The Longitudinal Study of Australian Children

Annual statistical report 2012

Australian Institute of Family Studies

(CC) BY

Contents

List of tables

List of figures

Acknowledgements

Foreword

I am pleased to introduce the third volume of the Annual Statistical Report series for *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC). This series aims to provide the evidence base for future research and policy development to support family functioning and children's health and wellbeing.

Using longitudinal data collected about children's development from ages 0 to 11 years old, this report covers a range of policy-relevant issues. Family functioning is the focus of chapters on children's relationships with parents in shared care-time arrangements, financial support for children after parental separation and intergenerational disadvantage. Children's wellbeing in the school context is addressed in chapters focusing on children's experiences of bullying and school attendance. The report also discusses how children aged 10–11 years spend their time after school, while children's health and health activities are covered in chapters on children's allergies and children's physical activity. For the first time in this series, the report also includes a chapter on the outcomes and transitions of Aboriginal and Torres Strait Islander children.

By providing statistical snapshots of children's development and wellbeing across time, this report is a valuable source of information for policy-makers, researchers and practitioners.

Alan Hayes
Director
Australian Institute of Family Studies

Introduction

Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC) is Australia's first nationally representative longitudinal study of child development. The purpose of the study is to provide policy-makers and researchers with quality data that contribute towards gaining a comprehensive understanding of children's development within Australia's contemporary social, economic and cultural environment (Department of Families, Housing, Community Services and Indigenous Affairs [FaHCSIA], 2009). 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.

LSAC was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs, 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.

This is the third volume in the LSAC Annual Statistical Report series, which for the first time incorporates data from the fourth wave of the study. The purpose of these reports is to provide an overview of the data from the study and to address policy-relevant questions about aspects of Australian children's lives and development. The reports make use of the longitudinal nature of LSAC data to describe continuities and change as children develop, as well as the dynamics of change in their families, neighbourhoods and communities.

The first section of this introductory chapter provides a brief overview of LSAC, the second describes the analytical approaches used throughout the main chapters of the report, and the third section introduces the subpopulation groups that are used for comparisons in some of the main chapters. The chapter ends with summary tables comprising a glossary of LSAC terms, statistical indicators, and the scales and measures used throughout the report.

1.1   About the study

Study design

The LSAC study has an accelerated cross-sequential design, with two cohorts of children:

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

The first wave of data collection took place in 2004, with subsequent main waves conducted every two years. In 2005, 2007 and 2009 parents were also sent a between-waves mail survey. Table 1.1 summarises the ages and sample sizes for the two cohorts across the first four main waves of the study.

Table 1.1: Ages and numbers of children, B and K cohorts, Waves 1–4				
	Wave 1 (2004)	**Wave 2 (2006)**	**Wave 3 (2008)**	**Wave 4 (2010)**
B cohort Age range	0–1 year	2–3 years	4–5 years	6–7 years
Sample size	5,107	4,606	4,386	4,242
K cohort Age range	4–5 years	6–7 years	8–9 years	10–11 years
Sample size	4,983	4,464	4,332	4,164

This design means that from the third wave of the study, the children's ages overlap; that is, children were aged 4–5 years in the first wave for the K cohort and in the third wave for the B cohort. In covering the first four waves of the study, this report includes data on children from birth to 11 years.

Respondents and collection methods

The use of multiple respondents in LSAC provides a rich picture of children's lives and their development in various contexts. Across the first four waves of the study, data have been collected from:

- parents of the study child:[1]
  - Parent 1 (P1)—defined as the parent who knows the most about the child (not necessarily a biological parent);[2]
  - 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); and
  - a parent living elsewhere (PLE)—a parent who lives apart from Parent 1 but who has contact with the child (if applicable);
- the study child;
- carers or teachers (depending on the child's age); and
- interviewers.

In the first four waves of the study, the main 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 in Wave 4 they also answered a series of self-complete questions. The B cohort children answered a small set of interview questions in Wave 4 for the first time.

A variety of data collection methods are used in the study, including:

- conducting face-to-face interviews:
  - on paper; and
  - by computer-assisted interview (CAI);
- having respondents fill in self-complete questionnaires:
  - during interview (paper forms, computer-assisted self-interviews [CASI] and audio-computer-assisted self-interviews [ACASI]);
  - on leave-behind paper forms; and
  - on mailout paper forms;
- physically measuring the child, including height, weight, girth, body fat and blood pressure;
- directly assessing the child's vocabulary and cognition;
- having children complete time use diaries;
- conducting computer-assisted telephone interviews (CATI); and
- linking to administrative or outcome data (e.g., Medicare, NAPLAN).

The interviews and questionnaires include validated scales appropriate to the children's ages (see section 1.4 for a list of the scales used).

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,

---

[1] The terms "Parent 1" and "Parent 2" are used for consistency and are not intended to suggest that one parent's relationship with their child is more important than the other parent's relationship.

[2] For separated families in which both parents provided care for the child, the interviewer in Wave 1 worked with the family to identify who the child's Parent 1 was for the purposes of data collection. Where possible, the same parent has been kept as P1 in subsequent waves.

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 and the rest of each state. The method of postcode selection took into account the number of children in the postcode; hence, all the potential participants in the study (aside from those living in very remote regions) had an approximately equal chance of selection (about one in 25).[3]

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 refused to participate (33% of B cohort families and 38% of K cohort families), and 11% of families could not be contacted (e.g., because the address was out-of-date, or only a post office box address was provided) (10% of B cohort families and 12% of K cohort families).

This resulted in a nationally representative sample of 5,107 0–1 year olds and 4,983 4–5 year olds who were Australian citizens or permanent residents. Table 1.2 presents the response rates for each of the four main waves.

Table 1.2: Response rates, main waves, B and K cohorts, Waves 1–4				
	Wave 1 (2004)	**Wave 2 (2006)**	**Wave 3 (2008)**	**Wave 4 (2010)**
B cohort				
Number of responses	5,107	4,606	4,386	4,241
Response rates of Wave 1	100.0%	90.2%	85.9%	83.0%
Response rates of available sample [a]	–	91.2%	88.2%	86.0%
K cohort				
Number of responses	4,983	4,464	4,332	4,164
Response rates of Wave 1	100.0%	89.6%	86.9%	83.6%
Response rates of available sample [a]	–	90.9%	89.7%	87.2%
Total				
Number of responses	10,090	9,070	8,718	8,405
Response rates of Wave 1	100.0%	89.9%	86.4%	83.3%
Response rates of available sample [a]	–	91.1%	89.0%	86.6%

Notes: Percentages based on weighted data. [a] The available sample excludes those families who opted out of the study between waves.

1.2 Analyses presented in this report

This report includes data from the first four main waves of the study, though given the breadth and depth of topics included in the study, chapters in this report do not necessarily use data from all four waves and/or both cohorts. Analyses for the two cohorts (B and K) are presented separately throughout the report.

Each chapter addresses a series of policy-relevant questions using descriptive statistical analyses. In answering these questions, chapters generally take one or both of the following approaches:

■ *comparisons between subpopulation groups* (summarised in section 1.3 on page 4) on the various aspects of children's environments and development; and

■ examinations of *trends across waves* as children grow older.

---

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

Chapter 1

Weighting and survey analysis

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 (Daraganova & Sipthorp, 2011; Misson & Sipthorp, 2007; Sipthorp & 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 into account the clusters and strata used in the study design when producing measures of the reliability of estimates.

Key points to be noted

Most of the information has been collected from the child's Parent 1 and Parent 2. Parent 1 is defined as the best person to ask about the child's health, development and care. The majority of Parent 1 repsondents are mothers (i.e., at all waves, more than 95% of the Parent 1 group have been women) and the majority of Parent 2 respondents are fathers.

Parent 1 for each study child was defined by the family at Wave 1. At subsequent waves, it has been preferable for Parent 1 to be the same person as for Wave 1. However, if Parent 1 no longer resides with the child or is temporarily away, Parent 2 of the previous wave becomes Parent 1. If both Parent 1 and Parent 2 do not reside with the child or are temporarily away, then a new Parent 1 (the best person to ask about the child's health, development and care) is assigned. Thus, Parent 1 and Parent 2 are sometimes not the same person in each wave, with different parents or guardians potentially occupying different roles at each wave.

Unless specifically noted, all references to the child's "household" or "family" are to those of Parent 1, and do not include any other household or family they may have with a parent living elsewhere from the Parent 1. Similarly, unless specified in the chapter, any reference to "parents" is to Parent 1 and Parent 2, not to parents living elsewhere. In some chapters, data are reported for mothers and fathers rather than for Parent 1 and 2.

Some chapters compare responses to particular questions across waves. In some cases, these questions were collected using different methods in different waves (e.g., by interview in one wave and by self-complete questionnaire in another).

1.3   Subpopulation groups

This section introduces the subpopulation groups that are used in some of the chapters in this report. Most of these subpopulation groups were introduced in detail in the LSAC *Annual Statistical Report 2010* (AIFS, 2011), and are summarised in Table 1.3 (child characteristics; see page 5), Table 1.4 (parent and family characteristics; see page 7), and Table 1.5 (school characteristics; see page 8). The percentages shown in these three tables are based on weighted data (as described in section 1.2 on page 3).

Child characteristics

The child characteristics for the B and K cohorts at each of the first four waves are summarised in Table 1.3 (on page 5).

Child gender

Parent 1 reported the child's gender at Wave 1.

Table 1.3: Child characteristics, B and K cohorts, Waves 1–4

Subpopulation categories	B cohort				K cohort			
	Wave 1 0–1 years (%)	Wave 2 2–3 years (%)	Wave 3 4–5 years (%)	Wave 4 6–7 years (%)	Wave 1 4–5 years (%)	Wave 2 6–7 years (%)	Wave 3 8–9 years (%)	Wave 4 10–11 years (%)
Child gender [a]								
Boys	51.2	51.1	51.1	51.1	51.2	51.3	51.3	51.2
Girls	48.8	48.9	48.9	48.9	48.8	48.7	48.7	48.8
No. of observations	5,107	4,606	4,386	4,242	4,983	4,464	4,331	4,164
Main language spoken at home by child [a]								
English	87.2	87.9	87.0	86.8	86.0	85.2	86.1	85.9
Not English	12.8	12.1	13.0	13.2	14.0	14.8	13.9	14.1
No. of observations	5,104	4,603	4,384	4,239	4,983	4,464	4,331	4,164
Whether child has a disability or medical condition [b]								
Yes	–	5.9	8.6	5.4	–	11.1	7.7	6.2
No	–	94.1	91.4	94.6	–	88.9	92.3	93.8
No. of observations	–	4,606	4,386	4,242	–	4,464	4,331	4,164
Weight status [c]								
Underweight	–	5.3	6.5	5.4	5.2	5.1	5.5	5.8
Normal weight	–	71.3	69.7	73.8	74.2	75.2	69.5	65.6
Overweight or obese	–	23.4	23.8	20.8	20.6	19.7	25.0	28.6
No. of observations	–	4,522	4,324	4,181	4,934	4,423	4,289	4,013
Child Indigenous status [a]								
Indigenous	4.9	5.1	4.9	5.2	3.9	3.7	3.7	3.9
Non-Indigenous	95.1	94.9	95.1	94.8	96.1	96.3	96.3	96.1
No. of observations	5,107	4,606	4,386	4,242	4,981	4,462	4,329	4,162

Notes: Percentages based on weighted data. [a] Recorded at Wave 1. [b] Questions about whether the study child had a disability or medical condition were asked differently in Wave 1 so these data are not included here. [c] Weight status is based on body mass index. It was not calculated at Wave 1 for the B cohort.

Main language spoken at home by child

At Wave 1, Parent 1 respondents were asked whether each household member mainly spoke English or a language other than English at home. Languages were classified according to the Australian Standard Classification of Languages (ABS, 2005), and these were summarised into English or non-English languages.

Whether child has a disability or medical condition

At each of Waves 2 to 4, Parent 1 respondents were asked whether each household member had a medical condition or disability that had lasted six months or more, while being shown a prompt card with a list of conditions, such as sight problems; hearing problems; blackouts, fits or loss of consciousness; difficulty learning or understanding things; and difficulty gripping things.

Weight status

At each wave (except Wave 1 for the B cohort), interviewers measured the children's weight and height, and these measurements were used to calculate children's body mass index (BMI). The children were then classified as being overweight or obese (Cole, Bellizzi, Flegal & Dietz, 2000), underweight (Cole, Flegal, Nicholls, & Jackson 2007) or of normal weight. Children in the B cohort at Wave 1 were not measured because of the technical difficulties of measuring infants' height and weight.

Child Indigenous status

Parent 1 respondents were asked at Wave 1 whether the study child identified as being of Aboriginal and/or Torres Strait Islander background. These results were summarised into a measure of whether the child was Indigenous or non-Indigenous.

Parent and family characteristics

The parent and family characteristics for the B and K cohorts at each of the first four waves are summarised in Table 1.4 (on page 7).

Family type

Two-parent families are defined as those in which the child lives with two parents in Parent 1's household. This includes children living with biological and/or non-biological parents, children living with same-sex couple parents, and children living in other two-parent family types (e.g., with their mother and their grandmother).

Lone-mother families are those in which the child lives with one female parent only (who is not necessarily the child's biological mother). Where children's parents have separated, and the child spends time with both parents, the family type is defined according to Parent 1's household, as identified by the study family.

There are very few lone-father families (fewer than 1% for each cohort), so these have been excluded from the analyses comparing different family types.

Family socio-economic position

The measure of family socio-economic position (SEP), developed by Blakemore, Strazdins, and Gibbings (2009), uses information about combined annual family income, educational attainment of parents, and parents' occupational status to summarise the social and economic resources available to families. The standardised SEP scores have been divided into quartiles and summarised into the lowest 25%, the middle 50% and the highest 25%.

Number of siblings in the household

At each wave, Parent 1 provides details about all household members, including the study child's siblings. Siblings include biological, adopted, foster, step- and half-siblings. Children may also have siblings who do not live in their household, but these siblings are not included here.

Table 1.4: Parent and family characteristics, B and K cohorts, Waves 1–4

Subpopulation categories	B cohort				K cohort			
	Wave 1 0–1 years (%)	Wave 2 2–3 years (%)	Wave 3 4–5 years (%)	Wave 4 6–7 years (%)	Wave 1 4–5 years (%)	Wave 2 6–7 years (%)	Wave 3 8–9 years (%)	Wave 4 10–11 years (%)
Family type								
Two-parent family	89.5	87.0	86.0	84.7	85.6	83.9	84.0	82.4
Lone-mother family	10.5	13.0	14.0	15.3	14.4	16.1	16.0	17.6
No. of observations	5,104	4,593	4,375	4,221	4,946	4,426	4,288	4,113
Family socio-economic position								
Lowest 25%	28.6	31.2	31.5	33.1	28.6	30.3	31.5	31.4
Middle 50%	48.9	47.9	47.8	46.6	50.0	48.8	48.8	48.8
Highest 25%	22.5	20.9	20.7	20.3	21.4	20.9	19.7	19.8
No. of observations	5,092	4,602	4,382	4,237	4,965	4,458	4,327	3,982
Number of siblings in the household								
None	39.1	19.9	11.4	9.5	11.5	9.6	8.6	8.6
One	36.4	47.3	46.3	43.6	47.5	43.9	42.5	42.5
Two or more	24.5	32.8	42.3	46.9	41.0	46.5	48.9	48.9
No. of observations	5,107	4,606	4,386	4,242	4,983	4,464	4,331	4,164
Main language spoken at home by Parent 1								
English	83.1	83.7	83.1	82.8	82.5	81.6	82.7	82.6
Not English	16.9	16.3	16.9	17.2	17.5	18.4	17.3	17.4
No. of observations	5,107	4,606	4,386	4,238	4,983	4,464	4,328	4,146
Parent 1's education level								
University degree or higher	29.1	28.3	29.6	30.0	24.1	24.4	25.1	25.8
Less than university degree	70.9	71.7	70.4	70.0	75.9	75.6	74.9	74.2
No. of observations	5,107	4,606	4,386	4,242	4,983	4,464	4,331	4,164
Both parents' education level								
At least one parent has a university degree (or higher)	37.5	36.9	38.4	38.9	33.9	34.3	35.0	35.2
Neither parent has a university degree	62.5	63.1	61.6	61.1	66.1	65.7	65.0	64.8
No. of observations	5,104	4,604	4,385	4,240	4,979	4,463	4,329	4,163

Table 1.4: Parent and family characteristics, B and K cohorts, Waves 1–4

	B cohort				K cohort			
Subpopulation categories	Wave 1 0–1 years (%)	Wave 2 2–3 years (%)	Wave 3 4–5 years (%)	Wave 4 6–7 years (%)	Wave 1 4–5 years (%)	Wave 2 6–7 years (%)	Wave 3 8–9 years (%)	Wave 4 10–11 years (%)
Region of residence								
Metropolitan	66.5	62.6	64.9	63.6	63.7	65.9	62.9	62.4
Non-metropolitan	33.5	37.4	35.1	36.4	36.3	34.1	37.1	37.6
No. of observations	5,107	4,606	4,378	4,231	4,983	4,464	4,324	4,158

Notes: Percentages based on weighted data.

Table 1.5: School characteristics, K cohort, Wave 4

	B cohort				K cohort			
Subpopulation categories	Wave 1 0–1 years	Wave 2 2–3 years	Wave 3 4–5 years	Wave 4 6–7 years	Wave 1 4–5 years	Wave 2 6–7 years	Wave 3 8–9 years	Wave 4 10–11 years
School size (no. of students) [a]	Mean (*SD*)							
Small (250 or fewer)	–	–	–	158.5 (60.1)	–	131.4 (57.5)	147.6 (61.9)	163.3 (63.0)
Medium (251–620)	–	–	–	432.0 (114.6)	–	396.3 (113.6)	416.1 (109.6)	437.4 (111.4)
Large (621 or more)	–	–	–	1,001.5 (355.1)	–	865.4 (341.7)	948.8 (601.4)	1,078.4 (725.3)
No. of observations (schools)	–	–	–	3,298	–	2,961	3,369	3,230
School type [a]	% of schools							
Government	–	–	–	67.9	–	68.8	68.3	66.8
Catholic	–	–	–	20.8	–	20.9	20.5	20.5
Independent/private	–	–	–	11.3	–	10.3	11.2	12.7
Total	–	–	–	100.0	–	100.0	100.0	100.0
No. of observations (schools)	–	–	–	4,225	–	4,447	4,307	4,139

Notes: Percentages based on weighted data. [a] Questions about children's school size and type were only asked for children of school age; that is, the B cohort in Wave 4 and the K cohort in Waves 2–4.

Main language spoken at home by Parent 1

The language spoken by Parent 1 is classified using the same approach described above for the study children.

Parents' education level

At each wave, Parent 1 is asked about the highest qualification held by each of the parents. This information is used to categorise parents into those who have a university degree (or higher) and those who don't. Comparisons are made for Parent 1 respondents only, and for both parents together (families in which at least one parent have a university degree, versus families in which neither parent has a university degree).

Region of residence

Families' postcodes are used to link to ABS Census data, which identifies whether they live in a metropolitan area (capital city statistical divisions) or non-metropolitan area (the rest of the state outside the capital city statistical divisions).

School characteristics

Characteristics of children's schools are summarised in Table 1.5 (on page 8).

School size

For school-aged children (i.e., aged 6–7 years and older; B cohort Wave 4 and K cohort Waves 2–4), teachers were asked how many children currently attended the study child's school. Responses were categorised according to the school size distribution. Schools at the bottom quartile of the school size distribution were considered relatively small. Schools in the second and third quartiles of the school size distribution were defined as medium-size schools. Schools at the top quartile of the school size distribution were defined as relatively large schools. Overall, small schools had 250 or fewer children, medium schools had 251 to 620 children and large schools had 621 or more students.

School type

For school-aged children (i.e., aged 6–7 years and older; K cohort Waves 2–4 and B cohort Wave 4), Parent 1 respondents provided details about the type of school the child attended: government, Catholic or independent/private schools.

1.4   Summary tables

Glossary of LSAC terms

Term	Description
B cohort	The younger group ("baby" cohort) of study children: ■ aged 0–1 years in Wave 1 (2004) ■ aged 2–3 years in Wave 2 (2006) ■ aged 4–5 years in Wave 3 (2008) ■ aged 6–7 years in Wave 4 (2010)
K cohort	The older group ("kindergarten" cohort) of study children: ■ aged 4–5 years in Wave 1 (2004) ■ aged 6–7 years in Wave 2 (2006) ■ aged 8–9 years in Wave 3 (2008) ■ aged 10–11 years in Wave 4 (2010)
LSAC	*Growing Up in Australia*: The Longitudinal Study of Australian Children. A nationally representative longitudinal study of child development that commenced in 2004. Data are collected from study children, and their parents, carers and teachers, and through linkage with other national datasets.
Parent 1	The child's Parent 1 was defined at Wave 1 as the best person to ask about the child's health, development and care. In the majority of cases, this was the child's biological mother, but was sometimes the father or another guardian. At subsequent waves, it has been preferable for Parent 1 to be the same person as for Wave 1. However, if Parent 1 no longer resides with the child or is temporarily away, Parent 2 of the previous wave becomes Parent 1. If both Parent 1 and Parent 2 do not reside with the child or are temporarily away, then a new Parent 1 (the best person to ask about the child's health, development and care) is assigned.
Parent 2	The child's Parent 2 lives in the same household as Parent 1 and is usually the partner of the Parent 1. In most cases, this is the child's biological father, but can be the mother, another partner of Parent 1, or another guardian.
Parent living elsewhere (PLE)/ non-resident parent	The child's parent who lives in a different household to Parent 1.
Study child (or child)	The sampling unit for LSAC is the study child, so "child" refers to the child selected for inclusion in the study. Data collected and reported relate to this child.
Wave	Periods of data collection: ■ Wave 1 in 2004 (B cohort were 0–1 years, K cohort were 4–5 years) ■ Wave 2 in 2006 (B cohort were 2–3 years, K cohort were 6–7 years) ■ Wave 3 in 2008 (B cohort were 4–5 years, K cohort were 8–9 years) ■ Wave 4 in 2010 (B cohort were 6–7 years, K cohort were 10–11 years)

Statistical indicators in tables and graphs

Indicator	Notes
†	Relative standard error (RSE)
*	Significance level p < .05
**	Significance level p < .01
***	Significance level p < .001

Scales used in the report

Scale	Range	Notes
Academic Rating Scales (ARS)	1–5	This scale was adapted for use in Australian schools (Rothman, 2009) and is a measure of school performance in mathematical ability (numeracy) and literacy. The overall measure of achievement was calculated using the Rasch rating score model. Higher scores represent greater proficiency.
Competence scale—Brief Infant Toddler Social Emotional Assessment (BITSEA)	13–33	Derived in LSAC for measuring competencies in the previous month for children 0–3 years old (see Smart, 2011; Briggs-Gowan, Carter, & Schwab-Stone, 1996). Higher scores represent greater competence.
Problems scale—Brief Infant Toddler Social Emotional Assessment (BITSEA)	20–54	Derived in LSAC for measuring certain social-emotional problems in the previous month for children 0–3 years old (see Smart, 2011; Briggs-Gowan, Carter, & Schwab-Stone, 1996). Higher scores represent more problems.
General Self-Concept	1–5	Part of the Self-Description Questionnaire (Marsh, 1990). A higher score indicates a more positive self-concept.
Matrix Reasoning Test	1–19	The Matrix Reasoning Test is part of the Wechsler Intelligence Scale for Children, 4th edition (WISC-IV), and measures non-verbal intelligence. A higher score represents a better outcome.
Peabody Picture Vocabulary Test (PPVT)	Age-specific	The PPVT measures receptive vocabulary (Dunn & Dunn, 1997). Scores are created via Rasch modelling. A higher score represents a better outcome.
Strengths and Difficulties Questionnaire (SDQ)	0–40	The SDQ assesses peer problems, conduct problems, hyperactivity, emotional problems and prosocial behaviours for children aged 3–12 years. Higher scores on the hyperactivity/inattention, emotional symptoms, peer relationship problems and conduct problems subscales, and lower scores on the prosocial behaviour subscale reflect more problematic behaviour.
School Readiness Score ("Who Am I?")	25–100	The School Readiness Score (de Lemos & Doig, 1999) is based on an interviewer-administered test of children's ability to perform pre-literacy/pre-numeracy tasks such as reading; copying and writing letters, words and numbers; and copying and drawing shapes. A higher score indicates a better outcome.

1.5   References

Australian Bureau of Statistics. (2005). *Australian Standard Classification of Languages (ASCL)*. Canberra: ABS.

Australian Institute of Family Studies. (2011). *The Longitudinal Study of Australian Children annual statistical report 2010*. Melbourne: AIFS.

Blakemore, T., Strazdins, L., & Gibbings, J. (2009). Measuring family socioeconomic position. *Australian Social Policy*, *8*, 121–168.

Briggs-Gowan, M., Carter, A., & Schwab-Stone, M. (1996). Discrepancies among mother, child, and teacher reports: Examining the contributions of maternal depression and anxiety. *Journal of Abnormal Child Psychology*, *24*(6), 749–765.

Cole, T. J., Bellizzi, M. C., Flegal, K. M., & Dietz, W. H. (2000). Establishing a standard definition for child overweight and obesity worldwide: International survey. *British Medical Journal*, *320*, 1240–1243.

Cole, T. J., Flegal, K. M., Nicholls, D., & Jackson, A. A. (2007). Body mass index cut offs to define thinness in children and adolescents: International survey. *British Medical Journal*, *335*(7612), 194.

Daraganova, G., & Sipthorp, M. (2011). *Wave 4 weights* (Technical Paper No. 9). Melbourne: Australian Institute of Family Studies.

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

Dunn, L. M., & Dunn, L. M. (1997). *Peabody Picture Vocabulary Test: Manual* (3rd Ed.). Circle Pines, MN: American Guidance Services.

Marsh, H. W. (1990). *Self Description Questionnaire-I (SDQ-I) manual*. Sydney: University of Western Sydney.

Misson, S., & Sipthorp, M. (2007). *Wave 2 weighting and non-response* (Technical Paper No. 5). Melbourne: Australian Institute of Family Studies.

Rothman, S. (2009). *The development and use of educational measures in the Longitudinal Study of Australian Children*. Paper presented at the 2nd LSAC Research Conference, Melbourne.

Sipthorp, M., & Misson, S. (2009). *Wave 3 weighting and non-response* (Technical Paper No. 6). Melbourne: Australian Institute of Family Studies.

Smart, D. (2011). How young children are faring: Behaviour problems and competencies. In Australian Institute of Family Studies (Ed.), *The Longitudinal Study of Australian Children annual statistical report 2010* (pp. 91–106). Melbourne: AIFS.

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

Soloff, C., Lawrence, D., Misson, S., & Johnstone, R. (2006). *Wave 1 weighting and non-response*. Melbourne: Australian Institute of Family Studies.

Financial support for children after parental separation

2

Lixia Qu and Ruth Weston
Australian Institute of Family Studies

2.1 Introduction

Parental separation typically creates an economic crisis, for the money that can support an intact family is usually insufficient to meet the costs of two newly formed households, at least one of which includes children. Furthermore, while parental separation occurs across the socio-economic spectrum, families who are already disadvantaged in this area are at greater risk of separation (de Vaus, Gray, Qu, & Stanton, 2012). Post-separation financial difficulties experienced in one or both households can extend for many years, embracing the entire period of the children's childhood, if not permanently. The de Vaus et al. study suggested that re-partnering continues to represent a key means by which single parents (usually mothers) and their children may escape their financial difficulties.

Although an increasing proportion of children spend roughly equal time with each parent after parental separation (thereby spreading child-related costs more or less equally), this arrangement still applies to a small minority of children (Weston et al., 2011). In fact, in separated families, most children under 18 years old spend the majority of nights in the care of their mother, who is typically single. This appears to be the case for children across the four age groups used by the Australian Bureau of Statistics (ABS, 2011): 0–4, 5–9, 10–14 and 15–17 years. Estimates vary about the precise amount of time during which children of separated parents are in the care of each parent. According to the Family Characteristics and Family Transitions Survey conducted in 2007, 22% of children aged 0–17 years who had a natural parent living elsewhere spent 14–34% of nights per year with that parent, and a further 8% spent 35–65% of nights per year with each parent.[1] Data from the Child Support Agency (CSA) show that in 2012, 18% of all child support payers in the Child Support Scheme had "regular care" of their children (14–35% of the time) and a further 10% had "shared care" (35–65% of the time) (Australian Government, 2012).[2]

Policies regarding the financial support of children after parental separation have changed dramatically since the early 1980s, when fewer than one in three "resident" mothers (i.e., those who had primary or sole care of their children after separation) received regular "maintenance payments" for their children (McDonald & Weston, 1986). In those days, payment amounts received by mothers were seen as totally inadequate, and were unrelated to the payers' income levels (Harrison & Tucker, 1986). Furthermore, most single mothers had no paid work (applying to 68% in 1983, according to Hayes, Weston, Qu, & Gray, 2010). A groundswell of concern developed about the unfairness of the situation for the children and their mothers, given their high rates of poverty, and for taxpayers, given that the financial support of children and their single mothers tended to rely entirely on the public purse (e.g., Cabinet Sub-Committee on Maintenance, 1986).

---

[1] The percentages have been derived from unpublished customised tables.

[2] The Child Support Agency has been part of the Australian Government Department of Human Services (DHS) since 2004. In 2011 it ceased to be a statutory agency and is now a program of DHS. In this chapter, we refer to the Child Support Agency because that is how it was referred to in some questions asked of parents in the Longitudinal Study of Australian Children. For the purposes of estimating child support payment transfers, the CSA classifies 0–13% of nights of care time as being "below regular care", 14–34% of nights as "regular care", 35–65% of nights as "shared care", 66–86% of nights as "primary care", and 87–100% of nights as "above primary care".

The roll-out of the initial Child Support Scheme (in 1988–89) was designed to ensure that "non-resident" parents contributed to the financial support of their children, not only regularly, but also according to their capacity to pay. The scheme was based on the view that children of separated parents should have a standard of living that reflects that of both parents, rather than the parent with whom they mostly lived (see *Child Support Assessment Act 1989* (Cth), Section 4). As such, the scheme also represented a potent endorsement of ongoing parental responsibility, and a major shift in the way in which parental responsibility was understood (Funder, 1993, 1994). Not surprisingly, it generated a great deal of controversy, with some people arguing that enforced child support might worsen father–child relationships, while others maintained that it would encourage fathers to spend more time with their children (Funder, 1994). Since the introduction of the original Child Support Scheme, the role of fathers in intact and separated families has continued to evolve, and fathers in both family forms now tend to spend more time with their children (see Craig, Mullan, & Blaxland, 2010; Kaspiew et al., 2009).[3] Among separated families, the proportion of children spending at least 30% of nights with each parent, and the proportion with equal care time has increased substantially over the last two decades (see Kaspiew et al., 2009; Smyth, 2009).[4] Nevertheless, as noted above, near-equal care time remains uncommon.

A number of amendments have since been made to the Child Support Scheme, the most significant of which were introduced in the *Child Support Amendment Act 2006*. These most recent reforms were introduced in three stages over a two-year period (July 2006 to July 2008) (see Department of Families, Housing, Community Services and Indigenous Affairs [FaHCSIA], 2012). They were designed, in part, to accommodate societal changes that had occurred since the initial scheme was introduced (including the increased workforce participation of mothers), and to complement the new family law system, with its emphasis on encouraging greater involvement of both separated parents in children's lives (where there are no safety concerns) and helping parents agree on what is best for their children.

Since July 2008, child support payments have been calculated on the basis of the costs of children (taking into account the fact that the direct costs increase as children grow older), the combined incomes of both parents (with each parent's income being treated in the same way), and the costs incurred by parents when the children are in their direct care. The scheme also treats first and second families more equally than was the case in the initial scheme.

Despite the various changes in child support legislation, it remains the case that some parents who are supposed to pay child support do not comply with their child support obligations. For example, among parents in the Longitudinal Study of Separated Families (LSSF) who were supposed to pay child support ("payers"), a substantial minority tended to either delay their payments, fail to pay the full amount owing, or both. This was reported by nearly one in four fathers and four in ten mothers who were liable to pay child support in the first wave of the LSSF (conducted in late 2008), when the parents had been separated for an average of 15 months (Kaspiew et al., 2009).[5]

The amount of child support that needs to be paid can be determined by the Child Support Agency (representing the most common pathway), by the courts in some very limited circumstances,[6] or independently (called "private agreements"). The transfer of payments established by the CSA can be organised via the CSA ("CSA collect") or directly between parents ("private collect"), with these two modes each accounting for around 50% of all cases (CSA, 2009).

Private agreements not only cover the amount of financial support to be paid, but also the form it should take. For example, financial support may entail transfers of money from one parent to the

---

3   See "Appendix A: Historical Context: Family Law and Social Change in Australia, 1976–2006" in Kaspiew et al. (2009).

4   In the original Child Support Scheme, the "non-resident" parent's care time was only taken into account in setting child support payment obligations if it amounted to at least 30% of nights per year. Shared care time was usually considered to have occurred when the child spent 30–70% of nights with each parent. As noted earlier, the Child Support Agency now classifies 35–65% of nights with each parent as reflecting shared care time.

5   These analyses were based on the reports of a cohort of 10,000 separated parents with a child under 18 years old who: (a) had separated since July 2006; (b) had registered with the Child Support Agency in 2007; and (c) as noted, were interviewed after they had been separated for an average of 15 months. Around 70% of these parents participated in Wave 2 of the study, which took place approximately 12 months later. The data referred to here are based on the reports of the total sample in Wave 1. (Some Wave 2 results are discussed in section 2.7.) While all respondents had separated before 2008, 4% reconciled after 2006, then separated again in 2008.

6   In 2008–09, the court ordered how child support was to be determined in only 0.1% of all CSA cases (CSA, 2009).

other and/or payment of certain expenses (such as school fees, clothing and medical expenses), along with non-cash support.

Using the first four waves of data from *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC), this chapter examines reports of "resident parents" (defined in section 2.2) to address the following questions:

- What proportion of separated parents have a child support arrangement in place?

- What services have parents used to assist in reaching their child support arrangement?

- What is the nature of their arrangements (e.g., payment liability, collection mode, etc.), and how stable are they?

- To what extent do non-resident parents fully comply with their child support payment liability?

- Does full compliance with child support liability vary systematically with care-time arrangements and duration of separation?

- To what extent do non-resident parents provide other forms of financial support for their children? What is the nature of such support?

2.2   Defining the separated families sample

In each wave of LSAC data collection, information about the study child has been collected from "Parent 1". While this can be the study child's biological (or adoptive) mother, father or guardian, in virtually all cases, this person was the child's mother. Parent 1 was defined in Wave 1 and, if possible, is to be the same parent across the waves. Since Wave 2 (2006), attempts have been made to interview parents who are not living in the same household with Parent 1 (called the "parent living elsewhere" in LSAC-related publications). In the present chapter, given its focus on separated parents, we refer to Parent 1 as the "resident parent" and the other parent as the "non-resident parent". We also refer to the "study child" as "the child". The term "resident parent" is not intended to suggest that this parent's relationship with the study child is more important than the relationship with non-resident parent, nor is the term intended to suggest that resident parents' reports are treated as being more accurate than the reports provided by the non-resident parents.

The separated families represented in each cohort vary across the four survey waves, with "moves into the sample" resulting from the occurrence of parental separation between survey waves, and "moves out of the sample" resulting from sample attrition, non-participation of eligible parents in a particular survey wave, reconciliation, or the skipping of relevant questions. The proportion of separated families who experienced reconciliation between Waves 1 and 4 was quite small, but was greater for the younger than older cohorts (14% in the B cohort and 4% in the K cohort by Wave 4).

It should be noted that the LSAC families with separated parents were not representative of all Australian families with separated parents during the four survey waves (from 2004 to 2010), as the sample was restricted to families with a child in the two specific birth cohorts only (where the children were 0–1 and 4–5 years old in Wave 1, and therefore 6–7 years and 10–11 years in Wave 2).[7] Furthermore, the results are based on the information provided by resident parents only.[8] Trends concerning care time and child support liability status and compliance based on the reports of parents tend to differ somewhat according to the gender and apparent residence status of these parents (see Kaspiew et al., 2009; Qu & Weston, 2008). These issues need to be kept in mind when interpreting the results outlined in this chapter.

Table 2.1 (on page 16) describes all families in each cohort (taken separately) who are represented in each survey wave for this analysis. The overall number of children with a non-resident parent was greater in Wave 4 than in previous waves. Table 2.2 (on page 16) shows the proportion of children with a non-resident parent in Wave 1 who was interviewed in later waves. Of children with a non-resident parent in Wave 1, 32% of the B cohort and 24% of the K cohort were represented in Wave 1 only, while 27% of the B cohort and 40% of the K cohort were represented in all four waves. The remainder were represented in two or three waves.

---

[7]   In addition, the LSAC sample was not designed to be representative of families (with a child in these two age cohorts) who were living in remote areas of Australia.

[8]   This chapter focuses on resident parents' reports due to the low response rates from non-resident parents.

Table 2.1:	Number and age of children with a non-resident parent in each survey wave, B and K cohorts				
Waves and survey year	**B cohort**		**K cohort**		
	No.	**Age**	**No.**	**Age**	
Wave 1 (2004)	478	0–1 years	775	4–5 years	
Wave 2 (2006)	495	2–3 years	724	6–7 years	
Wave 3 (2008) [a]	558	4–5 years	795	8–9 years	
Wave 4 (2010)	660	6–7 years	837	10–11 years	

Note: Excludes a small number of families in which the resident parent (who was one of the child's biological parents) indicated that the "parent living elsewhere" was not the child's other biological parent. [a] This sample includes 97 B cohort children and 123 K cohort children whose resident parent did not want to answer questions about their child's other parent. Questions on child support were skipped for these parents.

Table 2.2:	Proportion of children with a non-resident parent in Wave 1 who participated in subsequent survey waves, B and K cohorts		
Non-resident parents' participation	**B cohort (%)**	**K cohort (%)**	
Participated only in one wave (Wave 1)	32.2	24.0	
Participated two or three waves	40.6	36.5	
Participated in all four waves	27.2	39.5	

When assessing the extent of change in specific child-support-related issues, we focus on those parents who separated before Wave 1 and who participated in all survey waves relevant to the analysis.[9]

2.3   Separated families with a child support arrangement

Resident parents were asked whether they and the other parent of their child had a child support or "private child maintenance" arrangement (or agreement) in place.[10] This question was asked in all waves except Wave 2. The following resident parents who were represented in the wave in question (taken separately) indicated that they had such an arrangement:

- B cohort—69%, 73% and 79% in Waves 1, 3 and 4, respectively; and

- K cohort—74%, 80% and 75% in Waves 1, 3 and 4, respectively.

It should be noted that, although as a general rule parents who receive more than the minimum rate of Family Tax Benefit Part A are required to seek child support, they can apply for an exemption under certain circumstances (e.g., where they may be exposed to family violence). A small proportion of resident parents in LSAC may have obtained such an exemption. In addition, some resident parents do not seek child support payments because they would prefer that they and their children had little if anything to do with the other parent (Qu & Weston, 2007).

The above results are based on different sample sizes across the survey waves. Figure 2.1 (on page 17), on the other hand, shows the proportion of parents (who separated before Wave 1 and participated in all four survey waves) who reported that they had a child support arrangement in place in the above-mentioned three waves (taken separately). Most of these parents reported that they had such an arrangement. While the proportions of B cohort parents reporting this to be the case increased significantly across the four survey waves represented—that is, from 74% in Wave 1 to 88% in Wave 4 ($p < .05$)—the proportions of K cohort parents reporting the presence of an agreement varied little (79–84% from Waves 1 to 4).

---

[9]   It is worth noting that in Wave 1 virtually all of these parents were mothers (99% and 96% in the B and K cohorts respectively), most of these mothers were sole parents (96% and 83% in the B and K cohorts respectively), and virtually all the sole parents were mothers (99% and 96% in the B and K cohorts respectively).

[10]   In Wave 1, the term "agreement" was used in this question, while in Waves 3 and 4, the term "arrangement" was used.
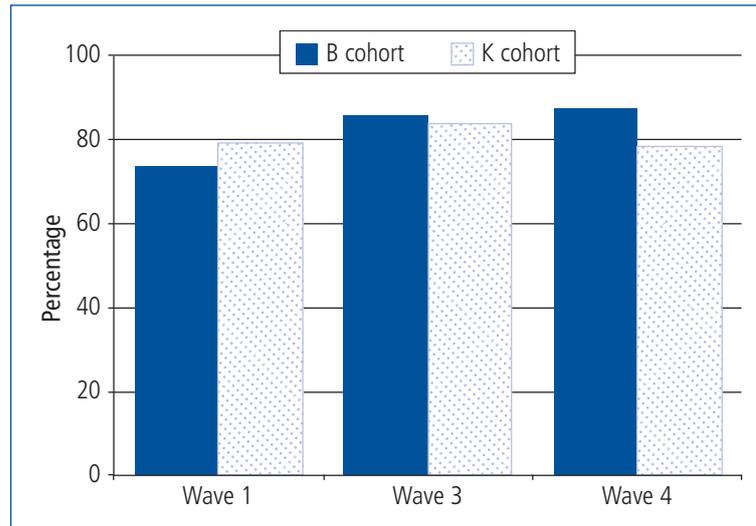
Note: Sample comprises resident parents who separated before Wave 1 and participated in all four survey waves. B cohort: *n* = 137; K cohort: *n* = 316.

Figure 2.1: **Resident parents who separated before Wave 1 and reported that they had child support arrangements, B and K cohorts, Waves 1, 3 and 4**

These trends mask the overall level of change within each cohort. For instance, among the B cohort parents who were represented in both Waves 1 and 4, 9% had a child support arrangement in place in Wave 1 but not Wave 4, 18% had an arrangement in Wave 4 but not Wave 1, and 68% had an arrangement in both these survey waves. Among the K cohort parents, the comparable proportions were 11%, 11% and 66% respectively.

In 2008 and 2010 (i.e., Waves 3 and 4), parents who had no child support arrangements were asked whether they were currently holding discussions with the other parent about developing an arrangement. Only a small minority of these parents indicated this to be the case (Wave 3: 11% and 16% for B and K cohort respectively; Wave 4: 15% and 8% respectively).[11] In Wave 4, the parents who said that they were not holding discussions with a view to developing an agreement were asked to indicate the main reason for not having a child support arrangement. The most commonly reported main reasons were that: the parent living elsewhere had, or claimed to have, little cash (reported by 17% and 23% of the relevant B and K cohort parents respectively); the respondent had not sought child support from the other parent (22% and 17% respectively); the other parent did not want to discuss the issue (12% and 14% respectively); child-related costs were shared in ways other than through the transfer of child support (17% and 8% respectively); the respondent did not need it or did not want it (10% and 11% respectively; some of these parents probably did not want anything to do with the other parent); and the decision was mutual (5% and 12% respectively).[12]

2.4 Services used for developing child support arrangements and method of payment adopted

As mentioned previously, most separated parents register their case with the CSA, which then assesses the amount of child support that should be transferred from one parent to the other. The assessment takes account of several issues, including each parent's income and the number of nights the children stay with each parent. Most other parents develop their child support arrangement independently, while a small number indicate that their arrangements are reached through other means (e.g., the Family Court) (CSA, 2009).

---

[11]　These and other percentages in this paragraph are based on all resident parents who were asked the question in the survey wave focused upon, regardless of whether they were represented in other survey waves.

[12]　In Wave 3 (2008), relevant parents were also asked to indicate the main reason for not having a child support arrangement. Response options differed from those in Wave 4 (2010), with nearly 60% reporting "other".

Figure 2.2 focuses on the reports of resident parents who had a child support arrangement in place (i.e., "payees"). It shows the proportions of these payees in Wave 4 who indicated that they mainly relied on the CSA, discussions with their child's other parent, or some other means in developing their arrangements. The results are again provided for each cohort separately. Most of these parents indicated that their arrangements had been decided by the CSA (74% of B cohort parents and 70% of K cohort parents). The pathway involving discussions with the other parent was reported by 14% and 16% of B and K cohort parents. The remainder indicated that their arrangements were achieved via other means.
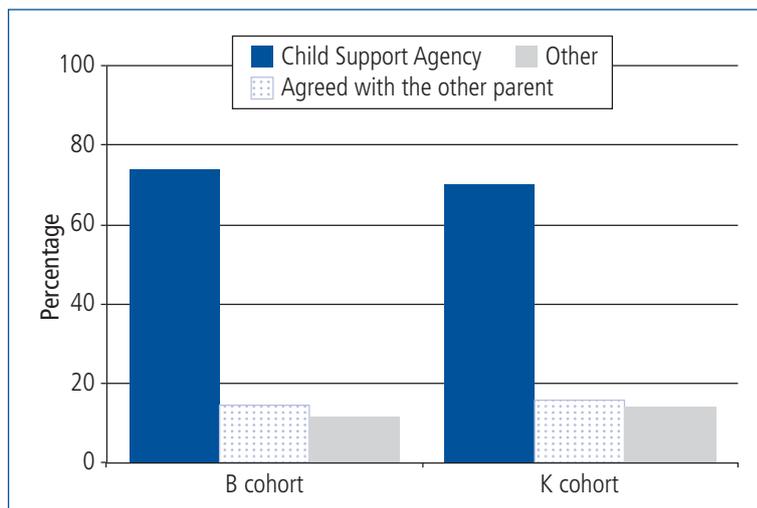
Note: B cohort: *n* = 518; K cohort: *n* = 611.

Figure 2.2:   Main pathway used for reaching child support arrangements, payee reports, B and K cohorts, Wave 4

As noted above, payments determined by the CSA can be made through the CSA (CSA collect) or directly from one parent to the other (private collect). Figure 2.3 shows the proportions of payees assessed by the CSA in each cohort who indicated in Wave 4 that their payments were transferred via the CSA, privately, or through another channel. Just over two-thirds of the payees in each cohort reported that payments were collected through the CSA, while just under one-third indicated that they had private collect arrangements. It was rare for payees to indicate that payments were collected through another channel.
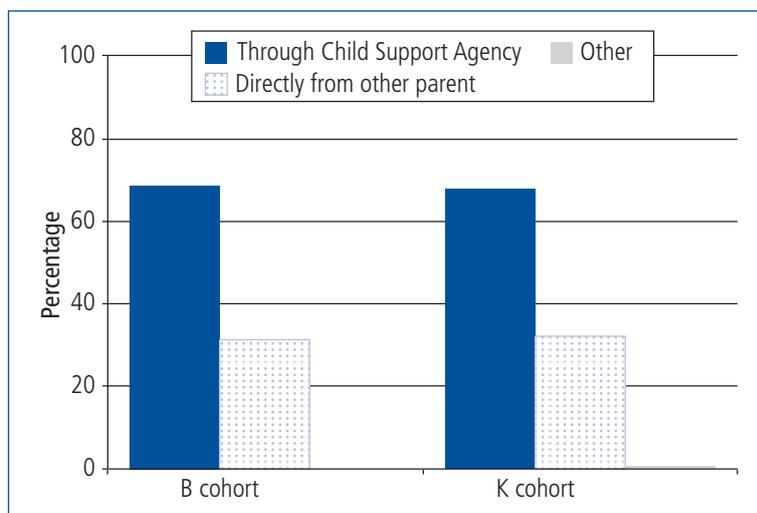
Note: B cohort: *n* = 333; K cohort: *n* = 384.

Figure 2.3:   Mode of child support payment transfers, payee reports, B and K cohorts, Wave 4

In order to gain insight into the level of stability of payment transfers, we focused on the reports of payees whose child support arrangements were reached through the CSA and who were interviewed in Waves 1 and 4 (Figure 2.4).[13] A greater proportion of payees relied on CSA collect in both Waves 1 and 4 than on private collect in both those waves (B cohort: 44% vs 14%; K cohort: 47% vs 20%). Changing from CSA collect in Wave 1 to private collect in Wave 4 was not very common (4% and 6% of the B and K cohorts respectively). In contrast, changing from private collect in Wave 1 to CSA collect in Wave 4 applied to 28% (B cohort) and 18% (K cohort) of payees who had an assessment from the CSA in Wave 1. For small proportions of each cohort, the child support payment transfer changed in other directions (e.g., other channels to CSA collect or private collection, and vice versa).
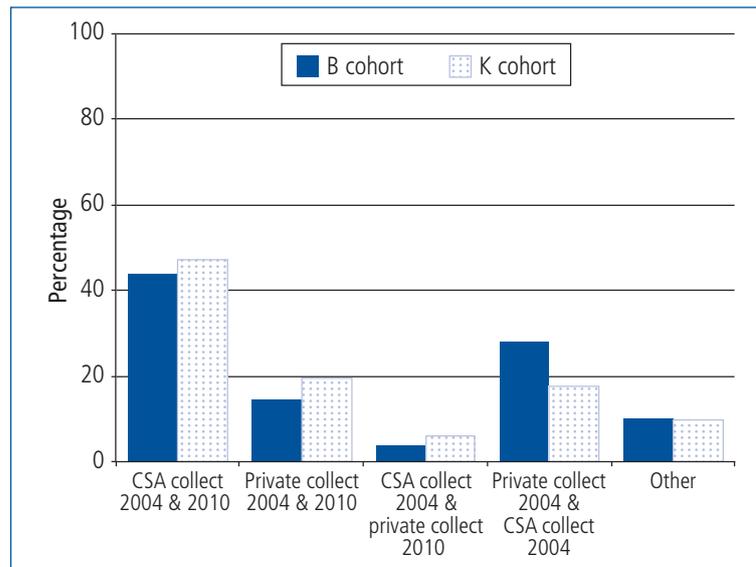
Note: B cohort: *n* = 81; K cohort: *n* = 188.

Figure 2.4: Change in child support payment transfer mode, payee reports, B and K cohorts, Waves 1 and 4

2.5   Child support compliance

In the first three waves (2004, 2006, 2008), payees were asked to indicate the amount of child support that their child's other parent was supposed to pay and the amount they actually received in the previous month.[14] The information collected in Wave 4 (2010) differed from that collected in previous waves. In Wave 4, respondents were asked to indicate how much they were supposed to receive and whether the payments were up-to-date. Payees who indicated that payments were up-to-date were then asked whether the last payment represented the usual amount, while those who indicated that payments were not up-to-date were asked whether they had ever received any payment, and if so, how much they had received most recently and when this occurred. The information collected in Wave 4 therefore provided a clearer picture regarding compliance with child support obligations than was the case for earlier waves. We therefore focus on the reported child support compliance rates in Wave 4.[15]

---

[13]   This information was not collected in Wave 2.

[14]   Resident parents who indicated that they did not have a child support arrangement in place were also asked whether they had received any child support payments. Some of these parents reported that, in fact, they were supposed to receive child support and had done so in the month before the interview.

[15]   Across the first three waves, the majority of payees reported that the payment in the month before the interview was the same as, or more than, the amount that they were supposed to receive (66–73% of B cohort payees, and 57–64% of K cohort payees). However, it was not possible to identify the proportion of cases in which payments were up-to-date and the extent to which any excess payments in the month prior to interview represented payment of some or all money owing to payees, or money additional to any that was owing.

Table 2.3 shows the proportions of payees in the two cohorts who reported that: (a) payments were up-to-date and the most recent payment represented the usual amount (full compliance); (b) payments were up-to-date but the most recent payment was not for the usual amount; (c) payments were not up-to-date but they had previously received some payment; and (d) they had never received any payment. Where respondents indicated that payments were not up-to-date but they had received some payment in the past, the amount paid was compared with the amount the non-resident parent was liable to pay in the payment period, in order to identify whether the payment covered the full amount owing for that particular period.

Table 2.3:	Payers' compliance with child support payment obligations, payee reports, B and K cohorts, Wave 4		
Level of payers' compliance		**B cohort (%)**	**K cohort (%)**
Payments were up-to-date and last payment was for the usual amount (full compliance)		67.3	67.6
Payments were up-to-date but last payment was *not* for the usual amount		2.9 [a]	3.7 [a]
Payments were not up-to-date but had received a payment previously:		26.8	25.5
most recent payment represented liable amount		16.7	15.0
most recent payment was below the liable amount or unspecified		10.1	10.5
Never received a payment		3.0 [a]	3.2 [a]
Total		100.0	100.0
No. of respondents		432	519

Notes: This table excludes a small number of payees who did not report whether payments were up-to-date or whether a payment was ever paid. [a] This estimate has a relative standard error of 25% and is not reliable.

The results for the two cohorts were similar. Two-thirds of payees in each cohort reported full compliance; that is, the child support payments they received were up-to-date and the most recent payment represented the usual amount. Another 3–4% indicated that their payments were up-to-date, even though the most recent payment was not for the usual amount. It is not clear for this group whether the most recent payment was excessive to cover previous debts or less than the amount that was supposed to receive. Around one-quarter of payees in each cohort reported that although they had received some child support in the past, the payments were not up-to-date. These parents were more likely to indicate that the payment that they had received most recently covered, rather than fell short of, the amount that they were supposed to receive for the particular payment period. Three per cent of payees in each cohort indicated that they had never received a payment.

2.6   Child support compliance and care-time arrangements

While most payees indicated in Wave 4 that child support payments were fully compliant, previous research suggests that, from the perspective of mother payees, compliance rates of father payers vary to some extent with care-time arrangements. For example, the Australian Institute of Family Studies' evaluation of the 2006 reforms to the family law system (Kaspiew et al., 2009—the "AIFS evaluation") showed that, according to mother payees represented in Wave 1 of the Longitudinal Study of Separated Families, fathers who never saw their children were less likely than other fathers to fully comply with their child support obligations, where full compliance was defined in terms of payments being made in full and on time (Qu & Weston, 2010).[16] However, there was little apparent relationship between child support compliance and care-time arrangements according to the reports of father payers. Across all the care-time groups examined, father payers were significantly more likely than mother payees to report full compliance. While there is evidence that child support compliance is linked with non-resident parents spending time with their children, the relationship between these is complex and not linear (Fehlberg & Smyth, 2000; Smyth, 2007).

---

16   It needs to be kept in mind that full compliance has been defined differently in the present LSAC-based study, where full compliance refers to circumstances in which the payer is reported to be up-to-date in child support payments, with the most recent payment made representing the usual amount.

Figure 2.5 shows the patterns of results regarding the reported full compliance rates for LSAC children with different care-time arrangements in Wave 4, as reported by payees. Given that few children of separated parents were living with their father for more than 65% of nights, data for these children were excluded from this analysis.[17] Consistent with the care-time cut-off points adopted by the CSA in determining how much child support should be paid,[18] the children who were spending 35–65% of nights per year with each parent are here treated as having a "shared" care-time arrangement.
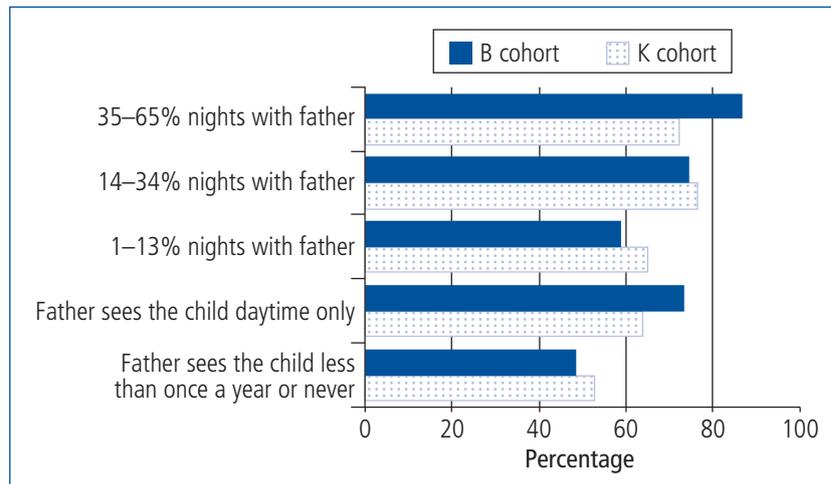
Notes: Time spent with father: 35–65% nights—B cohort: $n = 31$, K cohort: $n = 40$; 14–34% nights—B cohort: $n = 174$, K cohort: $n = 194$; 1–13% nights—B cohort: $n = 82$, K cohort: $n = 141$; daytime only—B cohort: $n = 69$, K cohort: $n = 63$; less than once a year or never—B cohort: $n = 69$, K cohort: $n = 67$.

Figure 2.5:   Fathers fully complying with child support obligations, payee reports, by care-time arrangement, B and K cohorts, Wave 4

Consistent with the AIFS evaluation results for mother payees, LSAC payees (almost all of whom were mothers) whose child rarely or never saw his or her other parent were less likely than other payees to indicate that their child's other parent was fully complying with their child support obligations. This pattern of results applied to both cohorts. For example, for the B cohort in Wave 4, full payment compliance was reported by 48% of payees whose child saw his or her other parent less than once a year, compared with 59–87% of payees with other care-time arrangements, with the differences being statistically significant between those whose child never saw his or her father and other care times except the group where child spent 1–13% nights with father.[19]

Indeed, the apparent rates of full compliance for the B cohort increased progressively with increases in the amount of time payers cared for their child (from 48% to 87%), although payers with daytime-only care of their child seemed just as likely to fully comply with their child support obligations as those who cared for their child for 14–34% of nights per year (73–74%). Among the K cohort, full compliance was reported by 72% of payees with a shared care-time arrangement and 76% of those whose child spent 14–34% of nights with the other parent. Statistically, the rate of child support compliance by the latter group was significantly higher than that of the group where the child never saw the father.[20]

---

[17]   In Wave 4, this situation applied to only 25 children in the B cohort and 44 in the K cohort, and the parents of some of these children did not have a child support arrangement in place.

[18]   See Table for Care and Cost Percentages, Child Support Program, <www.humanservices.gov.au/customer/enablers/child-support/child-support-assessment/working-out-child-support-using-the-basic-formula#care-cost-table>, published by the Department of Human Services.

[19] $p < .05$ based on logit regression model of compliance with child.

[20] $p < .05$ based on logit regression model of compliance with child.

2.7 Child support compliance and duration and timing of parental separation

The data from the first two waves of the Longitudinal Study of Separated Families, which were conducted about 12 months apart, demonstrate that considerable changes tend to occur in patterns of parental involvement, among other matters, as parents attempt to forge new lives, as children continue to develop, and other circumstances change. The LSSF parents had been separated for an average of 15 months at the time of the first interview (Qu & Weston, 2010). According to the reports of LSSF payees, the rate of full child support compliance fell between the first and second survey waves. To what extent, if any, do the reports of payees in LSAC (almost exclusively mothers) also suggest that rates of full compliance fall as duration of separation increases? This question could not be addressed longitudinally, given the above-mentioned changes made in assessing compliance in LSAC (see section 2.5). Nevertheless, some insight into this issue can be derived from cross-sectional analyses, based on payees' reports in Wave 4.

Figure 2.6 shows the apparent full compliance rates of LSAC payers in Wave 4 (as reported by payees) according to the following three circumstances relating to the timing of separation: (a) the parents had either separated before their child was born or had never lived together; (b) the parents had separated before Wave 2 (2006), when the B cohort children were 2–3 years old and the K cohort were 6–7 years old; and (c) the parents had separated between Wave 2 (2006) and Wave 4 (2010), when the B cohort children were around 2–6 years old and the K cohort children were around 6–10 years old.
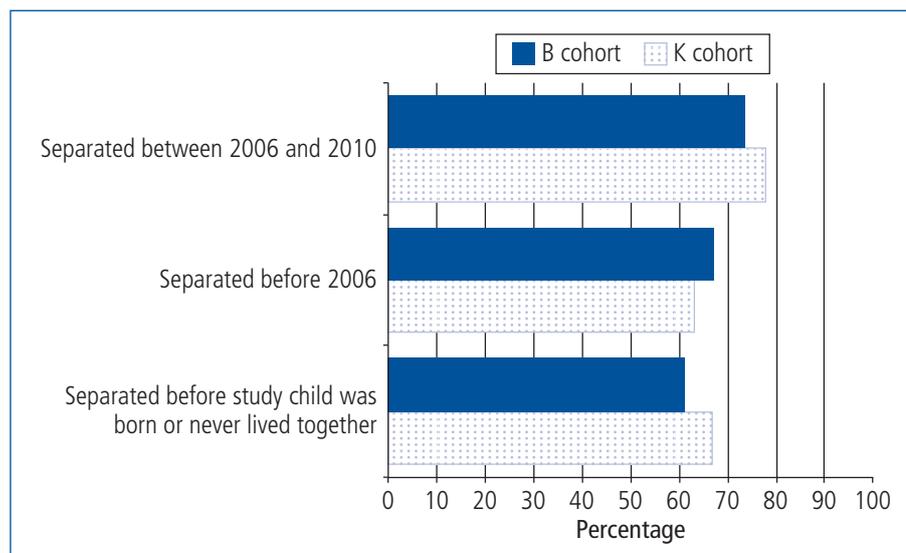
Notes: Timing of separation: between Wave 2 and 4—B cohort: $n = 174$, K cohort: $n = 149$; before Wave 2—B cohort: $n = 120$, K cohort: $n = 288$; before child born or never lived together—B cohort: $n = 105$, K cohort: $n = 53$.

Figure 2.6:   Payers fully complying with child support obligations in Wave 4, by timing of separation, B and K cohorts, Waves 1–4

Of the three groups in each cohort, the payees who had separated most recently (between Wave 2 and Wave 4) were significantly more likely than their counterparts in the other two groups to indicate in Wave 4 that their child's other parent fully complied with their child support obligations.

Among the B cohort, full compliance was reported in Wave 4 by 74% of payees who had separated most recently, compared with 61–67% of those who separated before Wave 2 or who had never lived with their child's other parent. Among the K cohort, full compliance with child support obligations was reported by 78% of payees who had separated most recently, and 63–67% who had either separated before Wave 2 or had never lived with their child's other parent. For each cohort, no significant differences emerged in the apparent rates of full compliance suggested by the group

of payees who had separated before Wave 2 or the group who had either separated before their child was born or had never lived together.[21]

The relatively greater apparent full compliance rates of those who had separated most recently is not surprising for at least two reasons. First, having spent the greatest amount of time living with their child and watching him or her grow up, the most recently separated payers would have had the greatest opportunity to develop a strong bond with the child. Second, the relatively short duration since separation would mean that they would have had less opportunity to forge a new life (e.g., re-partnering and gaining responsibility for other children) that may weaken their involvement in the lives of the children of their earlier relationship. In addition, parents who separate when their child is very young or had never lived together when the child was born tend to have different characteristics than parents who separate when their children are older. For example, among the B cohort, mothers who separated when the child was an infant or never lived with the other parent were less likely than mothers who separated from the other parent when the child was 4 years or older to have a degree or higher qualification (11% vs 26% respectively in Wave 1). However, it is perhaps surprising that no significant differences emerged in the reported full compliance rates of those who separated before Wave 2 and those who had never lived with their child, since the latter group would have had considerably less opportunity than the other group to have established a close attachment to their child.

It is worth noting that resident parents who reported that their child support payment was privately transferred were more likely than parents whose child support payment was collected through the CSA to report full compliance with child support obligations. In Wave 4 of the B cohort, 53% of resident parents with CSA collect child support payments compared to 85% of parents with private collect child support payments reported full compliance. The comparable proportions were 56% and 83% respectively for resident parents in the K cohort. Furthermore, the rates of full compliance between parents with private collect CSA assessments and those whose child support was independently arranged and collected were similar.

2.8   Other financial and non-financial support

In all four survey waves, resident parents in each cohort were asked how often the other parent provided the following forms of financial support for their child: (a) buys clothes, toys or presents; (b) pays for the child's medical or dental bills, health insurance or medicines; (c) gives extra money for the child's child care or school expenses; and (d) provides extra money to "help out" (e.g., pays money towards the rent, household bills or car repairs). In addition, resident parents were asked whether the other parent looked after the child when they needed to do other things such as working, studying or keeping an appointment (here called "non-financial support"). The response options provided for each of these questions were: "often", "sometimes", "rarely" and "never". Across all four survey waves, around one-half of these parents in each cohort indicated that their child's other parent had sometimes or often provided at least one of these forms of financial and non-financial support.[22]

Figure 2.7 (on page 24) shows the proportions of resident parents in each cohort who said in Wave 4 that they sometimes or often received these types of financial or non-financial support. The support most commonly mentioned concerned buying clothes, toys or presents for their child (44–47% of resident parents in each cohort). The non-financial support listed—looking after the child if needed—was the second most common form apparently received (23% of B cohort and 22% of K cohort parents). The provision of extra money to help out appeared to be unusual, being received by only 6–9% of B and K cohort resident parents.

---

[21]   These results are based on a logit regression model of apparent compliance with child support. The difference in the likelihood of compliance, as suggested by the reports of these two groups of payees, failed to reach the 5% level of significance.

[22]   Specifically, the following percentages of resident parents indicated that the other parent sometimes or often provided at least one of the forms of support—B cohort: 56% in 2004, 56% in 2006, 61% in 2008, and 53% in 2010; K cohort: 56% in 2004, 54% in 2006, 58% in 2008, and 52% in 2010.
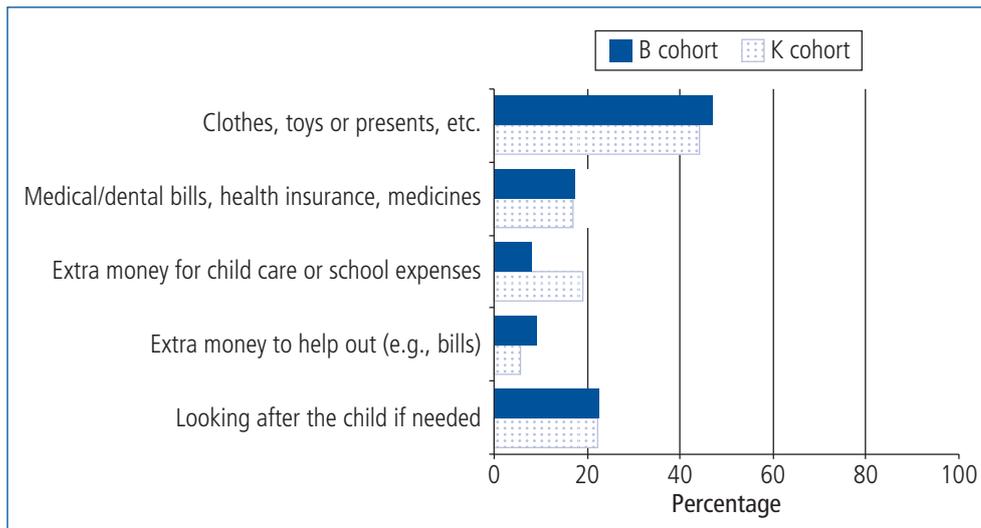
Note: Sample sizes differ slightly due to missing data for specific items (B cohort: *n* = 628–646; K cohort: *n* = 805–816).

