as first-born children.

As noted earlier (section 11.3), adolescents were more likely to volunteer if their parents were volunteers and, particularly so, if their mother was a volunteer. This association remained after controlling for a range of other factors. Compared to adolescents whose mothers did not volunteer, those who had a mother who did, had double the odds of volunteering themselves, and had higher odds of engaging in all types of volunteering. Adolescents also had a higher likelihood of volunteering if their father was a volunteer (odds 1.4 times higher). However, father’s volunteering was only associated with increased odds of adolescents engaging in particular forms of voluntary work (i.e. church or religious groups; sport and recreation groups; and activities related to youth, student service, mentoring, leadership or adventure).

These results are consistent with other research (Van Goethem, van Hoof, van Aken, Orobio de Castro, & Raaijmakers, 2014), demonstrating that parents might act as volunteering role models for their children. The findings also demonstrate a family commitment to particular organisations, which could also assist in strengthening parent–child relationships. In addition, adolescents who had a parent with a degree had higher odds (1.3 times higher) of becoming a volunteer than adolescents whose parents had no

post-secondary qualifications. More specifically, they had higher odds of volunteering for community or welfare organisations (1.8 times higher) and activities related to youth, student service, mentoring, leadership or adventure (double the odds).

Adolescents whose parents had completed a post-secondary certificate or diploma also had increased odds of participating in these forms of volunteering, although the likelihood of them doing so was lower than for those with a degree.

Language spoken at home was also associated with adolescents’ volunteering, which may be associated with cultural backgrounds. Compared to adolescents who only spoke English at home, adolescents who spoke a language other than English had higher odds of volunteering overall (1.3 times higher) and volunteering for:

- community or welfare organisations (1.5 times higher)
- church or religious groups (1.8 times higher)
- activities related to arts, heritage, culture or music (1.8 times higher).

The type of school an adolescent attended was related to their involvement in volunteering, with adolescents who attended Catholic or independent schools having higher odds of engaging in voluntary work than adolescents from government schools. Independent or Catholic schools may provide more opportunities and encouragement for volunteering than government schools or even mandate volunteering in some cases. The largest sector differences were found for volunteering for church or religious groups. Compared to adolescents in government schools, the odds of volunteering for church or religious groups were 2.1 times higher for adolescents in Catholic schools, and 2.3 times higher for adolescents in independent schools.³

A number of personal and family characteristics were significantly associated with specific forms of volunteering, once other factors were controlled for:

- Indigenous status was uniquely associated with voluntary activities related to arts, heritage, culture or music. This strong association may reflect the fundamental importance of art and music in the culture of Indigenous people in

3 Separate analyses were conducted for the K cohort alone, where adolescents aged 16–17 years were additionally asked whether they are active in a religious or spiritual group, such as regularly going to services, Sunday school or a religious youth club. After adjusting for all other variables, compared to adolescents who were not, adolescents who were active in a religious or spiritual group had 1.6 times the odds of any volunteering; 1.9 times the odds of volunteering related to youth, student service, mentoring, leadership or adventure; 1.7 times the odds of volunteering related to arts, heritage, cultural or music activities; 1.3 times the odds of volunteering for community or welfare organisations; 9.9 times the odds of volunteering for church or religious groups; and lower odds of volunteering for sport and recreation organisations (reduced by 31 percentage points).

Australia (Department of Health, 2017). Compared to non-Indigenous adolescents, the odds of volunteering for activities related to arts, heritage, culture or music were more than tripled for adolescents with an Indigenous background.

- Adolescents with special health care needs had lower odds of volunteering for sport and recreation groups (27 percentage points lower) than those without special health care needs, suggesting that their health care needs might limit their capacity to volunteer in activities of this type.
- Income was also related to specific forms of volunteering, but not volunteering overall. Adolescents from high-income families (top third) had higher odds of volunteering for sporting and recreation groups (about 30 percentage points higher), and lower odds of volunteering for church or religious groups (45 percentage points lower) than adolescents from low-income families (bottom third). This may be associated with the cost of participating in particular activities; for example, sports uniforms.
- Region of residence was also only associated with particular types of volunteering. Compared to adolescents living in major cities, adolescents living in inner regional areas, or outer regional and remote areas had higher odds of volunteering for sport and recreation groups (1.4 and 1.5 times higher, respectively). This finding is consistent with the observation that sport and recreation activities form a major part of the culture in country areas of Australia, and these activities often rely heavily on volunteers (Tonts, 2005). Conversely, adolescents living in inner regional areas had lower odds of doing voluntary work for church or religious groups.



Summary

This chapter has provided a picture of adolescent volunteering at ages 12–13 and 16–17 in 2016. It described the types of voluntary activities that adolescents participate in and associations with individual and family characteristics, including their parents' volunteering. This adds a unique understanding of youth volunteering by providing information on young people under the age of 15.