Figure 2.7:   Resident parents who reported sometimes or often receiving each type of other support, B and K cohorts, Wave 4

Table 2.4 focuses on resident parents in the B and K cohorts who had separated before Wave 1. The table shows the proportions of these parents who indicated in each wave (taken separately) that they received each type of financial and non-financial support "sometimes" or "often".

Table 2.4:   Resident parents who separated before Wave 1 who reported sometimes or often receiving each type of other support, B and K cohorts, Waves 1–4

Cohort and wave	Clothes, toys or presents, etc. (%)	Medical/dental bills, health insurance, medicines (%)	Extra money for child care/school expenses (%)	Extra money to help out (%)	Looking after the child if needed (%)
B cohort					
Wave 1	36.8	16.4	10.6	21.1	31.7
Wave 2	39.5	12.3	7.3	11.4 [a]	21.1
Wave 3	41.2	7.4 [a]	2.4 [a]	7.3 [a]	18.7
Wave 4	37.7	10.7	5.7	6.5 [a]	16.3
No. of respondents	114	122	123	123	123
K cohort					
Wave 1	47.7	13.0	13.3	8.0	25.4
Wave 2	48.8	13.4	16.3	4.7	23.1
Wave 3	47.4	15.1	18.0	4.0 [a]	22.4
Wave 4	38.7 [a]	13.0	16.3	2.7 [a]	20.5
No. of respondents	287	299	300	301	303

Note: The resident parents in these families participated in all four survey waves. [a] Percentage is significantly different (at *p* < .05) to Wave 1 percentage when using pair-wise chi-square tests.

Patterns of financial and non-financial support across the four waves for each cohort were broadly consistent with those found in Figure 2.7 for all separated families in Wave 4 (2010). For example, according to the reports of resident payees in each survey wave, the support most commonly provided by non-resident parents in each cohort took the form of buying clothes, toys or presents for the child, followed by looking after the child if needed.

However, there was some evidence of change in the levels of support provided. There was a decline in the proportion of the B cohort resident payees who reported that their child's other parent would sometimes or often pay extra money to help out in Wave 4 (7%, when the child

was 6–7 years) compared with Wave 1 (21%, when child was 0–1 years old). Likewise, support for looking after the child if needed declined progressively (16% in Wave 4, from 32% in Wave 1).

Virtually the same proportions of K cohort resident parents in Waves 1 to 3 indicated that the other parent would sometimes or often buy clothes, toys or presents (47–49%), with slightly fewer reporting this when their child was 10–11 years old (39% in Wave 4). There appears to be a small, progressive decline in the proportion of non-resident parents who sometimes or often looked after the child when needed (from 25% to 21% from Waves 1 to 4), and in the proportion who provided extra money to help out (from 8% to 3%), although these changes may simply reflect chance variation. Overall, non-resident parents providing the latter form of support seemed to be unusual. The proportion of resident parents reporting the other two forms of support varied little across the four survey waves.

It is worth noting that, in Wave 4, child support payers who were apparently fully complying with their child support obligations were significantly more likely than those who were not doing so to sometimes or often provide each of these other forms of support. These apparent trends, based on the reports of payees, are shown in Table 2.5. For example, over half the B and K cohort payees who indicated in Wave 4 that the child's other parent was fully compliant with their child support obligations reported that this parent sometimes or often also bought clothes, toys or presents for the child. This was mentioned by only one-third of B and K cohort payees who indicated that the other parent was not complying with their child support obligations. Again, 27–32% of B and K cohort payees receiving fully compliant payments reported that the other parent sometimes or often looked after the child when needed, compared with 10–12% of other payees.

Table 2.5: Payees who reported other parent sometimes or often provided other support, by payers' compliance with child support obligations, B and K cohorts, Wave 4

Other financial or non-financial support	B cohort		K cohort	
	Fully compliant (%) [a]	Not compliant (%) [b]	Fully compliant (%) [a]	Not compliant (%) [b]
Clothes, toys or presents, etc.	56.2	35.1	52.2	32.6
Medical or dental bills, health insurance, medicines	22.3	9.8 *	24.1	5.0 *
Extra money for child care or school expenses	11.0	1.4 [c]	28.2	9.7 [c]
Extra money to help out (e.g., bills)	14.1	2.8 [c]	8.6	0.6 [c]
Looking after the child if needed	31.8	10.4 [c]	26.6	12.1
No. of respondents	298	130	358	157

Notes: [a] "Fully compliant" refers to circumstances in which the child support payer was up-to-date in payments and the most recent payment covered the usual amount, as reported by payees. [b] "Not compliant" refers to other circumstances reported by payees (e.g., non-payments and payments that were not up-to-date). [c] Estimate has a relative standard error of 25% and is not reliable. The number of respondents may vary slightly due to non-response to specific items. Statistically significant differences are noted: * $p < .05$. Multiple responses were possible so column percentages do not sum to 100%.

2.9   Summary and discussion

Parental separation increases the risk of children growing up in very difficult financial circumstances. The Child Support Scheme was introduced to ensure that, after separation, both parents continue to support their children financially. This chapter has examined several issues relating to the provision of child support and other forms of financial support, and of non-financial support, for both cohorts of children in LSAC.

The analyses are based on the reports of resident parents only (almost all of whom were mothers). Because the composition of separated parents varied in each wave, assessments of levels of change focused on parents who had separated before Wave 1 (2004) and who were represented in each survey wave. The results refer almost exclusively to reports about the financial support provided by non-resident fathers from resident mothers' perspectives. As discussed above, previous research suggests that resident mothers are less likely than non-resident fathers to indicate that the father contributes financially to the support of their children. A better understanding of the extent to which non-resident fathers provide financial support to children of the ages represented in this

chapter would require an examination of the perspectives of both non-resident fathers and resident mothers.[23]

The apparent proportion of parents with a child support arrangement in place were examined for Waves 1, 3 and 4 (conducted in 2004, 2008 and 2010). In each of these periods (taken separately), around 70–80% of resident parents in each of the two cohorts reported that they had a child support arrangement in place. Across the waves examined, similar proportions of K cohort parents who had separated before Wave 1 and were represented in each survey wave had a child support arrangement in place. However, among their B cohort counterparts, the proportions with a child support arrangement in place increased from Wave 1 to Wave 4.

At least 70% of resident parents with a child support arrangement in place in Wave 4 (2010) indicated that they had primarily used the CSA to develop their arrangement, while around 15% said that they had mainly relied on discussions with their child's other parent. A range of reasons were offered for not having a child support arrangement, with the most commonly mentioned reason being that the other parent had limited income (or claimed to be in this position) and the respondent had not sought child support. These two reasons were reported by four in ten of these parents in each cohort.

Two-thirds of parents whose child support arrangement was reached through the CSA indicated that their payments were also collected through the CSA, with the remainder typically being collected privately. Nevertheless, it appeared that the proportion using CSA collect was greater among parents who separated before their participation in the study.

Around two-thirds of parents who received child support reported that the other parent fully complied with their child support liability (i.e., their child support payments were up-to-date and the last payment was the usual amount). The remainder typically reported that payments were not up-to-date, and a few indicated that they had never received a payment. Consistent with findings in the Longitudinal Study of Separated Families, data from LSAC show that payees whose child saw the other parent less than once a year were less likely than other payees to report that the other parent was complying with their payment obligations. There was also some (cross-sectional) evidence suggesting that full compliance rates fell as the duration of their separation increased.

In addition, about one-half of resident parents reported that the other parent provided other financial or non-financial support. The most common support provided was buying clothes, toys or presents, followed by looking after the child when the resident parent needed to do other things. It is worth noting that, according to the reports of payees, the non-resident parents who were fully complying with their child support obligations were more likely than other non-resident parents to provide each of the different forms of support examined. This suggests that children whose other parent meets their child support obligations tend to benefit by receiving other forms of support, while children whose other parent does not meet these obligations tend to lose out in these areas, and possibly also in other areas of potential paternal involvement.

This chapter suggests the existence of a link between non-resident parents' child support compliance behaviour and more active forms of engagement in their child's life. Specifically, non-resident parents who hardly see their children (most commonly fathers) appear to be less likely than other non-resident parents to comply with their financial support obligations. Although it seems likely that the current social policies that encourage non-resident parents' active engagement in the children's lives after separation would also encourage them to provide ongoing financial support to their children, it may also be the case that supporting the children financially helps maintain other forms of engagement—an argument that was advanced in support of the development of the initial Child Support Scheme (Funder, 1994).

Finally, while a substantial minority of non-resident parents of children in this study did not appear to be meeting their financial support obligations, it should be noted that today's picture is far better than that which was apparent before the initial Child Support Scheme came into operation. Nevertheless, the picture is not as rosy as it might seem, for single-mother families continue to be among the most financially disadvantaged groups, not only in Australia but also in other developed

---

[23]   Although only a small proportion of non-resident parents are mothers, there is evidence that these mothers are less inclined than their male counterparts to comply with their child support obligations (Kaspiew et al., 2009; Qu & Weston, 2010).

countries (ABS, 2007; Australian Council of Social Service, 2008; Whiteford, 2009). Whiteford showed that while child poverty patterns differ across developed countries, the link between child poverty and one-parent families applies to each country.

2.10 References

Australian Bureau of Statistics. (2007). One-parent families. In Australian Bureau of Statistics, *Australian social trends 2007* (Cat. No. 4102.0). Canberra: ABS.

Australian Bureau of Statistics. (2011). *Family characteristics, Australia, 2009–10* (Cat. No. 4442.0). Canberra: ABS.

Australian Council of Social Service. (2008). *Who is missing out? Hardship among low income Australians* (ACOSS Info Paper). Sydney: ACOSS.

Australian Government. (2012). *Submission to the Senate Inquiry on the Adequacy of the Allowance Payment System for Job Seekers and Others: A joint interagency submission from the Department of Education, Employment and Workplace Relations, the Department of Families, Housing, Community Services and Indigenous Affairs, the Department of Human Services and the Department of Industry, Innovation, Science, Research and Tertiary Education*. Canberra: Australian Government. Retrieved from <senate.aph.gov.au/submissions/comittees/viewdocument.aspx?id=6ecdecea-2f8d-42a8-b422-a7b3499ffd7b>.

Cabinet Sub-Committee on Maintenance. (1986). *Child support: A discussion paper on child maintenance*. Canberra: Australian Government Publishing Service.

Child Support Agency. (2009). *Facts and figures 08–09*. Canberra: CSA. Retrieved from <www.humanservices.gov.au/spw/corporate/publications-and-resources/facts-and-figures/child-support/resources/facts-and-figures-2009.pdf>.

Craig, L., Mullan, K., & Blaxland, M. (2010). Parenthood, policy and work-family time in Australia 1992–1996. *Work, Employment and Society*, 24, 1–19.

Department of Families, Housing, Community Services and Indigenous Affairs. (2012). *History of the child support scheme reforms*. Canberra: FaHCSIA. Retrieved from <www.fahcsia.gov.au/our-responsibilities/families-and-children/programs-services/history-of-the-child-support-scheme>.

de Vaus, D., Gray, M., Qu, L., & Stanton, D. (2012, 18 June). *The economic consequences of divorce and implications for the Australian social protection system*. Paper presented at the 19th International Research Seminar of the Foundation for International Studies on Social Security (FISS), Sigtuna, Sweden.

Fehlberg, B., & Smyth, B. (2000). Child support and parent–child contact. *Family Matters*, 20, 20–25.

Funder, K. (1993). Women's post-separation employment and reliance on social security. In K. Funder, M. Harrison, & R. Weston (Eds.), *Settling down: Pathways of parents after divorce*. Melbourne: Australian Institute of Family Studies.

Funder, K. (1994). Child support: A step towards changing parenting after separation. *Family Matters*, 37, 70–71.

Harrison, M., & Tucker, T. (1986). Maintenance, custody and access. In P. McDonald (Ed.), *Settling up: Property and income distribution on divorce in Australia*. Sydney: Australian Institute of Family Studies and Prentice-Hall of Australia.

Hayes, A., Weston, R., Qu, L., & Gray, M. (2010). *Families then and now 1980–2010* (Facts Sheet). Melbourne: Australian Institute of Family Studies.

Kaspiew, R., Gray, M., Weston, R., Moloney, L., Hand, K., Qu, L. & the Family Law Evaluation Team (2009). *Evaluation of the 2006 family law reforms*. Melbourne: Australian Institute of Family Studies.

McDonald, P., & Weston, R. (1986). The data base for child support reform. In P. N. Troy (Ed.), *Child support* (pp. 43–73). Canberra: Social Justice Project, Research School of Social Sciences, Australian National University.

Qu, L., & Weston, R. (2007). *Snapshots of family relationships prior to the family law reforms: Baseline report*. Unpublished report submitted to the Australian Government Department of Families, Community Services and Indigenous Affairs.

Qu, L., & Weston, R. (2008). *Snapshots of family relationships*. Melbourne: Australian Institute of Family Studies.

Qu, L., & Weston, R. (2010). *Parenting dynamics after separation: A follow-up study of parents who separated after the 2006 family law reforms*. Canberra: Attorney-General's Department. Retrieved from <tinyurl.com/cyzgoxm>.

Smyth, B. (2007). Non-resident parents. In G. Ritzer (Ed.), *Blackwell encyclopedia of sociology online* (pp. 3223–3227.). Oxford: Blackwell Publishing.

Smyth, B. (2009). A 5-year retrospective of post-separation shared care research in Australia. *Journal of Family Studies*, 15(1), 36–59.

Weston, R., Qu, L., Gray, M., Kaspiew, R., Moloney, R., & Hand, K. and the Family Law Evaluation Team. (2011). Care-time arrangements after the 2006 reforms: Implications for children and their parents. *Family Matters*, 86, 19–32.

Whiteford, P. (2009). *Family joblessness in Australia*. Canberra: Social Inclusion Unit, Department of the Prime Minister and Cabinet.

Is it just a matter of time?
How relationships between children and their separated parents differ by care-time arrangements

3

Jennifer Renda
Australian Institute of Family Studies

3.1 Introduction

There has been increased emphasis in recent years on the importance of children in separated families spending substantial amounts of time with both parents. However, there has also been considerable debate about the role that time spent with parents plays in relation to child social-emotional wellbeing. This chapter explores whether children who spend relatively large amounts of time with both parents have better parent–child relationships than those who spend most time with one parent and little, if any, time with the other. Factors that may influence the association between care time and parent–child relationships—such as parental involvement in decision-making relating to children's long-term welfare—are also considered.

In order to support equal involvement of both parents in children's lives after parental separation, family law reforms introduced with the *Family Law Amendment (Shared Parental Responsibility) Act 2006* (Cth) (*SPR Act 2006*), include a "presumption in favour of equal shared parental responsibility" (s61DA). This means that a court must make orders for equal shared parental responsibility unless it is shown that such orders would not be in the child's best interests, or that the presumption should not be applied because of issues relating to child abuse or family violence. Where orders for equal shared parental responsibility are made, the parents are expected to make major long-term decisions about the child's welfare together (Kaspiew et. al., 2009). In cases where equal shared parental responsibility is ordered pursuant to the presumption, the courts must consider orders for arrangements in which children spend equal or substantial amounts of time with both parents, where it is practical and, once again, the child's best interests are taken into account (*SPR Act 2006* s65DAA). Such arrangements, whereby children spend equal or close to equal time with each parent, are now often referred to as shared care-time arrangements.

While shared parental responsibility and shared care-time are linked in the legislation and are often considered together under the term "shared care", in this chapter, the main focus will be on shared care-time. However, the relationship between shared care-time and shared parental responsibility will be briefly examined.

Estimates of the proportion of children with shared care-time arrangements vary according to whom the informant is, the dataset that is being used, and how shared care-time is defined. Although only a minority of children currently experience shared care-time, there is considerable consensus that the adoption of this arrangement has been increasing progressively since well before the 2006 law reforms were introduced (Cashmore et al., 2010; Smyth, 2009; Weston, Qu, Gray, De Maio et al., 2011). Analyses using Australian Bureau of Statistics (ABS) data from the Multi-Purpose Household Survey have revealed that 7% of children aged under 18 who had a parent living elsewhere spent 30–70% of nights with each parent in 2009–10 (ABS, 2011). Data from the Child Support Agency's administrative database suggest that 12% of parents on the Child Support Agency caseload in 2008 had a shared care-time arrangement of 30–70% of nights (Smyth, 2009).

Not surprisingly, there has been substantial interest in the effects of post-separation parenting arrangements, particularly shared care-time, on children's wellbeing leading up to and since the 2006 reforms. The evidence is conflicting, with some studies finding benefits for children who spend substantial periods of care time with each parent, and others finding very weak or no such relationships (see Amato & Gilbreth, 1999; Bauserman, 2002; Cashmore et al., 2010; McIntosh,

Smyth, & Kelaher, 2010; Weston, Qu, Gray, Kaspiew et al., 2011). Weston, Qu, Gray, Kaspiew et al. found that fathers with shared care-time arrangements gave more positive assessments of their children's social-emotional wellbeing than those with less care-time, who were more likely to report learning difficulties, conduct problems and emotional symptoms in their children. However, as the authors noted, parents' levels of satisfaction with their care-time arrangements may colour their assessments of their children's wellbeing. Consistent with these results, Dunn, Cheng, O'Connor, and Bridges (2003) found that more frequent contact with fathers after separation was associated with fewer externalising problems in children. However, Dunn et al. also noted that the direction of the relationship is not clear and it may be that fathers pursue more frequent contact with children who display fewer behavioural problems. Other studies suggest that the relationship between the *amount* of time children and fathers spend together and child social-emotional wellbeing is mediated by the *quality* of the time spent together (Amato & Gilbreth, 1999; Smith, Robertson, Dixon, Quigley, & Whitehead, 2001; Whiteside & Becker, 2000).

Although there is a large body of research examining the effects on child wellbeing of fathers' care time after separation, less attention has been given to the links between care time and aspects of parent–child relationships such as enjoyment of time together, particularly in the Australian context. One Australian study that briefly touched on this topic found that fathers in shared care-time arrangements reported having better quality relationships with their children than those in other care-time arrangements; however, no such differences were found for mothers (McIntosh et al., 2010). In the United States, Amato and Gilbreth (1999) argued that frequent interaction between children and their separated parents is a necessary, but not sufficient, condition for developing close relationships, and that quality of time spent together is more important than quantity for building and maintaining relationships. Smyth (2009) similarly suggested that there is a lack of empirical evidence supporting the view that spending more time together leads to better child outcomes, but that spending time is needed in order to maintain "emotionally close and warm" relationships (p. 43).

Another gap in current research related to care-time arrangements is that studies rely on parent perspectives. The way in which care-time arrangements affect the aspects of parent–child relationships under examination may differ substantially according to whether the child or the parent is providing the report. For example, a qualitative study by the Social Policy Research Centre (Cashmore et al., 2010) suggested that children considered time spent together to be an indicator of parental love. In particular, children interpreted what they saw as their parents' lack of effort in making time for them as indicating reduced love for them.

This chapter uses data from the K cohort of *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC) to examine the views of 11–12 year old children and their parents on their relationships with each other in relation to their care-time arrangements. The LSAC data provide a unique opportunity to examine parent–child relationships from both parents' and children's perspectives. Although the main focus is on children from separated families, those from not-separated families are included in some analyses to provide comparisons. Different aspects of relationships will be examined—three from parents' perspectives and three from children's—with similar but not identical items used for parents and children (see Box 3.1 on page 34). The items used focus on parent–child closeness, enjoyment in spending time together, and communication.

3.2   Care-time arrangements

This section begins with a discussion of the LSAC measures of care-time arrangements and then provides a preliminary analysis of patterns of care-time arrangements in the LSAC dataset.

Measures of care-time arrangements

In each wave of LSAC data collection, information about the study child has been collected from Parent 1. Since Wave 2 (2006), attempts have been made to interview parents who are not living in the same household with Parent 1 (called the "parent living elsewhere" in LSAC-related publications). For consistency with other chapters in this report we refer to Parent 1 as the "resident parent" and the parent living elsewhere as the "non-resident parent".

In LSAC, both resident and non-resident parents are asked how many nights the study child stays overnight with the parent living elsewhere, and responses could be given as the number of nights per week, fortnight, month, three months, six months or year. The resident parent report is used to calculate the percentages of nights per year that the study child spends with their mother and with their father. The measures of care-time arrangements used in this chapter use these percentages and adopt the classifications provided by the Australian Government Department of Human Services (DHS) Child Support program (Department of Families, Housing, Community Services and Indigenous Affairs [FaHCSIA], 2008).[1] The care-time categories were separated out to take into account whether the main care provider was the mother or father, resulting in the seven care-time arrangement groups listed in Table 3.1.

Table 3.1: Care-time arrangements, K cohort, Waves 1–4				
Care-time arrangement	**Wave 1 (4–5 years) (%)**	**Wave 2 (6–7 years) (%)**	**Wave 3 [a] (8–9 years) (%)**	**Wave 4 (10–11 years) (%)**
Shared care-time (35–65% nights)	5.0	6.1	8.4	10.2
Mother main carer, father regular care-time (14–34% nights)	35.0	35.1	36.0	31.7
Mother main carer, father relatively little care-time (< 14% nights)	34.0	36.6	36.4	29.2
Mother main carer, father no care-time	24.0	19.1	13.8	22.9
Father main carer, mother regular care-time (14–34% nights) [b]	0.6	1.7	1.8	2.1
Father main carer, mother relatively little care-time (< 14% nights) [b]	1.4	1.0	3.2	3.1
Father main carer, mother no care-time [b]	0.0	0.4	0.4	0.8
Total	100.0	100.0	100.0	100.0
No. of observations	495	572	583	803

Notes: [a] Results for Wave 3 should be interpreted with caution as, for this wave only, Parent 1 was able to opt out of answering the questions about their child's parent living elsewhere. Many took up this option, resulting in a reduced and possibly biased group of Parent 1 respondents answering questions about their child's parent living elsewhere. [b] These groups are not included in further analyses in this chapter due to the low numbers of respondents.

Due to low numbers of children who had their fathers as their main carer, the three categories that include this type of arrangement (i.e., the father is the main carer and the mother has regular care-time, relatively little care-time or no care-time) are excluded from all analyses beyond those in Table 3.1. In addition, for simplicity, subsequent tables use shortened names for the care-time groups, referring to the different amounts of care provided by the father (e.g., the "regular care-time" group comprises children whose mothers provide the majority of care and whose fathers care for them overnight for 14–34% of nights per year). Therefore, the categories of care time used in the remainder of the chapter are:

- *shared care-time*—children who spend 35–65% of nights per year with each parent;

- *regular care-time*—children who spend 14–34% of nights with their father;

- *relatively little care-time*—where children spend fewer than 14% of nights with their father (including those who have daytime-only contact with their father);[2] and

- *no care-time*—where children see their father less than once a year or not at all.

In addition to the care-time categories for separated families, some tables include children whose parents had not separated, as a comparison group.

---

[1] These classifications are used by the Child Support Agency in assessing the amount of child support that should be paid and in determining a family's entitlement to Family Tax Benefit.

[2] Children who, on average, spent time with their parent living elsewhere one day a week or more without having any overnight stays were excluded from the analysis. It was not clear in which category these respondents would fit best, as the categories are based on overnight stays, but substantial daytime contact may also affect parent–child relationships.

Use of care-time arrangements

Of all the children with separated parents (n = 803 in Wave 4), the proportion in shared care-time arrangements more than doubled between Wave 1 (2004), when the children were 4–5 years old, and Wave 4 (2010), when the children were 10–11 years old (Table 3.1 on page 31). Despite this, shared care-time arrangements were still used by only 10% of separated families in Wave 4. More common arrangements included mothers being the main care providers, with fathers providing regular care-time (32%) or relatively little care-time (29%).

The increase in shared care-time arrangements across waves is likely to be at least partly related to the age of the study children. Several studies have found that children aged younger than 5 years are less likely to be in shared care-time arrangements than those aged 5–11 years (Cashmore et al., 2010; Smyth, 2009; Weston, Qu, Gray, Kaspiew et al., 2011). The K cohort children in LSAC were within the peak age range for shared care-time in Waves 2 to 4, but not in Wave 1.

Another factor to consider in regard to the increase in shared care-time arrangements is when parental separation occurred. Is it parents who have separated more recently (particularly after the 2006 family law reforms) who are more likely to be using shared care-time arrangements and are thus driving the increase in shared care-time arrangements? More recent separation may also mean that, due to having spent more time living with their children, parents' relationships with their children are stronger and they are thus more likely to opt for shared care-time arrangements. To examine this further, Table 3.2 presents care-time arrangements in relation to when parental separation occurred.

Table 3.2:	Fathers' care-time arrangements at Wave 4, by when separation occurred, K cohort, Waves 1–4			
	When separation occurred ***			
Care-time arrangement	Before Wave 1 (2004) (%)	Between Wave 1 (2004) & Wave 2 (2006) (%)	Between Wave 2 (2006) & Wave 3 (2008) (%)	Between Wave 3 (2008) & Wave 4 (2010) (%)
Shared care-time	6.2	17.4	17.5	17.9
Regular care-time	27.7	40.1	43.4	41.0
Relatively little care-time	30.7	30.9	30.0	35.8
No care-time	35.4	11.6	9.1	5.3
Total	100.0	100.0	100.0	100.0
No. of observations	386	109	109	109

Notes: This table excludes those who separated and re-united. Statistically significant differences are noted: *** $p < .001$.

Not surprisingly, shared care-time arrangements were least common for parents separating before Wave 1 (i.e., prior to 2004), when the study children would have been 4 years of age or younger. However, there was little difference in the proportions using shared care-time for those separating prior to each of the three subsequent data collection waves. Therefore, these results indicate that the increase in shared care-time arrangements had begun before the 2006 changes to the family law system (which emphasised shared parental responsibility and shared care-time arrangements); otherwise we would expect lower proportions in shared care-time arrangements for those separating between Waves 1 and 2 (prior to the 2006 reforms) than for those separating between the later waves (after the reforms). These findings indicate that the increase in the incidence of shared care-time arrangements between Waves 1 and 4, presented in Table 3.1 (on page 31), may be the result of the cumulative effect of increased rates of take-up of shared care-time arrangements by newly separated parents that began prior to the reforms rather than an increased rate of take-up of such arrangements after the reforms were introduced. This is consistent with findings from previous research using Child Support Agency data and ABS data, which found that rates of shared care-time had been increasing prior to the reforms and that the increase did not appear to gain momentum post-reform (Weston, Qu, Gray, De Maio et al., 2011).

While the proportion of families in shared care-time arrangements differed little for parents separating after Wave 1, the proportion who had no care-time was lower for those separating later. This is reflected in the greater proportions of parents who separated later having children in regular care-time or relatively little care-time compared to those who separated earlier.

Relevant to our focus in this chapter on parent–child relationships is whether or not rates of take-up of shared care-time arrangements differed for boys and girls. Table 3.3 shows that 13% of boys in Wave 4 were in shared care-time arrangements, compared to 9% of girls. The flip-side of this is that girls were more likely to be in the "relatively little care-time" group. Girls and boys were equally likely to be in regular care-time. However, none of these differences were statistically significant.

Table 3.3:	Fathers' care-time arrangements, by gender of study child, K cohort, Wave 4	
Care-time arrangement	**Boys (%)**	**Girls (%)**
Shared care-time	12.8	8.7
Regular care-time	32.6	35.1
Relatively little care-time	29.9	32.2
No care-time	24.7	24.0
Total	100.0	100.0
No. of observations	389	366

Notes: This table only includes children from separated families.

3.3   Parent–child relationships

This section describes the relationship measures used in this chapter, and presents results on how separated/divorced parents and their children view the various aspects of their relationships with each other.

Measures of parent–child relationships

Different aspects of parent–child relationships are examined, from both parents' and children's perspectives. Three items from the Parental Warmth Scale (Sanson, 1995) were used for parents;[3] and for children, two parent–child relationship items from the Growing Up in Ireland study (2008),[4] as well as one item measuring social support were used (see Box 3.1 on page 34). It is important to note the differing response categories across the child measures and between the parent and child measures.

For children who had a step-parent living in their household at the time of the Wave 4 interview, it is not possible to determine whether they were referring to their step-parent or their parent living elsewhere when answering the parent–child relationship questions. As a result of this, children with a step-parent living in their household have been excluded from the child perspective analyses.[5] This may have an effect on the results, as the relationship between children and their separated parents may be affected by the presence of a step-parent in the home.

Also excluded from the analyses were non-resident parents who had little or no contact with their children. Children were not asked the relationship questions about these parents. In addition, most of these parents were not study respondents, often due to the resident parents not providing contact information. The exclusion of non-resident parents who had little or no contact with their children may provide a positive bias to the father reports.

Overview of parent–child relationships

Parents from separated families generally gave positive responses to the three parent–child relationship measures used, as shown in Table 3.4 (on page 34). Over 80% of mothers responded "always/almost always" or "often" for each of the three relationship measures. While there was no difference in the proportions of mothers and fathers reporting a high frequency of warm close times with their study children, over 90% of fathers reported that they "always/almost always" or "often" enjoyed listening to their children and doing things with them, and feeling close to their children when they were happy or upset, compared to 84–88% of mothers.

---

[3]   The Parental Warmth Scale used in LSAC consists of six of the original scale's nine items. Three single items and not the whole scale were used for the analyses in this chapter because the remaining three items are about parents displaying affection towards their children and as such are thus more about parenting style than relationships.

[4]   See the Growing Up in Ireland website at: <www.growingup.ie>.

[5]   This problem was rectified for the Wave 5 data collection.

Box 3.1: Parent–child relationship measures used

Parent measures [a]

Thinking about [study child] over the last six months, how often did you …

1. have warm, close times together with [study child]?
2. enjoy listening to [study child] and doing things with him/her?
3. feel close to [study child] both when he/she was happy and when he/she was upset?

Responses dichotomised into:

- *always/often*—for responses: always/almost always; often; and
- *sometimes/never*—for responses: sometimes; rarely; never/almost never.

Child measures

Do you enjoy spending time with your mum/dad? [a]

Responses dichotomised into:

- *true*—for responses: definitely true; mostly true; and
- *not true*—for responses: mostly not true; definitely not true.

Do you and your mum/dad do things together that are just for fun?

Responses dichotomised into:

- *agree*—for responses: strongly agree; agree; and
- *disagree*—for responses: in between; disagree; strongly disagree.

If you had a problem, who would you talk to about it? [b]

Multiple responses allowed: mum; dad; brother/sister; teacher; friend; another relative (like grandparent, aunt, uncle or cousin); other.

Notes: [a] Responses were dichotomised due to small sample sizes and thus small numbers of respondents in each category. [b] For this item, we only consider whether or not children would talk to their mum or dad if they had very little or no contact with their study child. The other response options are not used.

Table 3.4:   Separated parents' views on their relationships with their children, K cohort, Wave 4

Relationship measure	Response	Fathers' views (%)	Mothers' views (%)
Have warm, close times together with child	Always/often	83.0	80.6
	Sometimes/never	17.0	19.4
	Total	100.0	100.0
Enjoy listening to child and doing things with him/her	Always/often	93.1	83.8
	Sometimes/never	6.9	16.2
	Total	100.0	100.0
Feel close to child both when he/she was happy and when he/she was upset	Always/often	91.3	87.5
	Sometimes/never	8.7	12.5
	Total	100.0	100.0
No. of observations		489	767

Notes: Differences in the numbers of observations for mothers and fathers are due to missing data from parents living elsewhere, particularly those who had very little or no contact with their study child. The sample is restricted to those with valid care-time arrangement data.

Children in separated families were also generally positive about their relationships with their parents (Table 3.5 on page 35). Ninety-two per cent of children reported that it was "definitely" or "mostly true" that they enjoyed spending time with their fathers, and a similar proportion (95%) gave this response when discussing their mothers. In relation to doing activities for fun together,

responses about mothers and fathers were again similar, with 67% of children reporting that they "strongly agreed" or "agreed" that they did activities for fun with their fathers and 63% reporting this in regard to their mothers. Rates of talking to parents about problems differed according to which parent was being referred to. Children were much more likely to report that they would talk to their mother (86%) than their father (61%).

Table 3.5: Children's views on their relationships with their parents, K cohort, Wave 4			
Relationship measure	Responses	Father (%)	Mother (%)
Enjoy spending time with mum/dad	True	91.9	95.1
	Not true	8.1	4.9
	Total	100.0	100.0
Do things together with mum/dad that are just for fun	Agree	66.6	63.0
	Disagree	33.4	37.0
	Total	100.0	100.0
Talk to mum/dad if have a problem	Yes	61.2	85.8
	No	38.8	14.2
	Total	100.0	100.0
No. of observations		444	623

Notes: Differences in the numbers of observations for mothers and fathers are due to missing data from parents living elsewhere, particularly those who had very little or no contact with their study child. The sample is restricted to those with valid care-time arrangement data.

How do parent–child relationships vary by care-time arrangements?

We begin this section by examining how parents' views on their relationship with their child vary by care-time arrangements, separately for mothers and fathers, and then turn to exploring children's perspectives.

For those in separated families, fathers' views on their relationships with their children varied little by care-time arrangements (see Table 3.6 on page 36). Post hoc analyses revealed that the only significant difference found across all three relationship measures was that fathers who provided relatively little care-time for their child were less likely to report experiencing "warm and close times" with their child than those who were in shared care-time arrangements or those who provided regular care-time (shared care-time: $p < .05$; regular care-time: $p < .001$).

When comparing these results to those of the not-separated group, the findings may seem a little surprising. At face value, it appears that not-separated fathers were not as positive about their relationships with their children as separated fathers, regardless of care-time group. Fathers from not-separated families reported significantly lower frequencies of having warm, close times together, enjoying listening to and doing things with him/her, and feeling close to him/her when he/she is happy and upset, compared to those from the separated family groups.

Limitations on the amount of time fathers from separated families can spend with their child may affect the way in which the relationship questions were answered, particularly considering that the relationship measures focus on the time spent together and use measures of frequency rather than focusing on ratings of the quality of the relationship. Fathers from separated families may answer questions related to the time they do have with their children in a more positive light than those who are not separated and do not experience the same time-related limitations.

Also, the way in which time with children is spent may differ between fathers from separated and not-separated families. Family separation may result in fathers changing their priorities. Having distinctions between when children are and are not available to spend time with them may mean that fathers from separated families are more likely to spend the time they have with their children doing fun activities and having dedicated time with them, promoting positive views about the time spent together and feelings of closeness. This was reflected in findings from a qualitative study by Smyth, Caruana, and Ferro (2004), in which parents in 50–50 care arrangements noted that the time they had apart from their children allowed them to have a social life and to organise the time in their week, enabling them to spend more "quality time" with their children during their care time.

Table 3.6: Parents' views on their relationships with their children, by fathers' care-time arrangements, K cohort, Wave 4						
Relationship measure	**Responses**	**Shared care-time (%)**	**Regular care-time (%)**	**Relatively little care-time (%)**	**No care-time [a] (%)**	**Not separated (%)**
Fathers' views						
Have warm, close times together with child ***	Always/often	83.4	91.3	73.0	–	71.3
	Sometimes/never	16.6	8.7	27.0	–	28.7
	Total	100.0	100.0	100.0	–	100.0
Enjoy listening to child and doing things with him/her ***	Always/often	93.7	94.2	92.6	–	78.9
	Sometimes/never	6.3	5.8	7.4	–	21.1
	Total	100.0	100.0	100.0	–	100.0
Feel close to child both when he/she was happy and when he/she was upset ***	Always/often	93.3	92.1	90.9	–	83.2
	Sometimes/never	6.7	7.9	9.1	–	16.8
	Total	100.0	100.0	100.0	–	100.0
No. of observations		88	203	150	–	2,473
Mothers' views						
Have warm, close times together with child	Always/often	85.0	80.1	83.0	74.0	80.5
	Sometimes/never	15.0	19.9	17.0	26.0	19.5
	Total	100.0	100.0	100.0	100.0	100.0
Enjoy listening to child and doing things with him/her *	Always/often	85.6	85.7	85.5	77.8	87.0
	Sometimes/never	14.4	14.3	14.5	22.2	13.0
	Total	100.0	100.0	100.0	100.0	100.0
Feel close to child both when he/she was happy and when he/she was upset	Always/often	93.5	88.6	86.0	83.2	89.2
	Sometimes/never	6.5	11.4	14.0	16.8	10.8
	Total	100.0	100.0	100.0	100.0	100.0
No. of observations		93	255	236	154	3,125

Notes: [a] Results for fathers' views for the "no care-time" group are not available due to those with no care-time with their father not being asked the relationship questions. Statistically significant differences are noted: *** $p < .001$; * $p < .05$.

Selection bias may also be contributing to these results. Non-resident parents (who are mostly fathers) may be likely to answer the survey if they have a positive relationship with their children, thus resulting in a positively biased sample of separated fathers. As a result, the views of not-separated fathers may seem more negative because they are more representative of the population.

The findings in relation to mothers' views revealed no significant differences across care-time groups for each of the three relationship measures. However, it is interesting to note that mothers reported lower frequencies on all three relationship measures if their child's father had no care-time (this difference may have been significant with a larger sample size).

In moving on to children's views, it is important to note the differences in measures used. Although the concepts being measured are quite similar, children responded using rating scales rather than measures of frequency. Therefore, comparisons between parents' and children's views of parent–child relationships should be made with caution.

Results in Table 3.7 (on page 37) show that while there were no significant differences for relationships with mothers across the care-time groups on any of the three relationship measures, this was not the case for fathers. Children whose fathers provided relatively little care-time were significantly less likely to report that they enjoyed spending time with their father or to agree that they did activities just for fun with him, compared to those in the groups with higher levels of father care-time.

These findings may indicate that having relatively little care-time with fathers impedes children's abilities to build or maintain enjoyable relationships with their fathers. Similarly, larger amounts of care-time with fathers, such as shared care-time, may facilitate the building and maintenance of strong relationships. Supporting this, Smyth, Caruana, and Ferro (2003), when reflecting on findings

from their qualitative study on parents' views of their shared care-time arrangements, identified that the "quantity time" gained from equal care-time arrangements becomes "quality time" as fathers are able to "envelop and embed in their children's lives" (p. 19).

Another possible explanation is that children with less care-time may be more likely than those in the other care-time groups to have already had more strained or distant relationships with their fathers prior to separation. Supporting this, Weston, Qu, Gray, Kaspiew et al. (2011) found that parents with minority care or no care-nights with their children were less likely to be described by their children's other parent as being "very involved" in their lives prior to separation compared to those with other care-time arrangements.

Table 3.7: Children's views on their relationships with their parents, by fathers' care-time arrangements, K cohort, Wave 4

Relationship measure	Responses	Shared care-time (%)	Regular care-time (%)	Relatively little care-time (%)	No care-time [a] (%)	Not separated (%)
Relationship with father						
Enjoy spending time with dad ***	True	96.2	93.9	87.4	–	97.2
	Not true	3.8	6.1	12.6	–	2.8
	Total	100.0	100.0	100.0	–	100.0
Do things together with dad that are just for fun ***	Agree	69.0	75.4	60.5	–	74.7
	Disagree	31.0	24.6	39.5	–	25.3
	Total	100.0	100.0	100.0	–	100.0
Talk to dad if have a problem ***	Yes	72.0	63.2	48.0	–	71.6
	No	28.0	36.8	52.0	–	28.4
	Total	100.0	100.0	100.0	–	100.0
No. of observations		74	174	131	30	3,119
Relationship with mother						
Enjoy spending time with mum *	True	97.7	95.9	95.3	94.5	97.4
	Not true	2.3	4.1	4.7	5.5	2.6
	Total	100.0	100.0	100.0	100.0	100.0
Do things together with mum that are just for fun	Agree	69.9	63.5	61.5	62.1	66.4
	Disagree	30.1	36.5	38.5	37.8	33.6
	Total	100.0	100.0	100.0	100.0	100.0
Talk to mum if have a problem	Yes	85.8	85.6	87.7	89.3	89.9
	No	14.2	14.4	12.3	10.7	10.1
	Total	100.0	100.0	100.0	100.0	100.0
No. of observations		74	210	211	118	3,124

Notes: [a] Results for fathers' views for the "no care-time" group are not available due to those with no care-time with their father not being asked the relationship questions. Statistically significant differences are noted: *** $p < .001$; * $p < .05$.

Results for whether or not children talked with their fathers when they had a problem show similar patterns to those for the other two relationship measures; however, the positive relationship with greater amounts of care-time was more pronounced. Children whose fathers had larger amounts of care-time were more likely to report that they would talk to their father when they had a problem, with those whose fathers had little or no care-time being the least likely to talk to their father, and those who were in shared care-time arrangements being the most likely. Results for the not-separated group were very similar to those for the shared care-time group.

It may be the case, therefore, that the amount of time children spend with their fathers after separation is important for their relationship. Fathers with shared care-time arrangements and those in not-separated families may be more accessible to their children when the children find themselves needing to talk to someone. Increased time together may also facilitate the building of closer, more trusting relationships.

However, there are likely to be other factors that influence the relationship between care-time arrangements and children's relationships with their fathers. For example, the nature of the father–child relationship prior to separation is likely to be important. Children in shared care-time arrangements may have had closer relationships with their fathers prior to their parents' separation. In support of this, McIntosh et al. (2010) found that fathers with shared care-time arrangements were more likely to report that prior to the shared care-time arrangement being established they could "understand, comfort and enjoy their child" (p. 43) compared to those who established other care-time arrangements.

Characteristics of the children may also contribute; that is, those with certain characteristics may be more likely to be in shared care-time arrangements and may also have closer relationships with their fathers. This doesn't seem to relate to the gender of the child, because while boys may be more likely than girls to talk to their fathers if they have a problem, no significant difference was found in the care-time arrangements used for boys and girls. However, replication of these analyses with a larger sample of children in shared care-time arrangements may result in significant differences.

Findings shown in Table 3.2 (on page 32) may also help explain the relationship between care-time arrangements and father–child relationships. Children whose parents separated more recently (i.e., after Wave 2 or Wave 3) were more likely to be in shared care-time arrangements. These parents may also put extra effort into maintaining relationships and helping children through the period of transition into separation. Also, children may reflect more positively on their relationship with their father if the separation was recent.

It is also important to remember that in addition to the concept of shared care (i.e., equal amounts of care time), there is the related concept of shared parental responsibility, which refers to parental involvement in making decisions about children's lives. Therefore, it may be the level of parental involvement and joint decision-making and not just the amount of care time that is driving the results. For example, if children see their fathers being more involved in making decisions about their lives, they may be more likely to approach them when they have a problem.

Exploring all of these hypotheses is outside the scope of this chapter. However, due to the close links in the legislative framework between parental involvement in decision-making and care-time arrangements (as described in section 3.1), it is an important factor to consider here.

3.4 Parental involvement in decision-making

The relatively small sample size of children in shared care-time arrangements means that we cannot simply add parental involvement as another dimension to our existing analyses. Instead, in this section, care-time arrangements and parent–child relationships from children's perspectives will each be examined separately in relation to parental involvement in making decisions about the children's lives.

Measures of parental involvement in decision-making

Where children had a parent living elsewhere, both parents were asked to identify who was mostly involved in making decisions about four specific aspects of children's lives: education, health care, religious or cultural activities, and sporting and social activities. A set of five response options was used: "mainly me", "mainly child's other parent", "both of us equally", "whichever parent child is with at the time", and "someone else".

For the current analyses, the Parent 1's responses to the four items were combined to obtain a single measure of parental involvement.[6] Parents were placed in a "both parents" category if the response "both of us equally" was given to at least three of the four decision-making areas or there was an equal split across decision-making areas (e.g., if responses for two of the decision-making areas were "mostly mother" and two were "mostly father"). "Mostly mother" was the category given when mainly the mother made decisions in three of the four areas and "all mother" included families where mainly the mother made decisions in all four areas. "Mostly father" and "all father" were

---

[6]   The report from Parent 1 was used due to the lower numbers of parents living elsewhere being interviewed, not because the report from Parent 1 was considered more reliable. Both parents reported involvement in decision-making based on their own perceptions.

similarly coded. The response option "whichever parent child is with at the time" was considered the same as "both of us equally" if the child was in a shared care-time arrangement. Otherwise, the parent with the most care time was considered to be the main decision-maker for that particular aspect of their children's lives.

How does parental involvement in decision-making differ by care-time arrangements?

Results presented in Table 3.8 suggest a strong relationship between care-time arrangements and parental involvement in decision-making. Those in shared care-time arrangements were much more likely than those in any of the other care-time groups to have both parents involved in decision-making. They were more than five times more likely to have both parents involved than those in the regular care-time group, and more than five times less likely to have all decisions made by the mother. Only 5% of those in the "little or no care" group had both parents making the decisions.

Table 3.8:	Relationship between parental involvement in decision-making and fathers' care-time arrangements, K cohort, Wave 4		
Parent making the decisions about the child	**Shared care-time (%)**	**Regular care-time (%)**	**Relatively little care-time (%)**
Both parents	57.4	10.9	4.7
Mostly mother	26.3	33.8	16.7
All mother	9.2	55.4	78.6
Mostly father	3.5	0.0	0.0
All father	3.6	0.0	0.0
Total	100.0	100.0	100.0
No. of observations	74	204	189

Notes: This table only includes responses from separated families. Results for the "no care-time" group are not available due to mothers not being asked about the involvement in decision-making questions in cases where the study child had no care-time with their father. Percentages may not total exactly 100% due to rounding. Small numbers in some cells mean that accurate significance testing could not be conducted.

What is the relationship between parental involvement in decision-making and parent–child relationships?

Positive correlations were found between father involvement in decision-making and parent–child relationships (Table 3.9 on page 40). While overall these correlations weren't found to be significant, larger sample sizes may have produced significant results.

Children whose fathers had no involvement in decision-making (the "all mother" group) were least likely to enjoy spending time with their father. However, whether the father was an equal partner in decision-making (the "both parents group") or took a secondary role (the "mostly mother" group) made little difference to the results on this relationship measure. What was important was that he was involved to some extent.

For children who did things for fun with their fathers and talked to their fathers about their problems, the level of father involvement in decision-making also appears to be important. Children whose fathers and mothers were equally involved in decision-making were the group most likely to report that they did things for fun with their father and that they would talk to their father if they had a problem. Those whose mothers were making all of the decisions were least likely to report doing these things, and the "mostly mother" group fell in between the other two groups.

In regard to mother–child relationships, children were less likely to do activities for fun with their mothers if their mothers made all the decisions. However, children were less likely to talk to their mother if they had a problem if both parents made the decisions.

Table 3.9:	Children's views of parent–child relationships, by parental involvement in decision-making, K cohort, Wave 4			
Relationship measure	**Responses**	**Both parents decision-making (%)**	**Mostly mother decision-making (%)**	**All mother decision-making (%)**
Relationship with father				
Enjoy spending time with dad *	True	98.7	94.8	88.3
	Not true	1.3	5.2	11.7
	Total	100.0	100.0	100.0
Do things together with dad that are just for fun	Agree	77.9	70.0	63.5
	Disagree	22.1	30.0	36.5
	Total	100.0	100.0	100.0
Talk to dad if have a problem*	Yes	74.3	63.6	54.3
	No	25.7	36.4	45.7
	Total	100.0	100.0	100.0
No. of observations		70	96	222
Relationship with mother				
Enjoy spending time with mum	True	93.5	94.2	97.0
	Not true	6.5	5.8	3.0
	Total	100.0	100.0	100.0
Do things together with mum that are just for fun	Agree	74.4	65.5	57.7
	Disagree	25.6	34.5	42.3
	Total	100.0	100.0	100.0
Talk to mum if have a problem *	Yes	77.9	88.4	88.0
	No	22.1	11.6	12.0
	Total	100.0	100.0	100.0
No. of observations		75	120	313

Notes: Results for those whose fathers made most or all of the decisions are not available due to low numbers of respondents in these two groups. Statistically significant differences are noted: * $p < .05$.

The relationships between care-time arrangements and parental involvement in decision-making are not surprising given that spending more time with children can facilitate involvement and that these two factors are linked in legislation (as described in section 3.1). What is not clear from these results is if parental involvement in decision-making increased as a result of the shared care-time arrangement or if those in such arrangements were already more involved prior to separation. The AIFS evaluation of the 2006 reforms suggests a number of precursors to shared parenting prior to separation or divorce (Kaspiew et. al., 2009).

The findings also indicate that both amount of care time and parental involvement in decision-making are likely to be important for developing strong relationships between fathers and their children after parental separation. However, the relative effects of care time and parental involvement on parent–child relationships is unclear. Does care time merely facilitate greater father involvement, which in turn results in stronger father–child relationships, or is increased care time predictive of better parent–child relationships even when parental involvement in decision-making is taken into account? Additional analyses would need to be conducted to unpack this further.

3.5   Summary and discussion

This chapter has explored whether or not children with relatively large amounts of care time with both parents have better parent–child relationships than those who spend most of their time with their mother and little, if any, time with their father, using both parents' and children's perspectives on relationships. For fathers, those who were separated gave more positive reports on each of the aspects of the parent–child relationship measured, compared to those who were not separated, regardless of care-time arrangements. These findings may reflect differences in the way in which

separated fathers' time with children is spent compared to that of not-separated fathers. It is also likely that the measures used may have affected the results, as the responses were given in terms of amount of time rather than a rating of the quality. Also, while the first two relationship items—how often parents have warm, close times together with their study child, and how often they enjoy listening to their study child and doing things with him/her—are likely to indicate parent–child closeness, they may have also captured aspects of quality time, as they refer to *how* time is spent together. Therefore, further work is needed to see whether these findings hold when other measures of parent–child relationships, such as a rating of parent–child closeness on a 10-point scale, are used.

For children in separated families, those spending more time with their fathers, such as those in shared care-time arrangements, reported more positively on each of the relationship measures than those with less care-time. However, what is not clear is whether being in shared care-time helped fathers and children to build and maintain their relationships or whether those who already had stronger relationships were more likely to adopt shared care-time arrangements. Analyses that take into account pre-separation parent–child relationships and/or the amount of involvement fathers had in their children's lives prior to separation may help unpack this. Unfortunately, the small sample of children in shared care-time limited opportunities to conduct such analyses in this chapter; however, these analyses may be possible in the future using LSAC data, once the B cohort reach 10–11 years of age and their data can be combined with the K cohort data, substantially increasing the sample size.

The differences in findings from parents' and children's perspectives highlight the importance of examining different viewpoints in analyses related to parent–child relationships and care-time arrangements. Differences in the measures used (see Box 3.1 on page 34) may also have contributed to the differing results; therefore, future analyses using the same measures and response categories for parents and children would be beneficial.

Findings also indicate that parental involvement in decision-making may play a role in the relationship between care-time arrangements and parent–child relationships. Additional analysis, such as regression analysis controlling for parental involvement in decision-making, will be needed in order to unpack this further. Such analyses may be possible in the future using LSAC data, when the B and K cohort data can be combined and the sample size is large enough to produce reliable results.

Other factors that may mediate the relationship between care-time arrangements and parent–child relationships, such as the quality of the relationship between the parents, would also be worthwhile to consider in future analyses. Past research suggests that the levels of conflict in parental relationships may be strongly related to care-time arrangements used and may also affect children's abilities to form strong bonds with each parent (Cashmore et al., 2010; McIntosh et al., 2011; Weston, Qu, Gray, De Maio et al., 2011).

In relation to post-separation parent–child relationships, these analyses indicate that the amount of time spent with children matters. However, other factors, such as parental involvement in decision-making, appear to be just as important.

3.6   References

Amato, P., & Gilbreth, J. G. (1999). Nonresident fathers and children's well-being: A meta-analysis. *Journal of Marriage and the Family, 61*, 557–573.

Australian Bureau of Statistics. (2011). *Family characteristics, Australia, 2009–10* (Cat. No. 4442.0). Canberra: ABS

Bauserman, R. (2002). Child adjustment in joint custody versus sole-custody arrangements: A meta-analytic review. *Journal of Family Psychology, 16*, 91–102.

Cashmore, J., Parkinson, P., Weston, R., Patulny, R., Redmond, G., Qu, L. et al. (2010). *Shared care parenting arrangements since the 2006 family law reforms: Report to the Australian Government Attorney-General's Department.* Sydney: Social Policy Research Centre, University of New South Wales.

Department of Families, Housing, Community Services and Indigenous Affairs. (2008). *Fact sheet eleven: Recognising the costs of care.* Canberra: FaHCSIA. Retrieved from <www.families.fahcsia.gov.au/our-responsibilities/families-and-children/publications-articles/child-support-scheme-reforms-factsheets/fact-sheet-eleven-recognising-the-costs-of-care>.

Dunn, J., Cheng, H., O'Connor, T.G., & Bridges, L. (2003). Children's perspectives on their relationships with their non-resident fathers: Influences, outcomes and implications. *Journal of Child Psychology and Psychiatry, 44*, 1–14.

Kaspiew, R., Gray, M., Weston, R., Moloney, L., Hand, K.,Qu, L., & the Family Law Evaluation Team. (2009). *Evaluation of the 2006 family law reforms*. Melbourne: Australian Institute of Family Studies.

McIntosh, J., Smyth, B., & Kelaher, M. (2010). *Relationships between overnight care patterns and psycho-emotional development in infants and young children: Post-separation parenting arrangements and developmental outcomes for infants and children. Collected reports: Three reports prepared for the Australian Attorney General's Department*. Melbourne: Family Transitions.

McIntosh, J., Smyth, B., Kelaher, M., Wells, Y., & Long, C. (2011). Post-separation parenting arrangements: Patterns and developmental outcomes: Studies of two risk groups. *Family Matters*, 86, 40–48.

Sanson, A. V. (1995). *Childrearing questionnaire*. Unpublished scale. Melbourne: University of Melbourne.

Smith, M., Robertson, J., Dixon, J., Quigley, M., & Whitehead, E. (2001). *A study of stepchildren and step-parenting*. Unpublished report to the UK Department of Health.

Smyth, B. (2009). A 5-year retrospective of post-separation shared care research in Australia. *Journal of Family Studies*, *15*(1), 36–59.

Smyth, B., Caruana, C., & Ferro, A. (2003, 9–11 July). *Some whens, hows and whys of shared care: What separated parents who spend equal time with their children say about shared parenting*. Paper presented at the Australian Social Policy Conference, University of New South Wales, Sydney.

Smyth, B., Caruana, C., & Ferro, A. (2004). Father-child contact after separation: Profiling five different patterns of care. *Family Matters*, *67*, 20–27.

Weston, R., Qu, L., Gray, M., De Maio, J., Kaspiew, R., Moloney, L., & Hand, K. (2011). Shared care time: An increasingly common arrangement. *Family Matters*, *88*, 51–56.

Weston, R., Qu, L., Gray, M., Kaspiew, R., Moloney, L., Hand, K., & the Family Law Evaluation Team. (2011). Care-time arrangements after the 2006 reforms: Implications for children and their parents. *Family Matters*, 86, 18–32.

Whiteside, M. F., & Becker, B. J. (2000). Parental factors and the young child's post divorce adjustment: A meta-analysis with implications for parenting arrangements. *Journal of Family Psychology*, *14*, 5–26.

Echoes of disadvantage across the generations?

The influence of long-term joblessness and separation of grandparents on grandchildren

4

Kirsten Hancock

Telethon Institute for Child Health Research, Centre for Child Health Research, The University of Western Australia

Ben Edwards

Australian Institute of Family Studies

Stephen R. Zubrick

Telethon Institute for Child Health Research, Centre for Child Health Research, The University of Western Australia

4.1   Introduction

Intergenerational disadvantage refers to the situation in which multiple generations of the same family experience high and persisting levels of social exclusion, material and human capital impoverishment, and restrictions on the opportunities and expectations that would otherwise widen their capability to make choices (d'Addio, 2007; Frazer & Marlier, 2007). Levels of earnings, education, occupational status, wealth, decisions about family formation and receipt of welfare support have been found to persist across generations, suggesting that there is low intergenerational social and economic mobility (d'Addio, 2007). While such low mobility is beneficial for families from high socio-economic backgrounds, it is a real issue for disadvantaged families. d'Addio neatly summarised the issue as follows: "when intergenerational mobility is low, poverty during childhood will not only undermine the health, nutrition and education prospects of children, but will also increase the chances that the children of the next generation will grow up in low-income households" (p. 11).

It is important to appreciate that intergenerational disadvantage extends beyond the transmission of economic and material impoverishment to encompass the contextual circumstances that contribute to its perpetuation. For example, there is robust evidence to suggest that the likelihood of relationship separation also persists across generations in many different countries (e.g., Wolfinger, 2005, 2011). International studies of intergenerational income mobility have found that when the father is absent, the correlation between a child's earnings in later life and their father's earnings decreases, because children living in lone-parent families tend to move downwards in the income distribution compared with children from intact families (Biblarz & Rafferty, 1993; Bjorklund & Chadwick, 2003; Bratberg, Rieck, Marshall & Vaage, 2011; Fertig, 2007).[1] These findings are also consistent with work by the Organisation for Economic Co-operation and Development (OECD) that suggested that intergenerational disadvantage is more likely in children who live only with their mothers (d'Addio, 2007).

Most of these studies have focused on just two generations. One of the few studies of the effects of divorce on *multiple* generations, by Amato and Cheadle (2005), reported that divorce in the

---

[1]   Fertig (2007) reported that this is not due to the absence of the father from the household. Their results from sibling fixed effects analyses suggested that when fixed unobserved factors were taken into account, there was no correlation between fathers' and children's earnings based on whether the children grew up in separated or intact families. Factors that predispose parents to divorce and affect earnings are the likely explanation for this; for example, it is possible that mental illness predisposes parents to divorce and also can affect their earnings.

grandparent generation is associated with lower educational attainment and more marital discord among grandchildren, as well as poorer relationships between the grandchildren and their own parents.[2]

While Australia has a relatively low rate of joblessness overall compared to other OECD countries, it nevertheless has one of the highest rates of family joblessness among single-parent households (Whiteford, 2009). Policy interest in family joblessness therefore remains (Department of Prime Minister & Cabinet, 2009), as it is still a marker of entrenched disadvantage—especially intergenerational disadvantage—that affects children's life chances. Several studies have shown that children living in jobless households have poorer social-emotional wellbeing and learning outcomes (Gray & Baxter, 2012; Gray, Taylor, & Edwards. 2011). However, it remains uncertain whether joblessness in succeeding generations is associated with poorer child development outcomes than joblessness in one generation alone.

The purpose of this chapter is to document parents' childhood experiences of growing up within disadvantaged families and assess the extent to which these experiences are reflected in adulthood. We also examine the effects of persistent disadvantage—in this context, disadvantage that is experienced over two generations—on children's wellbeing and development, and how these effects compare to children with just one generation of disadvantage, or no history of disadvantage at all. This is a rare examination of joblessness over three succeeding generations and its onward effects upon children, and is one of the few in the research literature.[3] In this chapter, we use data from both the B and K cohorts of *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC), to address the following questions:

- What proportion of maternal and paternal grandparents of LSAC children experienced family joblessness or separation when LSAC parents were growing up?[4]

- To what extent is parents' experiences of family joblessness and separation associated with grandparents' experiences of joblessness and separation?

- What effect does this family history have on children's development?

- How do children fare when their family has two generations of disadvantage, compared to children with disadvantage only in their parents' generation, only in their grandparents' generation, or no history of disadvantage at all?

4.2   Data and definitions

Employment in the grandparent generation

Data on maternal and paternal grandparents' employment were collected at Wave 4 via a face-to-face interview with the parent who knew best about the child's health, development and care at Wave 1 (Parent 1). Parent 1 responded on behalf of themselves and Parent 2 (who lived in the same household as Parent 1). Parent 1 was asked a range of questions pertaining to the main breadwinner in their family when they (and Parent 2) were 14 years old: "Thinking back to when you were 14 years old, was your mother or father the main breadwinner?".[5] The respondent could nominate their mother, father, someone else or a combination of these options for their response; for example, both mothers and fathers could be nominated as the main breadwinners.

For each person nominated as a main breadwinner, the respondent was then asked: "At that time, did your mother/father/someone else work in a job, business or farm?". If "yes", the respondent

---

[2]   The association between grandparents' divorces and grandchildren's outcomes was explained by family characteristics of the parents, including lower education, more marital discord, more divorce and greater tension in parent–child relationships.

[3]   Moreover, many three-generation studies have been of relatively small groups of children living in particular areas of the US (Belsky, Conger, & Capaldi, 2009).

[4]   In this chapter, the LSAC study child is always referred to as the child, the parent is always the study child's parent and the grandparent is always the grandparent of the study child.

[5]   It is useful to get a sense of the years when parents were 14 years of age. Based on the median age when mothers of the B cohort were 14 years of age, it was 1987. As might be expected, fathers in the B cohort and mothers and fathers in the K cohort were older on average; the median years when they were 14 years of age were 1986, 1987 and 1984 respectively.

was then asked: "Was your mother/father/someone else unemployed for a total of 6 months or more while you were growing up?".

Similar questions were asked regarding Parent 2's family of origin. This information was also collected from parents living elsewhere from Parent 1 (PLEs) in a telephone interview at Wave 4. As family structure could change across the waves, family-of-origin data for fathers could be collected from either a male parent who resided in the same household as Parent 1 or from a biological father who was living in a different household to Parent 1 (male PLE) or, for a small minority of children, from both. Where family-of-origin data were collected from either source, whichever data were available were used to represent fathers' experiences growing up. Where family-of-origin data were collected from both a father with whom Parent 1 lives (i.e., step-father) and a male PLE, precedence was given to data collected from male PLEs, as in the majority of cases this person was the biological father.[6]

Based on answers to the employment questions, a "family joblessness" variable was derived separately for the maternal and paternal grandparents of the LSAC study child. For the purpose of this chapter, a jobless family in the grandparent generation refers to families where the main breadwinner either did not work in a job, business or farm, or was unemployed for a period of 6 months or more. Where both the grandmother and grandfather of the study child were nominated as being the main breadwinners of their families, these families were only classed as being jobless households if both grandparents did not work or were unemployed for a period of 6 months or more. Where "someone else" was named as a breadwinner, they were the sole breadwinner for the majority of cases.[7] For simplicity, we excluded from analyses the small number of cases (n = 18) where both a grandmother and "someone else" or a grandfather and "someone else" were nominated by parents as being the main breadwinners.

It is important to note that while the breadwinner questions related to the time when the study child's parents were 14 years old, the questions pertaining to the unemployment of the main breadwinner were framed as whether it occurred while they were "growing up". The measure of unemployment in the grandparent generation therefore does not capture when it occurred. Additionally, for households where both grandparents were nominated as breadwinners, unemployment may have occurred at different times, and one breadwinner may have been employed while the other was not. Therefore, dual breadwinner households may not have been "jobless" per se. However, as few parents indicated that both grandparents were main breadwinners (see Table 4.3 on page 48), and for ease of discussion when assessing intergenerational disadvantage, the "jobless" terminology has been adopted for this chapter.

Separation in the grandparent generation

Data on separation in the grandparent generation were collected from parents at multiple points across Waves 2, 3 and 4. At Wave 2, data on whether grandparents had separated or divorced (and if so, the age of parents when this occurred)[8] were collected via the Parent 1 and Parent 2 leave-behind questionnaires. At Waves 3 and 4, the same questions were asked during the face-to-face interview with Parent 1. As with the employment questions, Parent 1 responded to the questions on behalf of Parent 2. Data on separation in the grandparent generation were also collected from PLEs at Waves 3 and 4 via the telephone interview. The data on separation were maximised, where possible, so that if data were missing from one wave they were supplemented from another.[9]

---

[6] At Wave 4, almost all PLEs were the biological parent of the study child (99% for the K cohort, and nearly 100% for the B cohort).

[7] When asked to specify who the "someone else" was, 21% were step-fathers; 12% were grandparents; 20% were other relatives, including aunts, uncles, siblings or a family friend; 20% said they lived in a state home or a foster home; 10% said themselves; 5% relied on government assistance, such as pensions; and 12% were coded as "other".

[8] Age when separation occurred is not addressed in this chapter. Within the group in which the grandparents had separated, the majority of separations occurred before the parent was 14 years old (72% for mothers and 61% for fathers), and by age 18 this had increased to 87% of mothers and 79% of fathers.

[9] As the data from Wave 2 were based on self-report by Parent 2 (rather than Parent 1 responding on behalf of Parent 2), Wave 2 data were given preference and then supplemented with data from Waves 3 and 4 where necessary. As with the grandparent employment data, data on family separation from fathers and PLEs were combined. If data were collected from both a father figure (e.g., step-father) and a male PLE, the experiences of the male PLE were used to represent the experience of fathers.

Joblessness and separation in study child's family

To classify joblessness in the parent generation, we adopted the approach used by Gray and Baxter (2011). At each wave, LSAC parents were coded according to their employment status, with parents working full-time given a score of 1, parents working part-time a score of 0.5 and parents who were either not working or unemployed given a score of 0. Households scoring 0 (i.e., did not have one parent working at least part-time) were coded as being jobless for that wave. Joblessness across all four waves was then collated to determine the number of waves that the household was jobless. Note that this classification only refers to employment status at the time of interview, and does not cover either having a job or being jobless between waves.