By age 12–13 years, a considerable percentage (over 40%) of adolescents were involved in some form of volunteering and, by age 16–17, over half of young Australians reported volunteering. Adolescents most commonly volunteered for sport and recreation organisations, school and children's groups, and community or welfare organisations. At both ages, more adolescents volunteered if a parent volunteered, particularly their mother, suggesting that parents act as important role models for their children. Generally, adolescents were more likely to volunteer if they were female, older (16–17 rather than 12–13 years of age), attended independent or Catholic schools rather than government schools and had parents with higher levels of education.

These findings are encouraging because they indicate that younger Australians are engaging in voluntary activities, which may have a positive effect on their individual development and wellbeing, while also contributing to their community and Australian society more broadly. The double benefit of this engagement – in terms of benefits to society from adolescents' contributions and the benefits to the adolescents themselves in developing skills and experience beyond what they could gain in the classroom – means that efforts should be made to encourage and empower adolescents to get involved in volunteering. Given the association between volunteering by adolescents and their parents, possible approaches to increase youth volunteering would be to encourage parent volunteering and family volunteering opportunities. Future research in this area to understand the motivations of adolescents who volunteer (and who do not volunteer) would help to target efforts to encourage volunteering. Further follow-up of the volunteering behaviours of the LSAC cohorts will reveal the immediate and longer-term benefits of youth volunteering.

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12

Tweens and teens: What do they worry about?

Suzanne Vassallo and Neha Swami



Key findings

- Tweens and teens worried most about issues affecting their families.
- Two in three 10–11 year olds were worried about a family member becoming seriously ill or injured and over half were worried about fighting in their family.
- Just over two in five 10–11 and 12–13 year olds were worried about terrorism or war and around a third were worried about the environment.
- Family-related issues were particularly concerning for children from less advantaged and culturally and linguistically diverse (CALD) backgrounds.
- Children from CALD backgrounds were more likely to be concerned about global issues, and alcohol and drug use.
- Anxiety about changing schools was higher among 10–11 year olds, while 12–13 year olds were more likely to worry about not doing well at school.
- Girls worried more when it came to their appearance and fitting in with friends.

As young people move through childhood and adolescence, they experience many changes. Their bodies mature, thought processes become more complex (Arain et al., 2013; Raising Children Network, 2017) and their relationships with parents and friends typically change (Brown & Larson, 2009; Paikoff, & Brooks-Gunn, 1991; Yu & Baxter, 2018). Schoolwork and homework often become more demanding (Raising Children Network, 2019), and balancing school, family and extracurricular demands can become challenging (Hardy, 2003). Added to this are concerns about the environment (Queensland Family and Child Commission, 2018) and global issues such as terrorism (UNICEF, 2013) – therefore, it is not surprising that many young people worry.

Some degree of anxiety is normal when faced with change or uncertainty (Einstein, 2015; Greco & Roger, 2003). In fact, worrying can be a useful response in particular circumstances because it helps a person to anticipate potential ‘threats’ to their wellbeing and make preparations to avoid them (Guitérrez-García & Contreras, 2013). However, parents and society can trivialise children’s concerns. It is important to understand what children and young people worry about in order to support them to deal with these concerns effectively, so that they do not become

overwhelming and negatively affect their mental health (Queensland Family and Child Commission, 2018). Research suggests that the more worries children have, the more likely they are to become anxious or depressed (Brown, Teufel, Birch, & Kancheria, 2006).



Box 12.1: Worries

In 2014 and 2016, when the B cohort were aged 10–11 and 12–13, respectively, they were asked how worried they were about the following issues:

- the environment
- terrorism/war
- use of alcohol and other drugs by children or teenagers
- someone in your family becoming seriously ill or injured
- people in your family fighting
- parents losing their job
- the way you look
- not fitting in with your friends
- not doing well at school
- starting high school.

Responses were made using a four-point scale: 1 = 'not at all worried'; 2 = 'a little worried'; 3 = 'fairly worried'; 4 = 'very worried'. For simplicity of presentation, children's responses were combined ('not at all worried/a little worried' vs 'fairly worried/very worried') and only the percentage who responded 'fairly worried/very worried' are reported.

Items adapted from the Children's Worries and Concerns Scale (Tucci, Mitchell, & Goddard, 2006).

Studies undertaken several decades ago indicated that the most frequent sources of worry among children and teens were family, school and personal health (Silverman, Greca, & Wasserstein, 1995; Simon & Ward, 1974). Recent Australian research has found that children now worry about coping with stress, school or study problems, and their mental health (Carlisle et al., 2018). Bullying (including cyberbullying), education, drugs and alcohol, climate change, the environment and employment have also been identified as issues causing Australian children to worry.

When LSAC B cohort participants were aged 10–11 (in 2014) and 12–13 (in 2016) they were asked how worried they were about a range of issues relating to themselves, school, their families, and global issues. This chapter uses this data to examine what issues concern Australian children and whether these worries change, as young people move from being 'tweens' to 'teens'. Comparisons are made between girls and boys, children from different family and cultural backgrounds and those living in country and city areas, to see if they differ in their levels of worry and what they worry about. This information may be helpful for parents and educators to support children and teens to build their resilience now and as they move through adolescence.