For family separation, families that were lone-parent households at any wave were classified as being an "ever lone-parent family". Under this definition, a lone-parent household would include those families where a parent had passed away, or had never lived with the study child. The vast majority of lone-parent households, however, resulted from family separation; therefore in this chapter the term "separated families"—with respect to the study child's parents—is used interchangeably with "lone-parent households".[10]

Two-generation family history of joblessness and separation

In order to assess the effect of multiple generations of disadvantage on study children's social and academic outcomes, we derived family history variables for each study child relating to maternal and paternal experiences of joblessness and family separation. Overall, four separate variables were created to document family background: maternal history of joblessness, maternal history of separation, paternal history of joblessness, and paternal history of separation. For each of these variables, study children fell into one of four categories:

- no history;
- G1 only: generation 1 only (the study child's grandparent[s]);
- G2 only: generation 2 only (the study child's parent[s]); and
- G1 + G2: generations 1 and 2.

For maternal history of joblessness, for example:

- G1 only: refers to study children whose maternal grandparent(s) were jobless; in other words, the study child's mother grew up experiencing joblessness in her family;
- G2 only: refers to study children whose parent(s) were jobless at least once over the four waves, but whose maternal grandparents were not;
- G1 + G2: refers to study children whose maternal grandparent(s) were jobless and whose parent(s) were jobless.

A paternal history of joblessness variable was also created in the same manner. As "G2 only" refers to the combined experience of the study child's mother and father, the maternal and paternal family history variables were not mutually exclusive. Therefore, a child coded as "G2 only" for maternal history may also have paternal grandparents who were jobless; in this case, the child would be coded as "G1 + G2" on a paternal history of joblessness.

4.3   Joblessness and separation in the grandparent generation

The percentages of maternal and paternal grandparents who were ever separated or were jobless are shown in Table 4.1 (on page 47), while the combined experiences of separation and joblessness are shown in Table 4.2 (on page 47). For both cohorts, 26–28% of LSAC grandparents had ever separated, and 18–21% of maternal grandparents and 12–14% of paternal grandparents were jobless when parents were aged around 14 years. When the experiences of both separation and family joblessness were combined (Table 4.2), 17–19% of maternal grandparents had separated only,

---

10   For example, in the B cohort analytical sample for this chapter, 1,004 of 4,274 children were ever in a lone-parent household. Over 99% of these cases resulted from a separation.

10–11% were jobless only, 8–11% were both separated and jobless, and 64–62% had experienced neither separation nor joblessness. Percentages for paternal grandparents were similar: 17–18% separated only, 8% jobless only, 3–6% both separated and jobless, and 68–72% neither.

Table 4.1:	Maternal and paternal grandparents of the study child who were ever separated or were jobless, B and K cohorts, Waves 1–4							
	B cohort grandparents				**K cohort grandparents**			
	Maternal		**Paternal**		**Maternal**		**Paternal**	
	%	**n**	**%**	**n**	**%**	**n**	**%**	**n**
Ever separated	27.7	4,140	25.1	3,981	25.8	4,000	21.7	3,864
Jobless household	21.2	3,902	14.0	3,471	18.0	3,756	12.1	3,389

Note: The residual proportions of non-separated and non-jobless households are omitted. For example, 28% of maternal grandparents had separated, while 72% of maternal grandparents had never experienced separation. The latter category has been omitted from the table.

Table 4.2:	Maternal and paternal grandparents' combined experience of separation and joblessness, B and K cohorts, Waves 1–4			
	B cohort grandparents		**K cohort grandparents**	
	Maternal (%)	**Paternal (%)**	**Maternal (%)**	**Paternal (%)**
Neither separated nor jobless	61.6	67.8	63.8	71.5
Separated only	17.4	18.4	18.5	16.7
Jobless only	10.5	8.1	10.0	7.9
Both separated and jobless	10.5	5.7	7.6	3.4
Total	100.0	100.0	100.0	100.0
No. of households	3,825	3,371	3,642	3,308

Note: Percentages may not total exactly 100.0% due to rounding.

When considering the influence of grandparents' separation and disadvantage on parents, it is important to understand that before the introduction of the Child Support Scheme in 1988 (the period when most grandparents were raising LSAC parents), unless mothers re-partnered following separation, they and their children were usually at considerable financial disadvantage (Funder, Harrison, & Weston, 1993; McDonald, 1986).[11]

In addition to the lack of child support, lone mothers also had much lower rates of employment than they do now. For instance, Hayes, Weston, Qu, and Gray (2011) used data from the Australian Bureau of Statistics Labour Force Status and Other Characteristics of Families series to demonstrate that, in 1983, close to 70% of lone mothers did not have any job and just over 10% had part-time work, whereas by 2009, just under 50% of lone mothers had no job and about 25% had part-time work.

To better understand the experience of separation and unemployment in the grandparent generation, understanding who the main breadwinners were provides a useful context around the experience of disadvantage in these families. Table 4.3 (on page 48) provides an overview of the main breadwinners in the grandparent generation, according to separation experience. For maternal grandparents who separated, 48% of B cohort maternal grandmothers and 41% of K cohort maternal grandmothers were the main breadwinners, compared to just 7% of maternal grandmothers (both cohorts) who had never separated. Similarly, 32% of paternal grandmothers were the main breadwinner in families where paternal grandparents had separated, compared to just 6% of paternal grandmothers who had not separated. In contrast, 83% of maternal grandfathers and 86–87% of paternal grandfathers were the main breadwinners for intact families, compared with 36–43% and 56–57% respectively for those who had ever separated. Finally, "someone else" was more likely to be a main breadwinner if grandparents had separated than if they had not separated

---

[11]   Prior to 1988, the Spousal Maintenance Scheme was in effect. Based on a survey conducted in 1987, previous research published by AIFS suggests that the median maintenance per child paid to the mother at that time was $20 per week, as reported by separated mothers (Funder, Harrison & Weston, 1993).

(e.g., for the B cohort, 11% for maternal grandparents who had separated compared with 1% who had not, and 7% for paternal grandparents who had separated compared with 1% who had not).

The time when grandparents were likely to have separated (the 1980s), 34% of the grandmothers who separated were living with their own parents or friends in the months following divorce (McDonald, 1986). On average, these women had separated five years after marriage.

Table 4.4 shows the percentage of grandparents who were jobless according to who the main breadwinner was. Joblessness was clearly more common where only grandmothers were the

Table 4.3:	Main breadwinners in grandparent generation, by whether ever separated, B and K cohorts, Waves 1–4					
	B cohort grandparents			K cohort grandparents		
Main breadwinner	Ever separated (%)	Never separated (%)	Total (%)	Ever separated (%)	Never separated (%)	Total (%)
Maternal grandparents						
Grandfather only	36.0	82.8	69.8	42.9	83.1	72.7
Grandmother only	48.3	7.3	18.7	41.3	6.6	15.6
Both grandfather and grandmother	4.3	9.2	7.9	5.4	9.4	8.4
Someone else only	11.4	0.7	3.6	10.5	0.9	3.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
No. of households	1,056	3,073	4,129	953	3,025	3,978
Paternal grandparents						
Grandfather only	56.2	85.7	78.4	57.4	87.0	80.7
Grandmother only	32.0	5.5	12.0	32.4	5.6	11.3
Both grandfather and grandmother	5.0	7.7	7.1	6.2	6.2	6.2
Someone else only	6.8	1.1	2.5	4.0	1.2	1.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
No. of households	2,875	923	3,798	2,914	755	3,669

Note: Percentages may not total exactly 100.0% due to rounding.

Table 4.4:	Maternal and paternal grandparents who were jobless, by main breadwinner, B and K cohorts, Waves 1–4			
	Maternal grandparents jobless		Paternal grandparents jobless	
Main breadwinner	%	*n*	%	*n*
B cohort				
Grandfather only	12.0	2,994	8.5	2,942
Grandmother only	52.8	707	44.6	415
Both grandfather and grandmother	26.2	83	14.2	47
Someone else	32.7	118	47.7	67
Totals	21.2	3,902	14.0	3,471
K cohort				
Grandfather only	11.0	2,988	7.3	2,923
Grandmother only	44.9	591	41.5	382
Both grandfather and grandmother	26.8	67	28.4	36
Someone else	40.2	110	39.0	48
Totals	18.0	3,756	12.1	3,389

Note: The residual proportions of non-jobless households by main breadwinner are omitted. For example, for the B cohort there were 2,994 households where the maternal grandfather only was the main breadwinner, 12% of these households were jobless, while 88% were not jobless. The latter group has been omitted from the table.

main breadwinners. For the K cohort, for example, in families where the grandmother was the main breadwinner, 45% of maternal grandmothers and 42% of paternal grandmothers experienced joblessness, compared with only 11% and 7% of families where the grandfather was the main breadwinner. Joblessness was also common in families where "someone else" was the main breadwinner (e.g., 39–40% in K cohort families) and where both grandmothers and grandfathers were breadwinners (e.g., 27–28% for K cohort families).

4.4   The intergenerational continuity of family joblessness

In Table 4.5 we examine the persistence of disadvantage across generations by showing the percentage of LSAC parents who have been jobless in at least one wave, according to grandparents' experience of family joblessness. Because Australia has one of the lowest rates of employment for single parents among OECD countries (50%, compared to an OECD average of 71%; OECD, 2007), and, since 1980, single-parent families have accounted for at least half of all jobless families with children (Whiteford, 2009), the results in Table 4.5 were separated by whether the LSAC family was ever a lone-parent family across Waves 1–4.[12]

Table 4.5: Joblessness in parent and grandparent generations, by whether child's family was ever a lone-parent family, B and K cohorts, Waves 1–4				
	Joblessness in never lone-parent family		Joblessness in ever lone-parent family	
Joblessness in grandparent generation	%	*n*	%	*n*
B cohort				
Neither maternal or paternal grandparents jobless	6.2	2,045	53.1	258
Either maternal or paternal grandparents jobless	8.6	583	70.1 [a]	117
Both maternal and paternal grandparents jobless	20.0 [a, b]	100	79.8 [a]	24
Totals	7.3	2,728	60.5	399
K cohort				
Neither maternal or paternal grandparents jobless	5.3	2,002	41.9	314
Either maternal or paternal grandparents jobless	8.1	457	54.6 [a]	127
Both maternal and paternal grandparents jobless	15.6 [a]	84	65.4 [a]	20
Totals	6.2	2,543	46.7	461

Notes: Due to the small number of households where the study child's family was ever a lone-parent family and where both maternal and paternal grandparents were jobless, those results should be interpreted with caution. [a] Percentage is significantly different (at $p < .05$) to the families where *neither* maternal nor paternal grandparents were jobless (using pair-wise chi-square tests). [b] Percentage is significantly different (at $p < .05$) to the families where *either* maternal or paternal grandparents were jobless (using pair-wise chi-square tests). The residual proportions of non-jobless households by grandparent joblessness are omitted from the table. For example, out of 2,045 never lone-parent B cohort families where neither maternal nor paternal grandparents were jobless, 6.2% experienced joblessness, 93.8% did not. The latter group has been omitted from the table.

LSAC parents who were lone-parent families at any point in time were also overwhelmingly more likely to have been jobless at any point in time, with 61% of B cohort and 47% of K cohort families (who were ever lone-parent families) having been jobless, compared to 7% of B cohort and 6% of K cohort families who had never been lone-parent families.

Within both LSAC family structures, being in a jobless family was also associated with experiences of grandparent joblessness. For example, within two-parent B cohort families who had been jobless for one wave or more, 20% were those where both the mother and father had experienced family joblessness in their family of origin, compared to only 6% where neither parent had had such an experience.[13] The percentages were much higher for ever lone-parent B cohort families who had been jobless for one wave or more, with 80% of these families having had both parents experiencing

---

[12]   As noted previously in the analytic sample for the B cohort, for example, over 99% of cases of ever lone-parent families resulted from a separation.

[13]   Of two-parent families who were in jobless households for 3–4 waves, 9% were those where both parents' families had been jobless in their family of origin (the grandparents' families), compared to 3% where neither parent had experienced joblessness in their family of origin.

family joblessness growing up, compared to 53% having had neither parent experiencing family joblessness—a significant difference. Similar patterns were found for the K cohort.

4.5 The intergenerational continuity of separation

Previous research has consistently shown that the likelihood of separation in adulthood is greater for adults whose own parents have separated (D'Onofrio et al., 2008; Wolfinger, 2005, 2011). In line with previous research, Table 4.6 shows that a larger percentage of LSAC parents separated if either the maternal or paternal grandparents had separated. This percentage was even greater if both maternal and paternal grandparents had separated. For K cohort families where both maternal and paternal grandparents had separated, the risk of parental separation was more than double that of families with no grandparent history of separation (45% compared to 17%), and likewise for B cohort families (31% compared to 14%). For both cohorts, the percentage of families who were lone-parent families at any wave was also significantly higher for families where either the maternal or paternal grandparents had separated compared with families where there was no history of grandparent separation. Notably, a higher percentage of K cohort than B cohort families were lone-parent families by Wave 4. This is due to the fact that parents would have had more time to separate.[14]

Table 4.6:	Families who had ever been a lone-parent family, by whether grandparent generation separated, B and K cohorts, Waves 1–4	
Separation in grandparent generation	Ever lone-parent families (%)	Ever lone-parent families (*n*)
B cohort		
Neither maternal or paternal grandparents had separated	13.8	2,180
Maternal grandparents only had separated	21.4 [a, b]	656
Paternal grandparents only had separated	21.3 [a, b]	660
Both maternal and paternal grandparents had separated	31.2 [a]	278
Totals	17.9	3,774
K cohort		
Neither maternal or paternal grandparents had separated	16.5	2,239
Maternal grandparents only had separated	27.6 [a, b]	603
Paternal grandparents only had separated	21.0 [a, b]	535
Both maternal and paternal grandparents had separated	44.8 [a]	230
Totals	21.1	3,607

Notes: [a] Percentage is significantly different (at $p < .05$) to the families where *neither* set of grandparents had separated (using pair-wise chi-square tests). [b] Percentage is significantly different (at $p < .05$) to the families where *both* set of grandparents had separated (using pair-wise chi-square tests).

4.6 Intergenerational disadvantage and children's development

Earlier research using LSAC data has demonstrated that family joblessness is associated with poorer developmental outcomes for children across the learning, social-emotional and physical health domains, particularly for children living in families where joblessness endures over time (Gray & Baxter, 2011). Longitudinal analyses have also been conducted on US data showing that parental divorce is associated with a decline in children's psychosocial wellbeing and academic achievement (Potter, 2010). In this chapter, we examine how the experience of separation and joblessness across two generations affects two key domains of children's development: social-emotional problems and academic performance.

---

14   For example, at Wave 1, 68% of B cohort parents who had not separated had lived together for 5 years or more, compared to 98% of K cohort parents who had not separated.

Child social-emotional problems

Social-emotional problems were measured using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ is a 25-item scale that assesses peer problems, conduct problems, hyperactivity, emotional problems and prosocial behaviour. Total problem scores, which are the sum of scores across the four problem subscales and could range from 0 to 40, were used in this chapter. Using Goodman's recommended cut-off points (Goodman, 1997), children scoring 14 or above (borderline or abnormal range) were classified as likely having social-emotional problems.[15] Wave 4 data were used for both cohorts.

Intergenerational joblessness and children's social-emotional problems

As the majority of data for LSAC mothers were based on self-reports and are therefore more reliable than data for fathers, which were largely collected from LSAC mothers, in this section we focus on maternal grandparents' experience of family joblessness, though the experiences of paternal grandparents are also presented for information.

Figure 4.1 shows the percentage of study children with social-emotional problems according to patterns of joblessness in the grandparent and parent generations. For both cohorts, as the extent of intergenerational disadvantage increased in terms of joblessness, the percentage of children with social-emotional problems increased in a step-wise pattern. For example, 17% of B cohort children had social-emotional problems where maternal grandparents had been jobless (G1 only), 24% where parents (but not grandparents) had been jobless (G2 only), increasing to 33% for children whose grandparent(s) and parent(s) had both been jobless (G1 + G2). For those children without joblessness in either generation, only 13% had child social-emotional problems. A similar pattern was shown for K cohort children, though the percentages were higher in each category of having a history of joblessness relative to the B cohort.
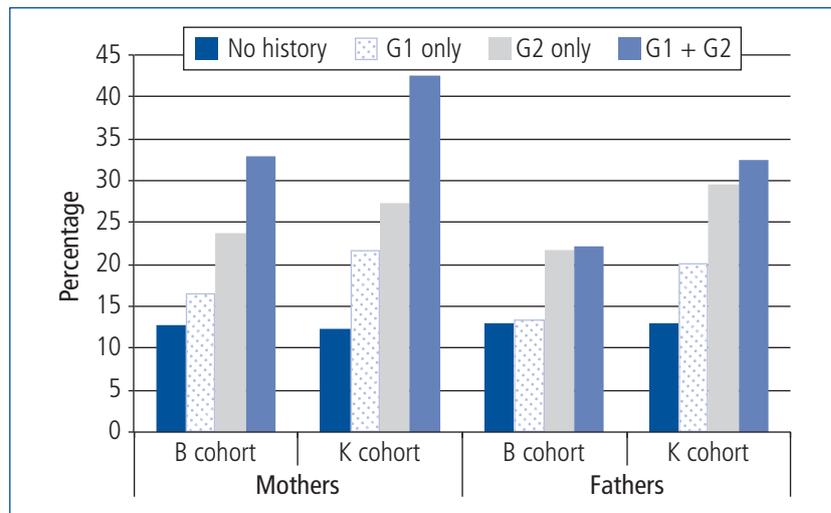
Notes: B cohort: mother (n = 3,876), father (n = 3,447); K cohort: mother (n = 3,713), father (n = 3,348). Maternal history, G1 + G2 vs No history: B cohort: χ^2(1, n = 558) = 5.5, p = .045; K cohort: χ^2(1, n = 525) = 11.3, p < .001.

Figure 4.1:   Children with social-emotional problems, by history of family joblessness over two generations, mothers' and fathers' experiences, B and K cohorts, Wave 4

Notably, the percentage of children with social-emotional problems was significantly higher for both cohorts if they had two generations of joblessness in their family compared to joblessness at G2 only and to no joblessness history (33%, 24% and 13% respectively for the B cohort, 43%, 27% and 12% for the K cohort). These results suggest that irrespective of whether LSAC parents were jobless, the employment experiences of maternal grandparents are associated with children's

---

[15]   According to the Goodman's (1997) cut-off standardisation, approximately 20% of the population sample is expected to be in the borderline and abnormal bands. With LSAC data, however, only 11% (B cohort) to 13% (K cohort) of children fell into these categories (at the 14-point cut-off). According to Mellor (2005), on the other hand, the Australian banding for "borderline" (top 20%), is 12 points for Parent 1 reports (14 for self-reports), which corresponds with the LSAC data (the top 20% of LSAC is around 12 points for both cohorts).

social-emotional problems. Furthermore, there appears to be an additive effect, where two generations of disadvantage (here, joblessness) has a larger association with children's wellbeing than just one generation of disadvantage.

Intergenerational separation and children's social-emotional problems

Figure 4.2 shows the percentages of children with social-emotional problems according to the history of separation in their family. Again, we focus on maternal history in our discussion, but also include paternal history in the figure for information. In contrast to joblessness, whether or not maternal grandparents had separated had little bearing on the percentages of study children with social-emotional problems. For both cohorts, there was no significant difference in the percentage of children with social-emotional problems for children with no history of separation (13–14% across cohorts), compared to children whose maternal grandparents had ever separated or divorced (15–16% across cohorts). The percentage of children with social-emotional problems was higher if their parents had ever been a lone parent (25–27% across cohorts) compared to children whose parents were never separated (24% for the B cohort and 31% for the K cohort), but there appeared to be no additional effects of separation in the grandparent generation beyond this. In sum, there is no evidence that family separation in the grandparent generation had any influence on children's social-emotional problems.
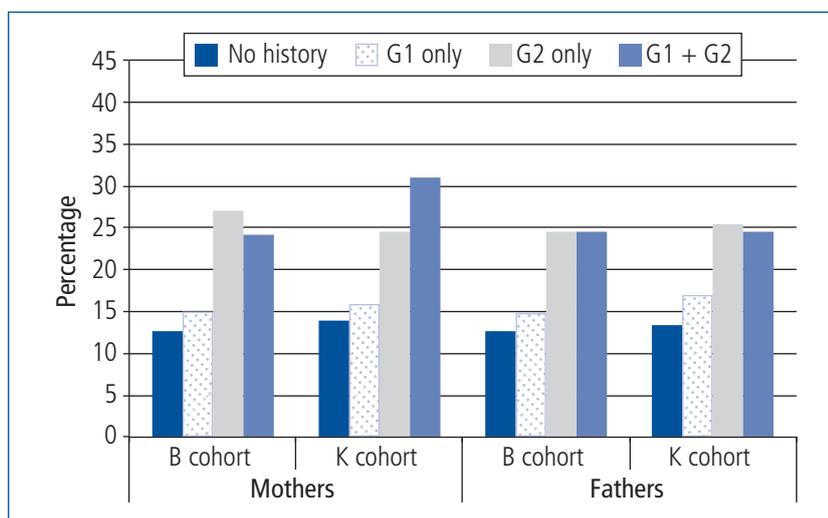
Notes: B cohort: mother ($n = 3,958$), father ($n = 3,836$); K cohort: mother ($n = 3,823$), father ($n = 3,721$). Maternal history, G2 only vs No history: B cohort: $\chi^2(1, n = 2,936) = 72.4$, $p < .001$; K cohort: $\chi^2(1, n = 2,895) = 40.5$, $p < .001$. Maternal history, G1 + G2 vs G2 only: B cohort: $\chi^2(1, n = 734) = 0.7$, $p = .489$; K cohort: $\chi^2(1, n = 846) = 4.3$, $p = .062$.

Figure 4.2:   Children with social-emotional problems, by history of family separation over two generations, mothers' and fathers' experiences, B cohort and K cohort, Waves 4

Literacy and numeracy

The Academic Rating Scale (ARS) provides a measure of school performance in literacy and mathematical ability (numeracy), based on the reports of the child's teacher. The scales used in LSAC were adapted from the versions developed for the Early Childhood Longitudinal Study (National Center for Education Statistics, n.d.). Scores are based on teachers' assessments of students relative to other children of the same age level. Unique items were used at each wave to assess age-relevant literacy and numeracy competencies. At Wave 4, the scales consisted of 10 literacy and 8 numeracy items for the B cohort, and 9 literacy and 10 numeracy items for the K cohort. Teachers were asked about items such as: "The study child understands and interprets a story or other text read aloud (e.g., identifies an author's purpose, identifies persuasive techniques through information presented and language choices)", and could choose from one of 5 responses where 1 = "not yet"; 2 = "beginning"; 3 = "in progress"; 4 = "intermediate" or 5 = "proficient". Scores were summed and scaled to range from 1 to 5, with higher scores representing greater proficiency. To facilitate comparisons across domains, the scores were standardised for each cohort to have a mean of 0 and a standard deviation of 1. The standardisation of scores in this manner means that differences

can be interpreted as effect sizes, which describes the magnitude of differences between groups. To facilitate interpretation, a difference of .20 of a standard deviation unit is considered a small difference, .50 medium, and .80 a large difference (Cohen, 1988). To put these "rules of thumb" into perspective, in the social sciences, the majority of differences found are small or medium.

Intergenerational joblessness and children's academic performance

The relationship between family history of joblessness and language and literacy scores is shown in Figure 4.3, and for numeracy in Figure 4.4, with very similar results shown for both cohorts and
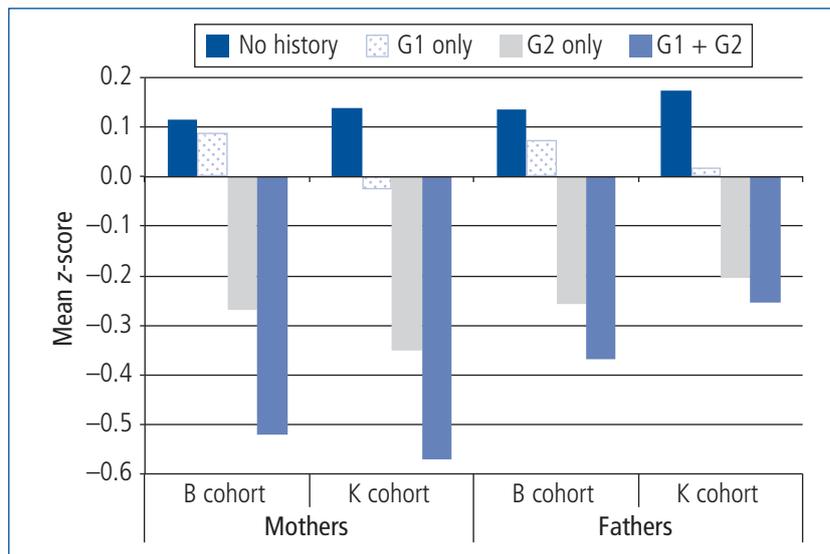
Notes: B cohort: mother (*n* = 3,146), father (*n* = 2,631); K cohort: mother (*n* = 3,010), father (*n* = 2,572). Maternal history, G1 + G2 vs No history: B cohort: *t*(2,382) = 8.9, *p* < .001; K cohort: *t*(2,326) = 9.4, *p* < .001. Maternal history, G1 + G2 vs G2 only: B cohort: *t*(433) = 2.4, *p* = .019; K cohort: *t*(409) = 1.9, *p* = .056

Figure 4.3: **Children's literacy scores, by history of joblessness over two generations, mothers' and fathers' experiences, B and K cohorts, Wave 4**
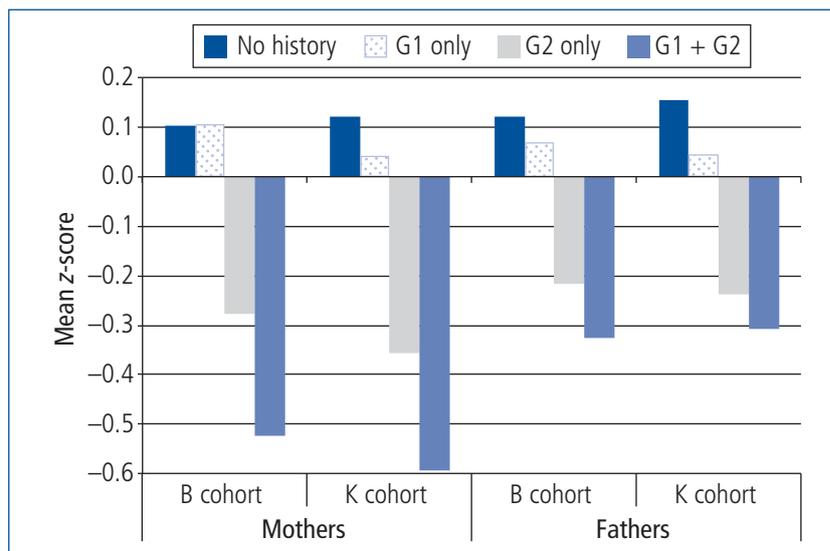
Notes: B cohort: mother (*n* = 3,103), father (*n* = 2,594); K cohort: mother (*n* = 2,930), father (*n* = 2,460). Maternal history, G1 + G2 vs No history: B cohort: *t*(2,351) = 8.7, *p* < .001; K cohort: *t*(2,261) = 9.3, *p* < .001. Maternal history, G1 + G2 vs G2 only: B cohort: *t*(426) = 2.4, *p* = .017; K cohort: *t*(404) = 2.1, *p* = .038.

Figure 4.4: **Children's numeracy scores, by history of joblessness over two generations, mothers' and fathers' experiences, B and K cohorts, Wave 4**

academic domains. As in the previous sections, we focus on maternal history for discussion, though paternal history is also provided. Academic performance was highest for children with no family history of joblessness, and lowest for children with two generations of family joblessness, with differences between these two groups being statistically significant. Notably, average scores were also lower for children with two generations of joblessness compared to children with joblessness only in the parent generation.

Again, this may be suggestive of an additive effect of generational joblessness, where the experience of two generations of joblessness is associated with poorer academic performance than having just one. Also noteworthy is the size of the difference—with an average score of –0.6, children in families with two generations of joblessness were performing around half a standard deviation lower than children with no family history of joblessness, which is a medium effect.

Intergenerational separation and children's academic performance

The relationship between family separation and children's academic performance is shown in Figure 4.5 for literacy and Figure 4.6 for numeracy (on page 55), with very similar results shown for both academic domains. For both cohorts, there were no discernible differences in literacy and numeracy scores between children with no family history of separation and those whose maternal grandparents (only) had separated. Children whose parents (only) had separated, however, performed significantly worse, with scores around –0.30 of a standard deviation lower than children who had no family history of separation (e.g., no history = 0.1; G2 only = –0.2). The average scores for children with two generations of family separation were significantly worse compared to children whose parents only had separated, with the exception of the K cohort on the numeracy measure.

Again, these results suggest that the experience of grandparents matters for the development of children, though the effects of separation are somewhat smaller than those shown for joblessness in the grandparent generation.
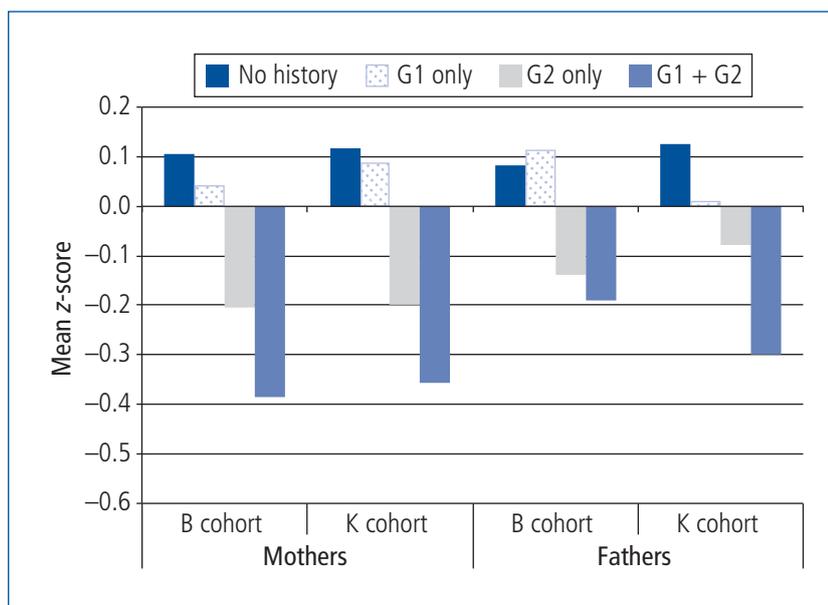
Notes: B cohort: mother (n = 3,218), father (n = 3,122); K cohort: mother (n = 3,100), father (n = 3,049). Maternal history, G2 only vs No history: B cohort: $t(2,389)$ = 6.1, $p < .001$; K cohort: $t(2,355)$ = 6.2, $p < .001$. Maternal history, G1 + G2 vs G2 only: B cohort: $t(582)$ = 2.1, $p = .035$; K cohort: $t(660)$ = 2.0, $p = .046$.

Figure 4.5:   Children's literacy scores, by history of family separation over two generations, mothers' and fathers' experiences, B and K cohorts, Wave 4
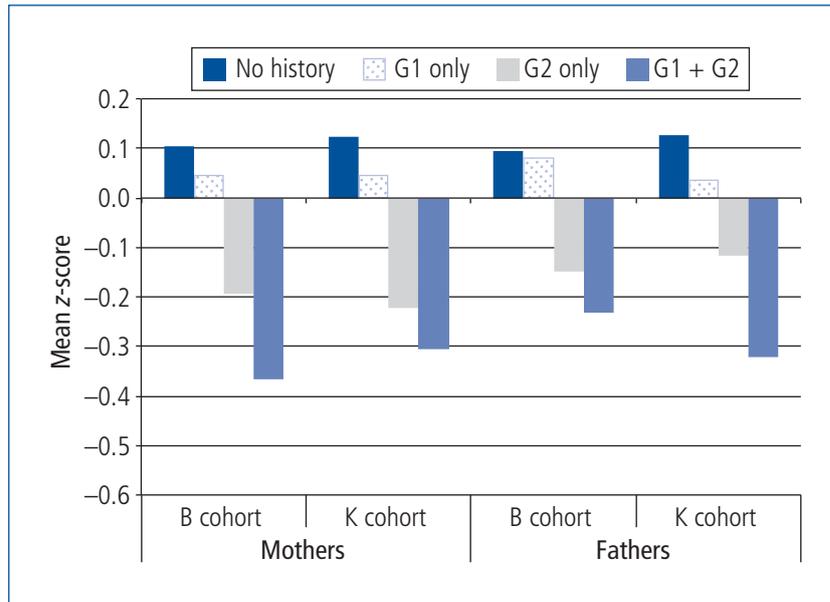
Notes: B cohort: mother (*n* = 3,173), father (*n* = 3,078); K cohort: mother (*n* = 3,017), father (*n* = 2,960). Maternal history, G2 only vs No history: B cohort: *t*(2,355) = 5.8, *p* < .001; K cohort: *t*(2,288) = 6.7, *p* < .001. Maternal history, G1 + G2 vs G2 only: B cohort: *t*(573) = 2.0, p = .043; K cohort: *t*(646) = 1.0, p = .301.

Figure 4.6: Children's numeracy scores, by history of family separation over two generations, mothers' and fathers' experiences, B and K cohorts, Wave 4

4.7   Summary and discussion

The aim of this chapter was to examine the experience of intergenerational separation and joblessness, and to document how these experiences relate to the key child development indicators of social-emotional wellbeing and academic performance. Findings from this chapter suggest that the echoes of early disadvantage in the grandparent generation can be heard in the continuity of family joblessness in the study child's family. These disadvantages are related to children's developmental outcomes at 6–7 and 10–11 years of age.

Consistent with previous research, the percentage of LSAC families that were ever lone-parent families was substantially higher where either set of the study child's grandparents had separated, and higher still if both the maternal and paternal grandparents had separated (e.g., Amato & Cheadle, 2005; Amato & DeBoer, 2005; Wolfinger, 2005, 2011). Similarly, the proportion of parents who were jobless for at least one wave was much higher where either or both the maternal and paternal grandparents had also experienced family joblessness, compared to families where neither set of grandparents had this experience. There were clear continuities in the experiences of joblessness and separation across the grandparent and parent generations.

Broadly, the continuity in these intergenerational relationships suggests that the LSAC children whose grandparents or parents have experienced separation or joblessness may themselves face a greater risk of separation and joblessness as adults. Indeed, already by age 6–7 and 10–11 years, the children in families who have experienced persistent intergenerational disadvantages have already fallen substantially behind their peers with respect to their academic performance and social-emotional development. These findings show that intergenerational disadvantage is pervasive and their effects upon the youngest generation of a family begin early.

We have also shown that the legacy of grandparents extends beyond their own children and into the next generation. The social-emotional and academic outcomes for study children whose grandparents experienced family joblessness were worse compared to children whose grandparents had not experienced joblessness. This pattern held irrespective of whether the study child's own parents had experienced joblessness. A similar pattern was found for separation, though this held only for families where the parents had separated.

The analyses in this chapter have some limitations. Firstly, retrospective reports are fallible, so there is likely to be greater measurement error in the reporting of the history of family joblessness and separation, particularly for fathers' experiences, which were often reported by the mother as a proxy. However, the history of significant life events such as parental divorce and an extended period of family joblessness are likely to be recalled with fewer errors than other types of events that are more transitory in nature (e.g., Mitchell, 2010), and therefore many studies employ the life history method of recall of significant life events (e.g., the Household Income and Labour Dynamics in Australia survey; see Wooden & Watson, 2007). Secondly, the associations between family joblessness and separation in the grandparent generation and children's social-emotional problems, numeracy and literacy have not taken into account any other "third" variables that may underlie this association, and therefore may overestimate the strength of the relationships reported in this chapter. Other factors from the grandparent generation—such as grandparents' mental health problems or alcohol or drug use—could be confounding variables. However, it would be a mistake to use contemporaneous socio-demographic variables such as socio-economic status in the child's family as covariates, as these types of variables are likely to be "outcomes" of intergenerational disadvantage in the parents' family of origin. (For a discussion of the issues in estimating the causal effect of intergenerational disadvantage, see Sharkey & Elwert, 2011).

While these analyses provide an important first step towards understanding the persistence of multigenerational inequality, very little is still known about this, either in Australia or internationally. Studies examining the influences of two or more generations of family separation and joblessness on children's outcomes are rare. The propensity for children to be living in a jobless lone-parent family at some point in time has been, and still is high in Australia (Whiteford, 2009). Rates of maternal employment and education have increased over time (Hayes et al., 2010), which has co-occurred with some reduction in jobless lone-parent families, but the rate of joblessness is still two in five of lone-parent families.

Further analyses of LSAC data in the coming waves could also examine the combined influence of joblessness and separation of grandparents on their grandchildren. Mare (2011), in a recent review on multigenerational inequality, also suggested that when the occupational status of both parents and the returns to education that women are enjoying are accounted for, the likelihood of an intensification of intergenerational inequality will increase. "Matthew effect" aside,[16] one of the important lessons from this chapter is that history is not destiny, and though there are echoes of disadvantage, there are also many children who do not follow the pattern of intergenerational disadvantage. Parents' own efforts to overcome the disadvantages they encountered while growing up may be one possible explanation for this resilience, but an examination of the role that social institutions and social policies have played over the years may also provide clues about how to improve children's life chances.

4.8   References

Amato, P. R., & Cheadle, J. (2005). The long reach of divorce: Divorce and child well-being across three generations. *Journal of Marriage and Family*, *67*, 191–206.

Amato, P. R., & DeBoer, D. (2001). The intergenerational transmission of marital instability across generations: Relationship skills of commitment to marriage? *Journal of Marriage and Family*, *63,* 1038–1051.

Belsky, J., Conger, R., & Capaldi, D. M. (2009). The intergenerational transmission of parenting: Introduction to the special section. *Developmental Psychology*, *45*, 1201–1204.

Biblarz, T., & Raftery, A. (1993). The effects of family disruption on social mobility. *American Sociological Review*, *58*, 97–109.

Bjorklund, A., & Chadwick, L. (2003). Intergenerational income mobility in permanent and separated families. *Economics Letters*, *80*, 239–246.

Bratberg, E., Rieck, K., Marshall, E., & Vaage, K. (2011). *Intergenerational earnings mobility and divorce* (Working Papers in Economics No. 09/11). Bergen, Norway: University of Bergen, Department of Economics.

Cohen, J. (1988), *Statistical power analysis for the behavioral sciences* (2nd Ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

---

[16]   The "Matthew effect" is a reference to the rich getting richer through the use of their greater economic and social capital, and the poor consequently getting poorer, as first noted by Robert Merton (1968). The reference is derived from the Gospel of Matthew: "For to all those who have, more will be given, and they will have in abundance; but from those who have nothing, even what they have will be taken away" (Matthew 25:29).

d'Addio, A. (2007). *Intergenerational transmission of disadvantage: Mobility or immobility across generations? A review of the evidence for OECD countries* (OECD Social, Employment and Migration Working Papers No. 52). Paris: OECD.

Department of Prime Minister and Cabinet. (2009). *A stronger, fairer Australia: National statement on social inclusion*. Canberra: Department of Prime Minister and Cabinet.

D'Onofrio, B. M., Turkheimer, E., Emery, R. E., Harden, K. P., Slutske, W. S., Heath, A. C. et al. (2007). A genetically informed study of the intergenerational transmission of marital instability. *Journal of Marriage and the Family, 69*(3), 793–809.

Fertig, A. R. (2007). *Is intergenerational earnings mobility affected by divorce?* (Center for Research on Child Wellbeing Working Paper 2002–04). Princeton, NJ: Princeton University.

Frazer, H., & Marlier, E. (2007). *Tackling child poverty and promoting the social inclusion of children in the EU: Key lessons synthesis*. Vienna: Peer Review and Assessment in Social Inclusion, European Commission.

Funder, K., Harrison, M., & Weston, R. (1993). *Settling down: Pathways of parents after divorce*. Melbourne: Australian Institute of Family Studies.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry, 38*, 581–586.

Gray, M., & Baxter, J. (2011). Parents and the labour market. In Australian Institute of Family Studies, *The Longitudinal Study of Australian Children Annual statistical report 2010* (pp. 29–41). Melbourne: AIFS.

Gray, M., & Baxter, J. (2012). Family joblessness and child well-being in Australia. In *Investing in children: Work, education, and social policy in two rich countries*. Washington, DC: Brookings Institution.

Gray, M., Taylor, M., & Edwards, B. (2011). Unemployment and the wellbeing of children aged 5–10 years. *Australian Journal of Labour Economics, 14*, 153–172.

Hayes, A., Weston, R., Qu, L., & Gray, M. (2010). *Families then and now: 1980–2010* (Facts Sheet). Melbourne: Australian Institute of Family Studies.

Mare, R. D. (2011). A multigenerational view of inequality. *Demography, 48*, 1–23.

McDonald, P. (Ed.). (1986). *Settling up: Property and income distribution on divorce in Australia*. Melbourne: Prentice-Hall of Australia.

Mellor, D. (2005). Normative data for the Strengths and Difficulties Questionnaire in Australia. *Australian Psychologist, 40*(3), 215–222.

Merton, R. K. (1968). The Matthew effect in science. *Science, 159*(3810), 56–63.

Mitchell, C. (2010). Are divorce studies trustworthy? The effects of survey nonresponse and response errors. *Journal of Marriage and the Family, 72*, 893–905.

National Center for Education Statistics (n. d.). *Early Childhood Longitudinal Study: Kindergarten (ECLS-K)*. Washington, DC: Department of Education.

Organisation for Economic Co-operation and Development. (2007). *Babies and bosses: Reconciling work and family life. Vol. 5: A synthesis of findings for OECD countries*. Paris: OECD.

Potter, D. (2010). Psychosocial well-being and the relationship between divorce and children's academic achievement. *Journal of Marriage and Family, 72*, 933–946.

Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *American Journal of Sociology, 116*, 1934–1981.

Whiteford, P. (2009). *Family joblessness in Australia*. Canberra: Social Inclusion Unit, Department of the Prime Minister and Cabinet.

Wolfinger, N. H. (2005). *Understanding the divorce cycle: The children of divorce in their own marriages*. New York: Cambridge University Press.

Wolfinger, N. H. (2011). More evidence for trends in the intergenerational transmission of divorce: A completed cohort approach using data from the General Social Survey. *Demography, 48*(2), 581–592.

Wooden, M. & Watson, N. (2007). The HILDA survey and its contribution to economic and social research (so far). *The Economic Record, 83*, 208–231.

5

Is it OK to be away?
School attendance in the primary school years

Galina Daraganova
Australian Institute of Family Studies

5.1   Introduction

Regular school attendance has a significant role in shaping both school-related and later life outcomes. While attending school, children gain basic academic and social skills that are essential for ongoing academic and social success. If they do not attain these skills, they require extra help to catch up and are at higher risk of poor academic performance and of dropping out of secondary school (Lamdin, 1996; Myers, 2000; National Centre for Education Statistics (NCES), 2003; Rumberger & Thomas, 2000). This, in turn, limits the future employment opportunities of chronically absent children and puts them at a higher risk of welfare dependency and involvement in the justice system (House of Representatives Standing Committee on Employment, Education and Training [HR SCEET], 1996). Research also suggests that children who regularly attend school are less likely to engage in delinquent or destructive behaviour (Wang, Blomberg, & Li, 2005), while those who are frequently absent from school are more likely to use tobacco, alcohol and illegal drugs (Hallfors et al., 2002). The research on correlates of school non-attendance provides convincing evidence that educators and policy-makers need to take very seriously student absenteeism and the ways in which to reduce it.

In the Australian school system, school attendance has always been a priority among educational policy-makers. To increase the level of attendance, various policy initiatives have been implemented across the different states and territories. One of the recent initiatives to encourage school attendance among disadvantaged children is the Australian Government's Improving School Enrolment and Attendance Through Welfare Reform Measure (SEAM) (Department of Education, Employment and Workplace Relations [DEEWR], 2012). The initiative aims to encourage parents on income support to ensure that their children are enrolled in school and attend regularly. In South Australia, the Department of Education and Children's Services (DECS) introduced the Attendance Improvement Package policy (DECS, 2009), which aims to engage schools and communities in promoting attendance and engagement for all children and students enrolled in government preschools and schools. In Victoria, the Department of Education and Early Childhood Development (DEECD) introduced the It's Not OK To Be Away initiative to change community and student attitudes to school attendance (DEECD, 2006). The initiative emphasises the importance of gaining support from both parents and the community to successfully address student attendance.

Despite the importance of school attendance for children's outcomes, there is a lack of consistency in the definition and measurement of school non-attendance, not only across states and territories but also across government and non-government sectors (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2011). As a result, accurate comparisons between sectors or jurisdictions can not be made, nor can attendance data for different states and territories be aggregated to provide school attendance rates at the national level. *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC) provides a way to address this gap by employing the same definition of non-attendance across states and territories and collecting the non-attendance data from two sources—parents and teachers—for children at different ages.

Research suggests that there is considerable variation in the patterns of attendance of children from different socio-economic backgrounds. Australian studies indicate that Indigenous children, children from low socio-economic backgrounds and jobless families have the highest levels of

non-attendance (Ainley & Lonsdale, 2001; Bourke, Rigby, & Burden, 2000; HR SCEET, 1996; Reid, 1999; Rothman, 1999, 2001; Zubrick, et al., 2006). Similar results have been also found in the US context. According to the US National Center for Children in Poverty (Chang & Romero, 2008), living in a low-income family, having low levels of parental education, and single motherhood are the factors that are most related to lower rates of school attendance.

The literature also suggests that children with particular characteristics are likely to be absent from school more frequently. Characteristics of children that are related to school non-attendance include, but are not limited to: age, risk of emotional and behavioural difficulties, and language spoken at home (HR SCEET, 1996; Reid, 1999).

However, it is not sufficient to attribute poor attendance to only family and individual factors. Children from similar socio-demographic backgrounds and with similar individual characteristics might experience different levels of attendance in different schools. School factors are important contributors to school absenteeism; for example, in the Australian context, school size has been found to be related to level of attendance, with attendance being higher in smaller schools (HR SCEET, 1996; Oerlemans & Jenkins, 1998). Leonard, Bourke, and Schofield (1999) found that students' perceptions of the quality of their school life were strongly associated with their level of attendance. Some studies have shown that a poor relationship between teachers and students is one of the factors related to persistent absenteeism (O'Keefe, 1994; Trent & Slade, 2001). A number of studies have also found that children who experience bullying of any form at school are more likely to be absent from school (Learmonth, 1995; Reid, 1999).

The majority of the research discussed so far has predominately focused on attendance patterns in secondary schools; in particular, truancy and its consequences. However, the factors associated with attendance during the primary school years might be quite different from those that are associated with attendance in secondary school. Early in the school years, children are more dependent on their parents than secondary school children. Children aged 5, 6 or 7 years are likely to be taken to school by their parents (driving or accompanying); therefore, they are less likely to wander away on their way to school, or stay at home without parental consent. Unlike high school students, who constantly change classes throughout the day and have more opportunities to skip school, primary school children mainly remain in the same classroom through the day and are closely monitored in terms of entering and leaving school. Taking this into account, not only the factors but also the patterns of attendance among primary school children might be different.

LSAC provides a unique opportunity to address the gap in understanding of primary school attendance by using data collected from different sources (parents, teachers and children) across time. In particular, this chapter aims to address the following questions:

- What are the different attendance patterns among primary school children as reported by parents and teachers?
- To what extent are family, child and school characteristics related to different attendance patterns among primary school children?
- To what extent is child and parental engagement at school associated with different levels of attendance?
- To what extent is poor attendance associated with lower levels of achievement in primary school?

The chapter is structured as follows. Firstly, a brief summary of the children included in the analyses is provided, followed by an overview of their attendance patterns and reasons for absences as reported by parents and teachers. Section 5.4 focuses on describing child, family and school correlates of poor attendance in the primary school years. Reports by children and parents regarding their satisfaction with school are discussed in section 5.5, and section 5.6 examines the role of parental involvement in school activities on school attendance. The association between children's academic achievement as assessed by teachers and different levels of attendance as reported by both parents and teachers is examined in section 5.7. A summary of the results concludes the chapter.

5.2   Methodology

The sample described in this chapter is drawn from the sample of all K cohort children who satisfied the following criteria:

- participated in all four waves (1–4);

- were enrolled in school and were assigned to a year level;[1]

- had parents provide attendance data at Waves 2, 3 and 4.

Most educational research examines school attendance rates by year level (Chang & Romero, 2008; Zubrick et al., 2006). However, due to the structure of the school data for the LSAC children, the patterns of attendance were investigated for different ages rather than for different year levels. In Australia, states and territories have different age regulations for children entering primary school (Edwards, Taylor, & Fiorini, 2011). Also, parents are allowed to delay the child's enrolment in school when the child is first eligible. Therefore, children who are born in the same calendar year might be enrolled in different year levels.

Table 5.1 represents a distribution of school year levels in the LSAC sample, by wave. The first panel corresponds to Wave 2[2] and shows that 5% of the children (average age: 6.6 years) were enrolled in pre-Year 1, 71% of children (average age: 6.8) were enrolled in Year 1, and 25% of children (average age: 7.0) were enrolled in Year 2. This reflects both government regulations and parental decisions in relation to when children enrol in school. Such age differences are observed across all school year levels.

The three groups identified in Wave 2 are labelled as: Stream 1 (enrolled in Year 2), Stream 2 (Year 1), and Stream 3 (pre-Year 1). Children remain in the same stream across all years of schooling unless they repeat or skip a year level. Around 5% of children had repeated or skipped a year level by 2010. If a child repeated or skipped a year level, he or she would be assigned to more than one stream. The second and third panels of Table 5.1 show the data structure of Wave 2 replicated across Waves 3 and 4. For example, if children did not skip or repeat a year level, children in Stream 3 were in Year 2 at Wave 3 and in Year 4 at Wave 4. Similarly, children in Stream 1 who followed normal year level progression were in Year 4 at Wave 3 and in Year 6 at Wave 4. One child who was in pre-Year 1 at Wave 2 repeated this year level at Wave 3, and so in 2008 was enrolled in Year 1 instead of Year 2, but then followed a normal year-level progression.

Table 5.1:	Children enrolled in different year levels and mean ages of children, by waves, K cohort, Waves 2–4											
	Wave 2 (2006)				Wave 3 (2008)				Wave 4 (2010)			
Year level	No. of obser-vations	%	Mean age (years)	Stream	No. of obser-vations	%	Mean age (years)	Stream	No. of obser-vations	%	Mean age (years)	Stream
Pre-Year 1	174	4.5	6.6	3								
Year 1	2,743	70.7	6.8	2	1	0.0	8.5	–				
Year 2	961	24.8	7.0	1	189	4.9	8.5	3				
Year 3					2,764	71.3	8.8	2	1	0.0	10.5	–
Year 4					924	23.8	9.0	1	204	5.3	10.6	3
Year 5									2,760	71.2	10.8	2
Year 6									913	23.5	11.1	1
Totals	3,878	100.0	6.8		3,878	100.0	8.8		3,878	100.0	10.8	

Note: This table uses unweighted data. Percentages may not total exactly 100.0% due to rounding.

The LSAC school structure presented in Table 5.1 clarifies the reasons for presenting the attendance data by ages rather than by year levels. First of all, sequential year levels are not represented by the same sample of children. For example, Year 1 is represented by Stream 2 in 2006, but Year 2 is represented by Stream 1 in 2006 and Stream 3 in 2008. Second, children from different streams were enrolled in the same year level in different calendar years. For example, Stream 1 and Stream 3 children were enrolled in Year 2 in 2006 and 2008 respectively. Finally, streams cannot be considered as representative samples of corresponding year levels as each stream represents only a

---

[1]   Fewer than 0.5% of children were not enrolled in school, mainly due to home schooling.

[2]   The data on school attendance at Wave 1 are unavailable, as this information has been collected only since Wave 2.

subsample of children from a particular year level. For example, Stream 1 represents a subsample of relatively younger children[3] enrolled in Years 2, 4 and 6 in 2006, 2008 and 2010 respectively.

5.3 Overview of attendance patterns in the primary school years

This section provides an overview of school attendance rates by age, as reported by both teachers and parents, followed by a discussion of the main reasons for non-attendance. The section concludes with a preliminary analysis of children's attendance patterns across their earliest school years.

Attendance patterns

Teacher reports

Teachers were asked whether the child had frequent absences from school.[4] The questionnaire did not specify the exact meaning of "frequent", and different teachers responded about the same child at different ages. Teachers also responded to this question at different times in the school year. This should be kept in mind while interpreting the results.

Table 5.2 shows that teachers reported that approximately 6% of children aged 6–7 years were frequently absent from school. The percentages of frequent absentees remained similar across different years of primary schooling. These numbers were consistent with the attendance rates reported in the *National Report on Schooling in Australia 2009* (ACARA, 2011), except for the Northern Territory, where ACARA data showed that the non-attendance rate varied from 82% to 86% across different ages.

Table 5.2:	Children's frequency of absence from school, teacher reports, by children's age, K cohort, Waves 2–4		
	6–7 years (%)	**8–9 years (%)**	**10–11 years (%)**
Frequently absent	5.6	5.4	5.9
Not frequently absent	94.4	94.6	94.1
Total	100.0	100.0	100.0
No. of observations	3,161	3,201	3,099

Parent reports

During the interview, Parent 1 was asked on how many days the study child had been absent from school during the last four weeks, excluding public or school holidays. The distribution of the days the child had been absent from school was heavily weighted towards children being regular attenders during the specified period, with fewer than 5% of children being absent for five days or more, and fewer than 1% of children being absent for more than nine days. Similar attendance patterns were observed at ages 8–9 and 10–11 years.

To better understand the attendance patterns, children were assigned to three groups according to the number of days they had been absent within the four-week period, as reported by the parent:

- none;
- one or two days; and
- three or more days.

Table 5.3 (on page 63) shows that at age 6–7 years, 52% of children did not miss a day of school during the four-week period, 34% missed one or two days; and 15% missed three or more days. Similar attendance patterns were observed at ages 8–9 and 10–11 years, with just over half of the children being present every day, more than 30% missing no more than two days, and about 15% missing three or more days.

---

[3] These children are younger relative to all Australian children because of their entry age and for no other reason.

[4] Neither parents nor teachers were asked whether a child was absent for the whole day or part of the day.

Table 5.3:	Children's days of absence from school in the previous four weeks, parent reports, by children's age, K cohort, Waves 2–4		
Days absent over four-week period	**6–7 years (%)**	**8–9 years (%)**	**10–11 years (%)**
None	51.8	53.9	51.4
1 or 2 days	33.6	31.0	33.1
3 or more days	14.6	15.1	15.6
Total	100.0	100.0	100.0
No. of observations	3,841	3,841	3,841

Note: Percentages may not total exactly 100.0% due to rounding.

It is worth noting that attendance rates reported by parents and teachers cannot be compared as different definitions of the non-attendance measure were employed.

Main reasons for non-attendance

For those children who had been absent, both teachers and parents were asked to report the reason for the absence. While teachers were asked to report the most common reason for frequent absences, parents reported on the main reason the child was absent for at least one day during the last four weeks.

Teacher reports

Table 5.4 shows the most common reasons for children's absences as reported by teachers. It is worth keeping in mind that different teachers reported for the same child at different waves. When children were 6–7 years old, 49% of teachers reported that the child's illness was the main reason for a child being absent. The second most frequent reason was a family event such as a holiday, reported by 19% of teachers. One in twenty teachers (5%) said that the child was absent due to the illness of a family member. Fewer than 2% of teachers reported that parental work conflict or lack of transportation was a main reason for the child's absence. The proportion of children who did not want to go to school was very small (less than 1%). A further 22% of teachers reported that there were other unspecified reasons for the child's absenteeism.

Table 5.4:	Reasons given by teachers for children's frequent absences from school, by children's age, K cohort, Waves 2–4		
Reason for non-attendance	**6–7 years (%)**	**8–9 years (%)**	**10–11 years (%)**
Child illness	48.8	53.0	49.9
Illness of a family member	4.9	2.3	4.6
Parental work conflict	1.5	0.3	0.0
Lack of transportation	1.6	2.1	0.0
Child did not want to attend	0.2	5.4	9.8
Family events (e.g., holiday)	18.7	14.5	13.3
Other	22.2	22.5	22.4
Total	100.0	100.0	100.0
No. of observations	157	146	140

Note: Percentages may not total exactly 100.0% due to rounding.

When children were 8–9 and 10–11 years old, similar proportions of teachers reported that child illness (53% and 50% respectively) and other unspecified reasons (23% and 22% respectively) were the main reasons for frequent absences. As children grew older, the proportion of children who were absent due to a family event decreased from 19% at age 6–7 years to 13% at age 10–11 years. At the same time, the proportion of children who were absent due to unwillingness to go to school increased from less than 1% at age 6–7 years to 10% at age 10–11 years.

Parent reports

In a similar manner to teachers, the majority of parents reported that child illness was the reason for school non-attendance (Table 5.5). At the age of 6–7 years, 73% of parents reported that the child was absent due to health issues; 16% reported a family event as the reason for their child's absence; and 7% of parents referred to other unspecified reasons. About 2% reported the illness of a family member or the child not wanting to attend, and fewer than 1% reported parental work conflict or lack of transportation as reasons for non-attendance. Similar results were observed for children aged 8–9 and 10–11 years, with the majority of parents reporting the following reasons for absence: child's illness (74%), followed by family events (15%) and other unspecified reasons (6% and 7%, respectively). In contrast to the teacher reports, the proportions of children who were reported by parents to have been absent due to a family event or unwillingness to go to school did not change as children grew older.

Table 5.5: Reasons given by parents for children's absence from school in the previous four weeks, by children's age, K cohort, Waves 2–4			
Reason for non-attendance	**6–7 years (%)**	**8–9 years (%)**	**10–11 years (%)**
Child illness	73.0	73.6	73.8
Illness of a family member	2.2	1.8	1.6
Parental work conflict	0.5	0.2	0.4
Lack of transportation	0.4	0.7	0.2
Child did not want to attend	1.5	2.5	1.7
Family events (e.g., holiday)	15.8	15.0	15.2
Other	6.6	6.1	7.1
Total	100.0	100.0	100.0
No. of observations	1,825	1,720	1,817

Note: Percentages may not total exactly 100.0% due to rounding.

As above, teacher and parent reports on reasons for non-attendance cannot be compared due to differences in the methodology used to collect the data and the different subpopulations used in the analyses.

Attendance patterns across time

To better understand how many of the same children were frequently absent from school across multiple years, a more detailed analysis was conducted that divided children according to their attendance patterns at different ages.

Teacher reports

Table 5.6 (on page 65) presents the percentages of children who were frequently absent from school at different ages (across three waves) as reported by teachers. The majority of the children (88%) were never classified as being frequently absent from school. Around 9% of children were reported to be absent frequently at only one wave and almost 2% of children were reported as being frequent absentees at two different waves. Fewer than 1% of the children demonstrated high levels of non-attendance at all ages under investigation (i.e., across the three waves).

Parent reports

To examine whether children were frequent absentees as reported by parents, we looked at the percentages of children who were absent for three or more days in the four weeks prior to the interview at different ages (Table 5.7 on page 65). Around 2% of children were absent for three days or more during the four-week period at all three waves, followed by 7% of children who were absent for three or more days at any two waves. Around 26% of children were absent for an extended period of time only at one wave in the primary school years and two-thirds of the children (65%) were either not absent or absent for no more than two days at any wave.

Table 5.6:	Children's frequent absences from school across Waves 2 to 4, teacher reports, K cohort	
Occurrence of frequent absences across the waves		**%**
Not frequently absent at any wave		88.2
Frequently absent at one wave		9.4
Frequently absent at two waves		1.8
Frequently absent at three waves		0.7
Total		100.0
No. of observations		2,206

Note: Percentages may not total exactly 100.0% due to rounding.

Table 5.7:	Children's days of absence from school in the previous four weeks across Waves 2 to 4, parent reports, K cohort	
Days of absence across the waves		**%**
Absent no more than two days at any wave		64.8
Absent three or more days at one wave		26.4
Absent three or more days at two waves		7.0
Absent three or more days at three waves		1.8
Total		100.0
No. of observations		3,840

The discrepancies between parent and teacher reports again might be due to the different methodologies used to collect the data, given that teachers were reporting at various times through the school year on a subjective measure of "frequent absences", while parents were reporting the actual number of days absent, but only for a limited four-week period. Given that the parent reports represent a more precise measure (i.e., actual numbers of days) of attendance than the teacher reports, the research questions outlined in section 5.1 are examined (and further explored below) for children whose parents reported that in the four-week period prior to the interview they were:

- never absent;
- absent for one or two days; or
- absent three or more days.

5.4   Child, family and school characteristics

As outlined in section 5.1, there is a range of factors that are expected to be associated with different patterns of non-attendance. These include child characteristics—such as the main language spoken at home, Indigenous status, disability, delayed entry to school, and experiences of bullying and victimisation; family characteristics—such as level of parental education, region of residence, mother's working hours, family type, and household income; and school factors—such as the type and size of the school.

In this section, we examined the association between these factors and the three levels of attendance reported by parents (no absence; one or two days absent; and three or more days absent). This was done separately for the three groups of factors—child characteristics, family characteristics and school-level factors. Within these groups, each factor was examined independently of the other factors; however, all the differences remained statistically significant after controlling for all of the factors across the three groups collectively, unless stated otherwise.

Child characteristics
Gender

There were no statistically significant differences in the patterns of non-attendance between boys and girls, regardless of age (Table 5.8 on page 67). At age 6–7 years, 15% of boys and 14% of girls were absent for three or more days over the four-week period, and 33% of boys and 35%

of girls were absent for one or two days, with the rest not missing a day. A similar pattern was observed at ages 8–9 and 10–11 years.

Non–English speaking background

Non–English speaking background was measured by the language the child mainly spoke at home. At ages 6–7 and 8–9, there were no statistically significant differences in patterns of non-attendance between children who spoke English at home and those who did not (Table 5.8 on page 67). A different picture was observed at 10–11 years ($p < .001$). Although there were no statistically significant differences among "heavy" non-attendees (three or more days absent), a higher proportion of 10–11 year old children who mainly or only spoke English at home were absent for one or two days (34%) compared to those who spoke a language other than English at home (25%).

Indigenous status

Compared with non-Indigenous children, Indigenous children in LSAC[5] missed significantly more days of school (6–7 years: $p < .05$; 8–9 years: $p < .001$; 10–11 years: $p < .01$) (Table 5.8 on page 67). At the different ages, 24% to 30% of Indigenous students missed at least three days within the four-week period, compared with 14% to 15% of non-Indigenous children. Although these findings are consistent with previous research (Zubrick et al., 2006), the small sample size should be kept in mind while interpreting the results.

Disability

Children were recorded as having a disability if they had a medical condition or disability lasting for 6 months or more. At age 6–7 years, significantly more children with a disability were absent from school ($p < .001$)—18% were absent for three or more days and 41% for one or two days, compared with 14% and 33% for children without a disability, respectively (Table 5.8 on page 67). As children got older, there were no statistically significant differences in patterns of non-attendance based on whether the child had a disability.

Delayed entry to school

A comparison of children who were sent to school when they were first eligible (according to state and territory policies regarding the school starting age) with those who started school in the following year revealed no statistically significant differences in patterns of non-attendance, regardless of age (Table 5.8 on page 67).

Experience of bullying

Parents were asked whether their child had experienced bullying (the meaning of "bullying" was left to the parent to determine) during the previous year of schooling. Whether the child was bullied at school was one of the largest correlates of non-attendance at all ages ($p < .001$) (Table 5.8 on page 67). Children who were bullied were more likely to be absent from school for three or more days compared with those children who did not experience bullying. This association was consistent at the different ages.

Family characteristics

Parental education

Level of parental education was defined by whether or not the child's mother or father had a university degree. The proportion of children who were absent from school was significantly higher among those children whose parents did not have a university degree (Table 5.9 on page 68). These differences were significant across all ages ($p < .001$). At age 6–7 years, 36% of children from families with no university education were absent for one or two days and 15% were absent for three or more days, compared to 30% and 14% respectively of children from families with at least one parent having a university degree. As children grew older, the proportion of children

---

[5] LSAC is not representative of Indigenous children due to its cluster sampling approach, which excluded many of Australia's most remote areas, where Indigenous peoples are statistically more likely to reside (Hunter, 2008).

Table 5.8: Child characteristics and attendance patterns, by children's age, K cohort, Waves 2–4

	Days absent			No. of obser-vations	Days absent			No. of obser-vations	Days absent			No. of obser-vations
	None	1–2	3+		None	1–2	3+		None	1–2	3+	
Gender	**6–7 years**				**8–9 years**				**10–11 years**			
Boys	52.7	32.5	14.8	1,967	54.3	31.4	14.3	1,967	52.2	32.2	15.6	1,967
Girls	50.9	34.8	14.3	1,864	53.4	30.6	16.0	1,864	50.5	33.9	15.6	1,864
Main language spoken at home by child	**6–7 years**				**8–9 years**				**10–11 years *****			
English	51.1	33.9	15.0	3,442	53.3	31.3	15.4	3,442	49.7	34.3	16.0	3,442
Not English	57.3	30.8	11.9	389	57.5	29.5	13.0	389	61.9	25.0	13.1	389
Indigenous status	**6–7 years ***				**8–9 years *****				**10–11 years ****			
Non-Indigenous	51.9	33.8	14.3	3,724	54.1	31.3	14.6	3,724	51.8	33.0	15.2	3,724
Indigenous	49.4	26.1	24.4	105	48.6	21.5	29.8	105	39.7	34.3	26.0	105
Disability	**6–7 years *****				**8–9 years**				**10–11 years**			
Yes	41.3	40.8	18.0	390	47.2	38.0	14.8	262	44.8	35.2	20.0	215
No	53.2	32.7	14.2	3,441	54.3	30.5	15.2	3,569	51.8	32.9	15.3	3,615
Delayed school entry	**6–7 years**				**8–9 years**				**10–11 years**			
Not delayed	52.9	32.6	14.5	3,089	53.9	30.9	15.2	3,089	52.0	33.0	15.0	3,089
Delayed	49.1	36.2	14.7	628	55.0	31.0	14.0	628	48.0	33.8	18.2	628
Child bullied at school (parent report)	**6–7 years *****				**8–9 years *****				**10–11 years *****			
Yes	47.2	35.6	17.2	1,169	48.4	34.0	17.6	1,256	46.9	34.7	18.4	1,122
No	53.8	32.8	13.4	2,588	56.7	29.6	13.7	2,513	53.4	32.7	13.9	2,658

Notes: Some sample counts do not add to the total because of missing data on specific characteristics. Percentages may not total exactly 100.0% due to rounding. Within each age group, chi-square tests were used to test for differences in school attendance by child characteristics. Statistically significant differences are noted: * $p < .05$; ** $p < .01$; *** $p < .001$.

who were absent for three or more days increased slightly to 17% for children from families with no university degree, while for the comparison group of children from families with a university degree, the proportion decreased slightly (12% at age 8–9 years and 13% at age 10–11 years).

Region of residence

At early ages, where children lived[6] was not related to the number of days absent during the four-week period (Table 5.9 on page 68). However, as children grew older (10–11 years old), the percentage of children who missed one or two days and three or more days was significantly lower in metropolitan areas (31% and 15% respectively) than in regional areas (36% and 17% respectively) ($p < .001$).

Family type

There was a significant association between family type and patterns of non-attendance (6–7 years: $p < .001$; 8–9 years: $p < .001$; 10–11 years: $p < .01$) (Table 5.9 on page 68). At age 6–7 years, children from lone-mother families were more likely to be absent for one or two days (41%) and for three days or more (19%), compared to 32% and 14% respectively of children from two-parent families. For children from two-parent families, a similar pattern of non-attendance was observed at different ages; however, a different pattern was observed for children from lone-mother families. While the proportion of children from lone-mother families who missed three or more days within the four-week period remained fairly stable across different ages, the proportion of children who did not miss a day increased from 40% at age 6–7 years to 45% at age 10–11 years, which was due to a decrease in the proportion of children who were absent for one or two days (41% at age 6–7 years and 35% at age 10–11 years).

---

6   LSAC is not representative of children from remote and very remote areas.

Mothers' working hours

Table 5.9 shows that mothers' working hours were significantly associated with the level of attendance for children of different ages ($p < .001$). The proportion of children who missed three or more days within the four-week period was significantly higher among children whose mother was not working (19–22% across the age groups) compared to those children whose mother was working fewer than 35 hours per week (12–13% across the age groups) or 35 hours or more per week (11–15% across the age groups). It is worth noting that the proportion of children who missed three or more days increased from 11% at age 6–7 years to 15% at age 10–11 years for children whose mother was working 35 hours or more per week, but the corresponding proportions did not change much for the other comparison groups.

Household income

Three categories were derived from the household income measure: (a) low-income households, who had income in the bottom quartile of household income distribution; (b) average-income households, who had income in the middle 50% of income distribution; and (c) high-income households, whose income was in the top quartile of household income distribution. Children aged 6–7 and 8–9 years from high-income families were less likely to be absent (39% and 41% respectively) compared to children from average-income (48% and 45% respectively) or low-income households (55% and 51%) (Table 5.9). There were no differences observed in the attendance pattern for children aged 10–11 years by household income. Moreover, while the association between household income and attendance rates was significant at 6–7 years ($p < .001$) and 8–9 years ($p < .001$), these differences disappeared after controlling for other family characteristics (results are not shown).

Table 5.9:	Family characteristics and attendance patterns, by children's age, K cohort, Waves 2–4											
	Days absent			**No. of obser-vations**	**Days absent**			**No. of obser-vations**	**Days absent**			**No. of obser-vations**
	None	**1–2**	**3+**		**None**	**1–2**	**3+**		**None**	**1–2**	**3+**	
Mother or father has a university degree	**6–7 years *****				**8–9 years *****				**10–11 years *****			
No	49.4	35.6	15.0	2,233	51.7	31.5	16.9	2,191	48.6	34.1	17.3	2,162
Yes	56.3	30.0	13.7	1,598	57.6	30.2	12.1	1,639	56.0	31.2	12.7	1,667
Region of residence	**6–7 years**				**8–9 years**				**10–11 years *****			
Metropolitan	52.7	33.8	13.5	2,372	55.7	29.7	14.6	2,351	54.1	31.2	14.7	2,336
Regional	50.4	33.0	16.6	1,459	50.9	33.3	15.8	1,474	46.6	36.3	17.0	1,489
Family type [a]	**6–7 years *****				**8–9 years *****				**10–11 years ****			
Two-parent	53.9	32.3	13.8	3,332	55.5	30.4	14.1	3,328	52.7	32.6	14.7	3,253
Lone-mother	39.5	41.4	19.1	470	44.6	34.0	21.4	468	45.0	35.2	19.8	531
Mothers' working hours	**6–7 years *****				**8–9 years *****				**10–11 years *****			
35+ hours per week	57.5	31.3	11.2	966	59.2	27.7	13.1	1,211	53.8	31.3	14.8	1,362
< 35 hours per week	53.1	34.1	12.9	1,612	56.8	31.4	11.7	1,668	51.9	35.0	13.1	1,563
Not working	46.6	34.5	18.9	1,224	43.8	33.7	22.5	917	47.6	32.3	20.1	856
Household income	**6–7 years *****				**8–9 years *****				**10–11 years**			
Low	44.8	37.5	17.8	711	48.6	32.7	18.7	696	50.9	32.1	17.0	700
Average	52.1	33.7	14.2	2,102	54.6	31.3	14.1	2,078	50.8	34.0	15.2	2,100
High	61.0	27.2	11.8	712	58.8	26.2	15.0	701	53.0	33.2	13.8	691

Notes: Some sample counts do not add to the total because of missing data on specific characteristics. [a] Excludes those in other family forms. Percentages may not total exactly 100.0% due to rounding. Within each age group, chi-square tests were used to test for differences in school attendance by family characteristics. Statistically significant differences are noted: ** $p < .01$; *** $p < .001$.

School characteristics

School type

Most children were enrolled in government schools (65% on average), followed by Catholic schools (22% on average) and independent schools (13% on average) (Table 5.10). There were no significant differences in patterns of non-attendance among children from government, Catholic and independent schools, regardless of age. Around one in seven of all children missed school for three or more days, with this proportion increasing slightly as children grew older for those attending government schools and Catholic schools, and decreasing slightly for those attending independent schools; however, these differences were not significant.

School size

The child's teacher reported on the school size. It can be seen that there were no significant differences in attendance rates between schools of different sizes (Table 5.10). About half of all the children were present for all days, and as children grew older this proportion decreased slightly for those enrolled in small and large schools, and increased slightly for those enrolled in average-sized schools. These results should be considered with caution, as around 20% of teachers did not participate in the study.

Table 5.10:	School characteristics and attendance patterns, by children's age, K cohort, Waves 2–4											
	Days absent			No. of obser-vations	Days absent			No. of obser-vations	Days absent			No. of obser-vations
	None	1–2	3+		None	1–2	3+		None	1–2	3+	
School type [a] **(parent report)**	**6–7 years**				**8–9 years**				**10–11 years**			
Government	50.8	34.0	15.2	2,574	52.8	31.1	16.0	2,529	49.7	33.8	16.5	2,444
Catholic	52.7	34.5	12.8	847	55.5	31.5	13.0	846	55.7	30.2	14.2	855
Independent	56.4	29.2	14.4	420	57.3	29.1	13.6	466	52.6	34.0	13.4	541
School size (teacher report)	**6–7 years**				**8–9 years**				**10–11 years**			
Small	52.2	32.8	15.0	504	51.4	34.0	14.6	586	49.9	32.8	17.3	596
Middle	51.4	32.9	15.7	1,570	54.5	30.9	14.6	1,834	52.4	33.1	14.5	1,800
Large	53.7	32.0	14.3	516	56.5	30.7	12.8	597	49.9	36.7	14.5	608

Notes: Small schools had 250 or fewer children, medium schools had 251 to 620 children and large schools had 621 or more students. Some sample counts do not add to the total because of missing data on specific characteristics. Percentages may not total exactly 100.0% due to rounding. [a] Excludes those not in school. Within each age group, chi-square tests were used to test for differences in school attendance by school characteristics. No statistically significant differences were found.

The analyses presented above used attendance data as reported by parents. The same analyses were undertaken using the teacher reports of children's attendance (details not shown here). After controlling for all factors collectively, mothers' working hours, Indigenous status of the child, and having experienced bullying were significantly associated with school attendance, as reported by teachers. In particular, regardless of the child's age, children of mothers who were not working, Indigenous children, and children who had experienced bullying were more likely to be reported by teachers as being frequent absentees. These results were consistent with analyses using parent reports.

5.5   Satisfaction with the school

In this section, the association between attendance patterns and levels of child and parental satisfaction with the school is examined. The following measures have been used to examine how child and parental satisfaction with the school might be associated with different attendance patterns as reported by the parent:

- parent reports on their satisfaction with the child's school; and
- children's reports on liking their school and teachers.

All results are discussed below; however, only the significant results are presented. While interpreting the results, it should be kept in mind that the analysis did not control for different socio-demographic characteristics that might be related not only to attendance patterns but also to the level of child and parental satisfaction with the school.

Parental satisfaction with the school

Parent 1 respondents were asked how satisfied or dissatisfied they were with the school the study child was attending. At each age the responses were divided into two categories: (a) "satisfied with the school", if parents reported that they were "satisfied" or "very satisfied" with the school; and (b) "indifferent or dissatisfied with the school", if parents reported that they "neither satisfied or dissatisfied", "dissatisfied" or "very dissatisfied". Table 5.11 shows that the level of parental satisfaction with the school was positively associated with the level of attendance, regardless of the child's age.

The proportion of parents who were satisfied with the school was higher among children who did not miss a day during the four-week period, whereas the proportion of parents who were indifferent or dissatisfied with the school was higher for children who were absent for three or more days (8–9 years: $p < .05$; 10–11 years: $p < .01$). These differences were not statistically significant for the youngest group of children.

Table 5.11:	Parental satisfaction with the school and attendance patterns, by children's age, K cohort, Waves 2–4										
	Days absent			**No. of observations**	**Days absent**			**No. of observations**	**Days absent**			**No. of observations**
	None	**1–2**	**3+**		**None**	**1–2**	**3+**		**None**	**1–2**	**3+**	
	6–7 years				**8–9 years ***				**10–11 years ** **			
Satisfied	52.3	33.3	14.3	3,557	54.7	30.7	14.6	3,485	51.8	33.2	14.9	3,454
Indifferent or dissatisfied	46.7	36.1	17.2	274	45.9	34.4	19.7	344	46.2	31.6	22.1	373

Notes: Some sample counts do not add to the total because of missing data on specific characteristics. Percentages may not total exactly 100.0% due to rounding. Within each age group, chi-square tests were used to test for differences in school attendance by parental satisfaction. Statistically significant differences are noted: * $p < .05$; ** $p < .01$.

Child satisfaction with the school

Children reported on their feelings in relation to their school and teachers. As questions were designed to be age-appropriate, wording and response options varied slightly across waves. At ages 6–7 and 8–9, children were asked whether they felt happy going to school and being at school ("no", "sometimes", and "yes"). Children aged 10–11 years were asked whether they "strongly disagreed", "disagreed", "agreed", or "strongly agreed" with the statements: "My school is a place where I feel happy" and "I like to go to school". At each age, the responses to every item were divided into positive ("yes" or "sometimes", "strongly agree" or "agree") and negative ("no" or "strongly disagree or disagree") feelings.

Table 5.12 (on page 71) shows that there was no relationship between attendance rates and feeling happy about going to or being at school when children were aged 6–7 years. When children grew older, feeling happy about going to school and being at school was positively related to the level of attendance. The proportion of children who always felt happy going to school and being at school was higher among the children who were present during the four-week period, whereas the proportion of children who felt happy either sometimes or never was higher among children who were absent for at least a couple of days. These differences were statistically significant.

| Table 5.12: | Children's feelings towards school and attendance patterns, by children's age, K cohort, Waves 2–4 |

	Days absent			No. of obser-vations	Days absent			No. of obser-vations	Days absent			No. of obser-vations
	None	1–2	3+		None	1–2	3+		None	1–2	3+	
School is fun	6–7 years *				8–9 years ***				10–11 years **			
No	51.1	28.2	20.6	198	41.8	37.1	21.1	188	47.3	34.2	18.5	929
Yes	52.1	33.7	14.1	3,591	54.6	30.7	14.7	3,598	52.9	32.4	14.8	2,831
Like going to school	6–7 years				8–9 years ***				10–11 years ***			
No	52.2	31.1	16.7	659	45.7	35.3	19.0	608	45.4	36.3	18.3	1,007
Yes	52.1	33.9	14.0	3,130	55.6	30.2	14.2	3,178	43.9	31.5	14.7	2,751
Happy at school	6–7 years				8–9 years				10–11 years **			
No	52.8	30.4	16.9	247	44.8	35.5	19.7	155	42.2	39.9	17.9	334
Yes	52.0	33.7	14.3	3,542	54.4	30.8	14.8	3,630	52.5	32.1	15.4	3,425

Notes: Some sample counts do not add to the total because of missing data on specific characteristics. Percentages may not total exactly 100.0% due to rounding. Within each age group, chi-square tests were used to test for differences in school attendance by feelings towards school. Statistically significant differences are noted: * $p < .05$; ** $p < .01$; *** $p < .001$.

Children's feelings towards their teachers

Children also reported on whether they liked their teachers or not. Children aged 6–7 and 8–9 years were asked whether they liked to see their teacher and whether their teacher was nice to them (response options were "no", "sometimes" and "yes"). As children grew older (10–11 years old), they were asked statements like "I like my teachers this year", "My teachers understand me", or "My teachers are proud of things I do" (response options were "almost never or never true", "sometimes true", "often true", or "almost always or always true"). At all ages, responses were categorised into positive ("yes", "sometimes", "sometimes true", "often true", or "almost always or always true") or negative ("no" or "almost never or never true") responses.

At age 6–7 years, children who liked to see their teachers and thought their teachers were nice to them were less likely to be absent (Table 5.13). While the same pattern was observed for children aged 8–9 years old, these differences were not statistically significant.

| Table 5.13: | Children's feelings towards their teachers and attendance patterns, children aged 6–7 and 8–9 years, K cohort, Waves 2 and 3 |

	Days absent			No. of obser-vations	Days absent			No. of obser-vations
	None	1–2	3+		None	1–2	3+	
Like to see the teacher	6–7 years **				8–9 years			
No	48.5	29.6	21.9	227	48.0	29.4	22.6	122
Yes	52.3	33.7	14.0	3562	54.1	31.1	14.8	3664
Teacher is nice to me	6–7 years *				8–9 years			
No	53.3	24.0	22.7	109	47.4	36.7	16.0	76
Yes	52.0	33.8	14.2	3680	54.0	31.0	15.0	3710

Notes: Some sample counts do not add to the total because of missing data on specific characteristics. Percentages may not total exactly 100.0% due to rounding. Within each age group, group chi-square tests were used to test for differences in school attendance by feelings towards teacher. Statistically significant differences are noted: * $p < .05$; ** $p < .01$.

At age 10–11 years, feelings towards teachers were associated with different levels of attendance (Table 5.14 on page 72).[7] Children were less likely to be absent if they liked their teachers, and

---

[7] Due to the poor psychometric properties of the teacher liking scale, analysis by individual items was used.

thought that the teachers respected their feelings, understood them, and were proud of things they were doing. Children who felt that they could rely on teachers and trust them and children who thought that they got along with teachers were also less likely to be absent. The amount of attention a teacher gave to a child was not a significant correlate of different levels of non-attendance.

Table 5.14:	Children's feeling towards teachers and attendance patterns, children aged 10–11 years, K cohort, Wave 4			
	Days absent			No. of obser-vations
	None	**1–2**	**3+**	
I like my teachers *				
No	44.5	33.2	22.3	184
Yes	51.9	32.8	15.3	3,576
My teachers respect my feelings *				
No	45.5	28.4	26.1	180
Yes	51.9	33.1	15.0	3,578
My teachers understand me *				
No	44.7	32.6	22.8	197
Yes	51.9	32.9	15.2	3,558
I trust my teachers *				
No	46.8	27.5	25.8	155
Yes	51.8	33.1	15.2	3,602
My teachers pay a lot of attention to me				
No	46.9	33.4	19.7	341
Yes	52.0	32.8	15.2	3,417
I get along with my teachers **				
No	44.7	29.9	25.4	159
Yes	51.8	33	15.2	3,599
My teachers are proud of things I do **				
No	44.4	27.7	27.9	144
Yes	51.8	33.1	15.1	3,613
I can rely on my teachers *				
No	44.7	31.4	23.9	261
Yes	52.0	33.0	15.0	3,495

Notes: Some sample counts do not add to the total because of missing data on specific characteristics. Percentages may not total exactly 100.0% due to rounding. Within each age group, chi-square tests were used to test for differences in school attendance by child's feelings towards teachers. Statistically significant differences are noted: * $p < .05$; ** $p < .01$; *** $p < .001$.

The same analysis was performed using the teacher reports of children's attendance (analysis not shown). Similar trends were found between parental satisfaction with school and attendance rates (i.e., children whose parents were less satisfied with the school were more likely to be reported by teachers as being frequently absent). However, the differences in proportions were significant when children were aged 6–7 and 8–9 years, but not when children were 10–11 years. Children who were reported as being frequent absentees tended to like the school less, not feel happy at school, and not like going to school, though these results were not statistically significant. At age 10–11 years, the same patterns of relationship were found between feelings towards teachers and different level of attendance (i.e., children who felt negative about their teachers were more likely to be reported to be frequent absentees by their teachers). Remarkably, whether children thought that teachers gave them a lot of attention or not was not associated with teacher reports of frequent absences.

5.6   Parental involvement in school activities

In this section, the association between attendance patterns and parental involvement in school activities is examined. The analysis presented in this chapter has not controlled for different socio-demographic characteristics, which should be kept in mind while interpreting the results.

When children were 6–7 and 8–9 years old, parents reported extensively on their involvement in school activities. Parents were asked whether they visited their child's class, contacted the teacher, talked to other school parents, attended school events or volunteered in class/excursions.

The attendance rate of children aged 6–7 years was negatively correlated with parental contacts with the teacher. Children whose parents contacted the teacher were more likely to be absent for three or more days compared to children whose parents did not contact the teacher ($p < .001$). Other school-related activities were not associated with child non-attendance at age 6–7 years old. When children were 6–7 years old, parents were also asked how often they helped their child with homework, how often they read to their child and how often they discussed school with their child. None of these activities was significantly correlated with different levels of school attendance.

When children were aged 8–9 years, the attendance rate was positively associated with parental visits to their child's class and parental talks with other school parents. Children whose parents visited the class ($p < .001$) or talked to other parents from the school ($p < .001$) were less likely to be absent for three or more days. Other parental activities—like contacts with teachers, attendance at school events or volunteering in class activities or excursions—were not associated with different attendance patterns. From age 8–9 years, parents were also asked whether anyone in the household helped the child with their homework and how often they read to the child. Parents were also asked how often they discussed school activities with the child. However, there were no significant relationships between attendance patterns and these types of parental involvement.

When children were 10–11 years old, parents reported only on how often anyone in the household helped the child with homework, how often the child had been read to and how often the parent discussed school with the child. Consistent with previous results, none of these variables were found to be significantly associated with different attendance levels.

The same analysis was performed using the teachers' measure of attendance (analysis not shown). It was found that the 6–7 year old children of parents who visited their child's class and talked to other school parents were less likely to be nominated as frequent absentees by teachers. Children aged 8–9 years were less likely to be reported as being frequently absent if their parents talked to other school parents and volunteered in class activities or excursions. There was also no association found between frequent absences (as reported by teachers) and parental involvement in the child's school life measured by reading to a child or talking with a child about school.

5.7   Academic performance

In LSAC, teachers were asked to rate the study child's literacy and numeracy skills using the age-appropriate Numeracy and Language and Literacy subscales of the Academic Rating Scale (ARS) (NCES, 2004). These scales have been adapted for use in Australia and comprise unique items relevant to the age of the child (Rothman, 2009). Children aged 6–7 years were assessed against ten literacy and eight numeracy items, children aged 8–9 against nine literacy and nine numeracy items, and children aged 10–11 years against nine literacy and ten numeracy items. A child's proficiency on each item was assessed in relation to other children of the same age using a five-point ordinal scale (1 = "not yet", 2 = "beginning", 3 = "in progress", 4 = "intermediate", 5 = "proficient"). The overall measure for each age-appropriate subscale was calculated separately using the Rasch rating score model. Higher scores indicate a greater level of numeracy or literacy proficiency.

The comparison of literacy and numeracy scores among children with different levels of attendance is shown in Table 5.15 (on page 74). For different ages and for both numeracy and literacy, average scores were higher for children who were present at school for the whole four-week period. At ages 6–7 and 8–9 years, the number of days absent was associated with neither literacy nor numeracy scores. However, as children grew older, children who were absent for three or more days had lower average scores for both literacy and numeracy than children who missed no more than two days. It is important to note that although all the differences described above were statistically significant (corresponding confidence intervals did not overlap), the calculation of effect sizes suggests that the differences in scores between these children were small (0.2 standard deviation of the corresponding grand mean).

Table 5.15:	Children's literacy and numeracy ratings by teachers and attendance patterns, by children's ages, K cohort, Waves 2–4					
	Literacy rating by teacher			**Numeracy rating by teacher**		
	6–7 years	**8–9 years**	**10–11 years**	**6–7 years**	**8–9 years**	**10–11 years**
All children in subsample	**Mean (SD)**			**Mean (SD)**		
	3.46 (0.95)	3.51 (1.10)	3.74 (1.04)	3.41 (1.00)	3.47 (1.12)	3.45 (1.15)
Days absent	**Mean (SE)**			**Mean (SE)**		
None	3.52 [a, b] (0.02)	3.55 [a, b] (0.02)	3.80 [a] (0.02)	3.49 [a, b] (0.02)	3.50 [a, b] (0.02)	3.54 [a] (0.02)
1–2	3.39 [a] (0.03)	3.46 [a] (0.03)	3.72 [a] (0.03)	3.34 [a] (0.03)	3.42 [a] (0.03)	3.40 [a] (0.03)
3+	3.34 [b] (0.04)	3.47 [b] (0.05)	3.59 [a] (0.04)	3.29 [b] (0.04)	3.43 [b] (0.05)	3.24 [a] (0.05)
No. of observations	3,092	3,143	3,019	3,092	3,143	3,019

Notes: The "a–a" and "b–b" superscript pairs denote significant differences between means within age group, as determined by the non-overlap of their respective 95% confidence intervals. For example, at age 6–7 years, the mean numeracy score for children who did not miss school was significantly different from mean numeracy score for children who were absent from school either for 1–2 days or 3 or more days.

The same differences were observed using teacher reports of attendance (analysis not shown). Children who were frequently absent had significantly lower literacy and numeracy scores at all ages. Moreover, the differences in literacy and numeracy scores between regular attendees and frequent absentees were moderate, as suggested by the calculation of the corresponding effect sizes (between 0.4 to 0.5 standard deviation of the corresponding grand mean). These results were consistent for children of different ages.

5.8   Summary and discussion

The main purpose of this chapter was to provide an overview of attendance patterns among primary school children as reported by both parents and teachers, and to explore risk factors that might be associated with higher levels of non-attendance.

Teachers reported that at each of the different ages (i.e., 6–7, 8–9, or 10–11 years), around 6% of children were frequently absent from primary school. These numbers were consistent with the attendance rates of children reported in all states and the ACT (ACARA, 2011). According to teacher reports, a very small proportion of children were frequently absent across multiple years of schooling. Fewer than 1% of children were reported to be frequently absent at all ages (6–7, 8–9, and 10–11 years old), 2% of children were classified as frequent absentees at any two ages, and 9% of children were frequently absent only at one age. The majority of children (88%) were never reported as having frequent absences from primary school. The main reasons for non-attendance reported by teachers were the child's health (on average 50% of absences at different ages) and a family event (varied from 13% to 19% across different ages). Around 5% of children aged 6–7 and 10–11 years were reported to be absent due to the illness of a family member. The proportion of children who were reported absent due to unwillingness to go to school increased as children grew older (i.e., from less than 1% at age 6–7 years to 10% at age 10–11 years). For each age group, around 22% of teachers reported that there were other unspecified reasons for the absences.

A more detailed picture of attendance patterns was provided by parents, who were asked to report the number of days the child was absent during the four-week period prior to the interview. According to parent reports, 52% of children aged 6–7 years were present for all days during this period, 34% were absent for no more than two days, and one in seven children were absent for three or more days. Similar attendance patterns were observed at ages 8–9 and 10–11 years. Across multiple years of primary school, two-thirds of children were either not absent or absent for no more than two days at any age; 26% were frequently absent (i.e., absent for three or more days) at one age; 7% were frequently absent at two different ages; and 2% were frequently absent at all ages. Parents also reported that child health was the main reason for non-attendance (around 73% across different ages), followed by a family event (around 15% across different ages). A very small proportion of parents (around 2%) reported that the child was absent because they did not want to go to school.

As the definition and methodology used to collect the non-attendance data from teachers and parents were not uniform, comparisons between the non-attendance rates reported by teachers and parents were not possible. Nor was it possible to compare teacher and parent reports on the reasons for non-attendance. However, the above analysis provides a broad overview of attendance patterns from two critical perspectives at a national level. It is important to stress that national statistics on non-attendance rates are not currently available (ACARA, 2011).

Consistent with previous research, the level of non-attendance was higher for the following groups of children: Indigenous children (Zubrick, et al., 2006), children from lone-mother families (Chang & Romero, 2008), children who experienced bullying of any form at school (Learmonth, 1995; Reid, 1999), and children with non-working mothers. These differences were significant even after controlling for the main socio-demographic and child characteristics. On the other hand, household income was not related to the different attendance patterns, after controlling for family characteristics. School factors (i.e., type and size of school) were also not related to different levels of attendance. The same results were obtained regardless of the attendance measure used (i.e., whether reported by teachers or parents).

Compared with previous studies, similar results were found in relation to parental involvement at school and parental and child satisfaction with school (HRSCEET, 1996; Oerlemans & Jenkins, 1998). Not all parental involvement activities were related to high levels of attendance. While parental involvement in school-related activities—like talking to other parents, visiting school and volunteering in excursions/class—were associated with high attendance rates, helping children with their homework or talking about school activities were not associated with different attendance levels at any age. Parental satisfaction with the school was positively related to the level of attendance when children were aged 8–9 and 10–11 years, but not when children were 6–7 years old. Children of any age were less likely to be absent if they thought school was fun. While for children aged 6–7 years the level of attendance was not related to whether they liked going to school or not, a different picture was observed for children aged 8–9 and 10–11 years. Older children were less likely to be absent if they liked going to school. When children were 10–11 years old, attendance was higher for children who also felt happy at school. Children's relationship with teachers was also an important correlate of school attendance when they were 6–7 years and 10–11 years. Younger children were less likely to be absent if they liked seeing the teacher and thought the teacher was nice to them. For older children, attendance was likely to be higher if they liked their teachers, could trust and rely on them, and thought their teachers were proud of them, respected their feelings and understood them. The results suggest that as children grow older, the level of attendance is strongly related to how children feel at school and what kind of relationships they have with their teachers. The results were similar for both measures of attendance (as reported by the parents and teachers).

The results also highlighted a negative association between the number of days a child was absent and academic success across all age groups. Even though it was found that differences in literacy and numeracy scores between children with different attendance patterns were small, they were statistically significant. But, to understand to what extent poor academic performance is associated with non-attendance, the analyses should control for other risk factors associated with child, family and school characteristics.

Overall, this chapter has provided an exploratory investigation of attendance patterns among primary school children, and examined the risk factors associated with high levels of non-attendance. The results emphasise that non-attendance is a complex problem with a variety of causes. Therefore, to improve school attendance, interventions should be implemented at different levels (i.e., individual, family and community) and targeted toward specific subgroups in the population. In particular, to improve attendance, children should be engaged in school life, should enjoy being at school and have good relationships with their teachers, while parents should be engaged in the child's school life. To improve attendance, different policies have already been implemented across different states and territories; for example, the Attendance Improvement Package developed by DECS in South Australia (DECS, 2009) or the It's Not OK To Be Away initiative in Victoria (DEECD, 2006).

To deepen our understanding of the risk factors and long-term consequences associated with non-attendance, future research should employ a longitudinal analysis. Such longitudinal analyses would allow a researcher not only to identify the timing and intensity of non-attendance that are

most critical for positive educational outcomes, but also to identify family and school factors that can offset the adverse effects of school absences.

5.9   References

Ainley, J., & Lonsdale, M. (2001). Non-attendance at school. In *Footprints to the future: Appendix 2. Research reports for the Prime Minister's Youth Pathways Action Plan Taskforce 2001*. Canberra: AGPS.

Australian Curriculum, Assessment and Reporting Authority. (2011). *National report on schooling in Australia 2009*. Sydney: ACARA.

Bourke, C. J., Rigby, K., & Burden, J. (2000). *Better practice in school attendance: Improving the attendance of Indigenous students*. Canberra: Commonwealth of Australia.

Chang, H. N., & Romero, M. (2008). *Present, engaged, and accounted for: The critical importance of addressing chronic absence in the early grades*. New York: National Center for Children in Poverty, Columbia University. Retrieved from <www.nccp.org/publications/pub_837.html>.

Department of Education and Children's Services. (2009). *2. Attendance policy: Attendance Improvement Package*. Adelaide: DECS. Retrieved from <www.decd.sa.gov.au/docs/documents/1/AttendancePolicy.pdf>.

Department of Education and Early Childhood Development. (2006). *It's Not OK To Be Away: Student attendance support kit*. Melbourne: DEECD.

Department of Education, Employment and Workplace Relations. (2012). *Fact sheet: Improving School Enrolment and Attendance through Welfare Reform Measure (SEAM)*. Canberra: DEEWR. Retrieved from <foi.deewr.gov.au/documents/fact-sheet-improving-school-enrolment-and-attendance-through-welfare-reform-measure-seam>.

Edwards, B., Taylor, M., & Fiorini, M. (2011). Who gets the "gift of time" in Australia? Exploring delayed primary school entry. *Australian Review of Public Affairs*, *10*(1), 41–60.

Hallfors, D., Vevea, J. L., Iritani, B., Cho, H., Khatapoush, S., & Saxe, L. (2002). Truance, grade point average, and sexual activity: A meta-analysis of risk indicator for youth substance use. *Journal of Social Health*, *72*, 205–211.

House of Representatives Standing Committee on Employment, Education and Training. (1996). *Truancy and exclusion from school*. Canberra: Commonwealth of Australia.

Hunter, B. (2008). Benchmarking the Indigenous sub-sample of the Longitudinal Survey of Australian Children: Implications for Indigenous policy direction. *Australian Social Policy Journal*, 7, 61–84.

Lamdin, D. J. (1996). Evidence of student attendance as an independent variable in education production functions. *Journal of Educational Research*, *89*, 155–162.

Learmonth, J. (1995). *More willingly to school? An independent evaluation of the Truancy and Disaffected Pupils GEST Programme*. London: Department for Education and Employment.

Leonard, C., Bourke, S. & Schofield, N. (1999, November). *Student stress and absenteeism in primary schools*. Paper presented at the Annual Conference of the Australian Association for Research in Education, Melbourne.

Myers, S. L., Jr. (2000). *Racial disparities in Minnesota basic standards test scores, 1996–2000: Technical report from the Roy Wilkins Center for Human Relations and Social Justice, Hubert H. Humphrey Institute of Public Affairs*. Minneapolis: University of Minnesota.

National Center for Education Statistics. (2003). *Public high school dropouts and completers from the Common Core of Data: School year 2000–01*. Washington, DC: NCES. Retrieved from <www.nces.ed.gov/pubs2004/dropout00-01>.

National Center for Education Statistics. (2004). *User's manual for the ECLS-K third grade public-use data file and electronic code book* (NCES 2004-001). Washington, DC: NCES.

Oerlemans, K., & Jenkins, H. (1998). Their voice: Student perceptions of the sources of alienation in secondary school. In *Proceedings of the Western Australian Institute for Educational Research Forum 1998*. Perth: Western Australian Institute for Educational Research. Retrieved from <www.waier.org.au/forums/1998/oerlemans.html>.

O'Keefe, D. (1994). *Truancy in English secondary schools: A report prepared for the DFE*. London: HMSO.

Reid, K. (1999). *Truancy and schools*. London: Routledge.

Rothman, S. (1999). *Non-attendance and student background factors*. Paper presented at the joint annual conference of the Australian Association for Research in Education and the New Zealand Association for Research in Education, Melbourne.

Rothman, S. (2001). School absence and student background factors: A multilevel analysis. *International Journal of Education*, *2*(1), 59–68.

Rothman, S. (2009). *The LSAC Academic Rating Scale score*. Unpublished paper. Melbourne: ACER.

Rumberger, R. W., & Thomas, S. L. (2000). The distribution of dropout and turnover rates among urban and suburban high schools. *Sociology of Education*, 73, 39–67.

Trent, F., & Slade, M. (2001). *Declining rates of achievement and retention*. Commonwealth Department of Education, Training and Youth Affairs.

Wang, X., Blomberg., T. G., & Li, S. D. (2005). Comparison of educational deficiencies of delinquent and nondelinquent students. *Evaluation Review*, *29*, 291–312.

Zubrick, S. R., Silburn, S. R., De Maio, J. A., Shepherd C., Griffin, J. A., Dalby, R. B. et al. (2006). *The Western Australian Aboriginal Child Health Survey: Improving the educational experiences of Aboriginal children and young people*. Perth: Curtin University of Technology and Telethon Institute for Child Health Research.

School's out—After-school's in
Children's after-school care arrangements and activities

6

Killian Mullan

Australian Institute of Family Studies

6.1   Introduction

The time after school is a critical juncture in a child's day. It is important during this time that children have adequate and appropriate care arrangements as well as opportunities to engage in activities that promote their healthy development. The care arrangements and activities in which children engage after school have increasingly become the focus of policy attention in Australia, as articulated in the My Time, Our Place policy framework (DEEWR, 2011). A number of factors underscore this, including increasing levels of maternal employment, aligned with concerns about children being unsupervised and a desire to encourage children to engage in developmentally positive activities (Cartmel, 2007; Vandell, Pierce, & Dadisman, 2005).

Given that the importance of children's time after school is gaining increasing public recognition, it is notable that there is limited Australian research in this area (Cartmel, 2007). Nationally, there is a lack of knowledge about the full range of after-school care arrangements used by parents, combined with a distinct lack of knowledge about the activities in which children engage after school. *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC) is an important resource for addressing this gap. It provides information about both the after-school care arrangements reported by parents, and information about how children spend their time after school and who they spend it with (reported by children from the age of 10–11 years) for a nationally representative group of families with school-age children. This chapter uses the most recent data from LSAC (Wave 4) to provide a comprehensive picture of after-school care arrangements and activity patterns for children aged 10–11 years.

After-school settings and children's development and wellbeing

The time immediately following school is a period in the day when children have the opportunity to engage in activities associated with positive developmental outcomes (Posner & Vandell, 1999). These activities may occur as part of an after-school program or club, or they may take place in an activity-specific setting such as a swimming club or dance class. Research shows that children's engagement in leisure activities (such as hobbies) and achievement-related activities (such as sports, reading and homework) is associated with positive developmental outcomes (Hofferth & Sandberg, 2001; McHale, Crouter, & Tucker, 2001). Others highlight that activities with structure, supervision and an emphasis on building skills are especially important for promoting children's development (Mahoney, Larson, & Eccles, 2005); that is, the content of activities is important, but so too is the social and organisational context within which those activities take place.

As well as presenting opportunities, the time after school poses potential threats to children's wellbeing. In particular, there is a recurrent concern, both in the research literature and in public discourse, about leaving children unsupervised after school (Ochiltree, 1992). Parents tend to increasingly leave their children unsupervised by an adult as their children get older and as parents decide that their children are sufficiently mature to be unsupervised (which is not necessarily related to age) (Cain & Hofferth, 1989). Under these circumstances, unsupervised time can be an important aspect of a child's development, as it promotes independence.

There is some evidence, however, that unsupervised children fare worse on developmental and behavioural outcomes (Aizer, 2004; Pettit, Bates, Dodge, & Meece, 1999; Pettit, Laird, Bates, & Dodge, 1997; Steinberg, 1986), though being unsupervised does not affect all children similarly. Having no adult supervision for very young children and children living in disadvantaged or unsafe neighbourhoods may be more problematic than if older or less disadvantaged children living in safe areas are left unsupervised (Marshal et al., 1997; Pettit et al., 1997). Moreover, unsupervised time tends to be less problematic when parents know the whereabouts of their children (Steinberg, 1986)—especially for those living in unsafe neighbourhoods (Pettit et al., 1999)—and tends to be less problematic when children are at home rather than "hanging out" away from home (Osgood, Anderson, & Shaffer, 2005; Steinberg, 1986). In addition, appropriate parenting and having a supportive family environment can help to lessen the potentially negative effects of unsupervised time (Steinberg, 1986; Vandell & Ramanan, 1991). Findings from this research literature have filtered into the advice that governments provide to parents around leaving children unsupervised (see, for example, Parenting SA, 2010).

Factors associated with different after-school care arrangements

Perhaps the most consistent factor associated with the use of non-parental after-school care is maternal employment (Australian Bureau of Statistics [ABS], 2008; Casper & Smith 2004; Laird, Petit, Dodge, & Bates, 1998; Vandell & Ramanan, 1991). The influence of income and socio-economic status more generally is less clear, however. Cain and Hofferth (1989), for example, found that children aged 5–13 years not supervised by an adult, compared with those in other forms of non-parental care, were more likely to be from middle-class families. In contrast, Vandell and Ramanan (1991) found that income was lowest in families with children aged 8–10 years in the care of their mother after school, followed by those not supervised by an adult, and was highest for families with children cared for by another adult. Laird et al. (1998) also found high socio-economic status to be associated with having less unsupervised time, less care by a relative or neighbour, and more care in school programs. A more recent study on a large sample of children aged 5–13 years, however, found no association between family income and care arrangements, including unsupervised time (Casper & Smith, 2004). They did find, however, that leaving children aged 11–13 years unsupervised by an adult was positively associated with having safe places to play in the neighbourhood, which broadly may be associated with having a higher socio-economic status. Finally, research shows that family income is positively associated with children's engagement in structured after-school activities (for a review, see Vandell et al., 2005).

After-school care arrangements and activities in Australia

Published data from the Childhood Education and Care Survey (ABS, 2008) provide some information on the usual or typical use of formal after-school care programs. Unfortunately, these data about the use of before- and after-school care were only published in a combined form. Around 7% of parents used formal before- or after-school care. Usage was largest for children aged 6–8 years (16%), but dropped substantially by the time children reached 9–12 years (8%). A much larger percentage of children aged 9–12 years (28%) were being cared for informally by other adults before and after school.[1] Children in one-parent families and English-speaking families were more likely to use non-parental care (informal care by other adults, formal after-school programs and no adult supervision). Families living in major cities were more likely to use formal before- or after-school care programs, and the vast majority of families used non-parental care arrangements for work-related reasons. These data provide a broad overview, but they provide little insight into what activities children are doing after school, and there are no data on unsupervised time.

Simoncini (2010) conducted a study that asked a sample of mothers with children aged 5–8 years in seven Queensland primary schools about the regular care arrangements they used each day of the week. The results provide insights into the mixture of different care arrangements employed by these mothers. Around two-thirds of mothers reported that children were in full-time parental care after school. A further 15% reported using a combination of parent care and formal care after school, and just fewer than 5% of mothers reported using full-time after-school care. These findings

---

[1]   Other adults could be nannies/babysitters, informal carers, siblings aged 18 years and older, grandparents, neighbours or parents of another child.

are broadly comparable with the ABS data cited earlier. Around 13% reported using informal after-school care by other adults. This study also showed that most children (80%) engaged in a range of extracurricular after-school activities, such as sports. Simoncini's work is a rare example of a detailed, insightful study of children's after-school time in Australia, but it does have certain limitations. There were little reported data on unsupervised time, which is likely because the children in the study were younger (preschool up to Year 3), and information on activities was partial, as it ignored home-based activities such as TV viewing and general unorganised activities. Similarly, the study did not provide information on children's activities across different after-school care arrangements. Finally, the sample was not representative of the Australian population.

There has been limited research on children's after-school care arrangements and activity patterns using nationally representative data in Australia. This is a problematic gap considering the developmental implications (positive and negative) of children's after-school time highlighted in previous research, and articulated in the recent Australian government policy document on out-of-school-hours care (*My Time, Our Place*; DEEWR, 2011). This chapter seeks to address this gap, and the analysis pivots on the following two broad questions:

- To what extent do Australian children remain unsupervised by an adult (18 years and over) after school, and what factors are associated with their after-school care arrangements?

- What kinds of activities are children engaged in after school, and what factors are associated with their engagement in these activities?

The first question focuses on the different after-school care and supervision arrangements children experience, with a particular focus on instances when children are not supervised by an adult, which has largely been neglected by previous data and research. Data from Parent 1[2] and child time use diary reports in LSAC are used to address this question and the results of this analysis are contained in section 6.2. The second question considers children's engagement in different activities, using child time use diary reports. The results of this analysis are contained in section 6.3.

The analyses in this chapter are primarily descriptive, focusing mainly on bivariate relationships between key factors and children's after-school care and supervision arrangements, and after-school activities. The key factors (as outlined in Chapter 1) are:

- parent characteristics—parental employment, educational status, main language and age;

- family characteristics—family type, number of older siblings, geographic location and socio-economic position; and

- child characteristics—child age and gender.

For the analysis of children's after-school care and supervision arrangements, we looked at all these factors and found that Parent 1's employment status and the number of older siblings were the most consistently significant factors ($p < .05$) across the full range of measures, when controlling for other variables. Therefore, due to space constraints, we focus on these factors in this chapter. In the analysis of children's activities, we found a wide range of significant associations ($p < .05$), and we present a summary of these.

6.2 Children's after-school care and supervision arrangements

Parents' reports

In Wave 4 of LSAC, parents reported on the after-school care arrangements that they regularly used (at time of interview) for the study child aged 10–11 years. The questionnaire did not specify the exact meaning of "regularly". One could interpret it to mean that they used a particular after-school care arrangement most consistently, most often, or for the most amount of time out of all options. Vandell and Posner (1999) showed that the measurement of after-school care arrangements is sensitive to the different methods for collecting the data and this is important to bear in mind when considering the results.

---

[2] The vast majority of Parent 1s were mothers (94%), although a small proportion were fathers (5%) or other adults who were identified as the primary carer of the study child (1%).

Interviewers guided the parents through fourteen separate questions—each relating to a specific type of after-school care arrangement—and respondents could answer "yes" to multiple care arrangements. To keep the analysis here tractable, we collapsed these fourteen possible after-school care arrangements into four groups:

- parental care (including by parents who live elsewhere from Parent 1);

- informal care by other adults (such as grandparents or neighbours);

- formal after-school programs or care; and

- no adult supervision (including care by self and care by other young people aged under 18 years).

Informal care by other adults, formal after-school programs and no adult supervision are also sometimes referred to together as non-parental care.

Regular use of after-school care arrangements

Table 6.1 reports the total percentages of parents who did or did not report the regular use of each of these types of care arrangements.

Table 6.1:	After-school care arrangements, by whether regularly used, parent reports, K cohort, Wave 4			
After-school care arrangements	Regularly used (%)	Not regularly used (%)	Totals (%)	No. of observations
Parental care	90.9	9.1	100.0	4,132
Informal care by other adults	16.8	83.2	100.0	4,132
Formal after-school program or care	8.2	91.8	100.0	4,132
No adult supervision	6.1	93.9	100.0	4,132

The vast majority of parents (91%) reported that they, or another parent, regularly cared for their 10–11 year old children after school. The most common alternative to regular parental care after school was regular informal care by other adults such as grandparents or neighbours (17%). Just less than one in ten children (8%) regularly attended after-school programs or care, and 6% of children either regularly looked after themselves or were under the regular care of other children under 18 years (no adult supervision). Therefore, according to these data, the percentage of Australian children 10–11 years with no adult supervision after school was slightly lower than the percentage regularly in after-school programs or care.

Parents could report multiple care arrangements, and therefore these data are optimal for capturing the complexity of after-school care arrangements as reported by parents. Table 6.2 reports on the broad range of different combinations of after-school care arrangements reported by parents.

Table 6.2:	Combinations of regularly used after-school care arrangements, parent reports, K cohort, Wave 4	
After-school care arrangements	Regularly used (%)	Category totals (%)
Parental care only	72.0	72.0
Informal care by other adults and parental care	10.0	13.8
Informal care by other adults only	3.7	
Formal after-school programs or care and parental care	4.0	6.0
Formal after-school programs or care	2.0	
No adult supervision and parental care	2.6	5.1
No adult supervision only	2.4	
Two forms of non-parental care and parental care	2.3	3.1
Two forms of non-parental care and no parental care	0.9	
Totals	100.0	100.0
No. of observations	4,132	4,132

The vast majority of parents who reported regular parental care reported that only they and/or another parent regularly cared for their children after school (72%). Most of the 14% of parents using informal care by other adults also reported using parental care (10%). Of the 8% of parents who reported that the child regularly attended formal after-school programs or care (see Table 6.1), half combined this with parental care (4%). Two per cent reported this as the sole form of regular after-school care, and the remaining parents combined this with other forms of non-parental and parental care. Just less than 3% of parents reported that they used parental care as well as periods when an adult did not supervise the child. A further 2% reported that the most regular arrangement for their child was for them to be left unsupervised by an adult. Finally, 2% of parents reported using three different care arrangements, while fewer than 1% reported using only two forms of non-parental care arrangements.

Main factors associated with after-school care arrangements

Maternal employment

Previous research (see section 6.1) has shown that maternal employment is one of the most important factors associated with after-school care arrangements, and bivariate analysis (also controlling for other factors detailed in section 6.1 and Chapter 1) confirms that this is the case for LSAC children. To keep the analysis manageable while retaining some degree of the complexity of after-school care arrangements, we focus on the following:

- parental care only;
- informal care by other adults (with and without instances of parental care);
- formal after-school programs or care (with and without instances of parental care);
- no adult supervision (with and without instances of parental care); and
- multiple care arrangements.[3]

Table 6.3 compares the percentages of parents using different after-school care arrangements separately for mothers who were not in paid work, or had part-time or full-time employment. Throughout, part-time employment is defined as working 1–34 hours per week, and full-time employment 35 or more hours per week. It is clear that the vast majority of mothers not in paid work (93%) reported regularly using parental care only, with half of the remaining 7% of these parents reporting using parental care combined with other adult care.

Table 6.3:	Maternal labour force status and after-school care arrangements, parent reports, K cohort, Wave 4			
After-school care arrangements	Not in paid work (%)	Part-time paid work (%)	Full-time paid work (%)	All parents (%)
Parental care only ***	92.9	71.2	51.6	72.0
Informal care by other adults (with and without parental care) ***	3.5	15.3	21.9	13.8
Formal after-school programs or care (with and without parental care) ***	1.8	6.0	10.4	6.0
No adult supervision (with and without parental care) ***	1.1	4.5	10.2	5.1
Multiple care arrangements ***	0.7	3.0	5.9	3.1
Totals	100.0	100.0	100.0	100.0
No. of observations	1,132	1,912	1,087	4,132

Notes: Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: *** $p < .001$.

The use of all types of non-parental care increases substantially with mothers' increasing engagement in paid work. Mothers in part-time employment reported more regular use of informal care (15%), after-school programs or care (6%) and no adult supervision (5%) than those not in paid work. For mothers in full-time employment the corresponding percentages were 22%, 10%, and 10%. Though small, the percentage of employed mothers (full- and part-time) who reported

---

3   Only a small group of parents regularly used multiple care arrangements.

multiple care arrangements was triple the percentage for non-employed mothers. These results correspond with previous research showing variation in parental paid employment to be one of the most important factors influencing the regular use of non-parental after-school care.

Number of older siblings

Table 6.4 compares regular after-school care arrangements for children with no older siblings, one older sibling, and two or more older siblings. Having a greater numbers of older siblings is unrelated to the regular use of parental care only, but is related to the use of different types of non-parental care. Around 16% of parents of children with no older siblings reported using informal adult care and 9% reported using formal after-school programs or care. These percentages were lower (11% and 2% respectively) for children with two or more older siblings. In contrast, instances of no adult supervision were more common in families with larger numbers of older siblings. Two per cent of children with no older siblings had no adult supervision, compared to 7% of children with a single older sibling, and 9% of those with at least two older siblings. Analysis looking at the influence of younger siblings (not shown) revealed patterns that were the inverse of those reported in Table 6.4. Broadly, children with two or more younger siblings were more likely to be only cared for by a parent, and less likely to experience periods of no adult supervision.

Table 6.4: Number of children's older siblings and after-school care arrangements, parent reports, K cohort, Wave 4				
After-school care arrangements	No older siblings (%)	One older sibling (%)	Two+ older siblings (%)	All children (%)
Parental care only *	69.5	74.0	74.0	72.0
Informal care by other adults (with and without parental care) ***	16.2	12.6	10.5	13.8
Formal after-school programs or care (with and without parental care) ***	9.3	4.2	1.9	6.0
No adult supervision (with and without parental care) ***	1.9	6.7	9.2	5.1
Multiple care arrangements *	3.1	2.5	4.4	3.1
Totals	100.0	100.0	100.0	100.0
No. of observations	1,823	1,501	807	4,132

Notes: Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: *** $p < .001$; ** $p < .01$; * $p < .05$.

Children's time use diary reports

Parent 1 reports provide a useful perspective on regular after-school care arrangements, but they have certain limitations. Firstly, emphasis on the use of regular care arrangements likely masks a fair degree of complexity or irregularity in after-school care arrangements. Secondly, parent reports ignore activity-based care arrangements that do not occur as part of an after-school program, but may be formal nonetheless. Finally, reported instances of unsupervised time after school are low and perhaps underrepresented.

Children's time use diaries provide another source of information from which it is possible to glean more information on after-school supervisory arrangements, as recorded by children on a specified day, as well as information on their activities after school. In these diaries, children record their main activities, the people who are with them, and their location throughout the day before a scheduled LSAC interview.[4] As we are looking at children's time use patterns after school, we restricted the analysis to children who were at school on the day they filled in the time use diary. The time use diaries allow us to analyse in great detail the children's after-school care arrangements immediately after and for several hours following school on the day they completed their time use diary.

---

[4] Respondents could choose the day on which the LSAC interview took place, and therefore could choose on which day children completed the diary.

First, we consider children's care and supervision arrangements immediately after school on the day they filled in their diary. Then we examine their care and supervision over a period of four hours following the end of the school day. Details of the measures are provided in the appropriate subsections.

Care and supervision immediately after school

In considering children's care and supervision arrangements immediately after school, we chose 3:30 pm as the cut-off time for the end of classes, as the "official" school day finishes on or before 3:30 pm for the vast majority of children in Australia. We grouped children depending on whether they were collected after school by their parents or other adults, or were unsupervised by an adult. It is important to note that time spent unsupervised by an adult includes being alone or being with other children 0–17 years. Therefore, children could be under the supervision of a responsible young person. Children unsupervised by an adult who travelled alone after school could be further separated into those who then met their parents (at home or elsewhere), met another adult (at home or elsewhere), remained unsupervised by an adult at home, or remained unsupervised by an adult elsewhere. This is important because it allows us to identify children who travelled home or elsewhere unsupervised by an adult and then remained unsupervised by an adult for some further period of time, as distinct from those who met their parents or other adults immediately following their unsupervised journey. Finally, a group of children remained in school after 3:30 pm for at least one hour after classes ended. We did not want to assume that every child who finished school after 3:30 pm was in a formal after-school program or care arrangement, so we included in this category only those who remained at school for at least one hour after the end of their last class. As we cannot be certain about the specific care arrangements for these children, we simply note that they "remained in school".

The result is a seven-point indicator of children's immediate after-school supervision arrangements, which gives us insights from the unique perspectives of the children:

- collected from school by parents;
- collected from school by other adults;
- travelled unsupervised by an adult and met parents (at home or elsewhere);
- travelled unsupervised by an adult and met other adults (at home or elsewhere);
- travelled unsupervised by an adult, then unsupervised by an adult at home;
- travelled unsupervised by an adult, then unsupervised by an adult elsewhere; and
- remained in school.

Figure 6.1 (on page 84) shows the percentages of children in each of these groups on the day they filled in their time use diary. Around 46% of children were collected by their parents directly after school and 10% travelled from school unsupervised by an adult and subsequently met their parents. This means that just over half of children reported being supervised by their parents, either directly from school or after travelling unsupervised from school. Other adults collected around 13% of the children immediately after school. A further 2% of children travelled unsupervised and met up with another adult.

A substantial number of children (around one in five) travelled home unsupervised by an adult and did not report being with their parents or any other adults when they got home. A further 5% of children reported that they went somewhere else unsupervised by an adult and remained unsupervised when they arrived there. These percentages are substantially larger than Parent 1 reports of their children having no regular adult supervision after school.[5] Finally, a relatively small percentage of children (4%) remained in school for at least one hour after classes. This time could have been spent in an after-school program or care, or in an organised activity at their school, such as sport or a dance class.

---

5   It is worth noting at this point that the parents' reports of after-school care arrangements for the restricted sample of children with time use diaries completed on a school day are not significantly different from the parents' reports of after-school care arrangements for the entire sample, reported above.
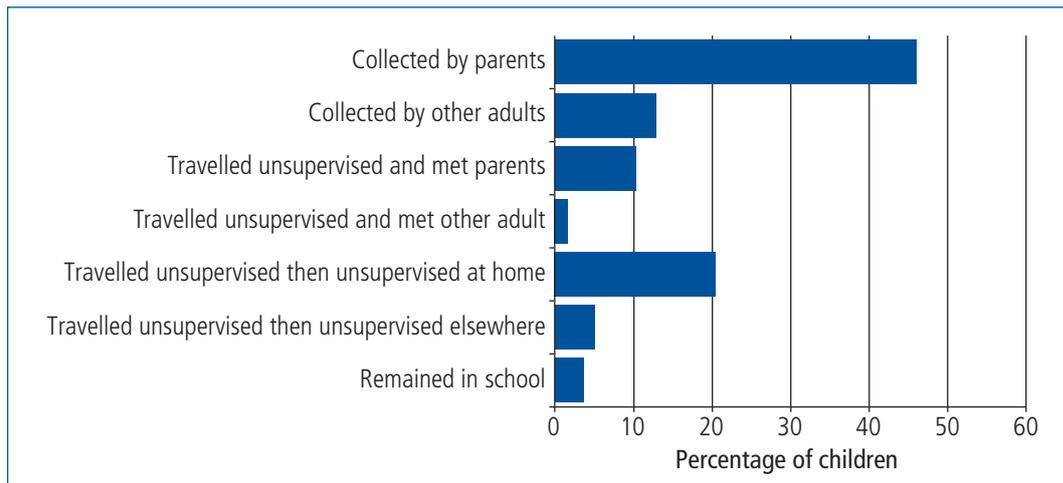
Note: No. of observations = 1,927. Unsupervised time refers to time not spent with an adult 18+ years.

Figure 6.1:   Children's supervision arrangements immediately after school, children's time use diaries, K cohort, Wave 4

Factors associated with care and supervision immediately after school

As above, we performed bivariate analysis of this measure, focusing on Parent 1 employment and the number of older siblings in the household, because these factors were found to be the most consistently significant factors ($p < .05$) in bivariate analysis and when controlling for other factors (see section 6.1 and Chapter 1 for details on the other factors).

Maternal employment

There was a significant association between after-school care arrangements and maternal employment ($p < .001$). Figure 6.2 (on page 85) shows a breakdown of the supervision groups by maternal employment. A lower percentage of children with employed mothers were collected by their parents directly after school (29%) than children with mothers either not in paid work (51%) or in part-time employment (54%). Other adults collected a larger percentage of children with full-time employed mothers directly after school compared with children who had a mother in part-time paid work or not in paid work. Children with full-time employed mothers were also more likely to be unsupervised by an adult after school, either at home or elsewhere.

Number of older siblings

There was a significant association between after-school care arrangements and how many older siblings the child had ($p < .001$). Figure 6.3 (on page 85) shows that children with older siblings were less likely to be collected by their parents, and more likely to return home unsupervised by an adult after school, compared with children with no older siblings. Having more than one older sibling had no influence on the percentage of children in any of the other supervisory arrangements immediately after school.

Children's unsupervised time immediately after school

Perhaps the most striking insight gained from children's time use diaries into their supervision arrangements immediately after school on a specified day relates to those who were unsupervised by an adult after school. The incidence of children being unsupervised by an adult was considerably greater in the time use diary data than that reported by parents (see Table 6.1 on page 80). It is important to note though that these findings correspond with previous research showing that time use diary data collected directly from children provide greater estimates of instances of time unsupervised by an adult than estimates derived from reports by parents (Vandell & Posner, 1995). Karrebrock and Lewit (1999) pointed out that parents can be reluctant to state accurately how often children are left with no adult supervision. Therefore, parent reports may understate the full extent of unsupervised time, and the results from time use diary data collected from children suggest that

this may be the case. However, it is important to bear in mind that parents reported on "regular" care arrangements, whereas children's time use diaries provide information for a single day only.
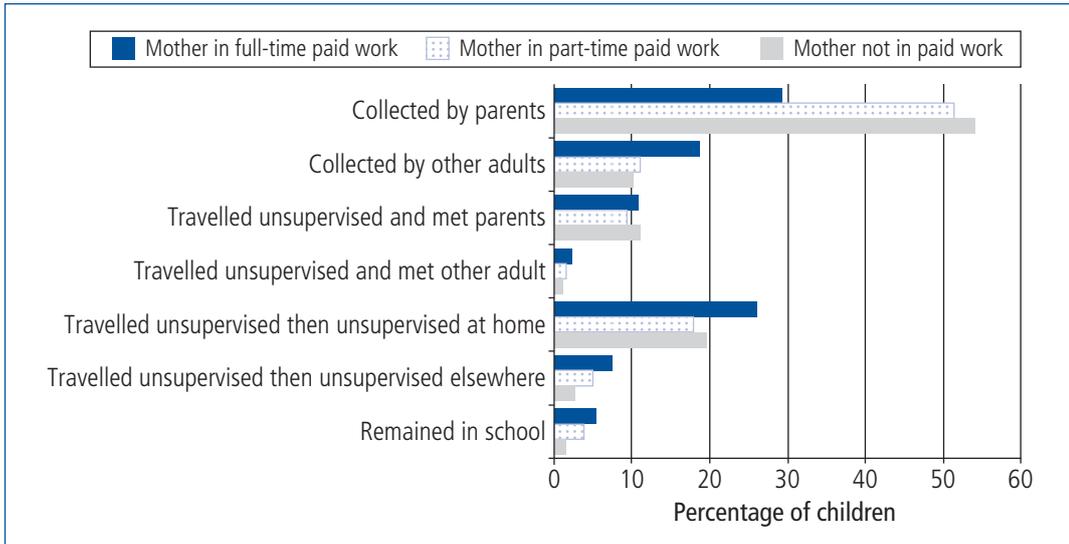
Note: No. of observations: not in paid work = 498; part-time paid work = 898; full-time paid work = 531. Unsupervised time refers to time not spent with an adult 18+ years.

Figure 6.2:   Maternal labour force status and children's supervision arrangements immediately after school, children's time use diaries, K cohort, Wave 4
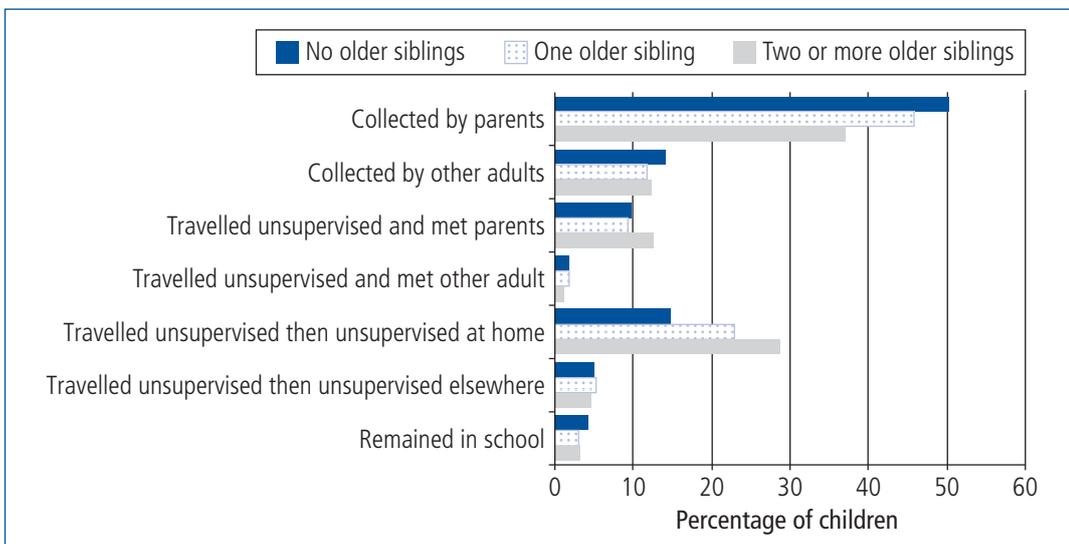
Note: No. of observations: no older siblings = 825; one older sibling = 728; two or more older siblings = 374. Unsupervised time refers to time not spent with an adult 18+ years.

Figure 6.3:   Number of children's older siblings and children's supervision arrangements immediately after school, children's time use diaries, K cohort, Wave 4

Supervisory arrangements during the four hours after school

It is important to stress that the description above only covers the period directly after school, and does not provide an overall picture of the supervisory arrangements for children in the hours after school. Of particular interest is the extent to which children collected by parents also spent time with other adults (away from parents), perhaps because of parents taking children to after-school activities and leaving them there. In addition, for children unsupervised by an adult directly after

school, it is important to know more about how much time they spent unsupervised by an adult in total. This section thus moves beyond the time immediately after school to consider children's after-school supervision arrangements in the four hours following school, excluding travel time.

Policy concerns in this arena are more focused on the hours immediately following school rather than later in the evening. Moreover, as the day progresses towards later in the evening (around 7–8 pm), the vast majority of children are in the care of at least one parent, and most are preparing or close to preparing for bed. Therefore, we concentrate on the four hours after school because we wish to cover a period that provides us with the greatest opportunity to consider the full range of activities and supervision arrangements children can experience after school, but we do not wish to include family time later in the evening.

We first examine the complexity of children's primary after-school supervision arrangements, starting with identifying children who reported spending any time with a parent in the four hours after school. It is important to note that children may have also been with other adults and/or other children while being with a parent. During the time when children reported not being with a parent, we identified whether or not they reported spending any time with other adults (including having other children present). The remainder of the time (not with a parent or other adult) was spent alone or only with other children younger than 18 years, and we refer to this as unsupervised time.

Thus, we grouped children according to whom they spent time with—their parents, other adults (while not with their parents), or no parents or other adults (unsupervised), or any combination of these three options—during the four hours after school. Figure 6.4 shows the percentages of children in the seven possible different combinations, in descending order of occurrence.
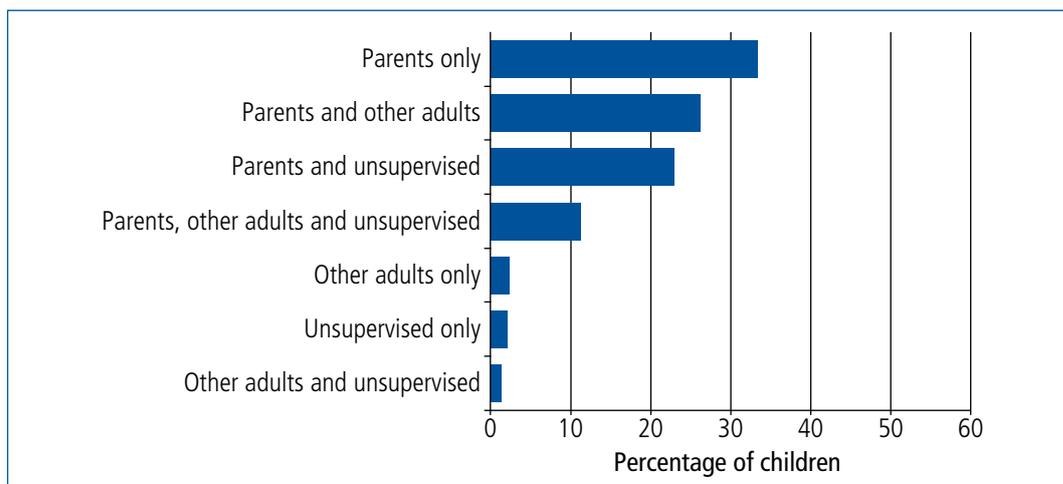
Note: No. of observations = 1,927. Unsupervised time refers to time not spent with an adult 18+ years.

Figure 6.4:   Children's supervision arrangements during the four hours after school, children's time use diaries, K cohort, Wave 4

Around one-third of the children spent time only with their parents in the four hours after school. Recall that these children may have been with other adults simultaneously while with their parents, but we assume that if the parents were present, they would have had primary responsibility for the supervision of the child rather than the other adults. A quarter of the children spent some time with their parents, and while away from their parents, some time with other adults. Just under one-quarter of the children spent some time unsupervised by an adult and some time with their parents (23%), while just over one in ten children (11%) spent some time with their parents, with other adults while not with their parents, and with no adult supervision otherwise. A relatively small percentage of children spent the entire four-hour period after school unsupervised by an adult (2%). These results show that the vast majority of children spent time with their parents after school, and certainly echo parent-based reports that the vast majority of parents provided after-school care for their children.