12.1 What do teens and tweens worry about?

The LSAC data show that the issues of greatest concern among 10–11 year olds in 2014 and 12–13 year olds in 2016 related to their families (Table 12.1), although a higher proportion of children worried about this at age 10–11 than at 12–13 years.

Worrying about the health of family members was the most common concern among children at both 10–11 and 12–13 years. Two in three 10–11 year olds said that they were worried about a family member becoming seriously ill or injured, more than half were concerned about fighting within their family, and more than four in 10 children were worried about their parents losing their job. By the age of 12–13, the level of worry about family issues had declined. Nevertheless, family issues remained a prominent concern among this age group, with around six in 10 teens worrying about the health of family members, and about four in 10 concerned about family fighting and parental job loss. These findings are consistent with other studies, which have shown that children are affected by family circumstances such as conflict among family members and parents' economic and health problems (Campo, 2015; Gambaro & Joshi, 2016).

Figure 12.1: More than half of 10–11 year olds were worried about fighting in their family



Credit: Longitudinal Study of Australian Children 2019 (creativecommons.org/licenses/by/4.0/)

Table 12.1: Children worried about different issues at ages 10–11 and 12–13

Worried about	Age 10-11 (2014) (%)	Age 12-13 (2016) (%)
Self		
The way you look	17.5	22.1
Fitting in with friends	25.6	19.1
School		
Not doing well at school	34.7	39.4
Changing school	40.3	23.1
Family		
A family member becoming seriously ill or injured	66.9	59.8
Fighting in your family	55.0	45.5
Parents losing job	45.7	38.1
The world		
Alcohol or drug use by teenagers or children	44.4	36.8
Terrorism or war	42.4	43.6
The environment	29.0	31.7

Notes: *n* for each of the eight items ranged from 3,572 to 3,575.

Source: LSAC Waves 6 and 7, B cohort, weighted

Global issues were another major concern among children at both ages, although some age-related differences were noted. At both ages, about four in 10

children said that they were worried about terrorism and war. Due to advances in electronic media, information about social issues and world events is easily accessible on various media platforms. Consequently, children today are more likely to become aware of distressing events such as war or terrorist attacks through TV, the internet or social media. Exposure to such information via the mass media can fuel fear and worries about these issues (Vasterman, Yzermans, & Dirkzwager, 2005).

The use of drugs and alcohol by teenagers and children was also a concern for many LSAC children (44% at 10–11 years), although this appeared to become less of an issue once they reached their early teens (37% identified this as a concern at 12–13 years). It is possible that as children aged, they experienced more exposure to this behaviour (via the media and peers), reducing their anxiety about this issue (Anderson, Kochanek, & Murphy, 2009; Strasburger, 2010).

Concern about the environment remained fairly stable over time with about one in three children worrying about this at age 10–11 and 12–13. The incidence of natural or environmental disasters has increased steadily worldwide, with millions of people, including children, affected (Leaning & Guha-Sapir, 2013; Ritchie & Roser, 2014; UNICEF, 2014). Children around the world are aware of climate change and are concerned about its impact on their own lives and the lives of other children (UNICEF, 2013). This is reflected in recent protests by young activists around the world expressing concerns about climate change (e.g. Menzie-Ballantyne, 2019).

Changing schools was an issue of greater concern for children at age 10–11 (the late primary school years for most) than at 12–13 (the early secondary school years for the majority), with four in 10 children aged 10–11 years indicating that they were worried about this. The transition from primary to secondary school is considered to be an important turning point in young people’s lives, often requiring them to make new friends and adapt to new school settings, routines and academic expectations (Hanewald, 2013). In contrast, not doing well at school was a greater issue among 12–13 year olds, with almost four in 10 identifying this as a worry. Schooling is frequently identified as a major source of stress and worry among children and teens (Carlisle et al., 2018; Raising Children Network, 2019). In today’s competitive environment, children are under great pressure to do well at school (Hardy, 2003).

The issues of least concern to study children related to how they looked and whether they fit in with their

friends, although a sizeable proportion (between 18% and 26%) still worried about these issues. It is possible that concerns about these issues may increase as children move through adolescence and peer relationships become more important. This has been explored in previous LSAC research (Gray, Romaniuk, & Daraganova, 2017).

12.2 Characteristics of children who worry

Worrying is a normal reaction to change and uncertainty (Einstein, 2015; Greco & Roger, 2003). However, people differ in how well they tolerate uncertainty, with those who find it particularly difficult being more vulnerable to becoming anxious and depressed (Grupe & Nitschke, 2013). Previous research also suggests that individual attributes such as personality can influence how much a person worries (Alizadeh et al., 2016; Toumbourou, Williams, Letcher, Sanson, & Smart, 2011). However, many other factors may influence what children worry about. These include their age, gender, the type of family and social and political environment they grow up in, as well as their exposure to information via social and mass media (Barahmand, 2008; Brown et al., 2006; Grist & Field, 2012; Lupien, King, Meaney, & McEwen, 2000; Tikkanen, 2016).

The LSAC data were used to identify whether children with particular characteristics worried more and, if so, what they worried about. While many factors are likely to influence the extent to which children and teens worry about particular issues, this chapter focuses on gender, family characteristics, cultural background and residential location.

Gender differences

The LSAC data show that a higher percentage of girls than boys were worried about most of the issues addressed in the survey. (Table 12.2). Although this gender difference was evident at both 10–11 (in 2014) and 12–13 years (in 2016), for many issues it increased as children got older.

The issues with the greatest difference between girls and boys were worries about how they looked and fitted in with friends (Table 12.2). These differences were particularly evident at age 12–13. Around one in three girls said that they were worried about their appearance at age 12–13, and almost one in four were worried about fitting in with friends (compared to only about one in seven boys for both issues). This finding is strongly supported by other research that has shown that girls tend to be less satisfied with their bodies than boys (O'Connor, Warren, & Daraganova, 2018) and may experience greater pressure to conform to societal ideals of beauty (Grabe, Ward, & Hyde, 2008; Voelker, Reel, & Greenleaf, 2015).

Table 12.2: Children who worried about different issues at ages 10–11 and 12–13, by sex

Worried about	Age 10–11 (2014)		Age 12–13 (2016)	
	Boys (%)	Girls (%)	Boys (%)	Girls (%)
Self				
The way you look	14.8	20.3***	14.4	30.1***
Fitting in with friends	23.9	27.3*	14.4	23.9***
School				
Not doing well at school	32.8	36.6*	36.4	42.5**
Changing school	36.3	44.5***	21.8	24.4
Family				
A family member becoming seriously ill or injured	65.7	68.2	57.0	62.8**
Fighting in your family	52.0	58.2***	42.2	48.8**
Parents losing job	49.3	41.9***	40.6	35.4*
The world				
Alcohol or drug use by teenagers or children	43.5	45.4	35.3	38.3
Terrorism or war	41.4	43.5	39.0	48.3***
The environment	27.5	30.4	30.1	33.4
Total (n)	1,822	1,753	1,629	1,561

Notes: Population weighted results. Asterisks (marked in the second column of each age group) indicate statistically significant differences in proportions between boys and girls, from chi-square tests: * $p < .05$, ** $p < .01$, *** $p < .001$.

Source: LSAC Waves 6 and 7, B cohort

The only issue that concerned boys more than girls was the possibility that one of their parents may lose their job – almost half (49%) of boys indicated that they worried about this at age 10–11, compared to 42% of girls.

Family influences

Children from less advantaged families (as measured by parents' income and education) worried more, about a range of issues, than children from more advantaged families (Tables 12.3 and 12.4). These results are not unexpected, given that research suggests that children who experience disadvantage are more likely to be exposed to more stressful living conditions (e.g. lower quality housing, less responsive parenting and higher neighbourhood crime) than more advantaged children (Brooks-Gunn & Duncan, 1997; Evans, Brooks-Gunn, & Klebanov, 2011; Warren & Edwards, 2017).

Parental education had a more widespread influence on children's worries at age 10–11 than parental income, with children of parents with no post-secondary school qualifications reporting higher

levels of concern about most issues (Table 12.3). However, by age 12–13 most of these differences had disappeared. In comparison, parental income was strongly and consistently associated with children's worries but only in specific areas – namely, their families, changing schools and alcohol and drug use among children and teens (Table 12.4).

While family-related issues were a common concern among tweens and teens generally, they appeared particularly concerning for children from less advantaged backgrounds. For instance, about a half of children whose parents had not completed any post-school qualifications were worried about parental job loss at age 12–13 (compared to one in three children who had at least one parent with a tertiary degree), as were four in 10 of children from low-income families (compared to a quarter of children in high-income families).

Changing schools was another common issue of concern among children from less advantaged backgrounds, possibly due to higher rates of residential mobility often observed among families experiencing disadvantage (Phinney, 2013).

Table 12.3: Children who worried about different issues at ages 10–11 and 12–13, by parental education

Worried about	Age 10–11 (2014)			Age 12–13 (2016)		
	Year 12 or less (%)	Certificate or diploma (%)	Degree (%)	Year 12 or less (%)	Certificate or diploma (%)	Degree (%)
Self						
The way you look	22.4	19.1	14.3**	20.1	20.9	23.8
Fitting in with friends	31.7	26.6	23.0**	20.6	18.3	19.4
School						
Not doing well at school	36.4	37.3	31.3**	49.0	39.5	37.6*
Changing school	45.6	43.2	35.9***	28.1	23.9	21.1
Family						
A family member becoming seriously ill or injured	71.6	69.5	62.8**	63.9	62.1	56.7*
Fighting in your family	62.5	57.5	50.3***	55.1	47.2	41.3**
Parents losing job	50.5	48.7	41.3***	49.9	40.9	32.4***
The world						
Alcohol or drug use by teenagers or children	48.6	47.4	40.1***	37.2	37.8	35.8
Terrorism or war	46.4	43.5	40.2	42.3	42.7	44.7
The environment	28.4	29.3	29.0	29.5	30.1	34.1
Total (n)	278	1,511	1,750	216	1,318	1,612

Notes: Population weighted results. Year 12 or less = both parents did not have any post-secondary qualifications; Certificate or Diploma = at least one parent completed a Certificate, Diploma or Advanced Diploma; Degree = at least one parent completed a Bachelor's Degree or a higher qualification. Asterisks (marked in the second column of each age group) indicate statistically significant differences from the reference group (Year 12 or less), from chi-square tests: * $p < .05$, ** $p < .01$, *** $p < .001$.