Bivariate descriptive analyses (results not shown) reveal very similar patterns to those shown in section 6.2 for parent reports of after-school care arrangements and for child time use diary reports of supervision arrangements immediately after school. Children with full-time-employed parents were less likely to be cared for solely by their parents, and were more likely to be using non-parental care in combination with parental care. Again, as above, children with older siblings were more likely to be unsupervised for some time, in combination with parental care and/or care by other adults.

For children not collected by an adult after school, a further interesting issue relates to the amount of time that they reported elapsing between the end of school, when they were unsupervised, and being with either a parent or another adult. Again focusing on the four hours directly after school, Table 6.5 shows the average number of minutes that these children were unsupervised until they reported being with a parent or other adult.

Table 6.5:	Average time unsupervised during the four hours after school, children not collected immediately after school, children's time use diaries, K cohort, Wave 4		
Care arrangement immediately after school		Average time unsupervised (min.)	No. of observations
Travelled unsupervised, then met parents at home or elsewhere		25	196
Travelled unsupervised, then met other adult elsewhere		41	32
Travelled unsupervised and unsupervised by an adult at home, then met parents/other adult		134	397
Travelled unsupervised and unsupervised elsewhere, then met parents/other adult		123	97
Remained in school		11	70

Notes: Unsupervised time refers to time not spent with an adult 18+ years.

The average unsupervised journey time for children who then met their parents was 25 minutes. This was greater for those children who travelled unsupervised by an adult to meet with another adult outside the family home (perhaps for additional tuition or some other organised activity). The children who remained unsupervised after travelling either home or elsewhere without adult supervision spent the longest time before they reported being with a parent or other adult. For both groups of children, an average of just over 2 hours elapsed before they recorded being with a parent or other adults from the moment they left school. Finally, children who remained in school (perhaps for an after-school program, organised activity, or care) spent a small amount of time (11 minutes on average) not under adult supervision.

In addition to the variety of supervision arrangements observed immediately after children finished school, results here show that there is considerable diversity in the use of different combinations of supervision arrangements across the four-hour period after school. In relation to unsupervised time, these results also show that there is a group of children whose unsupervised time is relatively limited and primarily spent travelling. However, other groups of children spent a substantial amount of time unsupervised by an adult, either at home or elsewhere. The extent to which their location has an effect upon the quality of this time depends to some extent on the nature of their activities. As noted above, research suggests that excessive engagement in unorganised activities not supervised by adults while outside the home may be more detrimental to children's development than time spent unsupervised by an adult within the home. We turn in the final section to examine children's activities in the four hours immediately after school.

6.3   Children's after-school activities

In this section, we consider six different activities in which children were engaged during the four hours after school, as reported in their time use diaries. As noted in section 6.1, children's engagement in different activities after school, such as organised sport, may be linked with positive outcomes. Time use diaries have been shown to provide reliable estimates of children's engagement in various activities over the course of a sampled day (Hofferth et al., 1997). We were able to use children's time use diaries to learn more about different after-school care arrangements and

supervision arrangements, and combine this information with data on their engagement in various activities to provide a more comprehensive picture of children's after-school time.

The activities we focused on were:

- playing organised sports (including individual and team sports);
- taking part in organised non-sport activities (tuition, clubs, etc.);
- doing homework and reading;
- engaging in unorganised active games/play (e.g., ball games, riding a bike, scooter or skateboard);
- watching TV; and
- playing computer games.

Taken together, these six activities consumed, on average, two-thirds of the four-hour period after school, with the remaining third dominated by eating and travel. As this is a partial view of the total time children spent in these activities on any given day, rather than looking at the number of minutes children spent in these activities after school, we consider the percentages of children participating in each of these activities. We compare engagement in each activity separately for children with different supervisory arrangements immediately following school and for all children together.

Table 6.6 reports the percentages of children who engaged in these activities. Note that children could participate in more than one of the six activities and therefore the row percentages do not sum to 100%.

Table 6.6:	Children's participation in activities during the four hours after school, by supervision arrangement, children's time use diaries, K cohort, Wave 4					
Type of activity	**With parents**	**With other adults**	**Unsuper-vised at home**	**Unsuper-vised else-where**	**Remained in school**	**Total**
Playing organised sports ***	23.3	26.4	18.2	18.3	42.2	23.1
Taking part in organised non-sport activities ***	8.3	7.2	4.2	6.2	23.8	7.8
Doing homework and reading	42.8	41.7	38.9	32.3	36.6	41.1
Engaging in unorganised active games/play *	33.0	33.5	35.5	48.7	44.6	34.8
Watching TV ***	57.0	63.3	60.7	47.6	34.4	58.6
Playing computer games	29.6	24.5	30.9	30.4	21.8	28.9
No. of observations	1,083	280	397	97	70	1,927

Note: Unsupervised time refers to time not spent with an adult 18+ years. Children could participate in more than one activity, therefore row percentages do not sum to 100%. The residual percentage of non-participants for each activity is omitted. Statistically significant differences are noted: * $p < .05$; *** $p < .001$.

Bivariate analyses were conducted for each activity separately to test for differences in participation across groups of children with different supervision arrangements immediately after school. Significant results were further tested, controlling for other factors (outlined in Chapter 1 and in section 6.1), though we report the bivariate tests only when considering associations with children's after-school arrangements. We then discuss the results for other factors.

Overall, just fewer than one-quarter of all children participated in organised sport in the four-hour period after school. Participation in organised sport was greatest for children who remained in school (42%) and lowest for children who were unsupervised directly after school, whether at home or elsewhere (18%).

Overall, 8% of children engaged in some type of organised non-sport activities, such as creative activities, additional tuition, scouts, or other club-based activities. Around one-quarter of children who remained in school took part in organised non-sport activities, and this was higher than the participation rates for children in all other groups, the lowest being for children who were unsupervised by an adult at home (4%). Doing homework and reading was relatively similar across groups, with around 40% of all children engaging in these activities in the four-hour period directly

after school. It was lower, however, for children who were unsupervised by an adult outside the home (32%).

On average, 35% of children reported engaging in unorganised active games/play, and we did not observe a highly significant association between children's after-school care arrangements and unorganised active games/play ($p > .05$). This percentage was highest for children who were unsupervised by an adult somewhere other than at home (49%) and for children who were in school (45%), but the numbers of children in these groups were small, which likely explains the lack of statistical significance overall.

TV viewing was the most common activity in which children were engaged after school, with 59% of all children reporting spending some time in front of the TV. The figure was highest for children who were supervised by other adults (63%) and those who were unsupervised at home (61%). A lower percentage of children who remained in school reported watching TV in the four-hour period after school compared with children in other groups, especially those who went home after school with either their parents or other adults. In addition, fewer children who were unsupervised and did not go home immediately after school engaged in TV viewing (49%). Finally, 29% of all children played computer games after school, and this was not significantly different across the supervision groups, ranging from 22% for children who remained in school to around 30% for children unsupervised by an adult at home and elsewhere and children supervised by parents.

As noted above, we further tested bivariate associations by controlling for other variables (as outlined in Chapter 1 and section 6.1) in logistic regression analysis. We found several significant ($p < .05$) associations between certain control variables and children's engagement in each of the six activities we considered in this chapter. The key findings were:

- **Child gender**—Girls were less likely to participate in unorganised active games/play and play computer games, but more likely to engage in organised non-sport activities, and homework and reading. There was no significant difference between girls and boys in participation in organised sport after school.

- **Family socio-economic position**—Children from families in the lowest quartile of socio-economic position were significantly less likely to engage in organised sport and significantly more likely to engage in unorganised active games/play, watch TV, and play computer games.

- **Parent 1's language is other than English**—Children with a Parent 1 who mostly spoke a language other than English at home were significantly less likely to engage in organised sport and unorganised active games/play. However, they were significantly more likely to engage in organised non-sport activities (e.g., music tuition), and homework and reading.

- **Parent 1's age**—Children with older parents were less likely to take part in unorganised active games/play, and more likely to engage in organised non-sport activities, watch TV and play computer games.

- **Locality**—Children living in regional areas were less likely to play computer games than those in metropolitan areas.

6.4   Summary and discussion

Issues around the care arrangements and types of activities in which children engage after school are gaining increasing prominence in the policy arena. However, there is little research in Australia using national data that brings together information about care arrangements and activity patterns. This chapter has considered children's after-school care arrangements and activity patterns using information collected from parents and their children aged 10–11 years in Wave 4 of LSAC.

The first research question addressed in this chapter concerned the use of different after-school care arrangements, including unsupervised time. Parents' reports on the regular use of after-school arrangements showed that parents cared for the vast majority of children after school. It follows that the percentages of families regularly using other types of care arrangements was relatively low. Around 17% of parents reported regularly using informal care by other adults. Fewer parents reported regularly using formal care (around 8%) and no adult supervision (around 6%). Parents likely interpret "regular" to mean arrangements that, in some way, dominate.

Data from children's time use diaries provide more insights into their after-school supervision arrangements, especially with regard to time spent unsupervised by an adult. During the four hours

following school, the majority of children (94%) spent some time with their parents, corroborating to some extent the parents' reports in this regard. Forty per cent of children reported spending some time with other adults (and not with parents), which encompasses formal and informal care arrangements. This tallies more closely with other national data (ABS, 2008) than the parents' reports do. What is different here is that children could record relatively small amounts of time with other adults in their time use diaries, which a parent may (reasonably) not regard as constituting a regular care arrangement.

However, it is in the area of time spent unsupervised by an adult that the child reports provide key insights not available elsewhere. About one in ten children travelled from school unsupervised by an adult and then met their parents. One in five children travelled from school unsupervised by an adult and spent some time at home unsupervised by an adult, while about 5% of children travelled from school unsupervised by an adult and spent some time elsewhere not supervised by an adult. These proportions are clearly greater than the parents' reports of their children's regular unsupervised time, which reflects previous research with similar types of data (Vandell & Posner, 1995). Note, however, that parents reported on regular care arrangements, whereas children provided reports for a single day.

It is important to bear in mind that previous research (see section 6.1) has consistently shown that unsupervised time occurs in a variety of settings, with differential implications for children. Under the right circumstances, making the journey from school unsupervised by an adult (either alone or with other children) may constitute an important dimension of a child's ongoing development, building their confidence and fostering independence and responsibility. Research also shows that parents who leave children unsupervised by an adult for a limited period of time, do so because they judge that the children are mature enough, and often they maintain telephone contact (Cain & Hofferth, 1989). There may be some problems with the relatively small group of children who remain unsupervised outside the home after school if their parents are unaware of their whereabouts, associates and activities (Osgood et al., 2005). Future analysis should explore this and other aspects of children's unsupervised time after school.

The parents' and children's reports represent different approaches to collecting information about children's after-school care arrangements. However, there are many similarities in the factors associated with different arrangements, regardless of how the information is collected. A higher percentage of study children aged 10–11 years with full-time employed parents were in non-parental care (parents' reports), and a lower percentage, on a specified day, were collected by their parents directly after school (children's reports). Full-time employed parents were also more likely to rely on the children having no adult supervision (parents' and children's reports). Both parents' and children's reports showed that children with more older siblings were more likely to be unsupervised by an adult. This latter finding raises questions about the quality of after-school care arrangements and outcomes for children in larger families, which further research should examine.

The second key research question related to children's activity patterns after school, with a particular focus on select activities that have been shown in previous research to be related to child outcomes in both positive and negative ways. Around one-quarter of children engaged in some form of organised sport, and a further 8% engaged in organised non-sport activities such as scouts, dance, or other classes. This is considerably lower than the percentage reported by Simoncini (2010) over the period of a week. It is important to bear in mind, though, that the data in this chapter cover a single day, and it is likely that many children who did not report engaging in these activities on the day they filled in their time use diary do indeed typically engage in them on other days. One-third of the children engaged in homework or reading after school.

In addition to these activities, the chapter reported on children engaging in unorganised active games/play, watching TV and playing computer games. TV viewing was the most common after-school activity among children (59%), followed by unorganised active games/play (35%) and then computer games (29%).

Children's engagement in these activities varied greatly across different supervision arrangements immediately after school. A higher percentage of children who remained in school or who were supervised somewhere other than home after school engaged in organised sport and other organised activities. Although it was a small group of children, and findings were not statistically significant, a higher percentage of children who were unsupervised by an adult outside the home engaged in unorganised games/play compared to other children, including those unsupervised by

an adult at home. This is something highlighted in the literature as being potentially problematic (see section 6.1) and should be considered more extensively in further research. Children collected from school by other adults and then supervised by them had the highest rates of TV viewing, followed by children who travelled unsupervised by an adult and then met their parents. Children who did not travel home immediately after school reported the lowest rates of TV viewing.

Interestingly, the activity profiles of children collected by their parents from school were relatively similar to those for children who travelled home after school unsupervised by an adult and remained unsupervised by an adult at home for a time. The latter were slightly less likely to engage in organised sport or non-sport activities, but their engagement in the other activities was very similar to children in other groups.

Results also highlighted associations between children's activities and key child and family factors. There was no difference between boys' and girls' engagement in organised sport after school (Chapter 9 considers organised sport more specifically). However, children in lower socio-economic status families were less likely to engage in organised sport and more likely to engage in unorganised active games/play, watch TV and play computer games. Cultural factors were important, with children of non–English speaking parents engaging less in sport and other physical activities (organised and unorganised) and more in organised non-sport activities, and homework and reading.

Overall, this chapter has provided key insights into children's after-school time, using the most recent data available from LSAC. While different types of reports yield different measures of the use of care arrangements, all of this information is useful. Considering the varied nature of after-school time in a child's life, it seems appropriate to collect data from as many sources as possible, and this chapter has shown the benefits of doing so. Especially important, however, are data from children themselves, and this will gain increasing importance as children progress into adolescence. Future work on the influence on child outcomes of spending time unsupervised by an adult in different settings is warranted. As well, we must consider whether engagement in developmentally positive activities like organised sports can be increased and spread more evenly across all groups of children, regardless of social background.

Future work should also consider a longitudinal treatment of this topic, which would allow examination of the trajectory of care arrangements and activity patterns as children progress through primary school and, in the future, move into high school. As well, there is much scope for developing our understanding of the relationship between after-school time and child outcomes, and future work should take up this question.

6.5   References

Aizer, A. (2004). Home alone: Supervision after school and child behavior. *Journal of Public Economics*, *88*, 1835–1948.

Australian Bureau of Statistics. (2008). *Childhood Education and Care Survey* (Cat. No. 4402.0). Canberra: ABS.

Cain, V. S., & Hofferth S. L. (1989). Parental choice of self-care for school-age children. *Journal of Marriage and the Family*, 51, 65–77.

Cartmel, J. L. (2007). *Outside school hours care and schools* (Unpublished doctoral dissertation). Queensland University of Technology, Brisbane.

Casper, L. M., & Smith, K. E. (2004). Self-care: Why do parents leave their children unsupervised? *Demography*, *41*(2), 285–301.

Department of Education, Employment and Workplace Relations. (2011). *My time, our place: Framework for school-age care in Australia*. Canberra: DEEWR.

Hofferth, S. L., Davis-Kean, P. E., Davis, J., & Finkelstein, J. (1997) *The child development supplement of the Panel Study of Income Dynamics: 1997 data user guide*. Ann Arbor, MI: University of Michigan.

Hofferth, S. L., & Sandberg, J. F. (2001). How American children spend their time. *Journal of Marriage and the Family*, *63*, 295–308.

Karrebrock, N., & Lewit, E. M. (1999). Child indicators: Children in self-care. *The Future of Children*, *9*(2), 151–160.

Laird, R. D., Petit, G. S., Dodge, K. A., & Bates, J. E. (1998). The social ecology of school-age child care. *Journal of Applied Developmental Psychology*, *19*(3), 341–360.

Mahoney, J. L., Larson, R. W., & Eccles, J. S. (2005). Organised activities as developmental contexts for children and adolescents. In J. L. Mahoney, R. W., Larson, & J. S. Eccles (Eds.), *Organised activities as contexts of development: Extracurricular activities, after-school and community programs* (pp. 3–22). Mahwah, NJ: Lawrence Erlbaum Associates.

Marshal, N. L., Coll, C. G., Marx, F., McCartney, K., Keefe, N., & Ruh, J. (1997). After-school time and children's behavioral adjustment. *Merrill-Palmer Quarterly*, *43*(3), 497–514.

McHale, S. M., Crouter, A. C., & Tucker, C. J. (2001). Free-time activities in middle childhood: Links with adjustment in early adolescence. *Child Development*, *72*(6), 1764–1778.

Ochiltree, G. (1992). Self care for school aged children. *Family Matters*, 33, 52–54.

Osgood, D. W., Anderson, A. L., & Shaffer, J. N. (2005). Unstructured leisure in the after-school hours. In J. L. Mahoney, R. W., Larson, & J. S. Eccles (Eds.), *Organised activities as contexts of development: Extracurricular activities, after-school and community program*s (pp. 45–64). Mahwah, NJ: Lawrence Erlbaum Associates.

Parenting SA. (2010). *Home alone* (Parent Easy Guide No. 32). Adelaide: Government of South Australia.

Pettit, G. S., Bates, J. E., Dodge, K. A., & Meece, D. W. (1999). The impact of after-school peer contact on early adolescent externalizing problems is moderated by parental monitoring, perceived neighborhood safety, and prior adjustment. *Child Development*, *70*(3), 768–778.

Pettit, G. S., Laird, R. D., Bates, J. E., & Dodge, K. A. (1997). Patterns of after-school care in middle childhood: Risk factors and developmental outcomes. *Merrill-Palmer Quarterly*, *43*(3), 515–538.

Posner, J. K., & Vandell, D. L. (1999). After-school activities and the development of low-income urban children: A longitudinal study. *Developmental Psychology*, *35*(3), 868–879.

Simoncini, K. M. (2010). *The hours after school: Young school-age children's care arrangements and activities* (Unpublished doctoral dissertation). James Cook University, Douglas, Queensland.

Steinberg, L. (1986). Latchkey children and susceptibility to peer pressure: An ecological analysis. *Developmental Psychology*, *22*(4), 433–439.

Vandell, D. L., Pierce, K. M., & Dadisman, K. (2005). Out-of-school settings as developmental context for children and youth. *Advances in Child Development and Behaviour,* 33, 43–77.

Vandell, D. L., & Posner, J. K. (1995). *An ecological analysis of the effects of after-school care*. Unpublished report to the Spencer Foundation.

Vandell, D. L., & Posner, J. K. (1999). Conceptualization and measurement of children's after-school environments. In S. L. Friedman, & T. D. Wachs (Eds.), *Measuring environment across the life span: Emerging methods and concepts* (pp. 167–196). Washington, DC: American Psychological Association.

Vandell, D. L., & Ramanan, J. (1991). Children in the national longitudinal survey of youth: Choices in after-school care and child development. *Developmental Psychology*, *27*(4), 637–643.

Children's experiences of unfriendly behaviour

Jodie Lodge and Jennifer Baxter
Australian Institute of Family Studies

7.1 Introduction

One of the significant ways in which the wellbeing of school-aged children can be eroded is through the effects of being bullied, and as such there is widespread concern over the perceived prevalence of bullying, and the implications this might have for children (Australian Institute of Health and Welfare [AIHW], 2009). This chapter contributes to the current literature on bullying by analysing 10–11 year old children's reports of being picked on through certain unfriendly behaviours that are commonly experienced as bullying behaviours. Specifically, this includes children having been subjected to name-calling, social exclusion, note-writing, and physical violence (i.e., shoving, pushing or hitting). These data were collected from the K cohort of LSAC in 2010 in Wave 4.

While bullying of children may occur across a range of settings, it very often occurs in school or on the way to and from school (e.g., see Cross et al., 2009; Fekkes, Pijpers & Verloove-Vanhorick, 2005). In this context, the National Safe Schools Framework—supported by the Department of Education, Employment and Workplace Relations (DEEWR)—addresses the rights of students to have a safe and supportive learning environment. The framework "incorporates existing good practice and provides an agreed national approach to help schools and their communities address issues of bullying, harassment, violence, and child abuse and neglect" (Ministerial Council on Education, Early Childhood Development and Youth Affairs, 2010, p. 3). A recent examination of changes in bullying prevalence in schools in 26 countries, including Australia, concluded that general levels of bullying have been gradually reducing over the last decade. Arguably, this is as a result of increased attention being directed towards the problem, and the use of effective anti-bullying programs (Rigby & Smith, 2011).

Despite the efforts made by governments and schools, bullying remains a pervasive problem in the school context and continues to be a matter of great concern among parents, teachers and others working with children and young people. Estimates of rates of bullying victimisation range from 15% to 30% in Australia and other parts of the world (Nansel et al., 2001; Rigby, 1996; Wolke, Woods, Stanford, & Schulz, 2001), with differences in measurement, definition and scope contributing to the variability in these rates. For example, in 2007, the Australian Covert Bullying Prevalence Study (Cross et al., 2009) found that almost half of the students in the study had experienced some type of bullying at least once during the previous term at school. This included any type of bullying behaviour. Approximately 10% reported being bullied most days or every day at school. The study included children from Year 4 through to Year 9 and, across these years, the percentage reporting to have experienced bullying behaviours was greatest for children in Year 5.

While there is currently no nationally agreed definition of the behaviour of bullying in Australia, it has been described as being when one or more students inflict pain on or cause distress to another student on repeated occasions (Zubrick et al., 1997). Many studies distinguish between the different forms that bullying may take. Overt bullying includes physical and verbal attacks or direct aggression (kicking, pushing, name-calling), while covert bullying involves behaviours linked to social, relational and indirect aggression (such as ignoring, gossiping, and sending or posting abusive notes), and are typically either unwitnessed or unaddressed by an adult (Cross et al., 2009). Definitions of bullying typically exclude fighting between equally strong children (Organisation for Economic Co-operation and Development [OECD], 2009).

In one study, young people described cyberbullying simply as "bullying via the Internet" or "bullying using technology" (Vandebosch & van Cleemput, 2008). And, while there is a growing recognition of cyberbullying as a separate entity (Joint Select Committee on Cyber-Safety, 2011), more often than not, victims of cyberbullying are also victims of face-to-face bullying (Lodge & Frydenberg, 2011). Therefore, though this new form of bullying undoubtedly has implications for future research and policy, this chapter addresses more traditional forms of bullying that occur without the use of electronic communication devices.

Cross-national research concludes that bullying is a universal phenomenon with many negative correlates for victims (Eslea et al., 2003). Being bullied can have far-reaching physical, social and mental health consequences. Victims of bullying tend to have low self-esteem, more interpersonal difficulties and are more likely to report higher levels of loneliness (Kochenderfer, & Ladd, 1996; Rigby, 2000; Smith, Talamelli, Cowie, Naylor, & Chauhan, 2004). Being bullied also significantly affects a young person's academic achievement and social development (Forero, McLellan, Rissel, & Bauman, 1999; Olweus, 1993; Slee, 1995). Victims have been reported to dislike school and to have higher levels of school absenteeism (Smith et al., 2004). Furthermore, recent Australian longitudinal data highlight the ongoing consequences of bullying victimisation, with victims in school going on to report higher levels of depression symptoms later in life (Lodge, 2010).

There is an extensive literature on bullying, and this chapter makes a contribution by focusing on children who are at a vulnerable age for being bullied (Cross et al., 2009), using a nationally representative sample and a rich set of child, family and other characteristics that can help inform the factors that are common to children who are picked on through unfriendly behaviours.

The data on children's experiences of being picked on through unfriendly behaviours were collected at Wave 4 from the K cohort of LSAC, when they were aged 10–11 years old. Specifically, the children were aged from exactly 10 years through to 11 years and 8 months at the time of the study. The majority of children at this age were in Year 5 (71%), with a large proportion in Year 6 (23%, including four children in Year 7), and the remainder in lower year levels (6%).

These analyses make use of questions asked of the children in the audio computer-assisted self-interview (ACASI) instrument of the study. Following a series of questions about school, teachers and friendships, children were asked whether or not, in the previous 12 months, another child (or children) had picked on them by: (a) shoving, pushing or hitting them; (b) calling them names or insulting them; (c) writing messages/notes; or (d) leaving them out of games or chats. The few children who did not answer all four of these questions (83 out of 4,169) were excluded from the analysis, leaving 4,086 children in the analytical sample.

Note that in analysing these responses we do not specifically refer to these behaviours as "bullying", but as "unfriendly behaviours", as children were not asked whether they considered that the behaviours constituted bullying. Nor do we have information on whether these behaviours were repeatedly experienced, or whether they were unwanted or unprovoked.

From elsewhere in LSAC, we do have some other relevant information collected from children, parents and teachers, including responses to one question that asked whether the child had been picked on or bullied by other children in the previous 6 months. Parent responses were available for all of the children, and teacher responses were available for 3,346 children (82% of children). Child responses on this item were also available and are analysed in section 7.2. These data were compared to the child reports of experiencing unfriendly behaviours to consider to what extent experiencing these behaviours may be indicative of experiencing bullying.

The key research questions examined in this chapter are:

- What types of unfriendly behaviours are experienced by boys and girls aged 10–11 years?
- What child, family and school factors are related to these children being the victim of unfriendly behaviours?
- How are boys' and girls' experiences of unfriendly behaviours related to their attachment to and relationship with others (peers, parents and teachers) and to different feelings about school?
- How are boys' and girls' experiences of unfriendly behaviours related to aspects of their social and emotional wellbeing?
- How do children's reports of experiencing unfriendly behaviours relate to children's, parents' and teachers' reports of children being bullied?

Findings referred to in this chapter as being statistically significant are those differences, when analysed using appropriate tests, that result in a degree of confidence of more than 95% (a *p* value of less than .05). The 95% confidence interval of means is shown in figures, where applicable.

7.2 Children's reports of experiencing unfriendly behaviours

Throughout this chapter, we refer to children as having been picked on through unfriendly behaviours if they reported that in the previous 12 months they had experienced any of the behaviours of name-calling or insulting, social exclusion (being left out of games or chats), physical violence (shoving, pushing or hitting), or note-writing. Overall, 59% of children at 10–11 years reported that they had experienced at least one of these in the previous 12 months. This figure was the same for boys and girls.

As Table 7.1 indicates, name-calling was the most common of the unfriendly behaviours experienced by children aged 10–11 years. More boys (47%) than girls (40%) reported being called names or insulted. Being socially excluded was the next most common type of unfriendly behaviour experienced, with girls (41%) reporting being left out of games or chats more often than boys (32%). In contrast, more boys (40%) than girls (27%) reported being subjected to physical violence (i.e., shoving, pushing or hitting). Being picked on through written notes or messages was the least common type of unfriendly behaviour reported by 10–11 year olds, and was more often reported by girls (17%) than by boys (13%). The differences between boys and girls were statistically significant for all of the unfriendly behaviours examined.

Table 7.1:	Children's experience of unfriendly behaviours, child reports, boys and girls, K cohort, Wave 4		
Type of unfriendly behaviour	**Boys (%)**	**Girls (%)**	**All (%)**
Name-calling or insulting ***	46.5	40.2	43.4
Social exclusion ***	32.3	40.5	36.3
Shoving, pushing or hitting ***	40.4	27.0	33.8
Note-writing **	12.5	16.8	14.6
Any of the above	59.3	59.0	59.1
No. of observations	2,088	1,998	4,086

Notes: Percentages do not sum to 100% as children could indicate multiple responses. Statistically significant differences between boys and girls are noted: ** *p* < .01; *** *p* < .001.

The percentages experiencing different types of unfriendly behaviours are consistent with those previously reported for Australian students of similar ages (Cross et al., 2009). Also, the gender differences found here are in line with other research on the gendered experiences of bullying victimisation, which show that boys and girls are picked on or bullied in different ways (e.g., Olweus, 1993).

Our interest in analysing these data lies in the assumption that being subject to these unfriendly behaviours suggests some degree of bullying victimisation. In Table 7.2 (on page 96), these data are compared to children's reports of whether they had been bullied or picked on by children at school, to give some indication of whether these different child reports of experiencing some level of victimisation are related. Note the two questions have different reference periods: 6 months for the direct question about being bullied and picked on, and 12 months for the specific types of unfriendly behaviours. Table 7.2 shows that there is a definite relationship between the experiences of unfriendly behaviours and reports of being bullied and picked on. In particular, the vast majority of those who reported that they *did not* experience each unfriendly behaviour also reported that it was not true that they had been bullied or picked on. While a considerable proportion who *did* experience each of the unfriendly behaviours reported that they had not been bullied or picked on, for each of the behaviours, around 6 in 10 of the children reported that it was somewhat or certainly true that they had been bullied or picked on.

Table 7.2:	Children's experience of unfriendly behaviours, by experience of being bullied or picked on, child reports, K cohort, Wave 4			
	Experience of bullying			
Experience of unfriendly behaviour	**Not true (%)**	**Somewhat true (%)**	**Certainly true (%)**	**Total (%)**
Name-calling or insulting ***				
Experienced	39.1	38.9	22.0	100.0
Did not experience	88.5	9.4	2.1	100.0
Social exclusion ***				
Experienced	42.3	35.9	21.8	100.0
Did not experience	81.2	14.4	4.4	100.0
Shoving, pushing or hitting ***				
Experienced	36.7	39.0	24.3	100.0
Did not experience	82.6	13.6	3.8	100.0
Note-writing ***				
Experienced	39.2	28.9	31.9	100.0
Did not experience	71.8	21.1	7.1	100.0

Notes: Statistically significant differences are noted: *** $p < .001$.

Returning to the reports of experiencing unfriendly behaviours, this information can be summarised to produce a count of the number of types of unfriendly behaviours experienced. While the types are no doubt important, the number of unfriendly behaviours may also provide some indication of the cumulative effects of being picked on or bullied in a number of ways (e.g., Sharp, Thomson, & Arora, 2000). Overall, 29% of children experienced one of the unfriendly behaviours, 18% two of them, 15% three of them and 7% four of them. These percentages were similar for boys and girls, although girls tended to have been picked on through fewer types of unfriendly behaviours, as shown in Table 7.3.

Table 7.3:	Number of types of unfriendly behaviours experienced, child reports, boys and girls, K cohort, Wave 4		
Number of types of unfriendly behaviour *	**Boys (%)**	**Girls (%)**	**All (%)**
None	40.7	41.0	40.9
One or more types:	59.3	59.0	59.1
One type	17.3	21.4	29.3
Two types	19.1	16.7	17.9
Three types	15.4	14.0	14.7
Four types	7.5	7.0	7.2
Total	100.0	100.0	100.0
No. of observations	2,088	1,988	4,086

Notes: Percentages may not total exactly due to rounding. Statistically significant differences are noted: * $p < .05$.

Gender differences were apparent in Table 7.1 (on page 95), in the types of unfriendly behaviours experienced. It is relevant to note, then, that when the number of unfriendly behaviours is analysed, for boys and girls this might relate to their having experienced different types of unfriendly behaviours.

■ For boys who experienced one type of unfriendly behaviour, the most common types were name-calling (43% of boys reporting one type of unfriendly behaviour), social exclusion (26%), and physical violence (25%). For girls who experienced one type of unfriendly behaviour, the most common types were social exclusion (52% of girls reporting one type of unfriendly behaviour) and name-calling (30%).

■ For boys who experienced two of the unfriendly behaviours, the most common combinations were name-calling and physical violence (60% of boys who reported two types of unfriendly behaviours), and name-calling and social exclusion (23%). For girls who experienced two of the

unfriendly behaviours, the most common combinations were name-calling and social exclusion (49% of girls who reported two types of unfriendly behaviours), and name-calling and physical violence (26%).

- For boys who experienced three of the unfriendly behaviours, the most common combination was name-calling, physical violence and social exclusion (84% of boys who reported three of the unfriendly behaviours). For girls who experienced three of the unfriendly behaviours, the most common combinations were name-calling, social exclusion and physical violence (66% of girls who reported three of the unfriendly behaviours), and name-calling, social exclusion and note-writing (19%).

The number of types of unfriendly behaviours experienced is compared to the child reports of having been bullied or picked on in Table 7.4. A strong relationship is apparent here, with a greater number of types of unfriendly behaviours reported by children being associated with a greater likelihood of their reporting that it was somewhat or certainly true that they had been bullied or picked on. For example, of those who had not reported any unfriendly behaviours, 1% said it was certainly true that they had been bullied or picked on. This was slightly higher, at 4%, for those who reported having experienced one type of unfriendly behaviour, but then the percentage increases to 15% for those reporting two types, 22% for three types and 51% for four types.

Table 7.4:	Number of types of unfriendly behaviours experienced, by experience of being bullied or picked on, child reports, K cohort, Wave 4			
	Experience of bullying			
Number of types of unfriendly behaviour ***	**Not true (%)**	**Somewhat true (%)**	**Certainly true (%)**	**Total (%)**
None	94.6	4.2	1.1	100.0
One or more types:	48.1	34.6	17.3	100.0
One type	73.0	23.2	3.8	100.0
Two types	45.0	40.1	14.8	100.0
Three types	32.6	45.8	21.7	100.0
Four types	20.2	28.7	51.0	100.0
Total	67.1	22.2	10.7	100.0

Notes: Statistically significant differences are noted: *** $p < .001$.

The results in Table 7.4 suggest that the number of types of unfriendly behaviours experienced by children is likely to give useful insights into bullying victimisation experiences of children. Later, we will return to examine relationships between these data and parent and teacher reports of children's bullying victimisation. But first, we focus on children's reports of being picked on through unfriendly behaviours, either differentiating between those who experienced some unfriendly behaviours and those who did not, or differentiating according to the number of types of unfriendly behaviours.

7.3   Child, family and school characteristics associated with experiences of unfriendly behaviours

This section focuses on children's reports of having experienced at least one of the unfriendly behaviours in the previous 12 months, and examines the individual, family and school characteristics associated with the likelihood of having had this experience. The range of child, family and school characteristics selected for analyses were chosen because they have previously been identified as being risk factors for children's experiences of being bullied (see Olweus, 1993).

The overall patterns described in Table 7.5 (on page 98) tended to apply to both boys and girls, thus the data in the table were not disaggregated by children's gender.

Table 7.5:	Experience of unfriendly behaviours, by child, family and school characteristics, child reports, K cohort, Wave 4		
	Did not experience (%)	Experienced (%)	No. of observations
Child characteristics			
School year level **			
Up to Year 4	35.9	64.1	228
Year 5	39.3	60.7	2,876
Year 6	46.8	53.2	955
Indigenous status and non–English speaking background ***			
Aboriginal or Torres Strait Islander	33.4	66.6	115
Non-Indigenous, a parent mainly speaks a language other than English at home	49.9	50.1	598
Non-Indigenous, no parent mainly speaks a language other than English at home	39.0	61.0	3,371
Disability or medical condition *			
Disability or medical condition	32.9	67.1	235
No disability or medical condition	41.4	58.6	3,846
Weight status **			
Underweight	50.0	50.0	31
Normal weight	42.7	57.3	2,848
Overweight or obese	36.8	63.2	1,207
Family characteristics			
Family type [a] ***			
Lone-mother family	31.9	68.1	588
Two-parent family	42.8	57.2	3,445
Family socio-economic position ***			
Lowest 25%	37.4	62.6	977
Middle 50%	42.2	57.8	1,952
Highest 25%	47.6	52.4	976
Region of residence **			
Metropolitan	42.7	57.3	2,476
Regional	37.9	62.1	1,604
School characteristics [b]			
School type			
Government	40.2	59.8	2,596
Catholic	42.7	57.3	895
Independent	42.5	57.5	568
School size (teacher report)			
Small (≤ 250 students)	38.9	61.1	643
Medium (251–680 students)	42.4	57.6	1,909
Large (> 680 students)	42.7	57.3	634
Changed schools since previous wave ***			
Yes	33.1	66.9	698
No	42.8	57.2	3,361
School attendance (teacher report) *			
Frequently absent	29.5	70.5	156
Regular attendance	42.4	57.6	3,123
No. of observations	1,671	2,285	

Notes: Some sample counts do not add to the total because of missing data on specific characteristics. [a] Excludes those in other family forms. [b] Excludes those not in school. Statistically significant differences are noted: * $p < .05$; ** $p < .01$; *** $p < .001$.

Child characteristics

School year level

Children aged 10–11 years in lower year levels (up to Year 4) were more likely to have experienced unfriendly behaviours than were children in higher year levels (5 or 6). Children in Year 6 were the least likely to report having experienced unfriendly behaviours. These differences were statistically significant.

Indigenous status and non–English speaking background

Only a small proportion of children in this sample were identified as being of Aboriginal or Torres Strait Islander background (4%). Another 19% lived with a parent who mainly speaks a language other than English at home, with the balance being non-Indigenous children living with parents who mainly speak English at home. Table 7.5 (on page 98) shows that the children least likely to report experiencing unfriendly behaviours were non-Indigenous children living with a parent who mainly speaks a language other than English (50%). The children most likely to experience unfriendly behaviours were Indigenous children (67%), with non-Indigenous children with only English-speaking parents falling between these extremes (61%).

Disability or medical condition

Almost 6% of children aged 10–11 years were identified as having a medical condition or disability lasting for 6 months or more. Comparisons of children with a medical condition/disability and those without revealed a somewhat higher incidence of experiencing unfriendly behaviours among the former (67% compared to 59% respectively).

Weight status

There was a significant difference in patterns of victimisation across children's weight categories. The victimisation rates were higher among children who were classified as overweight or obese (63%) compared to children of normal weight (57%). While sample sizes are small for underweight children, their victimisation rates were lower than for other children (50%).

Family characteristics

Family type

Children from lone-mother and two-parent households were compared on their experience of unfriendly behaviours. As shown in Table 7.5, 68% of children living in lone-mother families reported being subjected to unfriendly behaviours, compared with 57% of children living in two-parent families, and this difference was statistically significant. Children living in other family forms were excluded from these analyses, given the small number and diversity of these families.

Family socio-economic position

A clear trend emerged in the experience of unfriendly behaviours by children according to the three socio-economic position groups. While children experienced victimisation across all three groups, a greater proportion of children in families of the lowest socio-economic position (63%) reported experiencing unfriendly behaviours, compared to children from families of high socio-economic position (52%). The difference in the experience of these behaviours for levels of family socio-economic position was statistically significant at the 99% level of confidence.

Region of residence

Comparisons of children living in metropolitan and regional areas revealed that there were somewhat higher rates of having experienced unfriendly behaviours in regional areas (62%) compared to metropolitan areas (57%).

School characteristics
School type and size

Most children at age 10–11 years attended a government school (64%), with the balance attending a Catholic school (22%) or an independent or private school (14%). A small number of children were not enrolled in any school (n = 25) and were excluded from these analyses. Children's experience of unfriendly behaviours did not vary according to school type; that is, for each school type, a similar proportion of children aged 10–11 years reported experiencing unfriendly behaviours.

Similarly, the size of the school (measured by the number of students attending) did not seem to influence children's experience of unfriendly behaviours, with rates being similar across small, medium and large schools.

Changing schools and school attendance

In total, 18% of children aged 10–11 years had changed schools in the two years prior to the survey period. Of the children who had changed schools, almost 8% had attended three or more schools in that time. Parents reported a variety of reasons for their children changing schools in the last two years (e.g., residential move, convenience, child concerns).[1] A greater proportion of children who had changed schools were victims of unfriendly behaviour when compared to those who had not changed schools (67% compared to 57% respectively), and this difference was statistically significant. Note that we do not know if the actions reported by the children occurred prior to or after their change in schools.

Fewer than 6% of children aged 10–11 years old were reported by teachers to have had frequent absences from school. Of those children frequently absent, 71% reported having experienced unfriendly behaviours, compared to 58% of children with more regular patterns of attendance, and this difference was statistically significant.

7.4 Children's relationships with peers, teachers and parents and their feelings about school

In each of the following subsections, aspects of children's relationships and feelings about school are related to their experiences of unfriendly behaviours (the number of types). As these associations are measured at one point in time, and do not take account of other child or family characteristics, they tell us only that associations do or do not exist. While this does not allow us to speculate on the effects or causes of being subject to unfriendly behaviours, it is nevertheless useful to know the extent to which victimised children's relationships with others are potentially supporting or not.

Children's relationships with peers and liking of school

We begin by looking at children's relationships with their peers. As children who are subject to bullying victimisation are most likely to be bullied by children in their peer group (Cross et al., 2009), we expect that there will be an association between the number of types of unfriendly behaviours experienced and a measure of peer relations, inasmuch as unfriendly behaviours are indicative of bullying experiences. Further, this association would also be expected given that bullying victimisation is thought to be a manifestation of problematic peer relations. This association between peer relations and being picked on or bullied is important, because there is evidence that children who experience difficulty making friends and getting along with their peers are at increased risk of a wide range of poorer psychosocial outcomes (Woodward & Fergusson, 2000).

The measure of peer relations comes from child reports on the Self-Description Questionnaire I (Marsh, 1990). The Self-Description Questionnaire is a well-validated and widely used Australian measure of multidimensional self-concept in pre-adolescent children. The peer relations score is based on items such as "I have many friends" and "I get along with kids easily". The scale is derived

---

[1] Of children who changed schools, 4% moved from primary to secondary school, or moved as a result of school closure.

from the mean of eight underlying items, with a range of 1 to 5. Higher scores indicate better peer relations. The overall mean for LSAC children on this measure was 3.89, with a standard deviation of 0.83. We use another aspect ("general self-concept") of this scale in the next section of this chapter.

These measures were compared according to the number of types of unfriendly behaviours experienced (see Figure 7.1). The slope of the lines, for boys and for girls, indicates that the more types of unfriendly behaviours experienced by children, the poorer their peer relations. Overall, children who were picked on at all had poorer peer relations than those who were not. While the overlapping confidence intervals indicate that there are not significant differences associated with an increase by one in the number of types of unfriendly behaviours experienced, the differences between the experience of one type to three or four types, and between two types and four types are statistically significant.
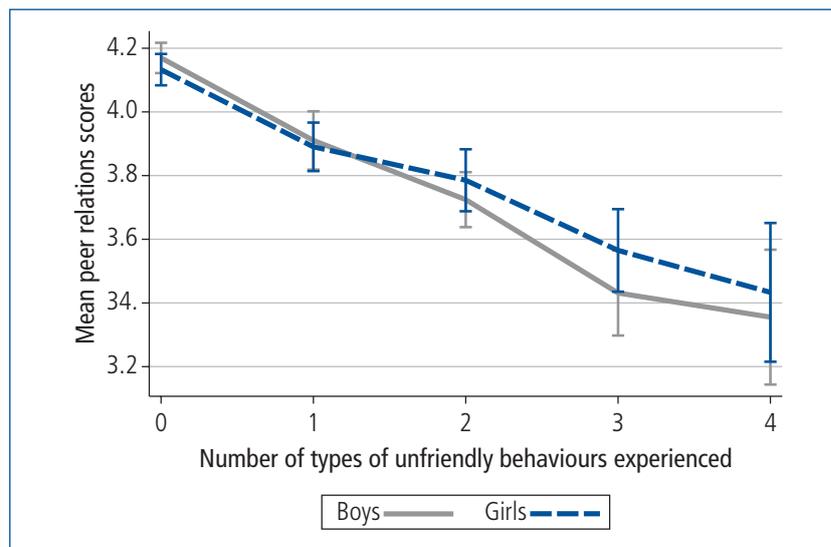
Notes: Confidence intervals are shown by the "I" bars at each data point. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different at *p* < .05.

Figure 7.1:   Mean peer relations scores, by number of types of unfriendly behaviours experienced, child reports, boys and girls, K cohort, Wave 4

The patterns are generally similar for boys and girls. The mean peer relations score was the same for boys and girls who had not been picked on through unfriendly behaviours, and were the same for those who experienced one type of unfriendly behaviour. While gender differences were not statistically significant for the experience of higher numbers of types of unfriendly behaviours, there was a tendency for boys who were subject to more types, to have poorer peer relations than girls who experienced the corresponding number of types.

If being picked on through unfriendly behaviours takes place in the school setting (as suggested by previous research on bullying; e.g., Cross et al., 2009; Fekkes et al., 2005), then children who are victims of a greater number of unfriendly behaviours may feel less positively about school. Here we explore this by examining to what extent children's experiences of unfriendly behaviours are associated with different feelings about their school. Specifically, children's levels of feeling safe and secure and of feeling happy at school are compared according to the number of types of unfriendly behaviours they experienced. This refers to information collected from children on whether they strongly disagreed, disagreed, agreed or strongly agreed with the statements "My school is a place where I feel safe and secure" and "My school is a place where I feel happy". Figure 7.2 (on page 102) shows the percentage agreeing or strongly agreeing with these statements.

Most boys and girls at 10–11 years reported that they felt happy and safe in their schools. However, children who experienced victimisation were less likely to report feeling happy and safe at school. There are quite wide confidence intervals on the estimates, such that statistically significant differences are generally not observed when comparing children who differ by one in the number of types of unfriendly behaviours experienced. However, the overall trend indicates that the more

types of unfriendly behaviour children had experienced, the less likely they were to say that they felt safe and secure at school. This was apparent for those who experienced more than one type of unfriendly behaviour and seemed to have a stronger association for boys than for girls.
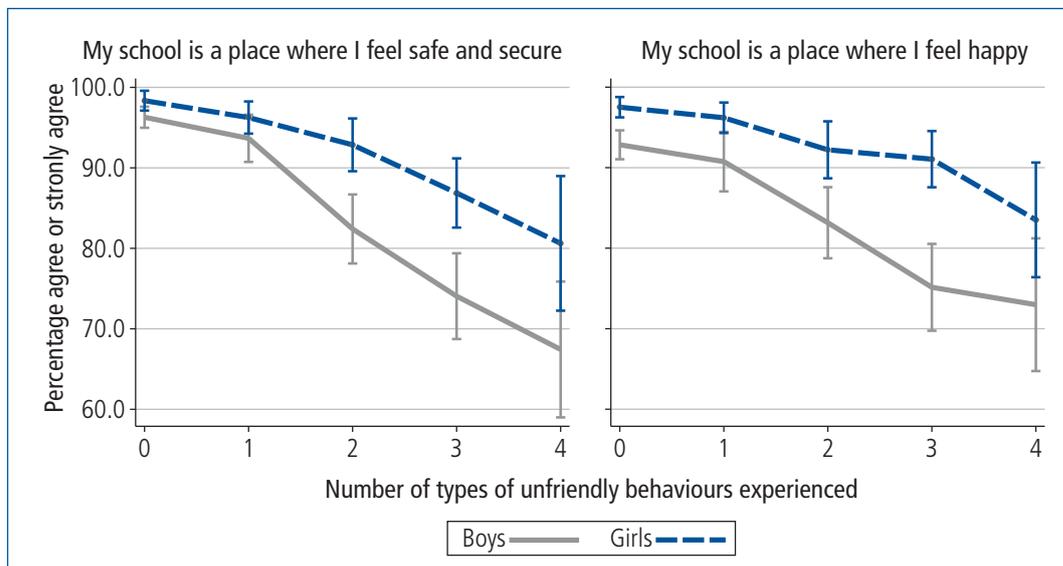
Notes: Confidence intervals are shown by the "I" bars at each data point. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different at $p < .05$.

Figure 7.2:   Agreement with feeling safe and happy at school, by number of types of unfriendly behaviours experienced, child reports, boys and girls, K cohort, Wave 4

Similarly, Figure 7.2 also shows associations between the number of types of unfriendly behaviour and reports of feeling happy at school. For both boys and girls, there was a tendency for children to less often report being happy at school when they experienced more types of unfriendly behaviour, although the differences were not as marked as they were for feeling safe and secure at school, especially for girls. The associations were more apparent for those who experienced more than one type of unfriendly behaviour.

Children's attachment to teachers

Children's feelings about their teachers may also be related to children's experiences of unfriendly behaviours. Secure attachment or connectedness is crucial for young people, and contributes to their sense of self, psychological wellbeing, academic performance and social competence (Buhrmester, 1990; Hartup, 1996; Nickerson & Nagle, 2004).

A warm, affective teacher–student relationship has been associated with positive student attitudes towards school and engagement in the school environment (Lodge, Frydenberg, Freeman, & Care, 2007). Teachers who show students that they care about them tend to create classroom environments that meet students' developmental, emotional and academic needs. Positive teacher–student relationships have been found to also promote peer relationships (Hughes & Kwok, 2007). In the context of school bullying, the role of teachers and other school staff appears to be critical. Teacher responsiveness is fundamental, with research showing that an important component in successful interventions is related to the degree of commitment and training on the part of teachers (Pepler, Smith, & Rigby, 2004).

This subsection first examines the attachment of 10–11 year old children to teachers, using the child reports on the People in My Life (PIML) measure (see Murray & Greenberg, 2000). The child's Teacher Attachment subscale assesses teacher affiliation and dissatisfaction (the Parent Attachment subscale is described in the next subsection). Children responded with their level of agreement with eight items assessing teacher affiliation and dissatisfaction. Examples of items include: "I get along well with my teachers", "My teachers understand me", and "I trust my teachers". Children rated their agreement with the items using a four-point scale of 1 = "almost never or never true",

2 = "sometimes true", 3 = "often true" and 4 = "almost always or always true". Items are combined into a summative attachment score with a range of 1 to 4. Higher scores indicate greater levels of attachment. The overall mean score for this sample was 3.17 (SD = 0.68). Girls' and boys' mean scores on these measures, according to the number of types of unfriendly behaviours experienced, are displayed in Figure 7.3.
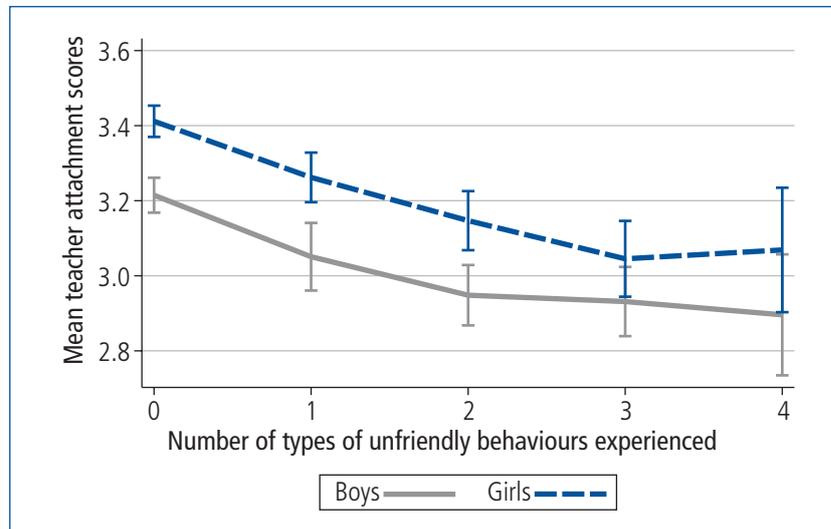
Notes: Confidence intervals are shown by the "I" bars at each data point. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different at $p < .05$.

Figure 7.3: Mean teacher attachment scores, by number of types of unfriendly behaviours experienced, child reports, boys and girls, K cohort, Wave 4

Overall, teacher attachment was higher for girls than for boys, and higher for children who were not picked on through unfriendly behaviours than for those who were. Among those who were picked on through unfriendly behaviours, teacher attachment was not necessarily significantly different when adding one more type of unfriendly behaviour; however, the slope of the line for boys and girls indicates that teacher attachment was lower when more types of unfriendly behaviours were experienced, up until three types. Teacher attachment was no lower for four compared to three types, and for boys there was little difference between those picked on through two compared to four types of unfriendly behaviour.

Children's attachment to parents

Research generally concurs that the quality of family relationships plays an important role in bullying behaviour (Lodge, 2008). More broadly, research regarding attachment in middle childhood highlights the significance of the emotional bonds between parents and children and the development of successful interpersonal skills and relationships (Madden-Derdich, Estrada, Sales, Leonard, & Updegraff, 2002). This emotional bond with parents can be understood in light of the specific dimensions of trust and communication, with higher levels of parental communication being more strongly associated with lower delinquency and depression in children (Ridenour, Greenberg, & Cook, 2006).

We now examine the attachment of 10–11 year old children to parents, again using child reports on the PIML measure, but using the Parent Attachment subscale. The Parent Attachment subscale measures trust and communication. Examples of items assessing parental trust and communication include: "My parents understand me", "I can count on my parents to help me when I have a problem", and "I share my thoughts and feelings with my parents". Children rated their agreement on eight items using a four-point scale: 1 = "almost never or never true", 2 = "sometimes true", 3 = "often true", and 4 = "almost always or always true". Responses on each item are combined into a summative score with a range of 1 to 4, with a higher score indicating a greater level of attachment. The overall mean score for the LSAC sample was 3.52 (SD = 0.53). Girls' and

boys' mean scores on these measures according to the number of types of unfriendly behaviours experienced are displayed in Figure 7.4.
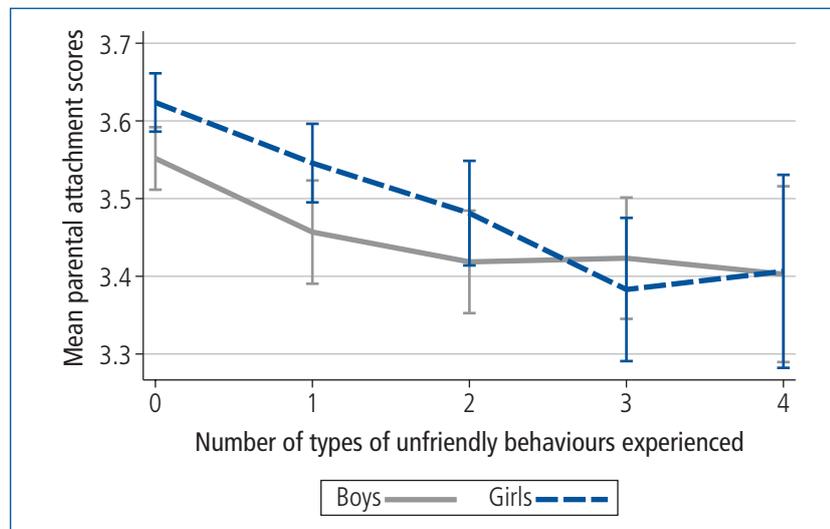
Notes: Confidence intervals are shown by the "I" bars at each data point. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different at *p* < .05.

Figure 7.4:   Mean parental attachment scores, by number of types of unfriendly behaviours experienced, child reports, boys and girls, K cohort, Wave 4

Levels of parental attachment differed significantly for boys and girls according to whether they were picked on through unfriendly behaviours. In total, children who were picked on through at least one unfriendly behaviour reported statistically significantly lower levels of parental attachment (trust and communication) than those who were not picked on at all. As with other measures examined in this chapter, the slope of the lines indicates that parental attachment was lower among children who experienced more types of unfriendly behaviours, although this is not apparent when comparing three types to four types of unfriendly behaviours for girls, and for boys, parental attachment was the same for those who experienced two, three or four types of unfriendly behaviours.

7.5   How do experiences of unfriendly behaviours relate to aspects of social-emotional wellbeing?

Being a victim of school bullying is considered a risk factor for poor psychological health, with the risk being greater for children who suffer severe and prolonged victimisation and who lack adequate social support (Rigby, 2003). To explore this, the following subsections present associations between children's experiences of being picked on through unfriendly behaviours and indicators of social and emotional wellbeing.

As with the previously presented analyses, it is important to note that the following analyses do not take account of other underlying characteristics (such as the socio-economic position of the family) that might be related to differences in children's experiences of unfriendly behaviours and may also influence children's outcomes. Further, as the analyses are based on data collected at one point in time, they do not identify causal relationships. This means that we are unable to say whether being picked on *results* in children having poorer social-emotional outcomes, *follows* from children having lower social-emotional wellbeing, or perhaps is related to other factors (such as the characteristics analysed in the preceding subsection). Extending this research to address these questions will be an important direction for future research with these data, but is beyond the scope of this chapter.

The value of the analyses presented here is to demonstrate how experiences of being picked on through unfriendly behaviours co-occurs with various aspects of wellbeing. To the extent that being picked on in this way is indicative of being bullied, this draws attention to the various supports or programs that may be beneficial to children who are victims of bullying.

The measures examined here are derived from children's own responses to items from the Strengths and Difficulties Questionnaire (measures of conduct problems, emotional difficulties and hyperactivity/inattention) and the Self-Description Questionnaire I (a measure of general self-concept). These measures are described further below.

Children's self-concept

First, we explore children's general self-concept, which is linked to students' level of confidence, social skills and self-worth (Hattie, 1992). Previous research has shown that children who are bullied more extensively have, for example, lower levels of self-esteem (Rigby, 2002), and so we have strong expectations that self-concept will be lower among children who are picked on through more types of unfriendly behaviours.

Child reports of self-concept are measured using the Self-Description Questionnaire I (described earlier in the discussion of the peer relations measure). In this questionnaire, general self-concept refers to eight items, including "I do lots of important things" and "I can do things as well as most other people". The scale is derived from the mean of these items, with a range of 1 to 5. A higher value indicates a more positive self-concept. The LSAC sample had an overall mean self-concept score of 4.16 with a standard deviation of 0.67.

These measures are presented in Figure 7.5 for boys and girls, by number of types of unfriendly behaviours experienced. Boys and girls who were not picked on through unfriendly behaviours reported greater levels of general self-concept than those who were. As with the other measures we have seen, children's self-concept declined as the number of types of unfriendly behaviours increased, although wide confidence intervals mean that differences were not necessarily significantly different when comparing children's outcomes where the number of types of unfriendly behaviours varied by just one.
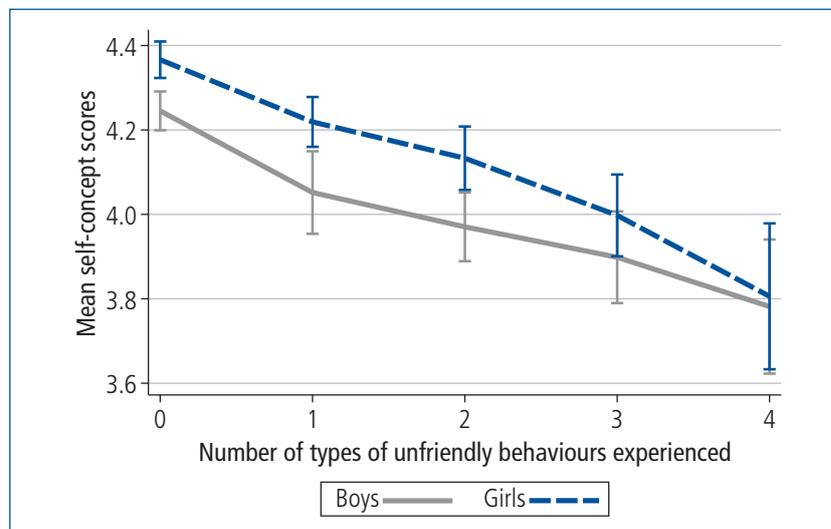
Notes: Confidence intervals are shown by the "I" bars at each data point. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different at $p < .05$.

Figure 7.5:   **Mean self-concept scores, by number of types of unfriendly behaviours experienced, child reports, boys and girls, K cohort, Wave 4**

Social-emotional problems

This subsection examines the social and emotional problems of 10–11 year old children using child reports on the Strengths and Difficulties Questionnaire (Goodman, 2001). This instrument is a brief screening questionnaire that includes scales assessing conduct problems, emotional symptoms, hyperactivity or inattention, and peer relationship problems. Since one component of the peer relations scale specifically relates to children being bullied or picked on, instead of using the overall scale in which all these subscales are aggregated, we explore associations with the subscales of

conduct problems (e.g., often fights with other children or bullies them), emotional symptoms (e.g., nervous or clingy in new situations, easily loses confidence), and hyperactivity/inattention (e.g., constantly fidgeting or squirming). Findings for conduct problems are of particular interest, as they may provide evidence of children being both victims and perpetrators of bullying. Each subscale has a possible range of 0 to 10, with higher scores indicating higher levels of social-emotional problems. The overall means of these measures in this sample were: conduct problems 2.01 (*SD* = 1.79), emotional symptoms 2.97 (*SD* = 2.25), and hyperactivity/inattention 3.61 (*SD* = 2.22).

Children experiencing different numbers of types of unfriendly behaviours were compared on each of these subscales (Figure 7.6). There were significant group differences in mean scores on each of the subscales, with children who had been picked on showing significantly higher levels of social-emotional problems. Further, associations with increasing numbers of types of unfriendly behaviours were apparent, especially for conduct problems and for emotional difficulties. On these scales, the difference between those who were picked on through all four types of unfriendly behaviour and those not picked on at all was more than one standard deviation. For hyperactivity/inattention, the mean score for girls was the same for those who experienced three or four types of unfriendly behaviours, and the mean scores for boys were the same for those experiencing two, three or four types of unfriendly behaviours.
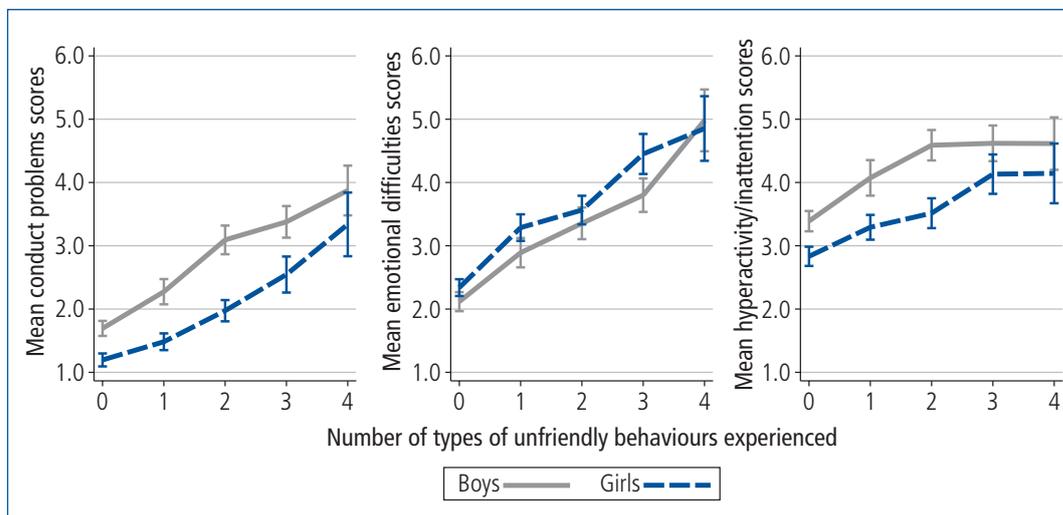
Notes: Confidence intervals are shown by the "I" bars at each data point. Where confidence intervals for the groups being compared do not overlap, this indicates that the values are significantly different at *p* < .05.

Figure 7.6:   Mean scores for social-emotional problems, by number of types of unfriendly behaviours experienced, child reports, boys and girls, K cohort, Wave 4

Note that these analyses use children's own reports on questions relating to their social-emotional wellbeing. If, instead, parents' or teachers' reports are used, there are similar associations apparent between children's experiences of unfriendly behaviours and their social-emotional wellbeing, as measured on these different subscales (results not shown).

7.6   Parent, teacher and child reports on children's experiences of bullying victimisation

One feature of bullying is that it often occurs during times when children are not being closely supervised by adults (Craig & Pepler, 1997). As such, parents and teachers may not always be aware that a child has been a victim of bullying behaviours. We explore this here with the LSAC data, by relating children's experiences of having been picked on through unfriendly behaviours to parent and teacher reports of children having been bullied.

In LSAC, parents and teachers are asked about whether children have been bullied or picked on in the previous 6 months. These parent- and teacher-reported data are the same as those analysed

for children's reports in section 7.2. As noted in the introduction, parent reports were available for all of the children, and here we focus on reports by Parent 1 (usually mothers). Teacher reports were available for 82% of the children.

For the 10–11 year old children, 69% of Parent 1 respondents said the child had not been bullied or picked on (67% for boys and 71% for girls), 25% said it was somewhat true that the child had been bullied or picked on (25% for boys and 24% for girls), and 7% said this was certainly true (8% for boys and 6% for girls). Looking at teacher reports, 85% said the child had not been bullied (82% for boys and 88% for girls), 12% said it was somewhat true that the child had been bullied (14% for boys and 9% for girls) and 3% said it was certainly true (4% for boys and 2% for girls).

These same questions were asked at each of the earlier waves of LSAC, and so it is possible to see to what extent reporting of children being bullied at age 10–11 years follows a pattern of being bullied at earlier ages. Here we use just the Parent 1 reports, for simplicity. The overall trend was for parents to be slightly more likely to report that their child had been bullied once children were school-aged; that is, from 6–7 years through to 10–11 years. Across these ages, there was very little difference in the percentages reporting that their child had been bullied. The percentage reporting that their child had been bullied or picked on (certainly or somewhat) was 21% at 4–5 years, 29% at 6–7 years, 30% at 8–9 years, then 31% at 10–11 years. (Note that these figures are based on the sample of children who responded at Wave 4.)

Children who were reported by parents to have been bullied or picked on at a younger age, were more often reported by parents to have been bullied or picked on at older ages. For example, of the children who were said to have not been bullied at age 4–5 years, 27% were said to have been bullied at age 10–11 years, which compares to a considerably higher percentage of 47% for 10–11 year old children who, according to parents, had somewhat or certainly been bullied at age 4–5 years.

These four waves of longitudinal data allow us to measure whether, according to parents, children were persistently bullied or picked on from age 4–5 years through to age 10–11 years. Overall, among the 10–11 year old children, 43% had not been bullied or picked on, according to parents, in the 6 months prior to each of the four waves. At the other extreme, 4% had been bullied or picked on in the 6 months prior to each of the waves, according to parents. In between, 27% had been bullied prior to only one of the waves (at age 10–11 years being the most common), 17% prior to two waves (at ages 8–9 and 10–11 years being the most common) and 10% prior to three waves (at ages 6–7, 8–9 and 10–11 years being the most common).

These longitudinal patterns suggest that, to some extent, bullying victimisation experiences that are apparent at young ages may be a precursor to such experiences as children grow. This may reflect the underlying characteristics of children that may place them at greater risk of being bullied, regardless of their age.