Source: LSAC Waves 6 and 7, B cohort

Table 12.4: Children who worried about different issues at ages 10–11 and 12–13, by parental income

Worried about	Age 10–11 (2014)			Age 12–13 (2016)		
	Low (%)	Middle (%)	High (%)	Low (%)	Middle (%)	High (%)
Self						
The way you look	18.2	16.6	14.4	19.7	22.9	22.8
Fitting in with friends	28.8	24.7	23.3	17.4	19.8	18.8
School						
Not doing well at school	38.1	32.1	33.4	40.0	39.4	38.9
Changing school	41.5	40.8	35.2*	28.9	22.3	18.7***
Family						
A family member becoming seriously ill or injured	72.1	65.3	62.6**	65.7	59.1	54.3***
Fighting in your family	60.5	53.5	50.1***	49.3	46.4	38.0***
Parents losing job	50.6	45.6	39.4**	44.3	40.0	27.6***
The world						
Alcohol or drug use by teenagers or children	48.0	43.1	41.7*	40.7	36.6	33.2*
Terrorism or war	46.8	39.3	43.4**	41.5	43.3	45.4
The environment	30.5	27.3	29.4	30.3	30.8	34.5
Total (n)	646	1,553	833	625	1,620	911

Notes: Population weighted results. Low = lowest 25%, Middle = middle 50%, High = highest 25% on parental income. Asterisks (marked in the second column of each age group) indicate statistically significant differences from the reference group (low income), from chi-square tests: * $p < .05$, ** $p < .01$, *** $p < .001$.

Source: LSAC Waves 6 and 7, B cohort

Culturally and linguistically diverse background (CALD)

Children from culturally and linguistically diverse (CALD) families in Australia generally worried more than children from non-CALD families (Table 12.5). These worries became more wide-ranging as children got older. As noted earlier, the transition to adolescence can be a difficult time for many young people. This may be particularly so for children from CALD backgrounds, who may face additional challenges to peers, such as difficulties learning English, discrimination, intergenerational conflict and feelings of displacement (Child Family Community Australia [CFCA], 2015; Commissioner for Children and Young People WA, 2016).

Children from CALD families were more worried about family issues such as the health of family members, family conflict and parental employment. They were also more worried about doing well at school than children from non-CALD families, with almost half (48%) indicating that this was a worry for them at 12–13 years (compared to four in 10 teens from non-CALD families).

Another area of greater concern for these children and teens was global issues such as terrorism and war, the environment, and drug and alcohol use among children and teenagers. For instance, at age 12–13, more than half (55%) of teens from CALD families indicated that they were concerned about terrorism compared to four in 10 (42%) teens of non-CALD families.

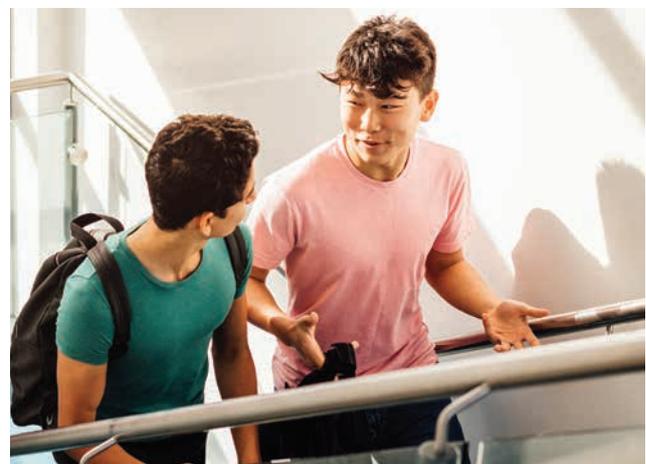


Table 12.5: Children who worried about different issues at ages 10–11 and 12–13, by cultural background

Worried about	Age 10–11 (2014)		Age 12–13 (2016)	
	Non-CALD background (%)	CALD background (%)	Non-CALD background (%)	CALD background (%)
Self				
The way you look	17.3	19.2	21.6	25.5
Fitting in with friends	25.4	26.7	18.6	22.4
School				
Not doing well at school	33.5	42.9***	38.0	48.5**
Changing school	40.1	42.0	22.0	30.2**
Family				
A family member becoming seriously ill or injured	65.5	76.9***	57.4	75.4***
Fighting in your family	53.6	65.3***	43.5	57.9***
Parents losing job	43.4	62.1***	35.7	53.2***
The world				
Alcohol or drug use by teenagers or children	43.1	53.6***	35.2	47.4***
Terrorism or war	41.5	49.1*	41.9	54.7***
The environment	28.7	30.5	30.6	39.4**
Total (n)	3,261	313	2,914	275

Notes: Population weighted results. Asterisks (marked in the second column of each age group) indicate statistically significant differences in proportions between children from CALD backgrounds and non-CALD backgrounds, from chi-square tests: * $p < .05$, ** $p < .01$, *** $p < .001$.