An important question to ask is to what extent parents are aware of bullying. To examine this, parent reports on their child's experience of victimisation behaviours in the preceding 6 months were compared with the self-reports of 10–11 year olds on experiences of unfriendly behaviours. Child reports refer to the experiences of specific unfriendly behaviours and, as we saw in section 7.2, there is a strong association between these reports and children's reports of having been bullied or picked on. However, this is not a perfect relationship, and the extent to which some children who experienced unfriendly behaviours reported that they had not been bullied or picked on suggests that some children do not equate these unfriendly behaviours with being bullied.

Just as was the case with child reports of having been bullied or picked on, parents (and also teachers) were not prompted to think about specific bullying behaviours, and so may not bring to mind all those behaviours that children are asked about when queried about unfriendly behaviours (or indeed, if parents are aware of children experiencing these behaviours). Also, the parent (and teacher) reports about children being bullied or picked on refer to the preceding 6 months, while children's reports of specific unfriendly behaviours refer to the preceding 12 months.

Table 7.6 (on page 108) shows that of children who said they had been picked on in some way, 55% of parents said it was not true that their child had been picked on, another 34% said it was somewhat true, and 11% said it was certainly true. That is, for a significant number of children who reported experiencing unfriendly behaviours, their parents may either not be aware that they had experienced these behaviours, or if they were aware, may not have considered those actions to

be bullying behaviours. For children who reported that they had not been picked on, 87% of their parents also reported that the child had not been picked on or bullied.

Table 7.6:	Comparison of parent, teacher and child reports of victimisation at 10–11 years old, K cohort, Wave 4			
	Not true (%)	Somewhat (%)	Certainly (%)	Total (%)
Parent reports of whether child picked on or bullied ***				
No types of unfriendly behaviours	86.7	11.3	2.0	100.0
One or more types of unfriendly behaviours:	55.2	34.3	10.6	100.0
One type	71.5	24.2	4.4	100.0
Two types	55.7	34.4	10.0	100.0
Three types	45.3	42.0	12.7	100.0
Four types	30.7	45.1	24.2	100.0
Teacher reports of whether child picked on or bullied ***				
No types of unfriendly behaviours	92.6	5.5	2.0	100.0
One or more types of unfriendly behaviours:	79.2	16.4	4.4	100.0
One type	88.4	9.5	2.2	100.0
Two types	80.1	16.5	3.4	100.0
Three types	72.8	19.1	8.1	100.0
Four types	65.5	28.8	5.7	100.0

Notes: Parent reports: no. of observations = 4,044. Teacher reports: no. of observations = 3,301. Statistically significant differences are noted: *** $p < .001$.

There was some variation in parents' reports of bullying according to the number of types of unfriendly behaviours experienced by children. The more types of unfriendly behaviours children experienced, the more likely were parents to report that their child was certainly bullied, and the less likely they were to report that their child was not bullied. This may indicate that when children are bullied in multiple ways, the outcomes are more apparent to parents, perhaps because children are more likely to talk to their parents about these experiences. Nevertheless, even for children who reported three or four types of unfriendly behaviours, a significant proportion of parents reported that their child had not been bullied (45% and 31% respectively).

Because much of the bullying of school-age children occurs in school, it is also valuable to consider whether teachers are aware of children's bullying experiences. Just as with parent and child reports, Table 7.6 shows that there were discrepancies between teacher reports of bullying and child reports of unfriendly behaviours. For those children who reported that they had been victims of unfriendly behaviours, 21% of teachers said the child was somewhat or certainly bullied, leaving 79% saying that the child had not been bullied or picked on. As with parent reports, teachers were less likely to say that the child had not been bullied if the child reported experiencing more types of unfriendly behaviours. Most of the accompanying increase was in the percentage reporting that the child had been somewhat bullied. For children who reported experiencing three or four types of unfriendly behaviours, a majority of teachers reported that these children had not been picked on or bullied (73% or 66%, respectively). There is some evidence to suggest that teachers are less likely to observe certain bullying behaviours, such as acts of social exclusion (Craig & Pepler, 1997). Problems with interpreting what is and is not "bullying" may also result from the subjective elements involved in defining a bullying episode.

To fully understand these relationships and apparent under-reporting of bullying by parents and teachers, more detailed information is needed on the types of bullying that parents and teachers observed. A more detailed examination of these data, along with the data on whether children considered that they had been bullied and their reports on unfriendly behaviours, could provide some insights on which specific behaviours are more closely aligned with parent or teacher reports of children's bullying experiences. Nevertheless, these data suggest a significant under-reporting of bullying by both parents and teachers, which is consistent with the research (e.g., Craig & Pepler, 1997).

7.7   Summary and discussion

The analyses presented in this chapter provide information about 10–11 year olds' experiences of being picked on through unfriendly behaviours, to provide some indication of experiences of bullying victimisation among this age group, using data from the nationally representative LSAC survey. The findings highlight that a significant proportion of children may experience some bullying victimisation. Almost 3 in 5 children aged 10–11 years reported that they had been picked on through some form of unfriendly behaviour in the previous 12 months. Seven per cent of children at 10–11 years had experienced all four types of unfriendly behaviour examined here (pushing, shoving, hitting; name-calling or insulting; social exclusion; and note-writing). The greater the number of types of unfriendly behaviour experienced, the more likely were children to report that they had been bullied or picked on in the previous 6 months.

While boys and girls aged 10–11 years reported similar rates of overall victimisation, boys were more likely than girls to report overt unfriendly behaviours (pushing, shoving, hitting, and name-calling or insulting) and girls were more likely than boys to report the covert types (social exclusion, note-writing). This supports the view that there is a need to distinguish between various forms of bullying by boys and girls to enable appropriate interventions to be devised and applied.

Some factors emerged in describing differences in the prevalence of being picked on through unfriendly behaviours. In particular, victimisation was more apparent among children from families with lower access to social and economic resources, and among children living in lone-mother rather than two-parent families. Also, Indigenous children more often experienced unfriendly behaviours compared to non-Indigenous children, while children of non–English speaking parents were less likely to experience unfriendly behaviours than other children. Children with a disability or long-term health condition also were more likely than other children to have been picked on through unfriendly behaviours, as were the 10–11 year olds in the lower grades, rather than the higher grades. Being picked on was also more common among overweight or obese children, compared to children of normal weight. Among children whom teachers identified as being absent from school more frequently, there was a higher percentage of children who reported experiencing unfriendly behaviours, compared to those with more regular school attendance. Additionally, children who had changed schools in the previous two years were more likely to report victimisation, although it is not clear whether this occurred before or after the change in schools. School type or size did not appear to be related to children's reports of experiences of unfriendly behaviours.

We explored here various aspects of boys' and girls' relationships with peers, teachers and parents, and how the quality of these relationships varied by the number of types of unfriendly behaviours the children had experienced. These relationships are important in this context. Peer relations are likely to be central to children's experiences of being bullied or picked on, since their peers are often the perpetrators of bullying. Here, it was clear that poorer peer relations were experienced by boys and girls who were subject to more types of unfriendly behaviours. It was not surprising to see, then, that a higher number of types of unfriendly behaviours experienced was associated with children feeling less safe and less happy in school.

The quality of children's attachments to teachers and parents is likely to be an important factor in a child's willingness to disclose peer victimisation to these adults. This research showed that children who had been picked on reported lower levels of parental and teacher attachment than those who had not. This was true for boys and for girls.

It is well established that children who are bullied tend to experience difficulties with self-esteem, and these analyses were consistent with this, showing that children who experienced more peer victimisation, on average, reported poorer general self-concept or self-worth. Children experiencing more peer victimisation also showed significantly higher levels of conduct problems, emotional difficulties, and hyperactivity or inattention. It is important for future research to examine the relationship between experiences of unfriendly behaviours and social-emotional problems, in order to establish to what extent this reflects children being both victims and perpetrators of bullying.

Teachers and parents may need help in ensuring bullying interventions are effectively targeted toward the children at greatest risk of bullying victimisation. The findings suggest that parents and teachers may have difficulty in detecting all forms of bullying behaviour, although different reporting periods and different methods of collecting information on bullying experiences may

contribute to differences in child, parent and teacher reports of children's bullying victimisation. In future research it will be valuable to explore these data further, to ascertain whether the factors that explain children's reports of experiences of unfriendly behaviours are the same as those that predict such reports by parents or teachers; or whether there are certain groups of children who self-report experiencing victimisation that does not come to the attention of parents or teachers. Previous research has highlighted the importance of providing teacher training aimed at raising teachers' awareness of bullying behaviours, as teacher responsiveness is considered fundamental in efforts to reduce school bullying (Pepler, Smith, & Rigby, 2004). Also important is helping parents by providing them with information on how to recognise that their child might be being bullied and helping them to help their child deal with these situations. Whole-school anti-bullying intervention programs that are targeted at students, teachers and parents have been shown to have some positive outcomes, including that these programs result in children becoming much more likely to tell someone if they have been bullied (Carney & Merrell, 2001; Soutter & McKenzie, 2000).

It will be important for later research with LSAC data to explore to what extent the associations presented in this chapter can be linked specifically to experiences of being bullied or picked on, rather than any underlying characteristics of those children who are victims of bullying. The longitudinal data will be especially valuable in helping to understand the factors that may lead to children being more likely to be victims of bullying. In the future, bullying victimisation will be able to be studied in more detail, and focus more directly on experiences of bullying rather than unfriendly behaviours. This will be possible in later waves of LSAC, in which more detailed information on bullying is being collected, including information on cyber-bullying. Importantly, further waves of these data will also be able to be used to examine to what extent children exhibit bullying behaviours themselves.

7.8   References

Australian Institute of Health and Welfare. (2009). *A picture of Australian children*. Canberra: AIHW.

Buhrmester, D. (1990). Intimacy of friendship, interpersonal competence, and adjustment during middle childhood and adolescence. *Child Development*, *61*, 1101–1111.

Carney, A. G., & Merrell, K. W. (2001). Bullying in schools: perspectives on understanding and preventing an international problem. *School Psychology International*, *22*(3), 364–382.

Craig, W., & Pepler, D. J. (1997). Observations of bullying and victimisation on the schoolyard. *Canadian Journal of School Psychology*, *2*, 41–60.

Cross, D., Shaw, T., Hearn, L., Epstein, M., Monks, H., Lester, L., & Thomas, L. (2009). *Australian covert bullying prevalence study (ACBPS)*. Perth: Child Health Promotion Research Centre, Edith Cowan University.

Eslea, M., Menesini, E., Morita, Y., O'Moore, M., Mora-Merchan, J., Pereira, B., et al. (2003). Friendship and loneliness among bulllies and victims: Data from seven countries. *Aggressive Behavior*, *30*, 71–83.

Espelage, D. L., & Swearer, S. (2003). Research on school bullying and victimization: What have we learned and where do we go from here? *School Psychology Review*, *32*(3), 365–383.

Fekkes, M., Pijpers, F. I. M., & Verloove-Vanhorick, S. P. (2005). Bullying: Who does what, when and where? Involvement of children, teachers and parents in bullying behavior. *Health Education Research*, *20*(1), 81–91.

Forero, R., McLellan, L., Rissel, C., & Bauman, A. (1999). Bullying behaviour and psychosocial health among school students in New South Wales, Australia: Cross sectional survey. *British Medical Journal*, *319*(7206), 344–348.

Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child & Adolescent Psychiatry*, *40*(11), 1337–1345.

Hartup, W. W. (1996). The company they keep: friendships and their developmental significance. *Child Development*, *67*, 1–13.

Hattie, J. (1992). *Self-concept*. Hillsdale, NJ: Erlbaum.

Hughes, J., & Kwok, O. (2007). Influence of student–teacher and parent–teacher relationships on lower achieving readers' engagement and achievement in the primary grades. *Journal of Educational Psychology*, *99*(1), 39–51.

Joint Select Committee on Cyber-Safety. (2011). *High-wire act: Cyber-safety and the young. Interim report*. Canberra: Parliament of the Commonwealth of Australia. Retrieved from <www.aph.gov.au/Parliamentary_Business/Committees/ House_of_Representatives_Committees?url=jscc/report.htm>.

Kochenderfer, B. J., & Ladd, G. W. (1996). Peer victimization: Cause or consequence of school maladjustment? *Child Development*, *67*, 1305–1317.

Lodge, J. (2008). *Working with families concerned with school-based bullying* (AFRC Briefing Paper No. 11). Melbourne: Australian Family Relationships Clearinghouse

Lodge, J. (2010). *The bully/victim continuum: stability of peer victimisation in school and patterns of internalising and externalising psychopathology in early adulthood*. Paper presented at the meeting of the 27th International Congress of Applied Psychology, Melbourne.

Lodge, J., & Frydenberg, E. (2011). *Cyber abuse and bullying*. In D. J. Christie (Ed.), *Encyclopedia of peace psychology*. Hoboken, NJ: Wiley-Blackwell.

Lodge, J., Frydenberg, E., Freeman, E., & Care, E. (2007, 25–29 September). Understanding engagement in the middle years of school: Relationships with coping and wellbeing. In K. Moore (Ed.), *Proceedings of 42nd annual conference 25–29 September 2007, Brisbane, Qld: Psychology making an impact* (pp. 247–251). Melbourne: Australian Psychological Society.

Madden-Derdich, D. A., Estrada, A. U., Sales, L. J., Leonard, S. A., & Updegraff, K. A. (2002). Young adolescents' experiences with parents and friends: Exploring the connections. *Family Relations*, *51*, 72–80.

Marsh, H. W. (1990). *Self Description Questionnaire-I (SDQ-I) manual*. Sydney: University of Western Sydney.

Ministerial Council on Education, Early Childhood Development and Youth Affairs. (2010). *National Safe Schools Framework* (2011 revision). Melbourne: Education Services Australia.

Murray, C., & Greenberg, M. T. (2000). Children's relationship with teachers and bonds with school: An investigation of patterns and correlates in middle childhood. *Journal of School Psychology*, *5*, 423–445.

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behavior among U.S. youth: Prevalence and association with psychosocial adjustment. *Journal of the American Medical Association*, *285*, 2094–2100.

Nickerson, A. B., & Nagle, R. J. (2004). The influence of parent and peer attachments on life satisfaction in middle childhood and early adolescence. *Social Indicators Research*, *66*, 35–60.

Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Cambridge, MA: Blackwell Publishers.

Organisation for Economic Co-operation and Development. (2009). *Society at a glance 2009: OECD social indicators*. Paris: OECD. Retrieved from <www.oecd.org/els/soc/previouseditionsofsocietyataglancesag.htm>.

Pepler, D., Smith, P. K., & Rigby, K. (2004). Looking back and looking forward: Implications for making interventions work effectively. In P. K. Smith, D. Pepler, & K. Rigby (Eds.), *Bullying in schools: How successful can interventions be?* (pp. 307–324). Cambridge: Cambridge University Press.

Ridenour, T. A., Greenberg, M. T., & Cook. E. T. (2006). Structure and validity of people in my life: A self-report measure of attachment in late childhood. *Journal of Youth Adolescence*, *35*(6), 1037–1053.

Ridenour, T. A., Greenberg, M. T., & Cook, E. T. (2006). Structure and validity of people in my life: A self-report measures of attachment in late childhood. *Journal of Youth Adolescence*, *35*(6), 1037–1053.

Rigby, K. (1996). *Bullying in schools: And what to do about it*. Bristol, PA: Jessica Kingsley Publishers.

Rigby, K. (2000). Effects of peer victimization in schools and perceived social support on adolescent well-being. *Journal of Adolescence*, *23*, 57–68.

Rigby, K. (2002). *New perspectives on bullying*. London: Jessica Kingsley.

Rigby, K. (2003). Consequences of bullying in schools. *Canadian Journal of Psychiatry*, *48*, 583–590.

Rigby, K., & Smith, P. K. (2011). Is school bullying really on the rise? *Social Psychology of Education*, *14*(4), 441–455.

Sharp, S., Thomson, D., & Arora, T. (2000). How long before it hurts? An investigation into long-term bullying. *School Psychology International*, *21*, 37–46.

Slee, P. (1995). Bullying: Health concerns of Australian secondary school students. *International Journal of Adolescence and Youth*, *5*, 215–224.

Smith, P. K., Talamelli, L., Cowie, H., Naylor, P., & Chauhan, P. (2004). Profiles of non-victims, escaped victims, continuing victims and new victims of school bullying. *British Journal of Educational Psychology*, *74*(4), 565–582.

Soutter, A., & McKenzie, A. (2000). The use and effects of anti-bullying and anti-harassment policies in Australian schools. *School Psychology International*, *21*(1), 96–105.

Vandebosch, H., & van Cleemput, K. (2008). Defining cyberbullying: A qualitative research into the perceptions of youngsters. *Cyberpsychology and Behavior*, *11*(4), 499–503.

Wolke, D., Woods, S., Stanford, K., & Schulz, H. (2001). Bullying and victimization of primary school children in England and Germany: Prevalence and school factors. *British Journal of Psychology*, *92*(4), 673–696.

Woodward, L. J., & Ferguson, D. M. (2000). Childhood and adolescent predictors of physical assault: A prospective longitudinal study. *Criminology*, *38*, 233–261.

Zubrick, S. R., Silburn, S. R., Gurrin, L., Teoh, H., Sheperd, C., Carlton, J., & Lawrence, D. (1997). *Western Australian Child Health Survey: Education, health and competence*. Perth: Australian Bureau of Statistics and the TVW Telethon Institute for Child Health Research.

8

Children's food allergies

Nadine Bertalli and Katie Allen
Murdoch Childrens Research Institute, The Royal Children's Hospital

Brigit Maguire
Australian Institute of Family Studies

8.1   Introduction

The "allergy epidemic" is a major public health issue predominantly facing Western countries, including Australia. There has been a rapid increase over the past 30 years in the prevalence of allergic conditions such as asthma, eczema and food allergy, and the causes remain unknown. Food allergy prevalence in particular, has increased dramatically over the past decade. Most concerning is that food allergy is a problem that affects mainly children (Sicherer, 2011).

The disease burden of childhood allergic conditions is substantial. Around 25% of Australian children have asthma or asthma-like symptoms (Asher et al., 2001, 2006), 20–24% have eczema, and 15–25% have allergic rhinitis (Beasley, 1998). The prevalence of childhood food allergies, however, is less certain. A recent meta-analysis using data from Europe and North America determined that between 12% and 13% of children aged 0–16 years reported food allergy symptoms, and food challenge tests[1] confirmed a prevalence of 1–11% (Rona et al., 2007). Australian population-based research has shown that up to 10% of infants have confirmed food allergies (Osborne et al., 2011). Although there is uncertainty about the exact prevalence of food allergies, research suggests that it is increasing. For example, in the United States, the rate of food allergies has been shown to have increased 18% from 1997 to 2007 (Branum & Lukacs, 2009), while peanut allergies doubled, from 0.4% in 1997 to 0.8% in 2002, and more than trebled to 1.4% in 2008 (Sicherer et al., 2010). Hospital admissions for food allergies and anaphylaxis (swelling/breathing difficulties) have seen similar rises in both the United Kingdom and Australia. In the UK, a seven-fold increase was observed in the period 1990–91 to 2003–04 (Gupta, Sheikh, Strachan, & Anderson, 2007), and in Australia, a 350% increase was seen in the period 1994–95 to 2004–05 (Liew, Williamson, & Tang, 2009).

Around 85% of children with an early allergy to foods—including eggs, cow's milk, wheat and soy—will develop tolerance to these foods by age 5 years (Wood, 2003). Allergies to peanuts and tree nuts, on the other hand, are typically lifelong. Only 20% of children with a peanut allergy and 9% of children with a tree nut allergy outgrew these allergies by the time they reached school (Fleischer, Conover-Walker, Matsui, & Wood, 2005; Ho et al., 2008).

Adverse food reactions can cause physical symptoms ranging from the mild (e.g., hives) to the severe (e.g., breathing difficulties); however, not all food reactions are food allergies. A food allergy causes adverse physical symptoms and involves the immune system. A food intolerance, on the other hand, does not involve the immune system. Survey questionnaires are unlikely to be able to reveal whether respondents recognise this difference.[2]

---

[1]   A food challenge is a test during which a suspect food is fed to the child and any reactions observed.

[2]   In the Longitudinal Study of Australian Children (LSAC) questionnaire, parents were asked whether their child had ever had a reaction (such as redness or itching) that they thought was due to food that the child had eaten. As this question did not differentiate between allergic and intolerance reactions, responses are likely to also include intolerance reactions (e.g., lactose or gluten intolerance).

Food allergies can be classified as being "immunoglobulin E (IgE)-mediated" or "non–IgE mediated", based on a person's food reaction history/food challenge (using time to onset of reaction and symptoms) and from allergy test results (see Table 8.1; Allen, Hill, & Heine, 2006).

Table 8.1:	Classification of IgE- and non–IgE mediated food allergies		
	Group 1	**Group 2**	**Group 3**
Time to onset of reaction	< 1 hour	1–24 hours	> 24 hours
Ingested volume required for reaction	Small	Moderate	Large
Symptoms	Immediate food hypersensitivity, urticaria, erythema, angioedema, vomiting, anaphylaxis	Vomiting, diarrhoea, colitis, functional intestinal obstruction	Diarrhoea, atopic dermatitis, failure to thrive, gastro-oesophageal reflux, severe infantile colic
Syndromes	Oral allergy syndrome	Food protein-induced enterocolitis syndrome	Food protein-induced enteropathy, enterocolitis and proctocolitis; multiple food allergy
Immune class	IgE-mediated	Mixed IgE- and non–IgE mediated	Non–IgE mediated
Immunological characteristics	Large wheal on skin prick test, raised levels of food-specific serum IgE antibodies	Not known	Enhanced T-cell reactivity

Notes: Medical terms: Urticaria—red itchy bumps on the skin, also called hives. Erythema—redness of the skin. Angioedema—swelling below the surface of the skin.

Food protein-induced gastrointestinal syndromes are allergic reactions and non-IgE gastrointestinal reactions are believed to be delayed allergic reactions, following ingestion of one or more foods. Symptoms affect various parts of the gastrointestinal tract. Specific syndromes are: Food protein-induced enteropathy—inflammation of the small intestine; symptoms include diarrhoea and failure to thrive. Food protein-induced enterocolitis syndrome—inflammation of the small and large intestine; symptoms include profuse diarrhoea, vomiting, dehydration and failure to thrive. Food protein-induced proctocolitis—inflammation of the lower section of the large intestine; symptoms include low-grade rectal bleeding.

Source: Allen et al. (2006)

In an IgE-mediated reaction, food-specific IgE antibodies (a type of marker produced by the immune system to identify foreign substances) "recognise" when the food is eaten and activate the immune system's inflammatory response. IgE-mediated reactions usually occur within minutes of ingestion of the offending allergen and most often result in hives, angioedema (swelling) of the face or vomiting. IgE-mediated food allergy is associated with the most serious form of food allergy—anaphylaxis—which can be fatal if left untreated. Anaphylaxis is a multi-system, rapidly evolving allergic reaction that involves respiratory and/or cardiovascular compromise (Allen et al., 2006).

Non–IgE mediated food allergies occur via a different, as yet undetermined, mechanism in the immune system. The majority of non–IgE mediated symptoms are delayed until more than four hours to days after ingestion, and are generally gastrointestinal in nature (e.g., diarrhoea and vomiting). Little is known about common precipitants of non–IgE mediated food allergies since there have been no population studies and few clinical cohort studies of these conditions using formal food challenges. However, typical foods thought to be common causes of non–IgE mediated food allergy include cow's milk and soy and, to a lesser extent, wheat. Non–IgE mediated food allergies to peanut and tree nuts have not been reported.

Medical assessment of a suspected food allergy involves a thorough investigation of food ingestion, reaction and medical history and, where appropriate, allergy testing. In a skin prick test, the skin is pricked with a needle containing a drop of food allergen. In children sensitised to the food, a small bump or wheal will develop. A blood sample can also be drawn to test for IgE levels. A food challenge—in which the suspect food is fed to the child and any reactions observed—is the most accurate way to diagnose a "true" food allergy. A food challenge may be undertaken either to diagnose a food allergy (typically in younger children), or to test for tolerance (typically in older children who are suspected of having outgrown their food allergy), but generally only if the child's history is uncertain or if he/she is at an age where tolerance would be expected to develop.

A diagnosis of a food allergy can affect the quality of life of not only the child but also their family, their school and community. Food-allergic children and their carers need to be vigilant to avoid ingesting allergenic foods, particularly in social and school environments. They may also need to carry an adrenaline auto-injector (for those at risk of anaphylaxis) and generally live with the fear of having an adverse reaction to food (Bollinger et al., 2006; Marklund, Ahlstedt, & Nordstrom, 2007; Sicherer, Noone, & Munoz-Furlong, 2001).

8.2   Risk factors for food allergy

It is widely accepted that gender and co-existent atopic disease (allergic diseases such as asthma, hay fever or eczema) are associated with the incidence of food allergy. In a review of population-based studies, Sicherer (2011) observed that male children and adult women were at increased risk of food allergy compared to the rest of the population. The same research also found that food allergy was positively associated with co-existent atopic disease and that asthma was a risk factor for increased severity of food reaction. The search for other factors to explain the rise in food allergies has been less clear and has often been explored in relation to allergic diseases in general rather than food allergies specifically.

Early life factors—such as birth weight, prematurity, breastfeeding and the timing of the introduction of solids—have been investigated as risk factors for the development of allergy. In a recent review, prematurity and/or low birth weight were not found to be associated with childhood food allergy and were protective against atopic dermatitis (Pali-Schöll, Renz, & Jensen-Jarolim, 2009). A review of the role of breastfeeding in the development of allergic diseases concluded that there were insufficient data on the role of breastfeeding in the development of food allergies, inconclusive evidence in regard to eczema and inconsistent data with regard to asthma (Matheson, Allen, & Tang, 2012). Several studies included in a review by Cochrane et al. (2009) found that the delayed introduction of solid foods is associated with a higher risk of allergic diseases, including food allergy.

One Australian study, using publicly available national databases, examined the role of socio-economic position (SEP) and area of residence on the risk of childhood food allergy. The authors found that having a higher socio-economic position and residing in urban areas were risk factors for childhood food allergy and anaphylaxis (Mullins, Clarke & Camargo, 2010).

Low vitamin D has recently been hypothesised as being a risk factor for food allergy and other atopic diseases. Two large population-based studies have supported this hypothesis, with one measuring serum vitamin D (Sharief, Jariwala, Kumar, Muntner, & Melamed, 2011) and the other using geographic latitude as a proxy measure of vitamin D (Osborne, Ukoumunne, Wake, & Allen, 2012).

This chapter uses the *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC) data from Wave 4 for the B cohort (6–7 year olds) and K cohort (10–11 year olds), with some background information also taken from Waves 1 and 2 where necessary. The strength of these data is that they allow for a whole-of-population analysis across two childhood age groups.

This chapter aims to:

■ describe the prevalence of food allergy—assessed via history of food reaction and results of food allergy testing—by food allergen and age group;

■ describe the timing of and symptomology of food reaction, by food allergen and age group; and

■ assess the relationship of demographic/antecedent factors—urbanicity, vitamin D levels (as measured by latitude and sun exposure), gender, socio-economic position, duration of breastfeeding, timing of the introduction of solids, birth weight and gestational age—on food allergy status (probable food allergy, probable food intolerance, and no food allergy/intolerance).

The methodology of each of the outcomes and risk factors is described alongside the tables in the results section.

8.3 Prevalence and characteristics of food allergy in children

The prevalence of self-reported food reactions are known to be higher than the prevalence of diagnosed food allergy (Venter et al., 2006, 2008). Parents were asked whether their child had ever had a reaction (such as redness or itching) that they thought was due to food that the child had eaten. It was found that 15% of the B cohort (667 children) and 12% of the K cohort (526 children) had had such a reaction. In the younger cohort, the rate was slightly higher than the 12–13% reported by an international review of children 0–16 years old (Rona et al., 2007) and the 12% determined in a sample of 6-year-old children in the UK (Venter et al., 2006).

For those children who had had a reaction, parents were then asked what food caused the reaction. For each food type, they were then asked how old the child was when they first had a reaction to the food. Table 8.2 details the mean age at first food reaction by type of food allergen, among those who had ever had a reaction, for each age cohort.

Table 8.2:	Age at child's first food reaction, by food allergen, children who had had a food reaction, B and K cohort, Wave 4					
	B cohort			**K cohort**		
Allergens	**Percentage**	**No. of obser-vations**	**Mean age at first reaction (months)**	**Percentage**	**No. of obser-vations**	**Mean age at first reaction (months)**
Peanuts	17.6	114	21.3	16.0	81	28.7
Other nuts	9.1	61	28.6	9.3	43	42.5
Eggs	14.9	97	15.6	9.1	47	24.0
Cow's milk	12.2	87	15.1	10.6	61	20.5
Soy	2.8	19	23.4	2.1	10	18.4
Sesame	1.8	13	31.3	0.3	2	40.3
Wheat	4.8	34	26.4	5.3	28	34.5
Other food	65.2	437	34.8	67.7	354	59.2

Notes: Children could have more than one type of food allergy, therefore column percentages do not sum to 100%. The residual percentage of children without each food allergy is omitted. For example, 18% of B cohort children (114 out of 667 children) had a reaction to peanuts, while 72% of children (553 out of 667) had never had a reaction on peanuts; the latter category has been omitted from the table.

Among those with a self-reported food reaction, peanuts were the most common food allergen (18%) in the B cohort, followed by eggs (15%), cow's milk (12%) and other nuts (9%). Soy and sesame were the least commonly reported, at 3% and 2% respectively. A similar pattern was observed in the K cohort, where the four most commonly reported food allergens were peanuts (16%), cow's milk (11%), other nuts (9%) and eggs (9%), while the two least common food allergens were soy (2%) and sesame (< 1%). K cohort sesame food reaction results will not be discussed in subsequent sections due to the low prevalence of this allergy ($n = 2$); however, the results will be included in the tables.

The mean age of first food reaction, excluding "other food," ranged from 15.1 to 28.6 months in the B cohort and 18.4 to 42.5 months in the K cohort. In the B cohort, the youngest age of mean reactions was to cow's milk (15.1 months) and eggs (15.6 months), while in the K cohort, these figures were for soy (18.4 months) and cow's milk (20.5 months).

Around two-thirds of children in both age cohorts had had a food reaction to "other food" and the mean age of reaction was 34.8 months in the B cohort and 59.2 months in the K cohort. For ease of discussion, results for "other food" will be discussed separately for all subsequent tables.

For all foods, the mean age of first reaction was distinctly younger in the B cohort (6–7 years old) in comparison to the K cohort (10–11 years old). This discrepancy is likely due to recall errors from parents of children in the older cohort rather than reflecting a true difference in age of first reaction.

It is important to note here that children may have more than one food allergy. Sixty children had two food allergies, nine had three food allergies and six had four or more food allergies.

Using this method of diagnosis, more than 90% of IgE-mediated food allergies were found in LSAC to be caused by just nine foods: cow's milk, soy, eggs, wheat, fish, shellfish, peanuts, tree nuts, and sesame. This suggests that the majority of food reactions self-reported in the "other food" category are likely to be non-IgE in nature (i.e., food intolerance or non–IgE mediated), while a lesser proportion are likely to be IgE-mediated in nature (e.g., fish, shellfish and less common IgE-mediated food allergies, such as kiwi fruit).

Parents were asked whether children had had their food reaction tested with a skin prick and/or a food challenge at the hospital, and whether they then tested positive or negative for the food. Table 8.3 describes the prevalence and test results of children in the B cohort at Wave 4 who had undergone allergy testing, by food allergen. Children who had reacted to nuts other than peanuts had most commonly been tested by skin prick (75%), followed by sesame (67%) and peanuts (62%). Children who had reacted to soy, cow's milk or wheat had undergone a skin prick test less than 50% of the time. Overall, skin prick tests were positive in more than 65% of cases. Other nuts and peanuts had the highest rates of positive skin prick tests, with both food types being positive at least 98% of the time.

Table 8.3:	Whether food reaction tested and test results, by type of test and food allergen, children who had had a food reaction, B cohort, Wave 4							
	Whether tested				**Test results**			
Allergens	**Tested (%)**	**Not tested (%)**	**Total (%)**	**No. of obser-vations**	**Positive (%)**	**Negative (%)**	**Total (%)**	**No. of obser-vations**
Skin prick test								
Peanuts	61.6	38.4	100.0	114	98.0	2.0	100.0	71
Other nuts	74.8	25.2	100.0	61	98.4	1.6	100.0	45
Eggs	56.0	44.0	100.0	97	92.7	7.3	100.0	57
Cow's milk	39.0	61.0	100.0	86	65.8	34.2	100.0	35
Soy	47.3	52.7	100.0	19	82.8	17.2	100.0	10
Sesame	67.0	33.0	100.0	13	88.3	11.7	100.0	9
Wheat	39.2	60.8	100.0	34	68.8	31.2	100.0	13
Other food	16.8	83.2	100.0	437	70.4	29.6	100.0	60
Food challenge test at hospital								
Peanuts	12.3	87.7	100.0	114	95.0	5.0	100.0	15
Other nuts	24.6	75.4	100.0	61	100.0	0.0	100.0	13
Eggs	16.5	83.5	100.0	96	92.4	7.6	100.0	18
Cow's milk	12.9	87.1	100.0	87	95.2	4.8	100.0	12
Soy	33.8	66.2	100.0	19	100.0	0.0	100.0	6
Sesame	19.4	80.6	100.0	13	68.5	31.5	100.0	2
Wheat	23.3	76.7	100.0	34	100.0	0.0	100.0	8
Other food	5.2	94.8	100.0	435	79.5	20.5	100.0	22

Notes: Children could have more than one type of food allergy. In some cases, the number of observations for positive or negative test results may not equal the total numbers tested due to item non-response.

A lower proportion of children underwent a food challenge, with fewer than one-third having this test. Soy was the most common food to be tested by food challenge (34%), while other nuts and wheat were food challenged one-quarter of the time. Of those children who reported a food reaction to cow's milk or peanuts, only 12–13% underwent a food challenge. Food challenge outcomes were positive more than 92% of the time for all foods, with the exception of sesame (69%).

Children reporting a food reaction to "other foods" had a lower rate of skin prick test and food challenge compared to any of the seven specific food allergens reported. However, positive allergy test outcomes for "other foods" were within the ranges observed for the specific allergens.

Table 8.4 (on page 118) describes the prevalence and test results of children in the K cohort at Wave 4 who had undergone allergy testing, by food allergen. Children who had reacted to peanuts or other nuts had the highest rates of skin prick tests (69% and 66% respectively), while children

who reacted to soy and wheat had the lowest rates of skin prick testing, at less than 30%. Overall, skin prick tests were positive in at least 75% of cases. Wheat (92%), other nuts (92%) and peanuts (91%) had the highest rates of positive skin prick tests.

Table 8.4: Whether food reaction tested and test results, by type of test and food allergen, children who had had a food reaction, K cohort, Wave 4

Allergens	Whether tested				Test results			
	Tested (%)	Not tested (%)	Total (%)	No. of obser-vations	Positive (%)	Negative (%)	Total (%)	No. of obser-vations
Skin prick test								
Peanuts	69.2	30.8	100.0	80	90.7	9.3	100.0	53
Other nuts	66.2	33.8	100.0	42	91.5	8.5	100.0	27
Eggs	45.9	54.1	100.0	47	86.7	13.3	100.0	21
Cow's milk	37.1	62.9	100.0	60	78.2	21.8	100.0	22
Soy	27.3	72.7	100.0	10	75.0	25.0	100.0	4
Sesame	100.0	0.0	100.0	2	100.0	0.0	100.0	2
Wheat	23.8	76.2	100.0	28	92.3	7.7	100.0	5
Other food	14.9	85.1	100.0	352	79.2	20.8	100.0	48
Food challenge test at hospital								
Peanuts	22.0	78.0	100.0	78	87.0	13.0	100.0	15
Other nuts	23.6	76.4	100.0	42	100.0	0.0	100.0	10
Eggs	18.1	81.9	100.0	47	71.0	29.0	100.0	8
Cow's milk	14.0	86.0	100.0	60	100.0	0.0	100.0	7
Soy	0.0	100.0	100.0	10	–	–	–	–
Sesame	58.8	41.2	100.0	2	100.0	0.0	100.0	1
Wheat	18.0	82.0	100.0	28	100.0	0.0	100.0	4
Other food	4.4	95.6	100.0	354	84.3	15.7	100.0	14

Notes: Children could have more than one type of food allergy. In some cases, the number of observations for positive or negative test results may not equal the total numbers tested due to item non-response.

Almost one-quarter of the K cohort children had a food challenge test at hospital. Other nuts and peanuts were the most commonly challenged allergens (24% and 22% respectively), while there were no reports of soy being food challenged. Food challenge outcomes were positive more than 70% of the time, and other nuts, wheat and cow's milk tested positive in 100% of cases.

Children reporting a reaction to "other foods" underwent allergy testing less often compared to the seven specific food allergens.

Overall, the rates of skin prick testing for any food allergen were comparable between the B and K cohorts. Peanuts and other nuts were the most commonly tested allergens by skin prick in both age groups, although other nuts were tested more often in the younger cohort (B cohort: 75% vs K cohort: 66%). Skin prick tests were more frequently positive in the K cohort (≥ 75%) than the B cohort (> 65%). Peanuts and other nuts had a higher positive test outcome in the B cohort (both 98%) compared with the K cohort (91–92%).

In both age groups, fewer children had a food challenge than a skin prick test. The rate of food challenge tests for food allergens was higher in the B cohort except for other nuts, soy and sesame. Up to one-fifth of the B cohort and 15% of the K cohort had been tested via food challenge (data not shown). Soy was the most commonly challenged food in the B cohort and was not challenged at all in the K cohort. Peanuts were challenged more frequently in the older cohort (22%) and least frequently in the B cohort (12%), while other nuts were food challenge tested at comparable rates.

For each food reaction, parents were asked how long after the child ate the particular food the reaction had appeared. As described in section 8.1, food reactions occurring within one hour of ingestion are likely to be IgE-mediated. Table 8.5 (on page 119) shows that the majority of food reaction symptoms were observed to occur within one hour for both age groups. In the B cohort,

the foods with the highest proportion of reactions occurring within half an hour were eggs (89%), other nuts (78%) and peanuts (77%), all of which are typically considered to be IgE-mediated food allergens. Similarly, in the K cohort, the foods with the highest proportion of reactions occurring within half an hour were other nuts (86%) and peanuts (75%).

Table 8.5:	Time taken for food reaction, by food allergen, children who had had a food reaction, B and K cohorts, Wave 4					
Allergens	**Less than half an hour (%)**	**Half an hour to an hour (%)**	**1–4 hours (%)**	**More than 4 hours (%)**	**Total (%)**	**No. of obser-vations**
B cohort						
Peanuts	77.4	7.5	12.9	2.2	100.0	114
Other nuts	78.2	7.8	6.9	7.1	100.0	61
Eggs	89.4	4.6	3.3	2.7	100.0	97
Cow's milk	43.6	7.5	18.3	30.6	100.0	87
Soy	38.6	0.0	18.1	43.4	100.0	19
Sesame	66.3	0.0	16.5	17.2	100.0	13
Wheat	30.7	5.2	38.3	25.8	100.0	34
Other food	43.1	16.4	21.3	19.2	100.0	437
K cohort						
Peanuts	75.0	13.8	6.1	5.1	100.0	81
Other nuts	85.8	4.8	5.6	3.8	100.0	43
Eggs	67.0	10.0	10.8	12.2	100.0	47
Cow's milk	52.6	10.8	12.8	23.7	100.0	61
Soy	68.0	16.8	9.5	5.6	100.0	10
Sesame	100.0	0.0	0.0	0.0	100.0	2
Wheat	29.9	10.4	5.4	54.3	100.0	28
Other food	49.3	16.0	15.5	19.1	100.0	354

Notes: Children could have more than one type of food allergy. Percentages may not total exactly 100.0% due to rounding.

Parents also provided information about the type of reaction children had to each food. As outlined in section 8.1, the type of food reaction symptom can indicate whether the reaction is IgE- or non–IgE mediated. A reaction is thought to be IgE-mediated if a skin rash or vomiting occurs, or if there are signs of anaphylaxis (including breathing difficulties or swelling/tingling of the mouth) within one hour of ingestion. Diarrhoea and stomach ache/pain can occur with either type of reaction. Migraine is a non-specific symptom not usually regarded by specialists as being mediated by food allergy reactions, although migraines in some cases can be triggered in response to adverse reactions to foods.

Table 8.6 (on page 120) shows that for all food allergens in both cohorts, with the exception of wheat in the K cohort, the majority of food reactions resulted in skin rash symptoms.

The most frequent food reaction symptoms reported for eggs were skin rash (B cohort: 72%, K cohort: 78%), swelling or tingling of the mouth (B cohort: 26%, K cohort: 20%) and vomiting (B cohort: 20%, K cohort: 20%). The most frequent food reaction symptoms reported for peanuts were skin rash (B cohort: 68%, K cohort: 73%), swelling or tingling of the mouth (B cohort: 45%, K cohort: 49%) and breathing difficulty (B cohort: 19%, K cohort: 21%). Vomiting was also reported, but more commonly in the younger cohort (23%) than the older cohort (9%). Similarly, for other nuts, the most common food reaction symptoms were: skin rash (B cohort: 68%, K cohort: 63%), swelling or tingling of the mouth (B cohort: 36%, K cohort: 47%) and breathing difficulty (B cohort: 26%, K cohort: 32%).

Breathing difficulty, the most serious form of food reaction, indicates the child is at risk of anaphylaxis. In both cohorts, the two foods that were associated with the highest rates of breathing difficulty were other nuts (B cohort: 26%, K cohort: 32%) and peanuts (B cohort: 19%, K cohort: 21%), while the lowest rates were found with soy (B cohort: 3%, K cohort: 0%).

With the exception of "other food", migraines were only reported in the K cohort and were very rare in younger children.

	Skin rash (%)	Vomiting (%)	Diarrhoea (%)	Stomach ache/ abdo- minal pain (%)	Migraine (within 4 hours) (%)	Difficulty breathing (%)	Swelling/ tingling of mouth (%)	Other (%)	No. of obser- vations
Table 8.6:	**Type of food reaction, by food allergen, children who had had a food reaction, B and K cohorts, Wave 4**								
Allergens									
B cohort									
Peanuts	68.2	23.3	3.0	4.6	0.0	18.6	44.7	19.1	114
Other nuts	68.4	20.5	7.0	9.4	0.0	26.4	35.8	10.8	61
Eggs	71.7	20.1	3.3	8.8	0.0	12.0	26.1	16.3	97
Cow's milk	61.6	26.5	21.4	29.5	0.0	5.9	3.8	14.8	87
Soy	53.9	9.4	11.9	23.3	0.0	3.0	0.0	40.5	19
Sesame	59.0	0.0	0.0	19.9	0.0	4.8	19.7	29.3	13
Wheat	56.2	15.8	10.1	40.2	0.0	8.8	3.6	31.9	34
Other food	70.0	6.6	2.7	4.7	0.5	2.8	12.6	23.5	437
K cohort									
Peanuts	72.7	8.9	1.9	6.1	1.9	20.6	48.9	17.2	81
Other nuts	62.8	21.8	8.1	16.6	4.3	31.8	47.2	17.5	43
Eggs	77.7	20.3	5.8	6.7	0.0	3.1	19.6	12.0	47
Cow's milk	57.9	26.9	25.1	28.9	0.9	7.8	6.8	11.7	61
Soy	83.6	50.5	22.5	32.1	0.0	0.0	0.0	0.0	10
Sesame	100.0	41.2	0.0	0.0	0.0	0.0	100.0	0.0	2
Wheat	48.0	6.7	21.0	54.0	3.1	5.6	0.0	27.4	28
Other food	63.2	10.5	2.5	5.0	1.7	3.8	16.5	20.2	354

Notes: Children could have more than one type of food allergy and more than one type of reaction.

8.4   Comparisons of groups by probable food allergy or intolerance

Comparison of groups by allergic reactions

The remainder of this chapter compares three groups based on their responses to the questions about allergic reactions. Because data from the gold standard for diagnosis—oral food challenge—were not always available, we collated responses into three groups:

- *probable food allergy*—those children who fulfil the criteria for a likely diagnosis of IgE-mediated food allergy for any food reaction through:
  - a positive food challenge; OR
  - a reaction within one hour AND a positive skin prick test; OR
  - a skin reaction, vomiting, diarrhoea, abdominal pain, difficulty breathing or swelling of mouth AND a reaction within one hour AND a skin prick test or food challenge test, but the result was negative or missing; OR
  - a skin reaction, vomiting, diarrhoea, abdominal pain, difficulty breathing or swelling of mouth AND a reaction within 1–4 hours AND a positive skin prick test;
- *probable food intolerance*—those with symptoms consistent with an adverse reaction to a food, but not consistent with an IgE-mediated reaction; and
- *no food allergy/intolerance*—those with no history of reaction to a food at all.

It is important to note, however, that the diagnosis of a food allergy or food intolerance among LSAC participants was not always determined by testing through a skin prick or food challenge.

We begin by looking at the risk of probable food allergy in each group by each potential risk factor individually (univariate analysis). The benefit of this type of analysis is that it allows for an examination of patterns of association between food allergies and each individual risk factor. However, univariate analysis does not allow for the effect of multiple risk factors (i.e., it does not consider the potential association between the risk factors themselves), thus such results must be interpreted with caution. At the end of this section, we combine all risk factors into one analysis (multivariate analysis) to assess which factors increase the risk of food allergies, while accounting for the other risk factors.

Table 8.7 shows that the prevalence of probable food allergy and probable food intolerance was higher in the B cohort compared with the K cohort. The rates of probable food allergy were within the 1–11% range of confirmed food allergy reported in children aged 0–16 years (Rona et al., 2007). When comparing the prevalence to age-specific populations (both included in Rona et al.), the rate for the B cohort was higher than that observed in 6-year-old British children (3%) (Venter et al., 2006) and the rate for the K cohort was comparable to that observed in 11-year-old British children (2%) (Pereira et al., 2005).

Table 8.7: Prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4

	B cohort		K cohort	
	%	*n*	%	*n*
Probable food allergy	4.2	182	2.9	122
Probable food intolerance	11.0	485	9.4	404
No food allergy/intolerance	84.8	3,571	87.7	3,635
Total	100.0	4,238	100.0	4,161

Geographic location and child/family characteristics

Families' postcodes were used to link LSAC and ABS Census data, which identified whether they lived in metropolitan (capital city statistical divisions) or regional areas (the rest of the state outside the capital city statistical divisions). Table 8.8 shows the prevalence of probable food allergy or food intolerance by region. Although the prevalence of probable food allergy seems higher in the metropolitan region for both age groups, the statistical evidence to support this observation is marginal (B cohort: $p < .05$; K cohort: $p = .07$).

Table 8.8: Geographic location and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4

	B cohort *		K cohort	
	Metropolitan (%)	Regional (%)	Metropolitan (%)	Regional (%)
Probable food allergy	4.7	3.1	3.3	2.4
Probable food intolerance	11.1	11.0	8.6	10.7
No food allergy/intolerance	84.2	85.9	88.2	86.9
Total	100.0	100.0	100.0	100.0
No. of observations	2,565	1,662	2,500	1,655

Notes: Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: * $p < .05$.

As documented elsewhere, Vitamin D insufficiency has been linked to an increased risk of food allergy (Sharief et al., 2011). The most accurate method of determining vitamin D status is to measure serum concentrations of 25-hydroxyvitamin D. However, in large population-based studies such as LSAC, this is not always logistically or financially feasible. Since almost all (90–100%) vitamin D requirements can be met by exposure to sunlight—in particular exposure to UVB (Holick, 2003)—it is reasonable to assume that measures of sunlight exposure are an acceptable proxy of vitamin D levels. Living at higher latitudes (i.e., further away from the equator) has been shown to correlate with lower vitamin D levels both in Australia (Daly et al., 2012) and the United States (Looker, Dawson-Hughes, Calvo, Gunter, & Sahyoun, 2002), and has been associated with higher rates of food allergy and asthma (Krstic, 2011; Osborne et al., 2012). The limitation of an approach

such as this, is that it describes *population* characteristics, which may not necessarily translate to the level of risk for an *individual*. To investigate individual-specific sun exposure, LSAC participants were asked about the frequency of children using sun protection during their time spent outdoors. Although this approach may be subject to recall errors, self-reported sun exposure has shown to be an acceptable measure of sun exposure (Millen & Bodnar, 2008).

Parents were asked how often during the summer months they tried to protect their child from the sun on days when the child was outdoors. Table 8.9 shows a positive trend association between the risk of probable food allergy and increasing frequency of sun protection in the K cohort ($p < .01$), but not the B cohort. Although these results appear to suggest low vitamin D status plays a role in the development of food allergy, they do not take into account any other factors and thus should be interpreted with caution.

Table 8.9: Frequency of sun protection and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4

	B cohort			K cohort **		
	Every day (%)	Most days (%)	Some days/ never/hardly ever (%)	Every day (%)	Most days (%)	Some days/ never/hardly ever (%)
Probable food allergy	4.3	3.8	5.0	3.3	2.7	1.7
Probable food intolerance	11.1	11.2	9.9	10.2	9.3	4.3
No food allergy/intolerance	84.7	85.0	85.1	86.6	88.0	94.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
No. of observations	2,930	1,112	195	2,437	1,401	319

Notes: Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: ** $p < .01$.

To assess geographic latitude, families' state of residence was used as a proxy, resulting in three comparison groups: NT and Queensland (lower latitude); ACT, New South Wales and Western Australia (middle latitude); and South Australia, Tasmania and Victoria (higher latitude). Table 8.10 shows that the risk of probable food allergy, but not probable food intolerance, increases with increasing latitude in both cohorts. However, only in the B cohort did this trend reach statistical significance ($p < .05$).

Table 8.10: Geographic latitude of family residence and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4

	B cohort *			K cohort		
	NT/Qld (%)	ACT/NSW/ WA (%)	SA/Tas./ Vic. (%)	NT/Qld (%)	ACT/NSW/ WA (%)	SA/Tas./ Vic. (%)
Probable food allergy	1.9	4.6	4.9	1.7	3.0	3.7
Probable food intolerance	11.1	10.6	11.5	9.7	9.0	9.7
No food allergy/intolerance	87.0	84.7	83.6	88.6	88.0	86.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
No. of observations	967	1,819	1,452	933	1,799	1,429

Notes: WA was grouped with ACT and NSW because the vast majority of its population (i.e., Perth/Fremantle) are located at similar latitudes. Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: * $p < .05$.

Table 8.11 (on page 123) shows that there was no gender difference in the prevalence of probable food allergy or food intolerance in either age cohort. Childhood food allergy is more common in males, yet in adulthood it is more common in females (Sicherer, 2011). The actual timing of this gender switch, however, is uncertain. A similar gender switch occurs around the time of puberty in the prevalence and severity of asthma (Almqvist, Worm, & Leynaert, 2008), and food allergy is hypothesised to also follow this pattern.

Table 8.11:	Child gender and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4			
	B cohort		**K cohort**	
	Boys (%)	**Girls (%)**	**Boys (%)**	**Girls (%)**
Probable food allergy	4.2	4.1	2.9	3.0
Probable food intolerance	10.9	11.2	8.5	10.3
No food allergy/intolerance	84.9	84.7	88.6	86.7
Total	100.0	100.0	100.0	100.0
No. of observations	2,184	2,054	2,128	2,033

Table 8.12 shows a trend toward an increasing risk of probable food allergy with increasing family socio-economic position. The highest prevalence rates of probable food allergy were clustered in the group with the highest 25% socio-economic position; however, the gradient was stronger and only significant in the B cohort ($p < .01$). In contrast, rates of probable food intolerance were comparable across socio-economic groups in both age cohorts. This suggests there may be other factors contributing to the higher rates of food allergy (but not intolerance) in the highest 25% socio-economic group. People from higher socio-economic groups are known to engage in more "health-seeking" behaviours (e.g., going to the doctor) and may therefore be more likely to be diagnosed with a food allergy than those from lower socio-economic groups.

Table 8.12:	Family socio-economic position and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4					
	B cohort **			**K cohort**		
	Lowest 25% SEP (%)	**Middle 50% SEP (%)**	**Highest 25% SEP (%)**	**Lowest 25% SEP (%)**	**Middle 50% SEP (%)**	**Highest 25% SEP (%)**
Probable food allergy	2.3	4.5	6.2	2.4	3.2	3.6
Probable food intolerance	11.1	10.8	11.5	9.1	9.4	9.7
No food allergy/intolerance	86.6	84.7	82.3	88.5	87.4	86.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
No. of observations	1,058	2,119	1,056	996	1,988	995

Notes: Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: ** $p < .01$.

Children's early life risk factors

Early life risk factors—including breastfeeding, timing of the introduction of solids, birth weight and gestational age—have been hypothesised to play a role in the development of food allergies and other allergic diseases. Information from Waves 1 and 2 of LSAC was used to categorise children based on these early life risk factors.

Based on Waves 1 and 2 data on how long each child had been breastfed, three comparison categories were created: never breastfed, breastfed for less than 6 months, and breastfed for 6 months or longer. Table 8.13 (on page 124) shows a significant positive relationship between duration of breastfeeding and the risk of probable food allergy in the B cohort ($p < .05$) but not the K cohort.

At Waves 1 and 2, B cohort parents were asked how old their child was when they first had solid food (e.g., baby cereals, puréed fruits, etc.) more than twice a week for several continuous weeks. Table 8.14 (on page 124) shows that the highest prevalence of probable food allergy was in children who had solids introduced at between 4 and 6 months of age, and the lowest was in children who had solids introduced before 4 months. However, as for many of the univariate associations reported here, there was no statistical significance when controlling for other risk factors.

Children's birth weight (provided by their parents at Wave 1) was categorised as "normal weight" (2,500 grams and over) or "underweight" (less than 2,500 grams), based on the definition provided by the World Health Organization (2010). Table 8.15 (on page 124) shows the risk of probable food allergy and probable food intolerance is lower in children born at low birth weight compared to those born at normal birth weight in the B cohort ($p < .05$), but not the K cohort.

Children's gestational age (provided by their parents at Wave 1) was categorised as "pre-term" (born at 36 weeks or earlier) or "normal" (born at 37 weeks or later, including late births) (Laws & Sullivan, 2009). Table 8.16 shows that the risk of probable food allergy in B cohort children born at 36 weeks or earlier was significantly lower than those born at term or later ($p < .01$), but in the K cohort was comparable between gestational age categories.

Table 8.13: Duration of breastfeeding and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4

	B cohort *			K cohort		
	Never breastfed (%)	Breastfed < 6 months (%)	Breastfed 6+ months (%)	Never breastfed (%)	Breastfed < 6 months (%)	Breastfed 6+ months (%)
Probable food allergy	2.2	3.0	5.0	4.2	2.5	3.0
Probable food intolerance	10.7	9.9	11.2	10.1	9.3	9.3
No food allergy/intolerance	87.1	87.1	83.7	85.6	88.1	87.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
No. of observations	308	1,336	2,134	342	1,337	2,462

Notes: Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: * $p < .05$.

Table 8.14: Timing of the introduction of solids and prevalence of probable food allergy or food intolerance, B cohort, Wave 4

	Solids introduced at < 4 months (%)	Solids introduced at 4–6 months (%)	Solids introduced at 6+ months (%)
Probable food allergy	1.9	4.7	3.8
Probable food intolerance	9.6	11.2	10.4
No food allergy/intolerance	88.5	84.1	85.8
Total	100.0	100.0	100.0
No. of observations	406	3,311	369

Table 8.15: Birth weight and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4

	B cohort *		K cohort	
	Low birth weight (%)	Normal birth weight (%)	Low birth weight (%)	Normal birth weight (%)
Probable food allergy	2.7	4.3	2.0	3.1
Probable food intolerance	7.1	11.3	8.7	9.3
No food allergy/intolerance	90.2	84.4	89.3	87.6
Total	100.0	100.0	100.0	100.0
No. of observations	219	3,996	260	3,847

Notes: Statistically significant differences are noted: * $p < .05$.

Table 8.16: Gestational age and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4

	B cohort **		K cohort	
	Pre-term (%)	Normal (%)	Pre-term (%)	Normal (%)
Probable food allergy	3.4	4.2	2.2	3.0
Probable food intolerance	5.5	11.5	7.8	9.4
No food allergy/intolerance	91.1	84.3	90.0	87.6
Total	100.0	100.0	100.0	100.0
No. of observations	269	3,963	302	3,832

Notes: Statistically significant differences are noted: ** $p < .01$.

Significant associations between food allergy and early life characteristics were more common in the B cohort compared with the K cohort. The rates of probable food allergy were lower in LSAC children with a low birth weight and those born pre-term in the B cohort (but not the K cohort). However, previous research has shown low birth weight/prematurity *not* to be associated with food allergy (Pali-Scholl et al., 2009) but with wheezing (Kumar et al., 2008), and to be protective against sensitisation to inhalant allergens (aeroallergens) such as birch pollen and cat fur (Siltanen et al., 2011) and to atopic dermatitis (Buhrer, Grimmer, Niggermann, & Obladen, 1999).

Asthma and eczema

At each wave, children's parents were asked whether they had ever had a doctor tell them that their child had asthma, and their reports from this question at Wave 4 are used here. Table 8.17 shows that the risk of probable food allergy is more than double in children with co-existent asthma compared to children without asthma in both age cohorts ($p < .01$).

Table 8.17:	Whether child has asthma and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4			
	B cohort **		K cohort **	
	Asthma (%)	No asthma (%)	Asthma (%)	No asthma (%)
Probable food allergy	7.9	2.9	5.5	1.6
Probable food intolerance	14.4	9.7	11.4	8.1
No food allergy/intolerance	77.7	87.4	83.1	90.2
Total	100.0	100.0	100.0	100.0
No. of observations	1,072	3,135	1,379	2,774

Notes: Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: ** *p* < .01.

At each wave, parents reported on whether their child had eczema (not necessarily diagnosed by a doctor), and information from Wave 4 is used here. Table 8.18 shows the risk of probable food allergy is four-fold higher in children with co-existent eczema in both cohorts ($p < .01$).

Table 8.18:	Whether child has eczema and prevalence of probable food allergy or food intolerance, B and K cohort, Wave 4			
	B cohort **		K cohort **	
	Eczema (%)	No eczema (%)	Eczema (%)	No eczema (%)
Probable food allergy	13.3	2.8	12.2	1.8
Probable food intolerance	22.3	9.3	14.3	8.8
No food allergy/intolerance	64.5	87.9	73.5	89.4
Total	100.0	100.0	100.0	100.0
No. of observations	556	3,682	453	3,708

Notes: Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: ** *p* < .01.

Multivariate analysis of demographic and risk factors

Demographic, early life characteristics and other antecedent (risk) factors were combined into one analysis (logistic regression analysis) to assess the effects of each factor on the risk of probable food allergy, while controlling for the influence of all other factors examined in this chapter.[3] Results in this type of analysis are expressed as an odds ratio (OR), which indicates the likelihood of a child being food allergic if they have the risk factor compared to if they don't have the risk factor. An OR greater than 1 indicates a positive association, while an OR less than 1 indicates a negative one.

---

[3]   The factors included in the regression models were: child gender, geographic location (metropolitan/regional), frequency of sun protection (every day, most days, some days/never/hardly ever), geographic latitude (NT/Qld, ACT/NSW/WA, SA/Tas./Vic.), family socio-economic position (lowest 25%, middle 50%, highest 25%), duration of breastfeeding (never, less than 6 months, 6 months or longer), timing of the introduction of solids (B cohort only; before 4 months of age, 4–6 months, 6 months or later), birth weight (low, normal), gestational age (36 weeks or earlier, 37 weeks or later), asthma, and eczema.

The results from the combined models showed that children in the B cohort were more likely to be food allergic if they had co-existent eczema (OR = 5.08, p < .001), or co-existent asthma (OR = 2.86, p < .001). In other words, B cohort children with eczema had more than five times the odds of being food allergic than children without eczema, and children with asthma had nearly three times the odds of being food allergic than children without asthma.

Similarly, children in the K cohort were more likely to be food allergic if they had co-existent eczema (OR = 7.41, p < .001), co-existent asthma (OR = 3.36, p < .001), or if they had never been breastfed (OR = 2.00, p < .05). K cohort children were less likely to be food allergic if they lived in lower latitude regions (i.e., NT and Queensland) (OR = 0.48, p < .05).

Many of the associations observed in the univariate analyses were not significant when combined into a logistic regression model, indicating the initial results were distorted by the relationships among the risk factors. Similarly, associations that were *not* significant in the univariate analyses—specifically breastfeeding and latitude in the K cohort—were significant in the multivariate model. Again, this is likely related to the interplay between risk factors.

Of note here is the apparent contradiction in findings for breastfeeding. In the initial analyses, a relationship between food allergy and a longer duration of breastfeeding was found in the B cohort, but not the K cohort. Yet in the regression analysis for the K cohort, those who had never been breastfed were more likely to have a food allergy. The discrepancy seen in the first analysis between the age groups may simply be a reflection of the ambiguous relationship between breastfeeding and food allergies described by Matheson et al., (2012). Alternatively, it may be a result of "reverse causation", whereby infants perceived to be at high risk of food allergy are breastfed for a longer duration (in response to changing infant feeding guidelines, for example) than those perceived to be at low risk, creating an apparent positive association between breastfeeding and food allergies.

8.5   Summary and discussion

This chapter has provided a snapshot of the prevalence of and factors associated with childhood food allergies in Australia, using Wave 4 LSAC data from the B cohort (6–7 year olds) and K cohort (10–11 year olds). It describes the prevalence of food reactions and "probable" food allergy, and the types of food causing and presenting features of food allergy reactions, and investigates the relationship between various demographic and antecedent factors and food allergy risk.

Overall, 15% of 6–7 year olds and 12% of 10–11 year olds had ever had a reaction to food. As would be expected, when classified using clinical criteria, a significantly lower number of children were considered to have had a "probable food allergy" (B cohort: 4%, K cohort: 3%). Consistent with previous reports by others, the prevalence of food reactions and food allergies was higher in younger children (Rona et al., 2007).

The four most common types of food reported to cause a reaction were peanuts, eggs, cow's milk and other nuts, while soy and sesame had the lowest reaction rates. Eggs, cow's milk and soy were reported to cause reactions earlier in life than foods that are typically introduced to the diet later (e.g., other nuts and sesame).

"Other food" accounted for around two-thirds of food reactions and was associated with a later age of first reaction. As discussed, this group is likely to predominantly involve food intolerances and non-IgE-mediated reactions.

Overall, the rates of skin prick tests were comparable between younger and older children, and in both age groups, peanuts and other nuts were the foods most commonly tested by skin prick. Food challenges were administered more frequently in younger children (one-fifth) compared with older children (15%). Younger children were challenged to soy most often and least often to peanuts. In contrast, older children were more often challenged to peanuts and least to soy. We expected a higher rate of children in the older age group undergoing food challenge tests for peanuts, as doctors seek to determine the development of tolerance with age.

Food allergies can be classified as being IgE- or non–IgE mediated, based on the symptoms and timing of onset of symptoms in addition to the type of food allergen. The results were consistent with the notion that peanuts, tree nuts and eggs cause IgE-mediated food allergies (i.e., within one

hour, skin rash symptoms and signs of anaphylaxis show), and that wheat is non–IgE mediated (i.e., symptoms show after 4 hours and are likely to be non-specific).

Risk factors for food allergies were investigated. Initial results suggested the prevalence of food allergies increased for children who lived in urban areas (for the B cohort), and had co-existent asthma or eczema (for both cohorts).

These results, however, were a preliminary analysis and did not account for other potential confounding factors, such as gender, socio-economic position and other risk factors investigated within this report. When all demographic and antecedent risk factors were considered together, the only two that increased the risk of food allergies consistently across age groups were co-existent eczema and asthma. The strongest association with food allergy was co-existent eczema; in both younger and older children, those with eczema had up to seven times the odds of being food allergic than children without eczema. Additional lifestyle risk factors in older children were not having been breastfed and living in southern areas of Australia.

The limitations of the results presented in this chapter include the self-report nature of the data and that questions were focused on lifetime food reaction history. The rate of self-reported food allergy is known to be higher than that of diagnosed food allergy (Venter et al., 2006, 2008), and self-reported data can be affected by inaccurate recall. We created an objective classification of food allergies, based on descriptions of clinical symptoms, and found a rate of probable food allergy comparable to existing research. In addition, parents were asked questions about lifetime, as opposed to current and past, food reactions. Since many children with an early food allergy develop tolerance before the age of five (Wood, 2003), it is possible that a subset had already outgrown their food allergy by the time of the questionnaire administration.

Nevertheless, these findings suggest a high prevalence of food allergy among Australian children aged 6–11 years, with the majority of affected children having received some form of allergy testing. Food allergy questions were first asked in Wave 4 of the LSAC study. Analysis of future waves of LSAC data will allow for a longitudinal investigation of childhood food allergies and enable researchers to explore factors contributing to the persistence of food allergies and the development of tolerance.

8.6   References

Allen, K. J., Hill, D. J., & Heine, R. G. (2006). Food allergy in childhood. *Medical Journal of Australia*, *185*(7), 394–400.

Almqvist, C., Worm, M., & Leynaert, B. (2008). Impact of gender on asthma in childhood and adolescence: A GA2LEN review. *Allergy*, *63*(1), 47–57.

Asher, M., Barry, D., Clayton, T., Crane, J., D'Souza, W., Ellwood. P. et al. (2001). The burden of symptoms of asthma, allergic rhinoconjunctivitis and atopic eczema in children and adolescents in six New Zealand centres: ISAAC Phase One. *New Zealand Medical Journal*, *114*(1128), 114–120.

Asher, M., Montefort, S., Bjorksten, B., Lai, C. K., Strachan, D. P., Weiland, S. K., & Williams, H. (2006). Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC Phases One and Three repeat multicountry cross-sectional surveys. *The Lancet*, *368*(9537), 733–743.