Source: LSAC Waves 6 and 7, B cohort



Geographic location

Overall, where children lived was not related to what they worried about, with children and teens living in city and country areas generally worrying about similar things (Table 12.6). However, some differences were noted. Compared to children who lived in metropolitan areas, more children who lived in non-metropolitan areas reported being worried about how they looked and about changing schools. However, group differences were quite small and were only found at age 10–11. In comparison, at age 12–13, children who lived in metropolitan areas worried more about their academic performance and about terrorism and war – possibly because cities are often the targets of terrorist attacks (Burke, 2018). Once again, group differences were quite small.

Table 12.6: Proportion of children who worried about different issues at ages 10–11 and 12–13, by location

Worried about	Age 10–11 (2014)		Age 12–13 (2016)	
	Metropolitan (%)	Non-metropolitan (%)	Metropolitan (%)	Non-metropolitan (%)
Self				
The way you look	16.0	19.9*	23.0	20.8
Fitting in with friends	24.6	27.2	19.7	18.2
School				
Not doing well at school	33.6	36.6	41.2	36.4*
Changing school	38.9	42.9*	22.9	23.3
Family				
A family member becoming seriously ill or injured	66.5	67.5	60.4	58.7
Fighting in your family	53.8	57.2	45.4	45.4
Parents losing job	45.7	45.6	38.4	37.4
The world				
Alcohol or drug use by teenagers or children	43.3	46.2	37.2	36.0
Terrorism or war	42.5	42.3	45.3	40.8*
The environment	30.2	27.0	32.5	30.4
Total (n)	2,146	1,422	1,886	1,298

Notes: Population weighted results. Asterisks (marked in the second column of each age group) indicate statistically significant differences in proportions between children from metropolitan and non-metropolitan areas, from chi-square tests: * $p < .05$, ** $p < .01$, *** $p < .001$.

Source: LSAC Waves 6 and 7, B cohort

Summary

Tweens and teens in this study mostly worried about issues related to their families. Two in three 10–11 year olds (in 2014) were worried about a family member becoming seriously ill or injured, and more than half were concerned about fighting within their family. Family-related issues were also the top concern for 12–13 year olds (in 2016). Given the extent to which 10–14 year olds typically rely on their families for financial, practical and emotional support and guidance, these results are not surprising. However, it would be interesting to know whether parents are aware of how much children worry about issues within the family. The current findings suggest that support might be needed to help children to deal with family-related issues.

School is frequently identified as a major source of stress and worry among children and teens, and this was reflected in the LSAC findings. The aspects of school life that worried children varied with age. Changing schools was a much bigger concern at age 10–11 (when most were in their late primary school years) than at 12–13 (when most were in secondary school), with four in 10 children indicating that this was a worry. The upcoming transition from primary to secondary school was likely to be concerning many.

As children as young as 10 were worrying about moving schools, it is possible that preparation for the transition to secondary school may need to begin earlier than it does currently (typically in Year 6). In comparison, academic performance was an issue of greater concern at age 12–13 than at 10–11. Four in 10 teens were worried about not doing well at school. Due to testing and pressures to perform well, children can often feel anxious (McDonald, 2001). Therefore, teens could benefit from further support to help them manage academic expectations, particularly in the early years of secondary school.

Two of the key areas that children and teens worried about – family and school – were also identified as major sources of worry among children and teens in international studies conducted in the 1970s and 1990s (Silverman et al., 1995; Simon & Ward, 1974), as well as in a recent Australian study on young children (Redmond et al., 2016). This suggests that these are typical areas of concern for children and teens.

The LSAC data showed that in 2014 and 2016 many Australian children were concerned about global issues such as terrorism and war (four in 10), the environment (one in three) and alcohol or drug use

among children and teenagers (four in 10). These issues were particularly concerning for children from CALD backgrounds. Children and teens often look to parents and other adults in their lives for guidance on how to interpret and respond to these events. Given the high level of concern about global issues among children, initiatives aimed at educating parents, teachers and other relevant professionals on how best to discuss such issues with children are likely to be beneficial. This may involve further promotion and dissemination of resources that have already been developed for this purpose (see e.g. Child Mind Institute, 2015).

Concerns about personal appearance and fitting in with friends ranked lowest among the issues children were asked about, although a sizeable proportion of children (between 18% and 26%) worried about their looks and fitting in with others. Significantly more girls than boys worried about these issues. As girls may experience a greater pressure to conform to social expectations about their physical appearance, it is understandable that they may feel particularly vulnerable about their appearance and ‘fitting in’ at this life stage, when their bodies are changing.

Looking at the characteristics of those who worried most, age appeared important. The percentage of children who worried about particular issues generally decreased between ages 10–11 and 12–13, suggesting that the late childhood (tween) years may be a time when children are more vulnerable to anxiety or stress, and could benefit from additional support. Consistent with previous research, girls generally worried more than boys, as did children from CALD and less socio-economically advantaged backgrounds, who may face additional challenges to other children. The findings presented in this chapter may help parents and educators to understand what children worry about. Given that children who worry a lot are more prone to anxiety and depression (Brown et al., 2006), analysis of future waves of LSAC data could provide a valuable understanding of how children and adolescents’ worries change over time.

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Respondents and collection methods

The use of multiple respondents in LSAC provides a rich picture of children's lives and development in various contexts. Across the first seven waves of the study, data were collected from:

- parents of the study child:
 - Parent 1 (P1) – defined as the parent who knows the most about the child (not necessarily a biological parent)
 - Parent 2 (P2), if there is one – defined as another person in the household with a parental relationship to the child, or the partner of Parent 1 (not necessarily a biological parent)
 - a parent living elsewhere (PLE), if there is one – a parent who lives apart from Parent 1 but who has contact with the child (not necessarily a biological parent)
- the study child¹
- carers/teachers (depending on the child's age)
- interviewers.

In earlier waves of the study, the primary respondent was the child's Parent 1. In the majority of cases, this was the child's biological mother, but in a small number of families this was someone else who knew the most about the child. Since Wave 2, the K cohort children have answered age-appropriate interview questions and, from Wave 4, they have also answered a series of self-complete questions. The B cohort children answered a short set of interview questions in Wave 4 for the first time. As children grow older, they are progressively becoming the primary respondents of the study.

A variety of data collection methods are used in the study, including:

- face-to-face interviews:
 - on paper
 - by computer-assisted interview (CAI)
- self-complete questionnaires:
 - during interview (paper forms, computer assisted self-interviews (CASI) and audio computer-assisted self-interviews (ACASI))
 - leave-behind paper forms

¹ The LSAC K cohort participants were 16–17 years old in Wave 7 so were adolescents rather than children.

- mail-out paper forms
- internet-based forms
- physical measurements of the child, including height, weight, girth, body fat and blood pressure
- direct assessment of the child’s vocabulary and cognition
- time use diaries (TUD)
- computer-assisted telephone interviews (CATI)
- linkage to administrative or outcome data (e.g. Centrelink, Medicare, MySchool).

Sampling and survey design

The sampling unit for LSAC is the study child. The sampling frame for the study was the Medicare Australia (formerly Health Insurance Commission) enrolments database, which is the most comprehensive database of Australia’s population, particularly of young children. In 2004, approximately 18,800 children (aged 0–1 or 4–5 years) were sampled from this database, using a two-stage clustered design. In the first stage, 311 postcodes were randomly selected (very remote postcodes were excluded due to the high cost of collecting data from these areas). In the second stage, children were randomly selected within each postcode, with the two cohorts being sampled from the same postcodes.

A process of stratification was used to ensure that the numbers of children selected were roughly proportionate to the total numbers of children within each state/territory, and within the capital city statistical districts versus the rest of each state. The method of postcode selection accounted for the number of children in the postcode; hence, all the potential participants in Australia had an approximately equal chance of selection (about one in 25). See Soloff, Lawrence, and Johnstone (2005) for more information about the study design.

Response rates

The 18,800 families selected were then invited to participate in the study. Of these, 54% of families agreed to take part in the study (57% of B cohort families and 50% of K cohort families). About 35% of families declined to participate (33% of B cohort families and 38% of K cohort families), and 11% of families (10% of B cohort families and 12% of K cohort families) could not be contacted (e.g. because the address was out-of-date or only a post office box address was provided).

This resulted in a nationally representative sample of 5,107 children aged 0–1 and 4,983 children aged 4–5, who were Australian citizens or permanent residents. This Wave 1 sample was then followed up at later waves of the study. Sample sizes and response rates for each of the main waves are presented in Table 13.1.

Table 13.1: Response rates, by wave and cohort

	Wave 1 (2004)	Wave 2 (2006)	Wave 3 (2008)	Wave 4 (2010)	Wave 5 (2012)	Wave 6 (2014)	Wave 7 (2016)
B cohort							
Response rate of Wave 1	100%	90.2%	85.9%	83.0%	80.0%	73.7%	66.2%
Response rate of available sample ^a	-	91.2%	88.2%	86.0%	83.5%	83.9%	78.3%
Total (n)	5,107	4,606	4,386	4,242	4,077 ^b	3,764	3,381
K cohort							
Response rate of Wave 1	100%	89.6%	86.9%	83.6%	79.4%	71.0%	62.0%
Response rate of available sample ^a	-	90.9%	89.7%	87.2%	83.6%	80.5%	74.0%
Total (n)	4,983	4,464	4,332 ^c	3,952 ^c	3,764 ^c	3,537	3,089
Total (B and K cohorts)							
Response rate of Wave 1	100%	89.9%	86.4%	83.3%	79.7%	72.3%	64.1%
Response rate of available sample ^a	-	91.1%	89.0%	86.6%	83.5%	82.2%	76.2%
Total (n)	10,090	9,070	8,718	8,406	8,029	7,301	6,470

Notes: This table refers to the numbers of parents who responded at each wave. Percentages based on weighted data using the Wave 6 data release. ^a The available sample excludes those families who opted out of the study between waves. ^b B cohort: different numbers of parents and their children responded at Wave 5 (there were eight cases where a child interview was completed and the main interview with the parents was not). ^c K cohort: different numbers of parents and their children responded at Wave 3 (in one case a parent interview was completed and the interview with the study child was not); Wave 4 (in five cases a child interview was completed and the main interview with the parents was not); and Wave 5 (in four cases a child interview was completed and the main interview with the parents was not).