Beasley, R. (1998). Worldwide variation in prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema: ISAAC. *The. Lancet*, *351*(9111), 1225–1232.

Bollinger, M. E., Dahlquist, L. M., Mudd, K., Sonntag, C., Dillinger, L., & McKenna, K. (2006). The impact of food allergy on the daily activities of children and their families. *Annals of Allergy Asthma & Immunology*, *96*(3), 415–421.

Branum, A. M., & Lukacs, S. L. (2009). Food allergy among children in the United States. *Pediatrics*, *124*, 1549–1555.

Buhrer, C., Grimmer, I., Niggemann, B., & Obladen, M. (1999). Low 1-year prevalence of atopic eczema in very low birthweight infants. *The Lancet*, 353, 1674.

Cochrane, S., Beyer, K., Clausen, M., Wjst, M., Hiller, R., Nicoletti, C. et al. (2009). Factors influencing the incidence and prevalence of food allergy. *Allergy*, *64*(9), 1246–1255.

Daly, R. M., Gagnon, C., Lu, Z. X., Magliano, D. J., Dunstan, D. W., Sikaris, K. A. et al. (2012). Prevalence of vitamin D deficiency and its determinants in Australian adults aged 25 years and older: A national, population-based study. *Clinical Endocrinology*, *77*(1), 26–35.

Fleischer, D. M., Conover-Walker, M. K., Matsui, E. C., & Wood, R. A. (2005). The natural history of tree nut allergy. *Journal of Allergy and Clinical Immunology*, *116*, 1087–1093.

Gupta, R., Sheikh, A., Strachan, D. P., & Anderson, H. R. (2007). Time trends in allergic disorders in the UK. *Thorax*, 62, 91–96.

Ho, M. H. K., Wong, W. H. S., Heine, R. G., Hosking, C. S., Hill, D. J., & Allen, K. J. (2008). Early clinical predictors of remission of peanut allergy in children. *Journal of Allergy and Clinical Immunology*, *121*, 731–736.

Holick, M. F. (2003). Vitamin D: A millennium perspective. *Journal of Cellular Biochemistry*, *88*, 296–307.

Krstic, G. (2011). Asthma prevalence associated with geographical latitude and regional insolation in the United States of America and Australia. *PLos One*, *6*(4), e18492.

Kumar, R., Yu, Y., Story, R. E., Pongracic, J. A., Gupta, R., Pearson, C. et al. (2008). Prematurity, chorioamnionitis, and the development of recurrent wheezing: A prospective birth cohort study. *Journal of Allergy and Clinical Immunology*, *121*(4), 878–884.e6.

Laws, P., & Sullivan, E. A. (2009). *Australia's mothers and babies 2007* (Perinatal Statistics Series No. 23; Cat No. PER 48). Sydney: AIHW National Perinatal Statistics Unit.

Liew, W. K., Williamson, E., & Tang, M. L. K. (2009). Anaphylaxis fatalities and admissions in Australia. *Journal of Allergy and Clinical Immunology*, *123*(2), 434–442.

Looker, A. C., Dawson-Hughes, B., Calvo, M. S., Gunter, E. W., & Sahyoun, N. R. (2002). Serum 25-hydroxyvitamin D status of adolescents and adults in two seasonal subpopulations from NHANES III. *Bone*, *30*(5), 771–777.

Marklund, B., Ahlstedt, S., & Nordstrom, G. (2007). Food hypersensitivity and quality of life. *Current Opinion in Allergy and Clinical Immunology*, *7*(3), 279–287.

Matheson, M. C., Allen, K. J., & Tang, M. L. (2012). Understanding the evidence for and against the role of breastfeeding in allergy prevention. *Clinical & Experimental Allergy*, *42*(6), 827–851.

Millen, A. E., & Bodnar, L. M. (2008). Vitamin D assessment in population-based studies: A review of the issues. *American Journal of Clinical Nutrition*, *87*(4), 1102S-1105S.

Mullins, R. J., Clark, S., & Camargo, C. A. Jr. (2010). Socio-economic status, geographic remoteness and childhood food allergy and anaphylaxis in Australia. *Clinical & Experimental Allergy*, *40*(10), 1523–1532.

Osborne, N. J., Koplin, J. J., Martin, P. E., Gurrin, L. C., Lowe, A. J., Matheson, M. C. et al. (2011). Prevalence of challenge-proven IgE-mediated food allergy using population-based sampling and predetermined challenge criteria in infants. *Journal of Allergy and Clinical Immunology*, *127*(3), 668–676.

Osborne, N. J., Ukoumunne, O. C., Wake, M., & Allen, K. J. (2012). Prevalence of eczema and food allergy is associated with latitude in Australia. *Journal of Allergy and Clinical Immunology*, *129*(3), 865–867.

Pali-Schöll, I., Renz, H., & Jensen-Jarolim, E. (2009). Update on allergies in pregnancy, lactation, and early childhood. *Journal of Allergy and Clinical Immunology*, *123*(5), 1012–1021.

Pereira, B., Venter, C., Grundy, J., Clayton, C. B., Arshad, S. H., & Dean, T. (2005). Prevalence of sensitization to food allergens, reported adverse reactions to foods, food avoidance, and food hypersensitivity among teenagers. *Journal of Allergy and Clinical Immunology*, *116*(4), 884–892.

Rona, R. J., Keil, T., Summers, C., Gislason, D., Zuidmeer, L., Sodergren, E. et al. (2007). The prevalence of food allergy: A meta-analysis. *Journal of Allergy and Clinical Immunology*, *120*, 638–646.

Sharief, S., Jariwala, S., Kumar, J., Muntner, P., & Melamed, M. L. (2011). Vitamin D levels and food and environmental allergies in the United States: Results from the National Health and Nutrition Examination Survey 2005–2006. *Journal of Allergy and Clinical Immunology*, *127*(5), 1195–1202.

Sicherer, S. H. (2011). Epidemiology of food allergy. *Journal of Allergy and Clinical Immunology*, *127*(3), 594–602.

Sicherer, S. H., Munoz-Furlong, A., Godbold, J. H., & Sampson, H. A. (2010). US prevalence of self-reported peanut, tree nut, and sesame allergy: 11-year follow-up. *Journal of Allergy and Clinical Immunology*, *125*, 1322–1326.

Sicherer, S. H., Noone, S. A., & Munoz-Furlong, A. (2001). The impact of childhood food allergy on quality of life. *Annals of Allergy, Asthma & Immunology*, *87*(6), 461–464.

Siltanen, M., Wehkalampi, K., Hovi, P., Eriksson, J. G., Strang-Karlsson, S., Jarvenpaa, A. L. et al. (2011). Preterm birth reduces the incidence of atopy in adulthood. *Journal of Allergy and Clinical Immunology*, *127*, 935–942.

Venter, C., Pereira, B., Grundy, J., Clayton, C. B., Arshad, S. H., & Dean, T. (2006). Prevalence of sensitisation reported and objectively assessed food hypersensitivity amongst six-year-old children: A population-based study. *Pediatric Allergy and Immunology*, *17*(5), 356–363.

Venter, C., Pereira, B., Voigt, K., Grundy, J., Clayton, C. B., Higgins, B. et al. (2008). Prevalence and cumulative incidence of food hypersensitivity in the first 3 years of life. *Allergy*, *63*(3), 354–359.

Wood, R. A. (2003). The natural history of food allergy. *Pediatrics*, *111*(6, part 3), 1631–1637.

World Health Organization. (2010). *Low birthweight newborns (percentage)*. Geneva: WHO. Retrieved from <www.who.int/whosis/indicators/compendium/2008/2bwn/en/index.html>.

How engaged are children in organised sport and other physical activity during their late primary school years?

Killian Mullan and Brigit Maguire
Australian Institute of Family Studies

9.1   Introduction

Being physically active is important for good health throughout life, and it is important that children get off to a good start in terms of engaging in physical activity, as it supports their psychological wellbeing and physical health, including their metabolic, cardiovascular and skeletal health (Commonwealth Scientific and Industrial Research Organisation [CSIRO] & University of South Australia [UniSA], 2007). The Australian Government is committed to promoting health-enhancing physical activity across the population (Department of Health and Ageing [DoHA], 2010a), not least because of the health problems associated with the high number of children who are overweight or obese (Australian Bureau of Statistics [ABS], 2009a). Understanding more about the factors associated with different forms of physical activity, links with child health and wellbeing, and how such activity tracks over time, can provide useful insights for policy-makers seeking to promote children's engagement in a broad range of daily physical activity.

This chapter focuses on children's engagement in organised sport and other physical activity.[1] The distinction between these broad categories is an important one to make. Organised sport has received a lot of attention from researchers and policy-makers due to its positive association with children's health and wellbeing (see Chapter 6 this volume; Kumar, Rossiter, & Olczyk, 2009). However, data suggest that a substantial portion of children's physical activity also occurs in an unstructured manner, as part of daily life (ABS, 2009b; CSIRO & UniSA, 2007). Both are important, but there is a need to develop an understanding of factors associated with both organised sport and other types of physical activity, how they track over time, and their association with indicators of child health and wellbeing. For example, socio-economic status has been clearly linked with engagement in organised sport (see next subsection), but its association with other physical activity is much less clear.

The Australian Government is currently supporting efforts to promote the integration of physical activity into people's everyday lives.[2] It is likely that these efforts to increase levels of physical activity in the general population through everyday activities would be of benefit to children, and any such efforts may benefit from a better understanding of children's engagement in a broad range of physical activities. Data from *Growing Up in Australia*: The Longitudinal Study of Australian Children (LSAC) are especially useful in this regard. The study collects a range of data on different aspects of children's physical activity—organised sport and other free-time physical activity—as reported by parents and children. It provides an opportunity to investigate factors associated with children's engagement in such activity, and how this is associated with child health and wellbeing outcomes. Moreover, we can use data from successive waves of LSAC to begin to explore this over time.

The remainder of this section provides an introductory discussion of correlates of children's physical activity, indicators of children's wellbeing that are associated with their physical activity, and a brief discussion of the tracking of this activity over time. The section finishes with an overview of some recent Australian research and sets out the specific research questions addressed in this chapter.

---

[1]   For a detailed discussion of these categories and the sources of these data, see section 9.2.

[2]   For example, the Swap It Don't Stop It campaign <www.swapit.gov.au>.

Correlates of children's physical activity

Previous research has identified a wide range of factors that appear to be associated with children's engagement in physical activity. In this chapter we focus on those factors that are expected to be of particular interest to policy-makers, because they are easily targeted for interventions (Sallis, Prochaska, & Taylor, 2000). Although previous research has shown that the following factors are related to children's overall participation in physical activity, there has been little research investigating how they relate to children's engagement in organised sport and other physical activity.

Child gender

Research has found that gender is one of the factors most consistently associated with participation in physical activity, with studies generally finding that boys have higher levels of engagement in physical activity than girls, particularly as children grow older. These differences are not necessarily found in younger children; for example, in an analysis of data from *Growing Up in Scotland*, the Scottish equivalent of LSAC, Parkes, Sweeting, and Wight (2012) found that boys and girls at age 6 had equivalent levels of physical activity. However, gender differences are often found in older children (see Sallis et al., 2000, and Trost, 2005, for reviews). While it has been well established that boys in later primary school years generally have higher levels of physical activity than girls, this chapter examines whether this difference holds for engagement in both organised sport and other physical activities.

Family socio-economic position

Previous research has found mixed results for the relationship between family socio-economic position (SEP) and children's engagement in physical activity. In a broad-ranging review of the correlates of children's physical activity, Sallis et al. (2000) found that children's socio-economic position was unrelated to physical activity in the majority of studies. However, researchers continue to highlight negative associations between children's physical activity and socio-economic position (e.g., Halpern, 2006; Singh, Kogan, Siahpush, & van Dyck, 2008). Maher and Olds (2011) argued that differences in the measurement of socio-economic position and/or children's physical activity may be behind these mixed results in the literature. They showed that socio-economic position is associated with energy expenditure but not minutes of physical activity for Australian children aged 9–16 years. Moreover, they showed that engagement in sport (which has higher energy use) was positively associated with socio-economic position. Echoing this, Kumar et al. (2009) showed that Australian children aged 5–14 years in jobless households and those living in the most disadvantaged areas[3] were less likely to engage in organised sport outside school hours. This chapter investigates the relationship between family socio-economic position and participation in both organised sport and other types of physical activity, such as active transport (e.g., walking or cycling home from school).

Geographic location

Children in urban and rural areas of Australia have varied access to organised sporting activities and facilities for other physical activities (such as ovals, parks and swimming pools). Parkes et al. (2012) found that neighbourhood characteristics (such as availability of swimming pools and green spaces) were related to children's levels of physical activity. They also found that children in urban areas undertook higher levels of sedentary activities compared to children in rural areas. A review by Sallis et al. (2000), however, found that associations between geographic location and participation in physical activity were mixed (most of the studies reviewed were conducted in the United States). Recent analysis of LSAC data also found that Australian children in remote areas were more likely to prefer active (rather than inactive) pastimes compared to children in less remote areas (Baxter, Gray, & Hayes, 2011). The same analysis also found that participation in individual sports (such as swimming) was lower in outer regional areas compared to inner regional areas and major cities. In contrast, the authors found only small differences in participation in team sports for children living in outer regional areas compared to those in inner regional areas and cities. This chapter expands these findings further by investigating the relationship between geographic

---

[3]   Measured using the Socio-Economic Indexes for Areas (SEIFA). Those families living in areas in the lowest SEIFA quintile are considered to be the most disadvantaged.

location and children's engagement in different types of physical activity, using reports from both parents and the children themselves.

Child self-ratings of enjoyment of physical activity

In a review of previous research, Sallis et al. (2000) found that children's preference for physical (rather than sedentary) activity was one of the factors most consistently associated with their participation in such activity. Similarly, Trost (2005) found that children's confidence in their physical abilities was consistently related to both their interest and participation in physical activity. These findings are consistent with psychological theories, which state that those who intend to participate in physical activity (e.g., because they enjoy it) are more likely to actually do so (Martin, Oliver, & McCaughtry, 2007). Children who enjoy physical activity thus may have different levels of engagement in both organised sport and other physical activities compared to children who do not.

Physical activity and indicators of child wellbeing

Physical activity has been found to be associated with a wide range of indicators of children's wellbeing (CSIRO & UniSA, 2007). We focus here on two indicators: physical health and social-emotional wellbeing.

Theory says that body weight is dependent on the balance between energy intake (food) and energy output (activity), and in line with this, previous research has generally found an association between children's levels of physical activity and their body mass index (BMI) (CSIRO & UniSA, 2007). For example, the CSIRO and UniSA found that children with weight problems tended to have lower levels of physical activity than children of normal weight. This chapter extends these previous findings by investigating whether the link between engagement in physical activity and BMI varies by whether children take part in organised sport or other physical activity.

While there has been research showing the benefits of exercise for adult mental health (e.g., see Dubbert (2002) for a review of the literature), there has been less research examining the links between physical activity and social-emotional wellbeing in children. In a review of the literature, Trost (2005) found that the studies showed mixed results for the association between children and adolescents' physical activity and measures of social-emotional wellbeing such as stress, depression and anxiety. However, another review of the literature by Sallis et al. (2000) found that the experience of depression was associated with reduced participation in physical activity among adolescents. The analysis presented in this chapter extends these findings further by examining the relationship between children's social-emotional wellbeing and their engagement in organised sport and other physical activity.

Tracking children's physical activity

Longitudinal studies of children's physical activity have been concerned with tracking physical activity across periods ranging from a few years during childhood (Rhodes, Macdonald, & McKay, 2006) to a period from childhood to adolescence (Janz, Dawson, & Mahoney, 2000), and from childhood to adulthood (Herman, Craig, Gauvin, & Katzmarzyk, 2009). Studies that track physical activity seek to examine "the stability of a characteristic or the maintenance of relative rank or position within a group, over time" (Malina, Bouchard, & Bar-Or, 2004, p. 9). Therefore, the emphasis lies on identifying whether engagement in physical activity early in children's lives predicts later involvement in physical activity. One of the most common and straightforward methods used to track children's physical activity is the inter-age or inter-period correlation (Twisk, Kemper, & Mellenbergh, 1984). Broadly, research has shown low to moderate inter-age correlations for children's physical activity over a relatively short period of up to a few years, but even lower correlations over a longer period (Malina, 2001; Trost, 2005).

Children's physical activity in Australia

The Australian Physical Activity Recommendations for 5 to 18 year olds advise that children take part in at least 60 minutes of moderate to vigorous physical activity each day.[4] This includes

---

[4] Revised guidelines are expected in 2013.

organised sport, active play, and general movement throughout the day (DoHA, 2010b). Data from the Australian National Children's Nutrition and Physical Activity Survey revealed that 76% of a random sample of children engaged in at least one hour of moderate to vigorous physical activity on a randomly sampled day (the child × day method). However, when measured over four days, it was found that 90% of children aged 9–13 years engaged in such activity for an average of an hour a day (CSIRO & UniSA, 2007). This difference highlights instances when children may not meet the guidelines on one day, but exceed them on another day. Nevertheless, only 40% of children aged 9–13 years engaged in moderate to vigorous physical activity for at least one hour on each of four consecutive days. These data suggest that when observed over a period of four days, most children aged 9–13 years average at least one hour per day of moderate to vigorous physical activity, a smaller proportion consistently engage in such activity over consecutive days, and 1 in 10 do not meet the guidelines. This study also showed that girls and boys engaged in similar amounts of free-time play and active travel, but that boys averaged more moderate to vigorous physical activity by playing sport (CSIRO & UniSA, 2007).

The Children's Participation in Culture and Leisure Activities Survey (ABS, 2009b) provides further insights into children's engagement in organised sport (outside of school hours only). Published data show that 68% of children aged 9–11 years participated in organised sport outside of school hours at least once over a period of 12 months, with only 20% of those children participating for at least two days per week (105 or more times over 12 months). Kumar et al. (2009) used these data in further analyses and found that girls (compared with boys), children in families where neither parent worked (compared with families where at least one parent worked), and children living in disadvantaged areas (lowest SEIFA quintile, compared with the middle three SEIFA quintiles) were less likely to engage in organised sport outside of school hours.

The CSIRO and UniSA (2007) study had a comprehensive measure of children's physical activity, but limited its analysis of associated factors to age and gender. The Kumar et al. (2009) study had a limited focus on children's engagement in organised sport, but it considered more factors associated with this activity. More generally, the measure of organised sport in both these studies was limited to that conducted outside school hours, which likely underestimates total engagement in organised sport. Neither study considered links to child health and wellbeing outcomes, nor used longitudinal data.

Using LSAC, this chapter begins to address these limitations by exploring a range of factors associated with children's engagement in different types of physical activities, links between children's engagement in physical activity and children's health and wellbeing outcomes, and the tracking of children's engagement in physical activity over time. We predominantly use data from the K cohort at Wave 4 (10–11 year olds), but also use select data from Waves 2–4 to examine patterns over time on particular aspects of children's physical activity. Specifically, we address five key research questions:

1. What are the patterns of children's engagement in physical activity across the day and the week?

2. How many children take part in organised sport? How does this vary by gender, family socio-economic background, region, and child-reported enjoyment of physical activity?

3. How many children take part in other physical activities? How does this vary by gender, family socio-economic background, region, and child-reported enjoyment of physical activity?

4. How is children's participation in (a) organised sport, and (b) other physical activities associated with indicators of child wellbeing (physical health and social-emotional wellbeing)?

5. How does children's participation in physical activity track over time?

The next section (9.2) of the chapter introduces the measures used in LSAC and throughout this chapter, and, in addressing the first research question, presents an overview of children's total physical activity and how this changes across the days of the week, and by weekdays and weekends. Sections 9.3 to 9.6 address the remaining research questions, and the final section (9.7) provides a brief summary and discussion of the results from throughout the chapter.

9.2 An overview of children's engagement in physical activity

LSAC measures of children's physical activity

In this section, we describe the measures used in the chapter. We use measures from parent reports and child reports. The reports by Parent 1 cover a range of different types of physical activity over a broad range of time. The child reports relate to a single day, though they provide very detailed information about their engagement in physical activity on the sampled day. Therefore, together, parent and child reports provide an overview of children's engagement in physical activity in general, along with detailed insights into their engagement in physical activity on a sampled day.

We derive the parent-reported measures of children's physical activity from three questions that interviewers asked parents in Waves 2, 3 and 4:[5]

- "In the past week, on how many days have you or someone in your family played a game outdoors or exercised together like walking, swimming, cycling with the study child?" (Response categories: 0 = none; 1 = 1–2 days; 2 = 3–5 days; 3 = 6–7 days.)

- "In the past month, say from [nominate date one month ago], has the study child gone to a playground or a swimming pool with you or another family member?" (Response categories: 0 = yes; 1 = no.)

- "In the past 12 months, has the study child regularly participated (outside school hours, even if organised by the school) in team sport (e.g., football, cricket or netball) and/or individual sport, coached or lessons (e.g., swimming, tennis, karate or gymnastics)?" (Response categories: 0 = yes; 1 = no.)

The measures reported by parents cover broad periods, but they are restricted to specific activities and often when the child is with a parent or other adult in the household; excluding, for example, instances where a child is playing outside without a parent or other adult. Therefore, in addition to parent reports, we derived other measures of children's physical activity from the children directly. In Wave 4, children were asked to complete a time use diary to record the sequence of main activities in which they engaged on the sampled day, who they were with, and their location. These data provide measures of engagement in physical activity for a random sample of children across a random sample of days and is akin to the "child × day" measure used in previous Australian research on children's physical activity (see section 9.1). The data collected in these time use diaries provide insights into children's engagement in various physical activities, whether it occurred on a weekday or weekend day, the people they were with, and where they were at the time.

Using these Wave 4 time use data, we computed measures of children's participation and the total time they spent on the sampled day in:

- organised sport (including playing football, basketball, or netball; swimming; dancing; learning martial arts, etc.); and

- other physical activities (including playing ball games; riding a bike, scooter or skateboard; skipping; running; playing games and other active activities; and walking and cycling for travel).

To enhance comparability between parent and child reports, we distinguished between organised sport that occurred inside school from that which occurred outside of school, and we looked at other physical activities undertaken both with and without parents.

Children's physical activity across the day and the week

Children's time use diaries provide some insights into patterns of children's engagement in physical activity across the day and week. Overall, the vast majority (86%) of children reported engaging in some form of physical activity on the diary day, with participation being higher on weekdays (88%) than on weekend days (79%). However, fewer children (68%) were engaged in physical activity for at least one hour on the sampled day. This is lower than the figure reported by CSIRO and UniSA (2007), which sampled children's physical activity over four days. However, in LSAC,

---

5   Other questions about children's physical activity were also asked at various waves, but were not consistent across the three waves of interest in this chapter.

children recorded any engagement in physical activity as part of the school curriculum as "classes", which might also explain the difference.

Figure 9.1 shows the percentages of 10–11 year old children who reported spending any time engaging in physical activity for each hour of the day on school days and non-school days. On a school day, children's engagement in physical activity peaked at several points throughout the day. The first of these peaks occurred in the morning at 8 am, with two further peaks at 11 am and 1 pm, and a final peak at 4 pm, which correspond to recess, lunch breaks and after-school time. The pattern on a non-school day was quite different. Engagement in physical activity rose gradually until it peaked at around 11 am. It then declined a little, most likely due to lunch, and rose again in the afternoon, then decreased gradually throughout the afternoon and into the evening. On both school days and non-school days, the proportion of children engaging in physical activity declined substantially in the early evening, especially after 6 pm, when many families are sharing their evening meal.
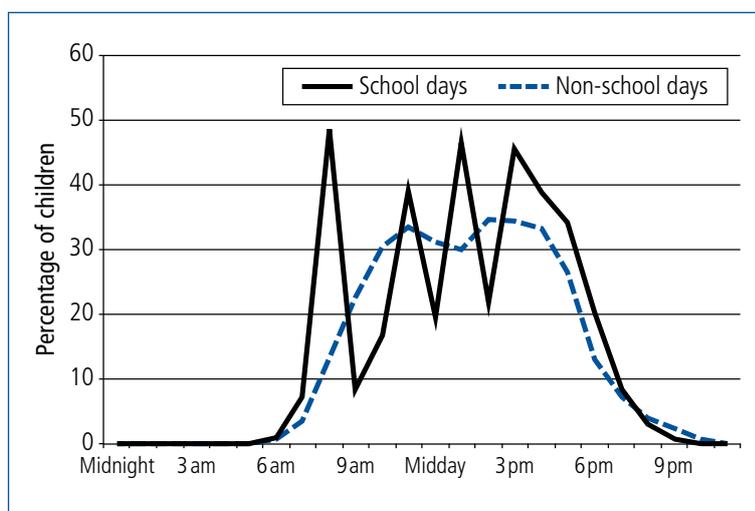
Note: No. of weekday observations = 2,926; no. of weekend observations = 947.

Figure 9.1:   Participation in physical activity across school days and non-school days, child reports, K cohort, Wave 4

This broad overview has established that children's engagement in physical activity is relatively consistent across days of the week, with the differences observed occurring mainly early in the morning. In addition, it shows that 10–11 year olds' engagement in physical activity occurs at various times throughout the day, tending to be lower around times in the day when children are most likely to be eating (midday and early evening). Patterns across the day also reveal that different children engage in physical activity at different points in the day. Generally, not more than half of all children who participate in physical activity during the day do so at any specific hour of the day.

9.3   Children's engagement in organised sport

Organised sport in the previous 12 months (parent reports)

This section addresses the second research question introduced in section 9.1. It investigates how many children take part in organised sport, and how this varies by gender, family socio-economic position, region, and child-reported enjoyment of physical activity. As noted in section 9.2, parents reported on whether or not children had participated in organised sport outside of school over the previous 12 months. Table 9.1 (on page 135) shows the percentages of children who had participated and those who had not, for all children, and by gender, family socio-economic position and region. Overall, three-quarters of children had engaged in organised sport outside school in the previous 12 months. This figure was significantly higher for boys (81%) than for girls (69%) ($p < .001$). Moreover, it was significantly lower for children from relatively low socio-economic

backgrounds (64%) than for all other children (81%) ($p < .001$), but not significantly different for children living in metropolitan and regional areas. Finally, there was a significant positive association between children's (self-reported) enjoyment of physical activity and their engagement in organised sport (as reported by their parents). Around 79% of children who reported enjoying physical activity "a lot" were reported by their parents to have engaged in organised sport outside school ($p < .001$), but this dropped to 57% for children who reported enjoying physical activity "not at all" or "not very much". These, however, represent a very small proportion of children overall (7%), as the vast majority of children reported enjoying physical activity at least "quite a lot".

Table 9.1:	Participation in organised sport outside of school in the previous 12 months, by child and family characteristics, parent reports, K cohort, Wave 4			
	Participated (%)	Did not participate (%)	Total (%)	No. of observations
All children	75.1	24.9	100.0	4,164
Gender ***				
Boy	80.8	19.2	100.0	2,133
Girl	69.1	30.9	100.0	2,031
Socio-economic position ***				
High/moderate SEP	80.9	19.2	100.0	2,889
Low SEP	64.2	35.8	100.0	1,007
Region				
Metropolitan	74.0	26.0	100.0	2,596
Regional	76.9	23.1	100.0	1,563
Child enjoys physical activity ***				
A lot	79.1	20.9	100.0	2,625
Quite a lot	70.6	29.5	100.0	1,176
Not at all/not very much	57.0	43.0	100.0	282

Notes: Numbers of observations vary due to missing data on certain factors. Statistically significant differences are noted: *** $p < .001$.

Organised sport on a sampled day (child reports)

In this section, using the child time use diary data, we consider children who reported spending any time in organised sport while at school, outside of school and overall, and the percentages in each of these categories are shown in Table 9.2 (on page 136). Overall, around 26% of children participated in organised sport, and by far the largest proportion of the organised sport (21%) occurred outside of school, although it is important to bear in mind that not all children attended school on the sampled day (see Chapter 6).

It is clear that the proportion of children engaged in organised sport on the sampled day is considerably lower than the proportion reported by parents over the period of one year. It is most likely that the difference in the periods that both these indicators cover underscores the difference in the overall proportions. Therefore, many children who did not report engaging in organised sport on the sampled day are likely to have engaged in organised sport at other times over the course of a year.

Table 9.2 also shows that engagement in organised sport on the sampled day was very similar between boys and girls. This is different from the results for parent reports covering a 12-month period (see Table 9.1) and from previous research (Kumar et al., 2009). It is important to note that the child reports cover a single day, and that these included relatively few weekend days. Weekends are often a time when children engage in organised sport, and it could be that gender differences reported in previous research (and by parents themselves) would be more apparent if there was better coverage of weekend days in the LSAC time use diaries. We cannot explore this more fully with the current data, but these results indicate that associations between gender and children's organised sport are not completely straightforward.

Table 9.2:	Participation in organised sport (at school, outside school, and overall) on the sampled day, by child and family characteristics, child reports, K cohort, Wave 4					
	Participated at school (%) [a]	Participated outside school (%) [a]	Total partici-pated (%)	Total did not participate (%)	Total (%)	No. of obser-vations
All children	7.0	21.0	25.9	74.1	100.0	3,879
Gender						
Boys	6.4	21.5	25.7	74.3	100.0	1,987
Girls	7.5	20.5	26.1	73.9	100.0	1,892
Socio-economic position						
High/moderate SEP	7.2	23.6 ***	28.5 ***	71.5	100.0	2,710
Low SEP	6.2	15.3 ***	19.9 ***	80.1	100.0	930
Region						
Metropolitan	6.4	20.5	25.0	75.0	100.0	2,445
Regional	7.9	21.9	27.3	72.7	100.0	1,429
Child enjoys physical activity						
A lot	8.0 **	23.7 ***	29.1 ***	70.9	100.0	2,492
Quite a lot	6.0 **	17.8 ***	22.4 ***	77.7	100.0	1,104
Not at all/not very much	1.9 **	10.6 ***	12.5 ***	87.6	100.0	261

Notes: [a] Some children (2%) participated in organised sport both at school and outside of school. Therefore, the total in column 3 is not the sum of columns 1 and 2. Numbers of observations vary due to missing data on certain factors. Statistically significant differences are noted: ** $p < .01$; *** $p < .001$.

Table 9.2 shows that children from a relatively low socio-economic position were equally likely to participate in organised sports in school, but significantly less likely ($p < .001$) to participate in organised sports away from school and in organised sport overall, compared to children from moderate to high socio-economic backgrounds. This result echoes the findings from the parent reports, and from previous research highlighting that children from lower socio-economic backgrounds are less likely to engage in organised sport (e.g., Halpern, 2006). However, the results do reveal that the difference is restricted to organised sport outside of school, highlighting the potential of schools as being a setting for equalising children's engagement in organised sport, regardless of their socio-economic position.

There was very little difference in the rates of participation in organised sport between children living in metropolitan and regional areas of Australia. There was, however, a significant positive association between children's enjoyment of physical activity and their reports of engaging in organised sport on the sampled day in school ($p < .01$), outside school ($p < .001$), and overall ($p < .001$). Both these results echo the equivalent findings from the parent reports.

Guidelines for children's engagement in physical activity are stated in terms of time spent in physical activity. Therefore, in addition to looking at participation, we used the children's time use diary data to compute the total number of minutes that children spent in organised sport on the sampled day, and examined potential differences in this associated with gender, family socio-economic position, region and self-reported enjoyment of physical activity (shown in Table 9.3 on page 137). Overall, children spent an average of around one and a half hours participating in organised sport. As with overall participation in organised sport, there were only small and non-significant gender differences in the average time that children spent in organised sport (95 minutes for boys and 90 minuted for girls). Those from relatively low socio-economic positions averaged less time in organised sport, but this was also not statistically significant. In addition, there was no significant difference between children in metropolitan and regional areas. Finally, those who reported enjoying physical activity "a lot" averaged significantly more time in organised sport on the sampled day than children who reported enjoying physical activity either "quite a lot" or "not at all/not very much". The number of participants who did not enjoy physical activity but did participate is very small ($n = 33$) and so no significant difference was found between these children and participating children who enjoyed physical activity "a lot".

Table 9.3:	Average minutes spent in organised sport by participants on the sampled day, by child and family characteristics, child reports, K cohort, Wave 4	
	Average minutes (participants only)	**No. of observations**
All children	92	1,004
Gender		
Boy	95	511
Girl	90	493
Socio-economic position		
High/moderate SEP	94	773
Low SEP	87	185
Region		
Metropolitan	94	612
Regional	90	391
Child enjoys physical activity		
A lot	97 ***	725
Quite a lot	79 ***	247
Not at all/not very much	82	33

Note: Numbers of observations vary due to missing data on certain factors. Significance thresholds from two-tailed mean comparison *t*-tests: *** $p < .001$.

9.4   Children's engagement in other physical activities

Organised sport is only one form of physical activity and it is not the most common, as more children get much of their required physical activity from active play, walking, skating or cycling and so on (ABS, 2009b). This section thus addresses the third research question outlined in section 9.1, examining how many children take part in other physical activities aside from organised sport, and how their engagement varies by gender, family socio-economic background, region, and child-reported enjoyment of physical activity. This is done separately for physical activities reported by parents and by children.

Other physical activities outside the home in the previous week (parent reports)

Parents reported how many days in the previous week they or another adult in the household played or exercised outdoors with the study child. In addition, they stated whether the study child had visited a playground or swimming pool with a parent or other family member in the previous month.

Table 9.4 (on page 138) reports the proportion of children who had played outdoors with their parent or other adult in the household for varying numbers of days in the previous week, by gender, socio-economic position, region and child-reported enjoyment of physical activity.

The majority of children had taken part in other physical activities with their parent or another adult on at least one day in the previous week (70%). The largest proportion of these children spent time in outdoors physical activities with an adult on 1–2 days (40%), while a much smaller proportion did so on 6–7 days (7%). Engagement in such physical activity was unrelated to child gender and region, but children in lower socio-economic positions were significantly less likely to do so. For example, 40% of children from the lowest socio-economic family backgrounds did not play or exercise outdoors with a parent or other adult in the household in the previous week, compared with 26% of children in families from higher socio-economic backgrounds ($p < .001$). There was a positive association between children's enjoyment of physical activity and their engagement in play or exercise with parents or other adults in the household ($p < .001$). Broadly, around 30% of children who reported enjoying physical activity either "a lot" or "quite a lot" had not played or exercised with parents or other household adults in the previous week, compared with around

42% of children who reported not enjoying physical activity. At the other extreme, 8% of children who enjoyed physical activity "a lot" exercised or played with their parents or other adults almost every day in the previous week, compared with 4% of children who did not enjoy physical activity.

Table 9.4:	Numbers of days in the previous week that children played outdoors with an adult from the household, by child and family characteristics, parent reports, K cohort, Wave 4					
	None (%)	1–2 days (%)	3–5 days (%)	6–7 days (%)	Total (%)	No. of obser-vations
All children	29.9	39.7	22.9	7.4	100.0	4,164
Gender						
Boy	29.2	38.7	24.4	7.7	100.0	2,133
Girl	30.7	40.8	21.4	7.1	100.0	2,031
Socio-economic position ***						
High/moderate SEP	26.1	41.7	24.7	7.6	100.0	2,889
Low SEP	39.3	34.2	20.1	6.4	100.0	1,007
Region						
Metropolitan	29.5	40.6	23.0	7.0	100.0	2,596
Regional	30.6	38.3	23.0	8.2	100.0	1,563
Child enjoys physical activity ***						
A lot	27.9	39.8	23.9	8.3	100.0	2,625
Quite a lot	32.0	40.1	22.2	5.9	100.0	1,176
Not at all/not very much	41.6	39.0	15.4	4.0	100.0	282

Note: Numbers of observations vary due to missing data on certain factors. Statistically significant differences are noted: *** $p < .001$.

Table 9.5 reports the percentages of children who visited a swimming pool or playground with a parent or other adult in the household by gender, family socio-economic position, region and child-reported enjoyment of physical activity.

Table 9.5:	Proportion of children visiting a swimming pool or playground in the past month with an adult from the household, by child and family characteristics, K cohort, Wave 4			
	Visited (%)	Did not visit (%)	Total (%)	No. of observations
All children	66.1	33.9	100.0	4,164
Gender				
Boy	66.9	33.1	100.0	2,133
Girl	65.3	34.7	100.0	2,031
Socio-economic position ***				
High/moderate SEP	69.0	31.0	100.0	2,889
Low SEP	57.9	42.1	100.0	1,007
Region ***				
Metropolitan	69.0	31.0	100.0	2,596
Regional	61.3	38.7	100.0	1,563
Child enjoys physical activity				
A lot	67.3	32.7	100.0	2,625
Quite a lot	64.3	35.7	100.0	1,176
Not at all/not very much	61.6	38.4	100.0	282

Note: Numbers of observations vary due to missing data on certain factors. Statistically significant differences are noted: *** $p < .001$.

Overall, two-thirds of children had visited a playground or swimming pool in the past month and one-third had not. Visits to the playground/swimming pool were unrelated to child gender, but again, children with the lowest socio-economic backgrounds were less likely to have visited in the previous month ($p < .001$). This was also the case for children living in regional areas ($p < .001$). In both cases, the availability of facilities in neighbourhoods or areas in which these families reside may be an important factor. Or it may reflect differences in the types of physical activity in which children engage in rural and regional areas. Further analysis should investigate this and other potential explanations. Lastly, there was a small but non-significant positive association between children's reported enjoyment of physical activity and visits to the playground/swimming pool in the previous month.

These measures of other physical activities reported by parents are very limited in that they focus on times when the child was with Parent 1 or another adult from the household, and primarily on activities outside the home. This notwithstanding, they provide some insights into children's engagement in other physical activities apart from organised sport. We can garner further insights into this from the information provided by children's time use diaries on a sampled day.

Other physical activities on a sampled day (child reports)

In addition to organised sport, children recorded in their time use diaries other physical activities in which they engaged throughout the sampled day. We focus on three activities that clearly involve some degree of physical activity:

- unorganised active play (including playing ball games; riding a bicycle for fun; riding a scooter or skateboard; skipping; running; playing active games; and other physical activities);
- walking for travel; and
- cycling for travel.

Table 9.6 reports the percentages of 10–11 year olds who reported spending any time in these three other physical activities (participated) and the percentages who reported spending no time in these activities (did not participate). It shows that the majority of children engaged in some form of other physical activity (82%). For the majority, this consisted of unorganised active play (74%), while around 30% of children spent some time walking for travel and 6% cycling for travel.[6] On average, children who participated spent 113 minutes in total on these other physical activities during the sampled day, most of which (107 minutes) comprised unorganised active play. Children who reported walking for travel on the sampled day spent a little over half an hour walking on average, and children who reported cycling for travel reported 49 minutes of cycling on average.

Table 9.6: Type of participation in and average minutes spent in other physical activities during the sampled day, child reports, K cohort, Wave 4

	Unorganised active play	Walking	Cycling	Totals
Whether participated (%)				
Participated	74.2	29.1	6.0	81.6
Did not participate	25.8	70.9	94.0	18.4
Total	100.0	100.0	100.0	100.0
No. of observations	3,879	3,879	3,879	3,879
Average minutes spent by participants	107	33	49	113
No. of observations	2,877	1,128	231	3,164

We now consider the broad social context of children's other physical activities, by dividing the activities into four groups according to where they occurred:

- in school;
- outside school with parents;
- outside school with other adults (and not with parents); and
- outside school and not with parents or other adults.

---

[6] Cycling for fun is included in the measure of unorganised active play.

Note that children could be with other children while with their parents or other adults, and they could be engaged in other physical activities in different contexts at different times in the day (e.g., in school *and* with their parents outside school). Finally, children could be with other adults and/ or other children while at school.

Table 9.7 reports the participation and the average minutes that 10–11 year olds spent in other physical activities in the different social contexts. Overall, 38% of children spent some time in other physical activities while at school, and 42% while with their parents. Around 43% of children did so away from either parents or other adults. Finally, fewer than one in ten children engaged in other physical activities while with other adults (and not with their parents).

Table 9.7:	Different social contexts for participation and average minutes spent in other physical activities during the sampled day, child reports, K cohort, Wave 4			
	At school	**With parents**	**With other adults (no parents)**	**Not with parents or other adults**
Whether participated (%)				
Participated	37.6	41.5	7.7	43.1
Did not participate	62.4	58.5	92.3	57.0
Total	100.0	100.0	100.0	100.0
No. of observations	3,879	3,879	3,879	3,879
Average minutes spent by participants	61	82	74	68
No. of observations	1,458	1,611	297	1,670

As above, we show the average time those children reported taking part in other physical activities. Children in school or outside school away from parents or adults averaged about an hour in other physical activities. This was less time than spent on the activities undertaken with parents (82 minutes) or with other adults (74 minutes).

Other physical activities and child and family characteristics

To address question three, we now consider associations between children's engagement in other physical activities and child gender, family socio-economic position, region and child-reported enjoyment of physical activity.

Table 9.8 (on page 141) shows that girls were less likely to participate in other physical activities (79%) compared with boys (84%). The difference is not large, but it is statistically significant ($p < .01$). Although it appears that higher proportions of children from the lowest socio-economic family backgrounds and those in regional areas participated in other physical activities—compared to children from higher socio-economic family backgrounds and metropolitan areas respectively— the differences are small and not statistically significant. There was a significant positive association between children's engagement in other types of physical activity and their enjoyment ($p < .01$). Around one-quarter of children who reported not enjoying physical activity did not spend any time in other types of physical activity, compared with 17% of children who reported enjoying physical activity "a lot".

Table 9.9 (on page 141) shows the average time that 10–11 year olds spent in other physical activities for children who reported spending any time in other physical activities. Results show that girls averaged spending significantly less time in other physical activities than boys. Results also show that children from the lowest socio-economic backgrounds and children living in regional areas averaged more time in other physical activities than children from relatively higher socio-economic family backgrounds and in metropolitan areas respectively. Children who reported enjoying physical activity "a lot" averaged more time in other physical activities than children who reported enjoying physical activity "not at all/not very much".

Table 9.8:	Participating in other physical activities on the sampled day, by child and family characteristics, child reports, K cohort, Wave 4			
	Participated (%)	Did not participate (%)	Total (%)	No. of observations
**Gender ** **				
Boy	83.7	16.3	100.0	1,987
Girl	79.3	20.7	100.0	1,892
Socio-economic position				
High/moderate SEP	81.0	19.0	100.0	2,710
Low SEP	83.5	16.5	100.0	930
Region				
Metropolitan	81.2	18.8	100.0	2,445
Regional	82.3	17.7	100.0	1,429
**Child enjoys physical activity ** **				
A lot	83.3	16.7	100.0	2,492
Quite a lot	79.6	20.4	100.0	1,104
Not at all/not very much	74.9	25.2	100.0	261

Note: Statistically significant differences are noted: ** $p < .01$. Significant chi-square independence tests: gender: $\chi^2(1) = 12.74$; $p < .01$; child enjoyment: $\chi^2(2) = 15.79$; $p < .01$.

Table 9.9:	Average minutes spent by participants in other physical activities on the sampled day, by child and family characteristics, child reports, K cohort, Wave 4	
	Average minutes	No. of observations
All children	113	3,164
Gender		
Boy	118 ***	1,664
Girl	107 ***	1,500
Socio-economic position		
High/moderate SEP	110 *	2,196
Low SEP	121 *	776
Region		
Metropolitan	110 *	1,985
Regional	118 *	1,176
Child enjoys physical activity		
A lot	118 ***	2,076
Quite a lot	102 ***	879
Not at all/not very much	110	196

Note: Numbers of observations vary due to missing data on certain factors. Significance thresholds from two-tailed mean comparison t-tests: * $p < .05$; *** $p < .001$.

9.5 Physical activity and indicators of child wellbeing

This section addresses the fourth research question introduced in section 9.1, and investigates the associations between children's engagement in organised sport and other physical activity and selected indicators of child wellbeing.

Children's body mass index was used as an indicator of children's physical wellbeing. At each wave, interviewers measured the children's weight and height, and these measurements were used to calculate the children's BMI. We used scores on the parent-reported Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) as indicators of the children's social-emotional wellbeing. The SDQ is a 25-item scale that assesses prosocial behaviour, hyperactivity/inattention, emotional symptoms, peer relationship problems and conduct problems. Mean scores on each subscale

were used in this chapter. Higher scores on the hyperactivity/inattention, emotional symptoms, peer relationship problems and conduct problems subscales, and lower scores on the prosocial behaviour subscale reflect more problematic behaviour.

It is important to note that these analyses test for associations only, and it is not possible from these results to determine whether physical health or social-emotional wellbeing (as measured by BMI and the SDQ) influences participation in physical activity, or the converse. In addition, there could be other factors related to physical health and social-emotional wellbeing, but it is beyond the scope of this chapter to consider these factors.

Table 9.10 shows the association between physical health (expressed as BMI scores) and social-emotional wellbeing (as measured by the five SDQ subscale scores) and children's participation in organised sport (in the previous 12 months) and other physical activities with an adult in the household (in the previous week) (both based on parent reports).

Table 9.10:	Physical health and social-emotional wellbeing, by participation in organised sport in previous 12 months and other physical activities in previous week, parent reports, K cohort, Wave 4				
	Organised sport		Other physical activities with adult from household		
	Non-participants	Participants	None	1–2 days	3–7 days
Physical health (mean BMI)	19.4	19.2	19.6 a, b	19.0 a	19.1 b
No. of observations	863	3,145	1,130	1,606	1,273
Social-emotional wellbeing (mean SDQ)					
Prosocial behaviour	8.3	8.5 **	8.3 a, b	8.5 a	8.6 b
Hyperactivity/inattention	3.6	3.2 ***	3.5 a, b	3.2 a	3.2 b
Emotional symptoms	2.5	1.9 ***	2.2 a	2.0	2.0 a
Peer relationship problems	2.0	1.5 ***	1.7 a, b	1.6 a	1.5 b
Conduct problems	1.7	1.4 ***	1.7 a, b	1.4 a, c	1.3 b, c
No. of observations	878	3,234	1,159	1,642	1,311

Note: Significance thresholds from two-tailed mean comparison t-tests: ** $p < .01$; *** $p < .001$. The "a–a" etc. superscript pairs denote significant differences between means within group comparisons, as determined by the non-overlap of their respective 95% confidence intervals. For example, the "a–a" superscript pair for BMI shows that children who did not play outdoors with an adult in the previous week had a significantly different BMI to children who played outdoors with an adult on 1–2 days in the previous week and those who played outside 3–7 days, but the BMI of children who played outdoors 1–2 days was not statistically different from that of children who played 3–7 days.

The results in Table 9.10 show that there was no significant association between BMI and participation in organised sport; however, children who had not played outdoors with an adult at all in the previous week had a significantly higher BMI compared to those who had done so for one or two days.

There was a significant association between participation in organised sport in the previous 12 months and mean scores on all five SDQ subscales. Children who participated in organised sport had higher levels of prosocial behaviour, and lower levels of hyperactivity/inattention, emotional symptoms, peer relationship problems and conduct problems compared to children who did not take part in organised sport.

There was also a significant association between the frequency with which children had played outdoors with a parent or other adult in the previous week, and mean scores on all five SDQ subscales. Children who had not played outdoors with an adult at all in the previous week had significantly lower prosocial scores compared to children who played outdoors with an adult on any number of days. In general, children who had not played outdoors with an adult in the previous week also had higher levels of hyperactivity/inattention, emotional symptoms, peer relationship problems and conduct problems compared to children who had (though the significance varied between subscales; see Table 9.10 for details).

Table 9.11 (on page 143) shows the association between physical and social-emotional health (represented by BMI and SDQ subscale scores respectively) and measures of children's participation

in organised sport and other physical activity (taken from time use diaries reported by the children). In contrast to the findings from the parent reports, there was a significant association between BMI and participation in organised sport, but not other physical activities (though the same pattern of results was evident). Children who had participated in organised sport on the sampled day had a significantly lower BMI than children who had not. This may be because the parent reports are less sensitive to differences in the amount or level of engagement in organised sport, whereas the child reports capture time periods when children are more engaged in organised sport.

Table 9.11: Physical health and social-emotional wellbeing, by participation in organised sport and other physical activity on sampled day, child reports, K cohort, Wave 4				
	Organised sport		**Other physical activities**	
	Non-participants	**Participants**	**Non-participants**	**Participants**
Physical health (mean BMI)	19.3	18.9 **	19.5	19.1
No. of observations	2,767	1,052	701	3,118
Social-emotional wellbeing (mean SDQ)				
Prosocial behaviour	8.4	8.6 *	8.5	8.5
Hyperactivity/Inattention	3.4	3.1 ***	3.3	3.3
Emotional symptoms	2.1	1.7 ***	2.3	2.0 ***
Peer relationship problems	1.7	1.3 ***	1.8	1.5 ***
Conduct problems	1.5	1.2 ***	1.4	1.4
No. of observations	2,808	1,071	714	3,165

Note: Significance thresholds from two-tailed mean comparison t-tests: * $p < .05$; ** $p < .01$; *** $p < .001$.

There was also a significant association between mean scores on all five SDQ subscales. Children who had participated in organised sport on the sampled day had significantly higher scores on prosocial behaviour, and significantly lower scores on hyperactivity/inattention, emotional symptoms, peer relationship problems and conduct problems.

There were less consistent results for participation in other physical activities, however. Children who took part in some other unorganised physical activities on the sampled day had statistically lower scores on emotional symptoms and peer relationship problems. The other comparisons were not statistically significant.

9.6   Tracking children's engagement in physical activity

This section addresses the final research question introduced in section 9.1; that is, how children's participation in physical activity tracks over time. We focus on measures from the K cohort, Waves 2 to 4, as all the children were in primary school over this period (ages 6–7, 8–9 and 10–11 years). Figure 9.2 (on page 144) shows the percentages of parents reporting that children engaged in each of the physical activity measures for no waves, one wave, two waves, or all three waves.

Just over 60% of children engaged in organised sport over the past year in all three waves. Consistently visiting playgrounds/swimming pools in the past month across all three waves was lower (50%), and playing/exercising with parents/adults for at least four days in the past week across all three waves was the lowest (12%). Baxter, Higgins, and Hayes (2012) noted a clear decline in children playing/exercising with parents/adults as they grow older. Not engaging in any physical activity in any wave was lowest in organised sport and visiting playgrounds/swimming pools (6% and 5% respectively), and highest for playing/exercising with parents/adults for at least four days in the past week (29%).

Again, these patterns reflect differences in the recall period of the different indicators. Over shorter recall periods, it is less likely that we will observe the behaviour being repeated over several waves. Note, for example, that around 60% of children played/exercised with a parent/adult for at least four days in the past week over one or two waves, while the comparable figure for organised sport was 33%, and for visits to the playground/swimming pool was 45%.
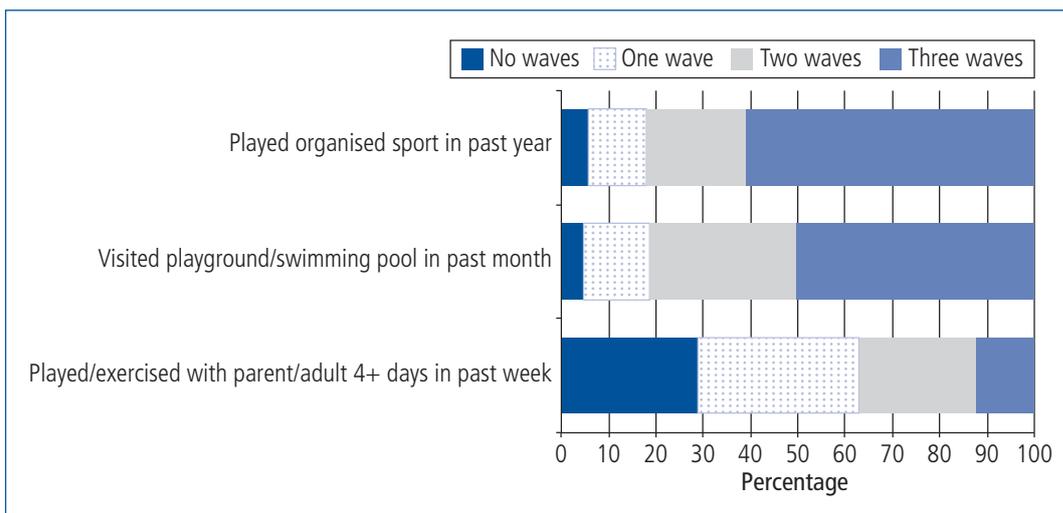
Notes: No. of observations = 3,940.

Figure 9.2:   Proportion of children in each physical activity measure, by number of waves they participated, parent reports, K cohort, Waves 2–4

Echoing the results shown in Figure 9.2, Table 9.12 shows inter-wave correlations of parent reports of 10–11 year olds' engagement in different aspects of physical activity. The correlations are all statistically significant ($p < .001$), but they vary in magnitude. Malina (2001) suggested that correlations of less than .30 indicate low tracking; correlations between .30 and .60 indicate moderate tracking, and correlations greater than .60 indicate "reasonably good" tracking. These are relative terms and do not correspond to any objective indicators. Using this as a guide, the inter-wave correlations reported in Table 9.12 suggest low to moderate tracking on these indicators across waves.

Table 9.12:   Inter-wave correlations of children's engagement in physical activity, parent reports, K cohort, Waves 2–4

	Waves 2 to 3 (r)	Waves 3 to 4 (r)	Waves 2 to 4 (r)
Played organised sport in past year	.52	.65	.45
Visited playground/swimming pool in past month	.39	.40	.38
Played/exercised with parent/adult 4+ days in past week	.30	.31	.26

Notes: No. of observations = 3,940. All correlations are statistically significant ($p < .001$). As a guide, correlations < .30 = low; correlations .30–.60 = moderate; correlations > .60 = reasonably good (Malina, 2001).

The inter-wave correlations are strongest for the variable indicating that a child engaged in organised sport in the past year and weakest for the indicator of children playing or exercising with parents or other adults in the household for at least four days in the past week. The correlations for the indicator of children visiting playgrounds/swimming pools in the past month lay between these two. The Wave 2 to Wave 4 correlations are lowest across all three indicators, suggesting that tracking is lower over a longer period, but is highest in relation to organised sport.

The correlations are stronger for measures with longer recall periods, which is not surprising. There is an increased likelihood of a child repeatedly engaging in physical activity at some point over a year than over a single week. In addition, the correlations are weaker for the two measures that relate to children's physical activity with parents or other adults in the household. This is likely to be because as children get older, more of their physical activity occurs with adults outside their household, or unsupervised with other children.

In addition to tracking indicators of children's physical activity reported by parents, we examined associations between parent reports of children's engagement in organised sport at age 6–7 years with child reports of playing organised sport at 10–11 years. We do not use the inter-wave

correlation, as the measures reported by parents and children are very different, both in terms of the recall period and in terms of the nature and social dimensions of the physical activities.

We found that around 30% of children reported by their parent in Wave 2 to have engaged in organised sport also reported themselves engaging in organised sport in Wave 4. In contrast, 16% of children reported by parents in Wave 2 to not have engaged in organised sport, also reported themselves engaging in organised sport in Wave 4 ($p < .001$). This result echoes the findings above that show relatively strong tracking over time of children's engagement in organised sport.

Overall, there is evidence of low to moderate tracking of children's physical activity. Children's engagement in organised sport tracks most strongly, with relatively weaker tracking for other aspects of children's physical activity. It is important to bear in mind that the other physical activity indicators relate to activities undertaken both with parents or other adults in the household, and it is likely that as children age, their physical activity would occur more often with other adults outside the household and with other children. Future analysis should consider longitudinal patterns in children's engagement in different types of physical activities in different social contexts using time use diary data. This is beyond the scope of the current chapter, but merits further analysis.

9.7   Summary and discussion

Organised sport and socio-demographic variations

Our analysis of organised sport shows that when measured over a period of one year, around three-quarters of children engaged in organised sport (as reported by parents), compared to measuring over the relatively short period of one day, where only around one-quarter of children engaged in organised sport (as reported by children themselves). This should not be surprising given that most children will engage in organised sport on particular days of the week and/or at particular times of the years.

Irrespective of the measurement, we found, in line with previous research, that children from lower socio-economic backgrounds were less likely to engage in organised sport than those from more advantaged families. However, there was no socio-economic gradient for organised sport in school, which highlights the potentially equalising influence of school. We also found that engagement in organised sport was relatively similar for children living in metropolitan and regional areas.

Children's engagement in organised sport reported by parents (over a period of 12 months) was unrelated to children's BMI; however, children who reported in their time use diaries that they engaged in organised sport on a sampled day had significantly lower BMI than those who did not. It could be that many of the children included in the parent report measure do not engage in organised sport very regularly, or may have not done so recently. For both parent and child reports, engagement in organised sport was positively associated with child social-emotional wellbeing. Children who participated in organised sport (either in the past 12 months or on the sampled day) had higher average prosocial scores, and lower problem scores, including lower levels of hyperactivity, peer problems and conduct problems. These results are particularly striking, and provide further insights into the importance of children's engagement in sport.

Engagement in organised sport tracked most strongly across waves. Parent reports were the most consistent measures, and organised sport had the highest inter-wave correlations of all the parent report measures. It is important to note, however, that parent reports are very broad measures of participation and provide no insights into the level of participation. In addition, there was a significant association between parent reports of children's engagement in organised sport over the previous year in Wave 2 and child reports of engagement in organised sport on the sampled day in Wave 4.

Other physical activities and socio-demographic variations

As well as organised sport, we considered other types of physical activity, such as active free play and active travel by walking or cycling. The vast majority of children aged 10–11 years (82%) engaged in some form of other physical activity on the sampled day. Children who reported not enjoying physical activity were slightly less likely to engage in other physical activities on the sampled day, and spent less time on it when they did participate.

Participation in other physical activities was unrelated to either socio-economic position or region of residence, but children in families with a lower socio-economic position and living in regional areas spent significantly more time on average on other physical activities. The relatively low engagement in organised sport by children in families with a lower socio-economic position is, therefore, somewhat offset by them spending more time on other physical activities.

The parent reports of children's other physical activities focused narrowly on specific activities that were done with a parent or other adult from the household. Participation rates were therefore lower, despite being measured over periods longer than one day. Around two-thirds of children had visited a swimming pool or playground in the past month and around 70% of children had played or exercised outside with a parent or other adult from the household in the previous week. Children in families with a lower socio-economic position and children who did not enjoy physical activity were less likely to have visited a swimming pool or playground in the previous month or to have played/exercised outside with a parent or other adult in the household. Girls were also less likely to have visited a swimming pool or playground in the previous month.

Children who had played/exercised outside with a parent or other adult had significantly lower BMI than children who had not. In addition, children who had engaged in other physical activities on the sampled day tended to have a higher BMI than those who had not, but the difference was not statistically significant. The sample size for the child reports is much lower than for the parent reports, and this may be a reason for the lack of statistical significance.

As with organised sport, children's engagement in other physical activities is positively associated with their social and emotional wellbeing. For example, engagement in physical activity is associated with having lower levels of peer and conduct problems. A positive association with prosocial behaviour was found for parent reports of children playing/exercising, but not for child reports of engaging in other physical activities.

Finally, measures of other physical activities reported by parents tracked at a low to moderate levels across the waves. This may be because these measures entail parental or other adult engagement in the activity with the children, which might be expected to decline as the children get older.

Implications, limitations and future research

Children's engagement in physical activity has positive benefits for their health and wellbeing. Children in families with a lower socio-economic position are at risk of not participating in organised sport and are less likely to visit a swimming pool/playground. Moreover, our results showed that this difference was concentrated in organised sport outside school. These results may be associated with financial disadvantage and/or a lack of facilities in disadvantaged communities. In contrast, socio-economic position had little bearing on other types of physical activity arising in daily life. Efforts to increase children's physical activity should consider the barriers to engagement in organised sport for some children, as well as exploring ways in which physical activity can become more of a part of the daily lives of all children. Our analysis shows that children's enjoyment of physical activity and sport is a clear driver in promoting their participation, and this could be pivotal in efforts to further increase children's engagement in physical activity, especially as a normal part of their daily lives. Moreover, our analysis suggests associations between earlier and later involvement in physical activity, suggesting that reaching children early in their lives will have beneficial consequences later.

Available data did not permit us to consider the relative intensity of physical activities, and this is a limitation of the research. In addition, all the measures used in this chapter are proxy reports or self-reports and these are subject to limitations. The number of correlates we analysed were limited.

Despite these limitations, there remains scope for future research with these data. Future work could consider factors such as children's perceptions of their own health and parents' own engagement in physical activity. Moreover, we could further explore the factors considered here, such as examining particular aspects of socio-economic position (e.g., education, family type, income). In addition, there are other possible outcomes relating to children's physical health and social-emotional wellbeing that might usefully be explored in future research. Further investigation could also be made into associations across time between socio-demographic characteristics and physical activity, and between physical activity and indicators of child wellbeing. In addition, as future waves of

LSAC become available, we could explore adolescent engagement in physical activity and trace possible links back to their earlier engagement or lack thereof.

9.8   References

Australian Bureau of Statistics. (2009a). *Children who are overweight or obese* (Australian Social Trends; Cat No. 4102.0). Canberra: ABS.

Australian Bureau of Statistics. (2009b). *Children's participation in cultural and leisure activities* (Cat. No. 4901.0). Canberra: ABS.

Baxter, J., Higgins, D., & Hayes, A. (2012). *Families make all the difference: Helping kids to grow and learn* (Facts Sheet). Melbourne: Australian Institute of Family Studies.

Baxter, J., Gray, M., & Hayes, A. (2011). *Families in regional, rural and remote Australia* (Facts Sheet). Melbourne: Australian Institute of Family Studies.

Commonwealth Scientific Industrial Research Organisation, & University of South Australia. (2007). *2007 Australian National Children's Nutrition and Physical Activity Survey: Main findings*. Canberra: Commonwealth of Australia.

Department of Health and Ageing. (2010a). *Physical activity*. Canberra: DoHA. Retrieved from <www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-strateg-active-index.htm>.

Department of Health and Ageing. (2010b). *Physical activity guidelines*. Canberra: DoHA. Retrieved from <www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-strateg-phys-act-guidelines>.

Dubbert, P. M. (2002). Physical activity and exercise: Recent advances and current challenges. *Journal of Consulting and Clinical Psychology*, *70*(3), 526–536.

Goodman, R. (1997). Psychometric properties of the Strengths and Difficulties Questionnaire (SDQ). *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*, 1337–1345.

Herman, K. M., Craig, C. L., Gauvin, L., & Katzmarzyk, P. T. (2009). Tracking of obesity and physical activity from childhood to adulthood: The Physical Activity Longitudinal Study. *International Journal of Pediatric Obesity*, *4*, 281–288.

Halpern, R. (2006). *Critical issues in after-school programming* (Monographs of the Herr Research Center for Children and Social Policy, Erikson Institute). Chicago: Erikson Institute.

Janz, K. F., Dawson, J. D., & Mahoney, L. T. (2000). Tracking physical fitness and physical activity from childhood to adolescence: The Muscatine Study. *Medicine and Science in Sports and Exercise*, *32*(7), 1250–1257.

Kumar, A., Rossiter, P., & Olczyk, A. (2009). *Children's participation in organised sporting activity*. Canberra: Australian Bureau of Statistics.

Maher, C. A., & Olds, T. S. (2011). Minutes, MET minutes, and METs: Unpacking socio-economic gradients in physical activity in adolescents. *Journal of Epidemiology and Community Health*, *65*, 160–165.

Malina, R. M. (2001). Physical activity and fitness: Pathways from childhood to adulthood. *American Journal of Human Biology*, *13*, 162–172.

Malina, R. M., Bouchard, C., & Bar-Or, O. (2004). *Growth, maturation and physical activity* (2nd Ed.). Champaign, IL: Human Kenetics.

Martin, J. J., Oliver, K., & McCaughtry, N. (2007). The theory of planned behavior: Predicting physical activity in Mexican American children. *Journal of Sport and Exercise Psychology*, *29*, 225–238.

Parkes, A., Sweeting, H., & Wight, D. (2012). *Growing Up in Scotland: Overweight, obesity and activity*. Edinburgh: Scottish Government.

Rhodes, R. E., Macdonald, H. M., & McKay, H. A. (2006). Predicting physical activity intention and behaviour among children in a longitudinal sample. *Social Science and Medicine*, *62*, 3146–3156.

Sallis, J. F., Prochaska, J. J. & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*, *32*(5), 963–975.

Singh, G. K., Kogan, M. D., Siahpush, M., & van Dyck, P. C. (2008). Independent and joint effects of socioeconomic, behavioral, and neighborhood characteristics on physical inactivity and activity levels among US children and adolescents. *Journal of Community Health*, *33*, 206–216.

Trost, S. G. (2005). *Discussion paper for the development of recommendations for children's and youths' participation in health promoting physical activity. Prepared for the Department of Health and Ageing*. Canberra: DoHA.

Twisk, J. W. R., Kemper, H. C. G., & Mellenbergh, G. J. (1984). Mathematical and analytical aspects of tracking. *Epidemiologic Reviews*, *16*(2), 165–183.

The family circumstances and wellbeing of Indigenous and non-Indigenous children

10

Jennifer Baxter
Australian Institute of Family Studies

10.1   Introduction

The health and wellbeing and learning outcomes of Indigenous Australian children have improved over recent years, though Indigenous children continue to be at greater risk of poorer developmental outcomes than non-Indigenous Australian children (Australian Institute of Health and Welfare [AIHW], 2011; Steering Committee for the Review of Government Service Provision, 2011). This chapter provides some insights on how the lives of Indigenous children and non-Indigenous children compare, using data from the Longitudinal Study of Australian Children (LSAC), and presents new information on the differences between these groups of children on a range of indicators of child wellbeing. Throughout these analyses, Indigenous children are those who were identified as being Aboriginal or Torres Strait Islander by their primary carer.