Sample weights

Sample weights (for the study children) have been produced for the study dataset in order to reduce the effect of bias in sample selection and participant non-response (Cusack & Defina, 2014; Daraganova & Siphthorp, 2011; Misson & Siphthorp, 2007; Norton & Monahan, 2015; Siphthorp & Misson, 2009; Soloff et al., 2005; Soloff, Lawrence, Misson, & Johnstone, 2006). When these weights are used in the analysis, greater weight is given to population groups that are under-represented in the sample, and less weight to groups that are over-represented in the sample. Weighting therefore ensures that the study sample more accurately represents the sampled population.

These sample weights have been used in analyses presented throughout this report. Cross-sectional or longitudinal weights have been used when examining data from more than one wave. Analyses have also been conducted using Stata® *svy* (survey) commands, which take the clusters and strata used in the study design into account when producing measures of the reliability of estimates.

Overview of statistical methods and terms used in the report

Confidence interval

A confidence interval (CI) is a range of values, above and below a finding, in which the actual value is likely to fall. The CI represents the accuracy of an estimate, and it can take any number of probabilities, with the most common being 95% or 99%. Unless otherwise specified, the analysis in this report uses a 95% confidence level. This means that the confidence interval covers the true value for 95 out of 100 of the outcomes.

In graphs, 95% confidence intervals are shown by the 'T' bars at the top of each column. Where confidence intervals for the groups being compared do not overlap, this indicates that the differences in values are statistically significant at the $p < 0.05$ level.

Mean

'Mean' is the statistical term used for what is more commonly known as the average – the sum of the values of a data series divided by the number of data points.

Standard deviation

'Standard deviation (SD)' is a statistical term used for variation or variability in a set of values. Lower standard deviations indicate that the values tend to be close to the mean, while higher standard deviations indicate that the values are spread out over a wider range.

Cohen's d

In this report, differences between means were defined as small, medium or large, according to Cohen's d (Cohen, 1988). Cohen's d is calculated according to the following formula:

$$d = \frac{M_{group1} - M_{group2}}{SD_{pooled}}$$

This is the difference in the means of both groups being compared (or mean difference) divided by the pooled standard deviation.

Where:

$$SD_{pooled} = \sqrt{(SD^2_{group1} + SD^2_{group2})/2}$$

This is the square root of the sum of the standard deviations of both groups being compared divided by two.

A mean difference of $d = 0.2$ is considered a 'small' effect size, $d = 0.5$ is considered a 'medium' effect size and $d = 0.8$ is considered a 'large' effect size (Cohen, 1988).

Odds ratios

An odds ratio (OR) is a measure of association between an exposure and an outcome. The odds ratio represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure.

ORs are used to compare the relative odds of the occurrence of the outcome of interest (e.g. disease or disorder), given exposure to the variable of interest (e.g. health characteristic, aspect of medical history). The OR can also be used to determine whether a particular exposure is a risk factor for a particular outcome, and to compare the magnitude of various risk factors for that outcome.

- OR = 1 Exposure does not affect odds of outcome.
- OR > 1 Exposure is associated with higher odds of outcome.
- OR < 1 Exposure is associated with lower odds of outcome.

Logistic regression models

Logistic regression models are used to estimate the effects of factors, such as age and educational attainment, on a categorical dependent variable, such as volunteering status. The standard models examine 'binary' dependent variables, which are variables with only two distinct values, and estimates obtained from these models are interpreted as the effects on the probability that the variable takes one of those values. For example, a model might be estimated on the probability that an individual is volunteering (as opposed to not volunteering).

Chi-square test

A chi-square (X^2) test is used to investigate whether distributions of categorical variables differ from one another. For example, are children's worries about the environment different between boys and girls.

Statistical significance

In the context of statistical analysis of survey data, a finding is statistically significant if it is unlikely that the relationship between two or more variables is caused by chance. That is, a relationship can be considered to be statistically significant if we can reject the 'null hypothesis' that hypothesises that there is no relationship between measured variables. A common standard is to regard a difference between two estimates as statistically significant if the probability that they are different is at least 95%. However, 90% and 99% standards are also commonly used. Unless otherwise specified, the 95% standard is adopted for regression results presented in this report. Note that a statistically significant difference does not mean the difference is necessarily large, it simply means that you can be fairly confident there is a difference.

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