The LSAC data cannot provide insights for all Indigenous children, because LSAC is not representative of children living in remote areas of Australia. Nevertheless, these data can help to build up a picture of the lives of Indigenous children in non-remote areas, and allow comparisons to be made between these children and non-Indigenous children (Hunter, 2008). While on many (though not all) indicators of child outcomes, Indigenous children living in more remote areas of Australia do not fare as well as other Indigenous children (e.g., Steering Committee for the Review of Government Service Provision, 2011), it is important to note that the majority of Indigenous children live in non-remote parts of Australia, and so a focus on these children is important.[1]

A particular strength of LSAC for making comparisons of different groups of children is the availability of extensive information about the families and parents of the children. Families set the scene for children's development, with parental characteristics being useful indicators of children's developmental opportunities. To understand the contexts for the development of Indigenous children, these data are used to provide information about their families, and about the parent or parents with whom they are living at each wave of LSAC. While LSAC is not designed to specifically capture the way in which Indigenous households are structured and function, the extensive family information in LSAC provides some useful insights. More information about Indigenous households can be gained through analyses of data from Footprints in Time: The Longitudinal Study of Indigenous Children (LSIC); but as we wish to compare Indigenous and non-Indigenous children in this analysis, we focus here only on the findings from LSAC.

Reflecting on the family circumstances of Indigenous compared to non-Indigenous children is particularly important, as Indigenous adults are themselves more often faced with disadvantage when compared to non-Indigenous adults (AIHW, 2011). This is true in areas of financial wellbeing, employment, education, health, and social and emotional wellbeing. Disentangling the different causes of disadvantage is not explored here, nor are the links between different indicators of disadvantage. The goal of the chapter is to describe the family circumstances of children to help build our understanding of the lives of Indigenous children in non-remote parts of Australia.

---

[1]   For example, according to the 2006 Census, of Indigenous children aged under 10 years, 77% live in non-remote parts of Australia (32% in major cities, 23% in inner regional areas and 22% in outer regional areas), 8% in remote parts and 15% in very remote parts (author's calculations using 2006 Census data, Tablebuilder, Australian Bureau of Statistics [ABS]).

The circumstances of Indigenous families are likely to influence their children's development. Previous research has clearly identified that compared to non-Indigenous children, Indigenous children are more often faced with risk factors that can be detrimental to the achievement of good developmental outcomes (Daly & Smith, 2005). Certainly the poorer wellbeing of Indigenous children is well documented for Australia (AIHW, 2011; Daly & Smith, 2005; Zubrick, 2004; Zubrick et al., 2004). Further, poorer outcomes for Indigenous children have been shown using LSAC data (e.g., Leigh & Gong, 2009; Ou, Chen, Hillman, & Eastwood, 2010; Priest, Baxter, & Hayes, 2012).

Various measures of child wellbeing are explored in this chapter, making use of information from the first four waves of LSAC. Parents' and children's reports are incorporated to gain insights from different perspectives. The sample size for Indigenous children does not allow very comprehensive analyses of these data, but the extent to which the relatively poor outcomes of Indigenous children may be related to their being over-represented in households of lower socio-economic position (SEP) is considered.

To summarise, the key research questions explored in this chapter are:

- How do the family circumstances of Indigenous and non-Indigenous children compare?

- What are the differences between Indigenous and non-Indigenous children in terms of how they are progressing in their physical, social-emotional and cognitive wellbeing?

- To what extent does the socio-economic position of families of Indigenous children explain any differences in developmental outcomes?

The research questions are explored for children at different ages from 0–1 years through to 10–11 years.

10.2   Data

This chapter uses Waves 1 to 4 and both cohorts of LSAC. The identification of children as being Indigenous or non-Indigenous is based on parents' reports at Wave 1 of whether the child is of Aboriginal or Torres Strait Islander origin.

A significant limitation of this analysis is the size of the subsample of Indigenous children in LSAC. The small number of Indigenous children affects sample errors and the ability to undertake very detailed analyses (Hunter, 2008). Significance tests (and the presentation of confidence intervals) have been used in this chapter to show when associations or differences were statistically significant.[2]

At Wave 1, there were 230 Indigenous children in the B cohort and 187 in the K cohort. This number decreased considerably in later waves, with attrition being relatively high among families with Indigenous children (see Table 10.1 on page 151; and, e.g., Daraganova & Sipthorp, 2011). For example, in the B cohort, across the whole sample, 83% of children (4,242 out of 5,107) from Wave 1 remained in the sample at Wave 4. Among Indigenous children who were in Wave 1 of the B cohort, only 63% remained in the sample at Wave 4 (145 out of 230). These proportions were similar in the K cohort.

In addition to this attrition causing potential difficulty with sampling errors that increase due to the diminishing size of the sample, there may be biases introduced if the responding Indigenous children at Wave 4 have different characteristics to those responding at Wave 1. This is, of course, a challenge for all analyses of later waves of longitudinal studies. The sample weights (which are used throughout these analyses) take some account of attrition and non-response bias. Nevertheless, care still needs to be taken in analysing the data at later waves, as change may be observed simply because of the changing characteristics of the sample. For this reason, when using the longitudinal data to compare across ages of children, those who provided valid responses (to the specific item being examined) at each of the relevant waves were included.[3]

---

[2]   In some analyses, if statistically significant results were based on very small cell sizes (i.e., a sample size of 5 or fewer children), these results have not been reported as being statistically significant.

[3]   That is, for these longitudinal analyses, balanced samples are used.

Table 10.1:	Sample distribution of Indigenous and non-Indigenous children in LSAC, B and K cohorts, Waves 1–4							
	(Wave 1)		(Wave 2)		(Wave 3)		(Wave 4)	
	%	No. of obser-vations	%	No. of obser-vations	%	No. of obser-vations	%	No. of obser-vations
B cohort	0–1 years		2–3 years		4–5 years		6–7 years	
Indigenous children	4.5	230	3.9	180	3.4	149	3.4	145
Non-Indigenous children	95.5	4,877	96.1	4,426	96.6	4,237	96.6	4,097
Total	100.0	5,107	100.0	4,606	100.0	4,386	100.0	4,242
K cohort	4–5 years		6–7 years		8–9 years		10–11 years	
Indigenous children	3.7	187	3.4	153	2.9	124	2.8	118
Non-Indigenous children	96.3	4,794	96.6	4,309	97.1	4,205	97.2	4,049
Total	100.0	4,981	100.0	4,462	100.0	4,329	100.0	4,167

Note: These figures are unweighted.

For many of the analyses of socio-economic and family circumstances, only Wave 1 data have been used, as these give the largest and more representative sample. However, when highlighting how children's outcomes compare as they grow up, data from the other waves have also been incorporated. In addition, Wave 4 of the K cohort has been used to compare Indigenous and non-Indigenous children's self-reports on a number of indicators of wellbeing.

Given the small sample sizes, multivariate methods have not been used; so where differences are observed between Indigenous and non-Indigenous children, it is not possible to state whether such differences are entirely due to the Indigenous status of the child, or due to other characteristics. However, as will be discussed later, in some analyses of children's outcomes, the comparisons by Indigenous status also incorporate information on the socio-economic status of families, which allows some consideration of whether differences by Indigenous status may, at least in part, be related to the different socio-economic positions (SEP) of Indigenous and non-Indigenous families.

10.3   Family circumstances of Indigenous and non-Indigenous children

This section examines the family circumstances of Indigenous and non-Indigenous children. For most of the analyses presented in this section only Wave 1 data were used.

Indigenous status and language of children and parents

Households may include a mix of Indigenous and non-Indigenous people, and for Indigenous children this might mean they are living with parents (or others) who are not themselves Indigenous.[4] Of children who were identified as being of Indigenous origin in Wave 1 (combining the two cohorts, as percentages are similar in each):

- 18% lived in a family with an Indigenous mother and an Indigenous father;
- 25% lived in a family with an Indigenous mother and non-Indigenous father;
- 20% lived in a family with a non-Indigenous mother and Indigenous father;
- 25% lived in a family with an Indigenous mother and no father;
- 11% lived in a family with a non-Indigenous mother and no father; and
- 1% lived in a family with a non-Indigenous mother and non-Indigenous father.

---

[4]   A small percentage of Indigenous children do not live with their parents. For example, at Wave 1, 97% of Indigenous children lived with their biological, adoptive or foster mother and 3% with a grandparent or aunt. For ease of presentation, the grandparents and aunts are included in any analyses referring to mothers. The same approach is taken in any analyses of fathers. For non-Indigenous children, 99% lived with their biological, adoptive or foster mother.

Fewer than 1% of children who were identified as not being Indigenous were living with an Indigenous mother and/or father.

This parental information for Indigenous children draws attention to the fact that their families are not all the same, and the simple identification of families in LSAC as being those of an Indigenous (or non-Indigenous) child hides this diversity. This is necessary, however, due to the small sample sizes for Indigenous children.

One important point to note for these analyses is that LSAC does not provide information about the way in which cultural diversity is experienced within Indigenous families. One indicator of this, however, could be the language that parents speak at home. In LSAC (B and K cohorts combined, Wave 1), 92% of Indigenous mothers and 90% of Indigenous fathers stated that English was the main language that they spoke at home. Given the small sample sizes, it is not possible to report specifically on the languages spoken by the remaining 8–10%, but the languages spoken are very diverse, with only a very small number reporting to mainly speak an Indigenous language. The same is true if the languages of the children are examined, with 95% of Indigenous children mainly speaking English at home (K cohort, Wave 1 only, since some of the B cohort at Wave 1 were not yet talking), and the balance including a small number speaking Indigenous languages, and others speaking a diverse range of non-Indigenous languages.[5]

In using a population-based study such as LSAC to examine children raised within a particular cultural framework, it is important to recognise that the meaning of certain questions, while tried and tested on the population as a whole, may have a somewhat different meaning in specific cultural groups. This may apply in the case of using LSAC to study the lives and wellbeing of Indigenous children. The fact that the vast majority of the children and parents mainly speak English at home leads us to think that it is appropriate to assume that the questions and concepts will not be completely foreign to most of the Indigenous families in the study. However, with these data, it is not possible to explore whether there were cultural nuances in the interpretation and meaning of the questions for the Indigenous children that might have affected the responses.

Residence

In LSAC, there is a considerable difference in the residential location of Indigenous and non-Indigenous children. Indigenous children are more likely to be living in regional areas (62% of each of the B and K cohorts at Wave 1), with the balance (38%) living in metropolitan areas of Australia. In comparison, non-Indigenous children more often live in metropolitan areas: 68% of the B cohort live in metropolitan areas and 32% in regional areas, while 65% of the K cohort live in metropolitan areas and 35% in regional areas. As already discussed, the more remote areas of Australia were excluded in the initial selection of families for LSAC. An important source of information about Indigenous children living in remote parts of Australia is LSIC.

These regional differences are consistent with population data for Australia, with the 2006 Census data showing that a higher proportion of non-Indigenous children aged under 10 years live in major cities (69% of non-Indigenous children compared to 32% of Indigenous children), somewhat fewer live in inner regional (20% compared to 23%) or outer regional areas (10% compared to 22%), and a much smaller proportion live in remote or very remote areas (1% compared to 23%).[6]

Household and family composition

This subsection addresses the first research question of this chapter, to explore how the family circumstances of Indigenous and non-Indigenous children compare. It builds on prior research on the lives of Indigenous Australians by focusing on families with young children, and allowing direct comparisons with information about families with non-Indigenous children.

First, Table 10.2 (on page 153) shows various aspects of family and household characteristics at Wave 1. These data show that 81–85% of non-Indigenous children lived with their two parents and no other adults. Another 5–6% lived with two parents and other adults. For Indigenous children a

---

[5]   These percentages are comparable with those reported by the ABS (2010) for Indigenous people living in non-remote parts of Australia.

[6]   Author's calculations. See footnote 1 for the source of these data.

smaller percentage lived with their two parents and no other adults (55% for the B cohort and 59% for the K cohort), while the percentage living with two parents and other adults was similar (6% and 8% respectively). Indigenous children were more likely than non-Indigenous children to be living with a single parent, though it was quite common for these children to also have another adult in the household. For the B cohort, 23% of Indigenous children were living with a single parent and no other adult and 16% were living with a single parent and one or more other adults. The K cohort was similar. For non-Indigenous children, overall a much smaller percentage lived with one parent as opposed to two parents, but it was not uncommon for these single-parent families—especially for the younger cohort—to have another adult resident in the household.

Table 10.2: Household and family composition, by children's Indigenous status, B and K cohorts, Wave 1

	Indigenous children (%)	Non-Indigenous children (%)	Indigenous children (%)	Non-Indigenous children (%)
Family composition (adults) [a]	**B cohort (0–1 year)** ***		**K cohort (4–5 years)** ***	
Two parents only	55.0	84.7	59.4	80.6
Two parents plus other adults	6.4	6.2	7.9	5.1
One parent only	22.7	5.8	22.0	11.9
One parent plus other adults	15.8	3.4	10.7	2.4
Total	100.0	100.0	100.0	100.0
Other adults in the home	**B cohort (0–1 year)**		**K cohort (4–5 years)**	
Has other adults in the home	22.2	9.5 ***	18.6	7.5 ***
Grandparent:	13.3	6.3 **	7.5	4.2 *
Grandmother	11.6	5.8 **	7.2	3.8 *
Grandfather	6.9	4.0	2.6	2.1
Aunt/uncle	10.9	3.9 ***	7.6	2.1 ***
Other relative	2.9	0.4 ***	4.8	0.4 ***
Other non-relative	6.9	1.7	2.1	1.8
Number of co-resident siblings of study child [b]	**B cohort (0–1 year)** ***		**K cohort (4–5 years)** ***	
0	30.5	41.2	9.3	12.6
1	32.0	35.9	34.8	48.1
2	16.1	16.0	28.4	26.3
3	11.3	4.5	14.6	9.1
4+	10.2	2.4	13.0	4.0
Total	100.0	100.0	100.0	100.0
Relationship between study child and siblings	**B cohort (0–1 year)**		**K cohort (4–5 years)**	
Has co-resident biological siblings	53.6	54.7	78.9	83.8
Has co-resident half-siblings	27.7	8.9 ***	29.9	10.5 ***
Has co-resident step-siblings	0.0	0.1	1.1	0.1
Has other non-sibling children < 15 years living in household	1.7	5.0 ***	1.0	6.7 ***
No. of observations	230	4,877	187	4,794

Note: [a] "Parents" includes adults who were listed as not having a parental relationship with the child, including biological and non-biological (step-) parents. "Other adult" does not include grown-up siblings of the study child. [b] "Siblings" includes children recorded as biological, foster/adopted, half- or step-siblings. Tests were done for family composition, each of the indicators of having (versus not having) other adults in the home, the number of co-resident siblings, and each of the indicators of having (versus not having) co-resident siblings of different relationships. Within each cohort chi-square tests were used to test for differences by Indigenous status. Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: * $p < .05$; ** $p < .01$; *** $p < .001$.

In describing the family composition of Indigenous families, it is important to acknowledge that they may have different ways of thinking about family relationships than is typical in non-Indigenous families. In Indigenous families, the broader family, including grandparents, aunts and uncles, are likely to be considered part of the family network that is responsible for raising children. Families tend to be larger, and resident children may be related to each other in diverse set of ways. This may have implications for capturing details of relationships within the household, especially if children are considered to be brother or sister to each other without being related by a common parent. Further, Indigenous families may also be less clearly defined in terms of who is usually resident within a household (which is the basis of household information in LSAC), with more movement occurring between households. These data do not attempt to reflect this more dynamic nature of Indigenous families, and may not fully capture the complexity of family relationships. LSIC will be particularly valuable for the examination of such matters. (For more discussion of this issue, refer to Daly & Smith, 2005; Morphy, 2006; and Silburn et al., 2006.)

At Wave 1, 22% of the B cohort and 19% of the K cohort families with Indigenous children had one or more adults (not including grown-up siblings of the study child) other than a parent living in the household. This compared to 10% and 8% for families of non-Indigenous children. These other residents, for both Indigenous and non-Indigenous children, were quite diverse in their relationship to the LSAC study child, though the two most common were grandparents and aunts or uncles.

Table 10.2 (on page 153) shows that Indigenous children live with a greater number of siblings when compared to non-Indigenous children. This is especially apparent in relation to the proportion with three or more co-resident siblings. These findings provide one explanation for the higher incidence of overcrowding in Indigenous housing (Steering Committee for the Review of Government Service Provision, 2011).

These data also highlight the greater complexity of Indigenous families. While the percentages of Indigenous and non-Indigenous children who had biological siblings were somewhat similar, Indigenous children were considerably more likely to be living with half-siblings (28–29%) than non-Indigenous children (9–11%). Virtually no children were reported to have step-siblings at age 0–1 or 4–5 years. Indigenous children were more likely than other children to have children (aged less than 15 years) other than siblings (e.g., cousins) living in their household—5% of Indigenous children in the B cohort and 7% of the K cohort, compared with fewer than 2% of non-Indigenous children.

It is well documented that Indigenous families face more economic disadvantages than non-Indigenous ones (see also the following subsection). More generally, this is related to Indigenous men and women having relatively low education levels and relatively low levels of participation in the labour market (Daly & Smith, 2005; Silburn et al., 2006; Steering Committee for the Review of Government Service Provision, 2011). In these data, this is also related to the finding from Table 10.2 (on page 153) that many families with Indigenous children do not include two resident parents.

Socio-economic position and educational attainment

Patterns of relative socio-economic disadvantage among families of Indigenous children are apparent in the LSAC data from Wave 1 (shown in Table 10.3 on page 155). It is important that these differences are outlined here, to provide context to the analyses of children's outcomes explored in this chapter.

First, considering educational attainment, mothers of Indigenous children were much more likely to have incomplete secondary education (around 50%) than mothers of non-Indigenous children (20–25%). In fact, almost one in five mothers of Indigenous children had an educational attainment of lower than Year 10, compared to around one in twenty for mothers of non-Indigenous children.[7]

---

[7] Only mothers' educational attainment has been reported here, since fathers are not present in a high proportion of families of Indigenous children. Among fathers who were present, their educational attainment was relatively low when compared to fathers of non-Indigenous children (e.g., at Wave 1, the percentage with a bachelor degree or higher among resident fathers of Indigenous children was 4% in the B cohort and 8% in the K cohort; for fathers of non-Indigenous children the respective percentages were 28% and 27%).

Table 10.3: Socio-economic characteristics of families, by children's Indigenous status, B and K cohorts, Wave 1

	Indigenous children (%)	Non-Indigenous children (%)	Indigenous children (%)	Non-Indigenous children (%)
Mothers' educational attainment	**B cohort (0–1 year) *** **		**K cohort (4–5 years) *** **	
Less than Year 10	19.6	4.1	18.4	5.5
Year 10 or 11	31.3	15.7	29.9	20.1
Year 12, diploma or certificate	45.6	54.5	47.5	54.1
Bachelor degree or higher	3.5	25.7	4.2	20.3
Total	100.0	100.0	100.0	100.0
No. of observations	229	4,871	182	4,756
Employment status of parent(s)	**B cohort (0–1 year) *** **		**K cohort (4–5 years) *** **	
Either (or only) parent employed	45.7	87.1	55.6	86.5
No parent employed	54.3	12.9	44.4	13.5
Total	100.0	100.0	100.0	100.0
No. of observations	227	4,758	168	4,493
Socio-economic position of family	**B cohort (0–1 year) *** **		**K cohort (4–5 years) *** **	
Lowest quartile (≤ 25%)	69.2	28.5	55.8	30.1
2nd quartile (26–50%)	21.4	23.9	26.3	24.3
3rd quartile (51–75%)	7.8	22.7	15.0	22.5
Highest quartile (≥ 76%)	1.6	24.8	3.0	23.1
Total	100.0	100.0	100.0	100.0
No. of observations	225	4,867	179	4,784
Financial hardships experienced by family in previous 12 months	**B cohort (0–1 year)**		**K cohort (4–5 years)**	
Experienced one or more hardships	36.2	13.5 ***	40.5	13.6 ***
Type of hardship experienced:				
Adults or children have gone without meals	5.4	2.4 *	7.8	2.0 ***
Unable to heat or cool your home	10.5	3.8 ***	8.3	4.1
Pawned or sold something	15.5	7.0 ***	23.0	6.8 ***
Sought assistance from a welfare or community organisation	26.5	6.1 ***	26.4	6.5 ***
No. of observations	228	4,873	186	4,784
Age of mother at birth of the child	**B cohort (0–1 year)**		**K cohort (4–5 years)**	
Mother aged less than 20 years	18.3	3.8 ***	13.1	3.5 ***
No. of observations	225	4,864	176	4,733

Note: Within each cohort, chi-square tests were used to test for differences by Indigenous status. Tests were done for mothers' educational attainment, parental employment, socio-economic position of the family, each of the indicators of experiencing (versus not experiencing) overall and specific financial hardships, and age of mother at birth of the child. Percentages may not total exactly 100.0% due to rounding. Statistically significant differences are noted: * $p < .05$; *** $p < .001$.

An extension of this educational attainment information relates to parents' expectations for the educational attainment of their children (data not shown). For example, in the K cohort at Wave 2 (when the children were aged 6–7 years), parents were asked how far they thought their child would go in education. Few parents expected that their child would *not* complete secondary education (4% for Indigenous children compared to 2% for non-Indigenous children). Parents of Indigenous children, however, were more likely than parents of non-Indigenous children to think their child's education would finish at secondary school (29% for Indigenous children compared to 16% for non-Indigenous children) or a trade or vocational education (24% for Indigenous children compared to 16% for non-Indigenous children). Parents of Indigenous children were also less

likely than parents of non-Indigenous children to expect their child to achieve a degree or higher (43% for Indigenous children compared to 67% for non-Indigenous children). When comparing the educational attainment of parents with the percentages expecting their children to achieve higher levels of education, there was an expectation among parents of both Indigenous and non-Indigenous children that their children would achieve higher levels of education than that of the parents themselves.

Families of Indigenous children very often had no parent employed (54% of families of 0–1 year olds and 44% of 4–5 year olds), compared to much lower rates of parental joblessness in families of non-Indigenous children in both cohorts (13–14%) (Table 10.3 on page 155). High rates of joblessness contribute to the relatively low socio-economic position of families with Indigenous children. In the B cohort in Wave 1, for example, fewer than 10% of the families of Indigenous children were in the highest two quartiles (the top 50%) of the distribution for socio-economic position, compared to 48% of non-Indigenous families.

The experience of financial hardship by parents illustrates how these characteristics may flow through to the lives of Indigenous and non-Indigenous children. For the B cohort at Wave 1, for example, 36% of families of Indigenous children had experienced a financial hardship in the previous 12 months, with the most common hardship being having sought assistance from a welfare or community organisation (27%). Relatively high percentages reported that, because of lack of money, they had pawned or sold something (16%) or were unable to heat or cool their home (11%). Table 10.3 shows that the percentages for all indicators of financial wellbeing were lower for the families of non-Indigenous children, among whom 14% in the B cohort at Wave 1 experienced at least one financial hardship. Results for the K cohort at Wave 1 followed a similar pattern.

Some of these differences in socio-economic position reflect that Indigenous children, on average, are born to younger mothers than non-Indigenous children. Table 10.3 shows that a higher percentage of mothers of Indigenous children, compared to non-Indigenous children, were aged less than 20 years old at the birth of the child (for the B cohort, 18% of Indigenous children and 4% of non-Indigenous children).

Physical and social-emotional wellbeing of parents

Indigenous men and women disproportionately face disadvantage in the areas of social-emotional and physical health (ABS, 2010). When parents have such disadvantages, this may then have implications for the outcomes of children. Table 10.4 (on page 157) shows selected aspects of parental wellbeing that are pertinent to the wellbeing of children, using Wave 1 data.

Rates of cigarette smoking are higher in the Indigenous population than the non-Indigenous population (AIHW, 2011), and this is apparent in the LSAC sample also. Mothers of Indigenous children were more likely than other mothers to have smoked during pregnancy (40% compared to 14% in the B cohort and 36% compared to 15% in the K cohort) and to be smokers at the time of the Wave 1 study (37% compared to 15% in the B cohort and 36% compared to 17% in the K cohort). It is not surprising to see that at Wave 1 this translated into Indigenous children being more likely than non-Indigenous children to be living in a household in which one or more person smoked inside (23% compared to 10% in the B cohort and 30% compared to 11% in the K cohort).

Table 10.4 also shows the proportion reporting that they or someone in the household had a drug or alcohol problem in the previous year. Again, this was more common in families of Indigenous children. In particular, for the K cohort at Wave 1, this was said to be true for 17% of families of Indigenous children, compared to 4% of families of non-Indigenous children. The rate in the B cohort was similar for non-Indigenous children (4%), and for Indigenous children was a little lower than the older cohort, at 10%.

A higher risk of having mental health problems was also apparent in families of Indigenous compared to non-Indigenous children. Based on the Kessler K6, which is a measure of non-specific psychological distress (Kessler et al., 2002), those with a score of 13 or more on a scale of 0 to 24 were classified as having a high risk of mental health problems. At Wave 1, 8% and 11% (in the B and K cohorts respectively) of primary carers in families of Indigenous children had a high risk of mental health problems. This compared to lower rates of 3% and 4% for families of non-Indigenous children.

Table 10.4: Selected parental and family health indicators, by children's Indigenous status, B and K cohorts, Wave 1				
	B cohort (0–1 year)		K cohort (4–5 years)	
	Indigenous children (%)	Non-Indigenous children (%)	Indigenous children (%)	Non-Indigenous children (%)
Cigarette smoking				
Mother smoked during pregnancy (occasionally or most days) [a]	39.8	13.7 ***	36.0	15.0 ***
Mother currently smokes (at least once a day)	37.1	15.1 ***	35.5	16.9 ***
One or more person currently smokes inside	22.6	9.5 ***	29.6	11.2 ***
No. of observations	230	4,877	187	4,794
Someone in the household had drug/alcohol problem in last year	10.4	4.1 ***	17.0	4.9 ***
No. of observations	155	4,129	131	4,041
Primary carer at high risk of mental health problems (K6)	7.9	2.6 ***	10.6	3.7 ***
No. of observations	155	4,153	133	4,063

Note: [a] For smoked during pregnancy, those who could not say whether they had smoked during pregnancy were coded as not having smoked in pregnancy, so these estimates are likely to underestimate the percentage smoking during pregnancy. Within each cohort, chi-square tests were used to test for differences by Indigenous status. Tests were done for mother smoking (versus not smoking or don't know) during pregnancy, current smoker (versus non-smoker/< one-a-day smoker), one or more person smoking inside (versus no one smoking inside), household drug/alcohol problem (versus no drug/alcohol problem), primary carer has (versus has not) high risk of mental health problems. Statistically significant differences are noted: *** $p < .001$.

Family functioning and parenting style

For all children—whether Indigenous or non-Indigenous—the quality of family functioning is important to the positive development of their social and emotional wellbeing (Smart, Sanson, Baxter, Edwards, & Hayes, 2008; Walker & Shepherd, 2008). This subsection considers this from the perspective of the parenting styles of mothers and fathers, and the degree to which parents or other adults in the household are involved in a range of activities with their child. These indicators provide some insights into family functioning, though clearly a fuller range of measures would need to be examined to gain comprehensive insights on the family functioning of Indigenous compared to non-Indigenous families. (See also Silburn et al., 2006, for further discussions and analyses of the role of family functioning in child wellbeing.)

Parenting style

To explore whether Indigenous and non-Indigenous children experience differences in the way in which they are parented, we first examine mothers' and fathers' parenting, as measured on scales of warmth, hostile/angry parenting and consistency. These measures in LSAC are each captured on a scale, based on questions asked of parents about their parenting behaviours. For parental warmth, parents are asked about how often they display warm affectionate behaviour towards their child. The hostile parenting and angry parenting scales include questions about parents being angry with their child or raising their voice or shouting. Consistent parenting is captured by the extent to which parents follow through to check children have done something they were instructed to do, and how consistent and effective they are in their punishment of children who are doing something they should not be doing.

For these analyses, mothers and fathers were classified according to whether they had the lowest scores on warmth and consistency and the highest scores on hostility/anger. To do this, the distribution of each of these scales was used (at each cohort and wave separately) to determine

whether each person's score was in either the top 20% (for hostile/angry parenting)[8] or the bottom 20% (for warm or consistent parenting) of the distribution. This allows us to see if there are differences in the percentage falling into these groups for parents of Indigenous and non-Indigenous children. Note that these groups identify those with less warm, less consistent and more hostile parenting relative to others in the sample, but this does not mean that their parenting styles would be deemed problematic from a clinical perspective.

Table 10.5 shows that for the percentage with lower parenting warmth, there was not a significant difference between Indigenous and non-Indigenous children, for mothers or fathers.

Table 10.5: Parenting styles of mothers and fathers, by children's Indigenous status, B and K cohorts, Wave 1				
	B cohort (0–1 year)		K cohort (4–5 years)	
Parenting style	Indigenous children (%)	Non-Indigenous children (%)	Indigenous children (%)	Non-Indigenous children (%)
Mothers (if present)				
Least warm parenting	19.7	23.3	21.6	21.4
Most hostile/angry parenting	18.9	18.7	20.9	12.7 **
Least consistent parenting	–	–	38.4	22.5 ***
No. of observations	228	4,844	183	4,717
Fathers (if present)				
Least warm parenting	21.6	24.7	23.6	25.6
Most hostile/angry parenting	18.7	16.4	24.2	16.6
Least consistent parenting	–	–	39.4	24.6 *
No. of observations	83	3,570	73	3,325

Note: Sample sizes vary slightly for the different measures of parenting styles (but do not vary by more than 10 from the numbers shown). Hostile/angry parenting is measured on the "hostile parenting" scale in the B cohort and "angry parenting" in the K cohort. For each scale, the distribution in that cohort and wave was used to identify those in approximately the lowest (for warm and consistent parenting) and highest (hostile/angry parenting) quintile. Consistent parenting was not measured for the B cohort at Wave 1. Within each cohort chi-square tests were used to test for differences by Indigenous status. Tests were done for least (versus not least) warm parenting, most (versus not most) hostile/angry parenting, and least (versus not least) consistent parenting. Statistically significant differences are noted: * $p < .05$; ** $p < .01$; *** $p < .001$.

In relation to hostile parenting, for the K cohort, mothers of Indigenous children were somewhat more likely to have higher hostile parenting styles compared to mothers of non-Indigenous children. However, there was no statistically significant difference in hostile parenting for K cohort fathers or for mothers or fathers in the B cohort according to whether or not their children were Indigenous.

Using the K cohort Wave 1 data, for both mothers and fathers, less consistent parenting was found for parents of Indigenous rather than non-Indigenous children. Consistent parenting was not measured for the B cohort at Wave 1 as the underlying items are not appropriate for this age of child.

These measures are based on parents' responses, and while they are not objective measures, they provide some insights, suggesting especially that the consistency of parenting may be one difference in considering the functioning of families with Indigenous versus non-Indigenous children. Prior ethnographic research comparing parenting approaches of Aboriginal and non-Aboriginal mothers likewise found that the style of parenting used by Aboriginal mothers tended to be less supervisory and vigilant (Malin, Campbell, & Agius, 1996). This approach, however, was related to these mothers having aspirations for their children to grow up more resilient and independent.

---

[8] Note that in the K cohort the distribution of the hostile parenting measure did not allow the top 20% to be identified. The "most hostile/angry parenting" category presented for the K cohorts includes 13% of the sample.

Engagement in family activities

Another perspective examined here is that of what parents (or other adults in the household) do with their children. Table 10.6 shows the percentage of children who engaged in a range of activities with an adult in their household every day (6–7 days) in the previous week. These data were not available for the B cohort at Wave 1, and so instead are shown for the B cohort at Wave 2, when the children were aged 2–3 years. They are also shown for Wave 1 of the K cohort.

Table 10.6:	Parents' daily involvement in children's home activities, by children's Indigenous status, B cohort Wave 2 and K cohort Wave 1			
	B cohort (2–3 years)		K cohort (4–5 years)	
An adult in the household:	Indigenous children (%)	Non-Indigenous children (%)	Indigenous children (%)	Non-Indigenous children (%)
read to child from a book	34.3	59.2 ***	28.0	45.6 ***
told child a story, not from a book	10.7	11.6	14.5	11.3
drew pictures, or did art or craft with child	17.4	24.6	17.6	21.4
played music, sang songs, danced or did other musical activities with child	39.0	41.7	33.7	26.9
played with toys or games indoors, like board or card games	46.0	53.5	18.5	21.6
involved child in everyday activities at home, such as cooking or caring for pets	43.7	46.3	49.4	40.5 *
played games outdoors or exercised together, like walking, swimming and cycling	24.4	27.4	32.8	22.3 **
No. of observations	180	4,426	187	4,791

Note: Within each cohort, chi-square tests were used to test for differences by Indigenous status. Tests were done for each of the indicators of adult involvement, measured as involved every day versus involved less often than every day. Statistically significant differences are noted: * $p < .05$; ** $p < .01$; *** $p < .001$.

These data indicate that sizable proportions of Indigenous as well as non-Indigenous children were undertaking a range of potentially enriching activities with adults in their household every day. One activity that was quite different for Indigenous and non-Indigenous children was that of reading to the child from a book. A much smaller percentage of Indigenous children were read to every day (34% at 2–3 years and 28% at 4–5 years) compared to non-Indigenous children (59% at 2–3 years and 46% at 4–5 years). On the other hand, the 4–5 year old Indigenous children were more likely to have been involved in everyday activities (like cooking or caring for pets) with an adult every day (49%) than were the non-Indigenous children (41%), and they were also more likely to have played outdoors or exercised with an adult in their household every day (33% compared to 22% for non-Indigenous children).

10.4 Wellbeing and development of Indigenous and non-Indigenous children

This section now turns to the second and third research questions. The second research question concerns differences between Indigenous and non-Indigenous children in physical, social-emotional and cognitive wellbeing and development. The third research question concerns how socio-economic differences contribute to any observed differences in wellbeing and development between these groups. Using the LSAC data, Indigenous and non-Indigenous children are compared on a number of outcomes, at specific ages. Using the B and K cohorts, and Waves 1 to 4 of LSAC, outcomes can be compared from age 0–1 year through to 10–11 years, and where possible this has been done here. Where the data allow, the longitudinal data are used to track how children's wellbeing changes as they grow, to see whether there is evidence of a narrowing or widening gap between Indigenous and non-Indigenous children. It is not always possible to do these analyses, with measures changing or only being relevant at certain ages; and where this applies, a selection of key measures have been used. In the case of outcomes at 10–11 years, these analyses include

some findings based on the children's own perspectives on aspects of health, social-emotional wellbeing and learning.

This section first examines children's physical health, then social-emotional wellbeing, and finally their cognitive development.

In the first subsection, comparisons of the physical health of Indigenous and non-Indigenous children at different ages are presented. In the subsections on social-emotional wellbeing and cognitive development, additional analyses are incorporated to consider to what extent differences (if they exist) are related to the socio-economic position of the families (the third research question explored in this chapter). These analyses are not included in the health subsection, as it was found that standard errors were always too high to draw any conclusions about how socio-economic position contributed to any differences between Indigenous and non-Indigenous children.[9] This is not to say that socio-economic factors are not likely to be important when looking at health disparities for Indigenous children (Shepherd, Li, & Zubrick, 2012).

Lower socio-economic position was derived by identifying families who were in the bottom 25% of the overall distribution of this variable at Wave 1 of the study, calculated separately for each cohort. In some analyses, the measure for non-Indigenous and Indigenous children was compared within this lower group. Where longitudinal analyses were done (presented in the figures), the sample sizes were too small to separate Indigenous children according to their socio-economic position, so all Indigenous children were compared to non-Indigenous children with a lower socio-economic position and with a moderate/high socio-economic position. The inclusion of socio-economic position in these analyses provides some indication of the role of socio-economic factors in explaining differences between Indigenous and non-Indigenous children; however, these analyses cannot be said to completely take account of such differences. Even within the group of families with a lower socio-economic position, there are likely to be differences in socio-economic factors between families of Indigenous and non-Indigenous children.[10]

Additional analyses of socio-economic position were not conducted when a significant difference in outcomes according to Indigenous status was not apparent.

Children's physical health and development

Previous research has consistently found that, on average, the health outcomes of Indigenous children are worse than those of non-Indigenous children. For example, mortality rates are higher for Indigenous children, as are rates of hospitalisation. Indigenous children are also at greater risk of being of low birth weight and suffering a range of childhood illnesses (AIHW, 2011; Steering Committee for the Review of Government Service Provision, 2011; Zubrick et al., 2004).

This subsection looks at a range of indicators of physical health and development. It begins with parents' reports of concerns over their child's physical wellbeing, and then parents' overall assessments of their children's health. Together, these data span the ages of 0–1 year through to 10–11 years, and so allow us to consider whether any health disparities (according to Indigenous status) change as children grow older. Reports made by 10–11 year olds themselves on some health-related questions are then presented, followed by information on the weight status of children.

Table 10.7 (on page 161) shows, at different ages of children, parents' reports of concerns about their child's physical development. At age 0–1 year and 2–3 years, parents reported on whether they were concerned about their children's fine motor skills, gross motor skills and weight. Almost all parents said they had no concerns in relation to fine and gross motor skills at these ages, with no differences according to the Indigenous status of the child.[11] At 4–5 years and 6–7 years, parents were asked if they had any concerns about their child's physical health. Responses at both these

---

[9]   Physical health was measured as percentages falling into particular categories, and the confidence intervals around these percentages tended to be very large. Social-emotional wellbeing and cognitive outcomes measures were analysed as means rather than percentages, and the confidence intervals on those estimates, while often still large, were such that comparisons could be made with the socio-economic position of the families.

[10]   For example, at Wave 1 in the families of Indigenous children with the lowest socio-economic position, 44% experienced a financial hardship, compared to 25% of families of non-Indigenous children with the lowest socio-economic position.

[11]   Only one difference was statistically significant (fine motor skills at age 2–3 years), but this was marginally significant (p = .049), and based on a cross-tabulation in which one cell size had a sample of 7 respondents.

ages also did not show significant difference between Indigenous compared to non-Indigenous children, with most parents saying they had no concerns about their child's physical health.

Table 10.7:	Parental concerns about children's physical wellbeing at different ages, by children's Indigenous status	
	Indigenous children (%)	Non-Indigenous children (%)
0–1 year olds		
No concerns about child's fine motor skills	97.5	99.1
No concerns about child's gross motor skills	97.8	97.7
Not concerned at all about child's weight	89.6	88.7
No. of observations	230	4,874
2–3 year olds		
No concerns about child's fine motor skills	95.1	97.7 *
No concerns about child's gross motor skills	95.5	97.3
Not concerned at all about child's weight	83.1	84.9
No. of observations	173	4,312
4–5 year olds (B cohort)		
No concerns about child's physical health	68.3	71.3
No. of observations	149	4,236
4–5 year olds (K cohort)		
No concerns about child's physical health	64.6	68.7
No. of observations	187	4,793
6–7 year olds (B cohort)		
No concerns about child's physical health	78.2	74.1
No. of observations	145	4,094

Note: Within each cohort chi-square tests were used to test for differences by Indigenous status. Tests were done for each of the indicators of parent being concerned about physical health (versus no or fewer concerns). Statistically significant differences are noted: * $p < .05$.

Continuing to look at subjective assessments of child health, parents were asked about their perceptions of their child's overall health. Examining both cohorts at each wave of LSAC provides a longitudinal analysis of this measure. For non-Indigenous and Indigenous children alike, parents very often reported that their children's health was "excellent" or "very good". The percentage giving these responses is shown in Figure 10.1 (on page 162) for those Indigenous and non-Indigenous children who have been in LSAC for four consecutive waves. While differences are not statistically significant, there is some indication that parents of Indigenous children are less likely to report that their child's health is excellent or very good according to these data, even with the large confidence intervals around the estimates for Indigenous children (largely due to the small sample sizes).

Another perspective on children's health can be gained directly from the 10–11 year old children, who themselves reported on a range of health and other indicators in Wave 4 of LSAC. Table 10.8 (on page 162) shows these children's responses to two questions: "Do you enjoy being physically active?" and "Have you felt fit and well in the last week?". On both of these questions, the responses did not differ significantly for Indigenous and non-Indigenous children. The majority of children said they liked being physically active "a lot" or "quite a lot". This is important, because liking physical activity is associated with engagement in physical activity (see Mullan & Maguire, Chapter 9 of this volume). Around two-thirds of Indigenous and non-Indigenous children said they felt extremely or very fit and well in the last week. Data such as these remind us that even though some health disparities may remain, there are many Indigenous children who are doing quite well on a range of indicators. Of course, being collected at Wave 4 of LSAC, and given that there are higher rates of attrition for Indigenous compared to non-Indigenous children, these data may be biased toward the Indigenous children who are doing relatively well.
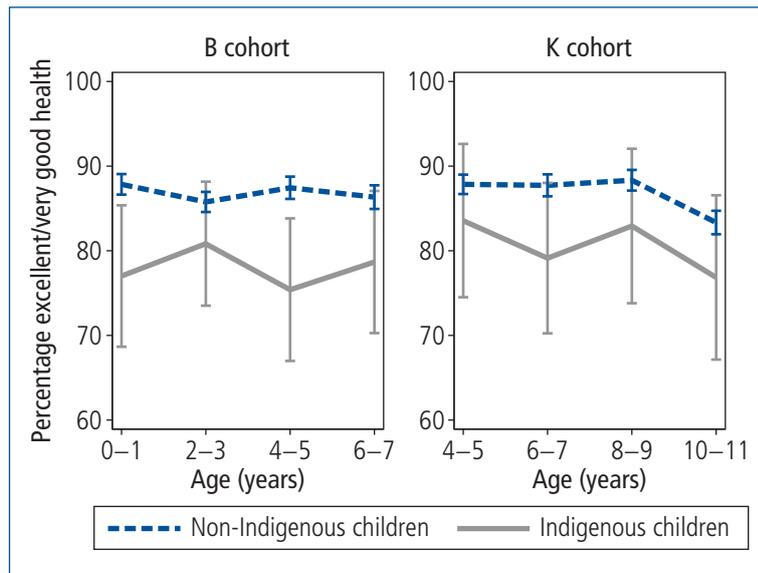
Note: Only includes children present and with parent reports on child health available at all four waves. For non-Indigenous children, $n = 3,872$ for the B cohort, and $n = 3,828$ for the K cohort; for Indigenous children, $n = 121$ for the B cohort, and $n = 105$ for the K cohort. The "I" bars indicate 95% confidence intervals.

Figure 10.1: Longitudinal analyses of children's overall excellent or very good health, parent reports, by children's Indigenous status, B and K cohorts, Waves 1–4

| Table 10.8:	Children's reports of enjoyment of physical activity and feeling fit and well, by children's Indigenous status, K cohort Wave 4	
	Indigenous children (%)	Non-Indigenous children (%)
Enjoy being physically active?		
A lot	64.9	64.3
Quite a lot	25.0	29.0
Not very much or not at all	10.1	5.7
Total	100.0	100.0
Felt fit and well in the last week?		
Extremely	34.5	29.1
Very	30.0	38.6
Moderately	19.5	22.5
Slightly or not at all	16.0	9.8
Total	100.0	100.0
No. of observations	112	3,968

Note: Within each cohort chi-square tests were used to test for differences by Indigenous status. Neither was statistically significant.

A more direct indicator of children's health is their weight status. Here, this is measured using the body mass index (BMI), which is used to examine the percentage of Indigenous and non-Indigenous children who are either underweight or overweight/obese at each age. To examine differences across ages of children, these analyses (shown in Figure 10.2 on page 163) include only those children in the B cohort who were in three consecutive waves (BMI categories were not calculated at 0–1 years), and in the K cohort for four consecutive waves.

The percentage underweight was low for both Indigenous and non-Indigenous children, with no statistically significant differences between these children across all ages. Note that this contrasts with information on the percentage of children who were underweight at birth (low birth weight) (data not shown). For the B cohort, 12% of Indigenous children and 5% of non-Indigenous children were of low birth weight (significantly different, $p < .001$). Differences were not statistically

significant for the K cohort, with 9% of Indigenous children and 7% of non-Indigenous children classified as being of low birth weight.

For the B cohort, no differences were apparent in the percentage overweight/obese at ages 2–3 years through to 6–7 years according to Indigenous status. In the K cohort, while the confidence intervals overlap due to the relatively small sample size of Indigenous children (meaning differences are not significant at the 5% level), there is some indication that compared to non-Indigenous children, Indigenous children were more likely to be overweight/obese at all ages after 4–5 years. The percentage who were overweight increased with age for both groups of children from 6–7 years through to 10–11 years.
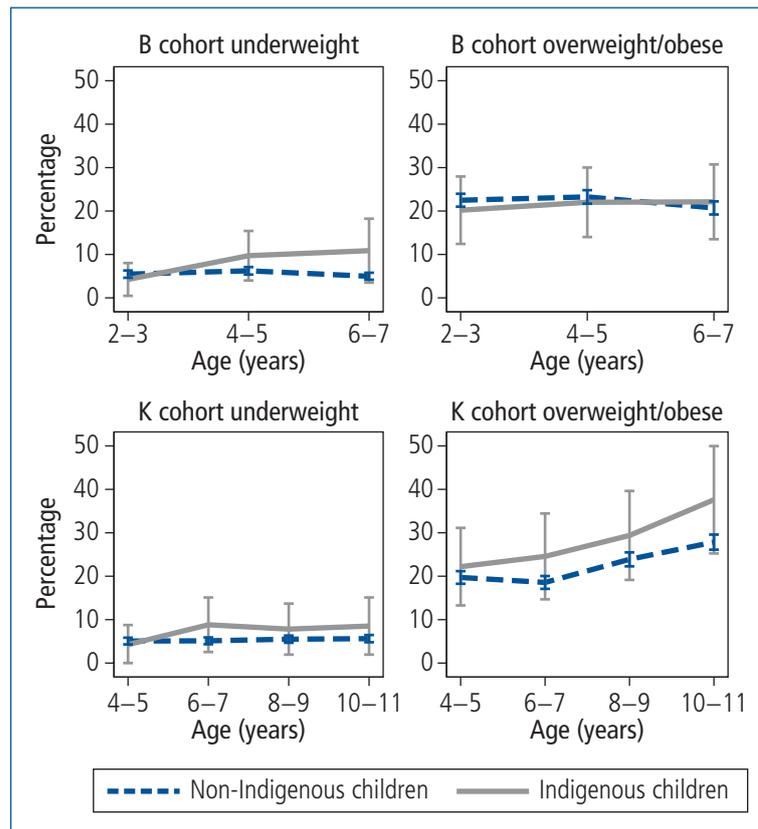
Note: Only includes children with weight status available at each of these waves. For non-Indigenous children, $n = 3,729$ for the B cohort, and $n = 3,650$ for the K cohort; for Indigenous children, $n = 119$ for the B cohort, and $n = 90$ for the K cohort. The "I" bars indicate 95% confidence intervals.

Figure 10.2: Longitudinal analyses of children's weight status (BMI categories), by Indigenous status, B cohort Waves 2–4, K cohort Waves 1–4

These analyses have perhaps shown a narrower gap in health outcomes according to Indigenous status than has been reported elsewhere (AIHW, 2011; Steering Committee for the Review of Government Service Provision, 2011; Zubrick et al., 2004). In part this may be due to the focus on non-remote areas of Australia in LSAC, with health outcomes for Indigenous children in more remote areas often (though not always) being poorer than those in city areas (see, for example, health data shown for Western Australia in Zubrick et al., 2004). Further, the attrition from Waves 1 to 4 means that it is possible that children with poorer health outcomes are not fully represented in the analyses of later waves (including the longitudinal analyses). While this is also true for non-Indigenous children, the higher attrition for Indigenous children (as shown in Table 10.1 on page 151) may mean this has a stronger effect on measures derived for Indigenous children than for non-Indigenous children.

Various factors highlighted in this chapter (such as family socio-economic position and parental smoking behaviours) are likely to have negative implications for children's health, and so this will be an important area to continue to monitor in regard to children's outcomes. Children's own

reports of their health and enjoyment of physical activity are positive areas to build on to facilitate good outcomes for children's health.

Children's social-emotional wellbeing

The social-emotional development of children is measured in various ways in LSAC in order to account for the developmental changes in children as they grow. Here, the analyses focus on social-emotional wellbeing from age 2–3 years onward. As discussed previously, in this subsection and the one that follows, the role of socio-economic factors in contributing to any apparent differences is examined.

At age 2–3 years, social-emotional outcomes are measured using the Brief Infant Toddler Social Emotional Assessment (BITSEA), with a subscale for competence and a subscale for problems (Briggs-Gowan, Carter, & Schwab-Stone, 1996). The BITSEA subscales are derived in LSAC from parents' responses to questions about the extent to which their child has shown certain competencies and problem behaviours in the previous month. (See Smart, 2011, for more information and analyses of BITSEA using LSAC.) At 2–3 years, Indigenous children already had a higher average score on the problems subscale compared to that of non-Indigenous children (Table 10.9 on page 165). Indigenous children also had a lower average score on the competence scale, when compared to non-Indigenous children. If the analyses are restricted to families with a lower socio-economic position, significant differences according to Indigenous status remain, despite the considerably smaller sample size. However, the gap is lessened within the group of families with the lowest socio-economic position, with non-Indigenous children in this group having mean scores that approach those of the Indigenous children.

At ages 4–5 years and older, a commonly used tool for analysing social-emotional wellbeing is the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 2001). The SDQ measure is based on ratings of how often in the previous 6 months children had exhibited a range of behaviours. These behaviours align with the areas of conduct problems (e.g., often fights with other children or bullies them), inattention and hyperactivity (e.g., constantly fidgeting or squirming), emotional symptoms (e.g., nervous or clingy in new situations, easily loses confidence), and peer problems (e.g., rather solitary, tends to play alone). (Again, refer to Smart, 2011, for details and other analyses of this measure using LSAC.) Responses have been summarised for each of these areas (subscales) and also summarised into a total difficulties score, and the mean values are shown in Table 10.9. To capture some indication of age-related differences, data are presented for the parent-reported measures for K cohort children when they were aged 4–5 years and then when they were aged 10–11 years. These SDQ measures are also shown for the 10–11 year old children, calculated from the children's own reports of their social-emotional wellbeing.

At 4–5 years old, Indigenous children had significantly poorer social-emotional wellbeing overall and on each of the subscales of the SDQ scales. Even when restricted to families with a lower socio-economic position, significant differences were apparent for all but inattention/hyperactivity.

According to parents' reports at 10–11 years, Indigenous children (despite being a smaller sample) had poorer average social-emotional wellbeing than non-Indigenous children. This is apparent for the SDQ total difficulties score and on all subscales except inattention/hyperactivity. It is interesting to find that children's own reports at this age resulted in the same findings. When these analyses were done for the low socio-economic position group, only one of the subscales remained statistically significant (for parent and child reports)—that of conduct problems, with Indigenous children having more conduct problems, on average, than non-Indigenous children. The lack of statistical significance will in part be related to these estimates being derived from smaller sample sizes, but they also reflect that children's difficulties are associated with socio-economic status.

To gain some insights into the developmental progress of Indigenous and non-Indigenous children in relation to social-emotional wellbeing, Figure 10.3 (on page 166) uses the samples of children for whom parent-reported SDQ total difficulties scores were available at all relevant waves (B cohort Waves 3 and 4, and K cohort Waves 1 to 4). These analyses compare all Indigenous children with non-Indigenous children in families with the lowest socio-economic position, and with non-Indigenous children in families with a moderate/high socio-economic position. At all time points, the means for the Indigenous children are similar to those of the non-Indigenous children in the lowest socio-economic position, as indicated by the overlapping confidence intervals for

Table 10.9: Children's mean social-emotional wellbeing scores at different ages, by socio-economic position and Indigenous status				
	All children		Lowest socio-economic position	
	Indigenous children (mean score)	Non-Indigenous children (mean score)	Indigenous children (mean score)	Non-Indigenous children (mean score)
2–3 years				
BITSEA problems scale (higher = more problems) [a]	32.5	30.5 ***	33.0	31.7 *
BITSEA competence scale (higher = more competence) [b]	27.7	28.6 ***	27.4	28.1 *
No. of observations	170	4,298	105	962
4–5 years (K cohort Wave 1)				
SDQ total difficulties (higher = more difficulties): [c]	12.7	9.5 ***	13.5	11.3 ***
Emotional difficulties	2.5	1.7 ***	2.7	2.0 **
Peer problems	2.3	1.7 ***	2.6	2.1 **
Inattention/hyperactivity	4.4	3.6 ***	4.5	4.2
Conduct problems	3.5	2.5 ***	3.6	3.0 **
No. of observations	179	4,772	94	1,254
10–11 years, parent reports				
SDQ total difficulties (higher = more difficulties): [c]	11.3	8.3 ***	11.9	10.2
Emotional difficulties	2.7	2.0 **	3.1	2.5
Peer problems	2.2	1.6 **	2.3	2.1
Inattention/hyperactivity	4.0	3.3 **	3.9	3.8
Conduct problems	2.3	1.4 ***	2.7	1.8 *
No. of observations	111	3,994	50	915
10–11 years, child reports				
SDQ total difficulties (higher = more difficulties): [c]	13.7	10.7 ***	14.9	12.1 *
Emotional difficulties	3.8	3.1 **	4.2	3.5
Peer problems	2.3	1.7 **	2.4	2.2
Inattention/hyperactivity	4.1	3.7	4.4	3.9
Conduct problems	3.2	2.1 ***	3.9	2.5 **
No. of observations	113	4,006	52	931

Note: [a] BITSEA problems: scale = 20–54. [b] BITSEA competence: scale = 13–33. [c] SDQ total difficulties: scale = 1–40; all SDQ subscales: scale = 1–10. The identification of the lowest socio-economic position is based on being in the lowest quartile at the first wave of LSAC. Significance thresholds from two-tailed mean comparison t-tests: * $p < .05$; ** $p < .01$; *** $p < .001$.

these groups. This reinforces the links between social-emotional wellbeing and family socio-economic disadvantage. In the B cohort, the total difficulties score is significantly higher for both Indigenous children and lower socio-economic position non-Indigenous children at 4–5 and 6–7 years, compared to other non-Indigenous children. There did not appear to be any trends according to ages of children. In the K cohort, across the ages 4–5 years through to 10–11 years, it was the youngest children who had the higher average difficulties, though the trend is not as clear for Indigenous children, given the wide confidence intervals on the estimates.

Social-emotional wellbeing can be assessed in other ways. For example, at age 10–11 years, child reports of self-concept were measured using the Self-Description Questionnaire I (Marsh, 1990). Two related aspects of self-concept were examined here. One was that of general self-concept, which refers to items such as "I feel that my life is very useful". The other was the peer relations

self-concept, which refers to items such as "I get along with kids easily". Each scale is derived from the mean of eight underlying items. The range for each is between 1 and 5, with a higher value indicating more positive self-concept. The means on each of these scales did not vary for Indigenous compared to non-Indigenous children: for the sample of 115 Indigenous children, the mean general self-concept score was 4.08 and the mean peer relationship score was 3.89. For non-Indigenous children (*n* = 3,978), the means for these were 4.14 and 3.88 respectively.
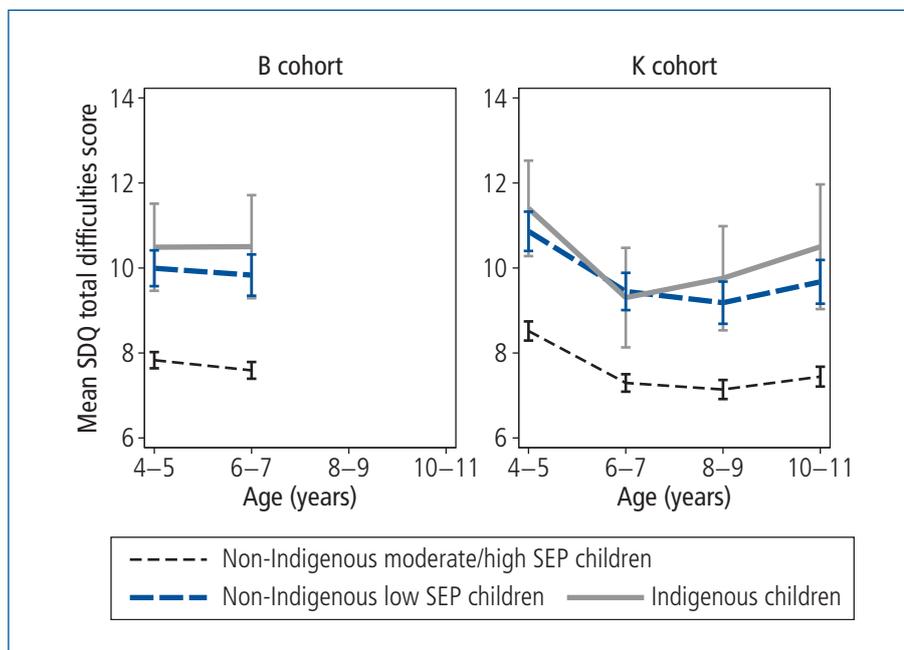
Note: The identification of the lowest socio-economic position is based on being in the lowest quartile at the first wave of LSAC. Only includes children present and with an SDQ total difficulties score available at each of these waves. Non-Indigenous moderate/high SEP children: *n* = 2,812 in the B cohort, and *n* = 2,626 in the K cohort; non-Indigenous low SEP children: *n* = 698 in the B cohort, and *n* = 676 in the K cohort; Indigenous children: *n* = 102 children in the B cohort, and *n* = 81 children in the K cohort. The "I" bars indicate 95% confidence intervals.

Figure 10.3: Longitudinal analyses of SDQ total difficulties scores, parent reports, by socio-economic position and Indigenous status, B cohort Waves 3 and 4, K cohort Waves 1–4

On most measures examined here, Indigenous children had more social-emotional difficulties than non-Indigenous children, beginning at a very young age. This is related to the relative socio-economic disadvantage of the families of Indigenous children. However, even among the poorer families, some differences according to Indigenous status were apparent. The most persistent of the difficulties appears to be related to conduct problems, for which poorer outcomes were apparent across the age groups and also within the lower SEP group. Despite these findings, on the measures of self-concept taken when children were aged 10–11 years old, differences according to Indigenous status were not apparent. Specifically, Indigenous and non-Indigenous children did not score differently on their general self-concept or peer relations self-concept.

Children's cognitive development.

Poorer learning outcomes for Indigenous children are apparent on a range of indicator variables, such as the proportion achieving minimum standards for reading, writing and numeracy at different school levels (Steering Committee for the Review of Government Service Provision, 2011; Victorian Curriculum and Assessment Authority, 2010; Zubrick, 2004).

Learning, or cognitive, outcomes are assessed in LSAC at different ages using different instruments. School readiness (Who Am I), receptive vocabulary (Peabody Picture Vocabulary Test; PPVT), non-verbal intelligence (Matrix Reasoning) and academic rating scores (literacy and numeracy) are the different measures used in this subsection. (Details of these measures are outlined in Chapter 1

of this report; see also de Lemos & Doig, 1999; Dunn & Dunn, 1997; Rothman, 2009.) As with the above analyses, these measures were compared for Indigenous and non-Indigenous children. Further analyses included consideration of whether families had relatively low socio-economic status in order to see whether differences according to Indigenous status can be, to some extent, explained by differences in socio-economic position.

Table 10.10 shows the mean of each of the learning measures for Indigenous and non-Indigenous children at different ages, for all children, and then for the lower socio-economic status families. As indicated by the significance tests for all children, on every measure presented, Indigenous children had poorer learning outcomes than non-Indigenous children. These measures covered general school readiness at age 4–5 years, receptive vocabulary at age 4–5 years, non-verbal intelligence at age 6–7 years, and teacher ratings of language/literacy and maths at age 6–7 years.

Table 10.10: Children's mean cognitive outcome scores at different ages, by socio-economic position and Indigenous status, B cohort Waves 3–4, K cohort Waves 1 and 2

| | All children | | | | Lowest socio-economic position | | | |
| | Indigenous children | | Non-Indigenous children | | Indigenous children | | Non-Indigenous children | |
	Mean score	No. of obser-vations	Mean score	No. of obser-vations	Mean score	No. of obser-vations	Mean score	No. of obser-vations
School readiness, 4–5 years [a]								
K cohort	60.7	169	64.1 ***	4,693	59.7	87	62.5 **	1,221
B cohort	61.4	139	65.4 ***	4,050	61.5	78	62.7	884
Receptive vocabulary, 4–5 years [b]								
K cohort	61.7	140	63.9 **	4,252	61.0	75	61.8	1,078
B cohort	61.7	140	64.8 ***	4,119	61.4	79	62.1	904
Non-verbal intelligence, 6–7 years [c]								
K cohort	8.6	144	10.3 ***	4,256	8.1	71	9.6 ***	1,028
B cohort	8.6	112	10.5 ***	3,980	8.4	51	9.6 **	926
Language and literacy, 6–7 years [d]								
K cohort	2.8	119	3.6 ***	3,492	2.7	59	3.3 ***	803
B cohort	2.9	111	3.5 ***	3,307	2.8	68	3.2*	687
Mathematical thinking, 6–7 years [e]								
K cohort	2.8	120	3.5 ***	3,478	2.7	60	3.2 **	798
B cohort	3.0	111	3.4 ***	3,294	2.8	68	3.1	687

Note: [a] Who Am I; range in the sample = 30 to 97. [b] PPVT; range in the sample = 28 to 106. [c] Matrix Reasoning; range in the sample = 1 to 19. [d] Academic rating scale; range in the sample = 1 to 5. [e] Academic rating scale; range in the sample = 1 to 5. The identification of the lowest socio-economic position group is based being in the lowest quartile at the first wave of LSAC. Comparisons were made by Indigenous status, for all children and for children in the low socio-economic position group. Significance thresholds from two-tailed mean comparison t-tests: * $p < .05$; ** $p < .01$; *** $p < .001$.

When the analyses are limited to children in lower socio-economic position families, the gaps in learning outcomes between Indigenous and non-Indigenous children are reduced, though there are still some significant differences.

One learning outcome that seems closely related to socio-economic status is receptive vocabulary, which differs significantly overall between Indigenous and non-Indigenous children, but does not differ between these groups within families with a lower socio-economic position. In fact, if the PPVT scores of children are tracked across waves (for only those who have a score at each of the waves), then Figure 10.4 (on page 168) shows that non-Indigenous children who are not in lower socio-economic position families continue to have better receptive vocabulary as they grow, when compared to Indigenous children overall, and compared to non-Indigenous children from lower socio-economic position families. The gap between Indigenous and non-Indigenous children remains the same over the ages of children shown here.
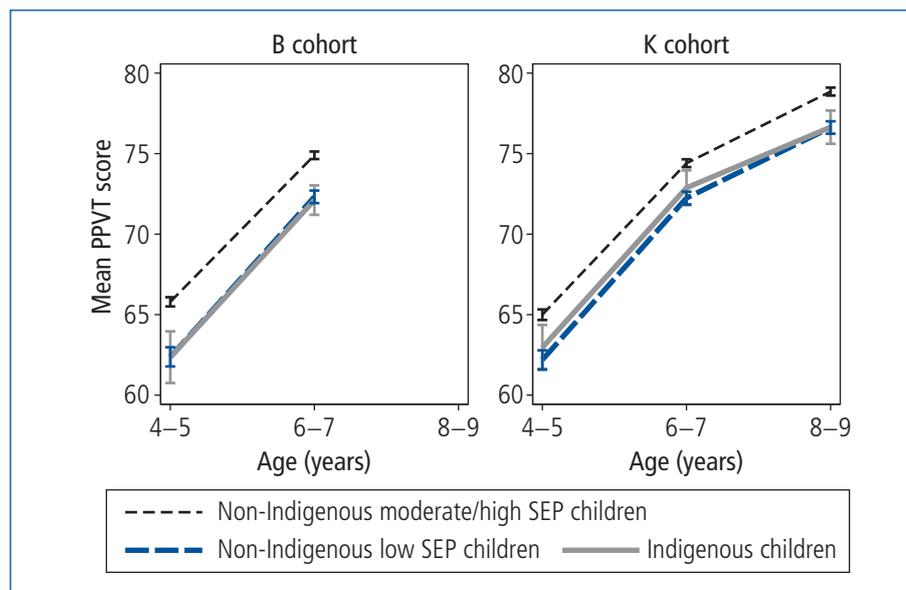
Note: The identification of the lowest socio-economic position group is based on being in the lowest quartile at the first wave of LSAC. Only includes children present and with an SDQ total difficulties score available at each of these waves. Non-Indigenous moderate/high SEP children: *n* = 3,067 in the B cohort, and *n* = 2,757 in the K cohort; non-Indigenous low SEP children: *n* = 792 in the B cohort, and *n* = 794 in the K cohort; Indigenous children *n* = 121 children in the B cohort, and *n* = 96 children in the K cohort. The "I" bars indicate 95% confidence intervals, using unweighted data (not using survey commands).

Figure 10.4: Longitudinal analyses of children's receptive vocabulary (PPVT), by socio-economic position and Indigenous status, B cohort Waves 3 and 4, K cohort Waves 1–3

In the same way, Figure 10.5 (on page 169) tracks children's outcomes as measured on Matrix Reasoning, and the academic ratings scales (language/literacy and maths). These data show a gap in outcomes, even when comparing Indigenous children with non-Indigenous children from lower socio-economic position families. The non-Indigenous children from moderate/high socio-economic position families had better learning outcomes than both these groups, across the ages 6–7 years through to 10–11 years. So in terms of these measures, socio-economic status contributes to poorer outcomes for Indigenous children, but it appears that Indigenous children are further disadvantaged in ways that matter to their learning outcomes. Clearly, more research is needed in order to understand what may be contributing to this gap.

Finally, it is interesting to consider the 10–11 year old children's views on school and learning. Table 10.11 (on page 169) shows the percentage of Indigenous and non-Indigenous children who gave more positive responses for a related set of questions about school engagement. The vast majority of 10–11 year old children were positive about school and about learning, and this applied equally to Indigenous and non-Indigenous children. For example, 85% of Indigenous children and 87% of non-Indigenous children agreed that the work they do in school is interesting. For "I like learning", 86% of Indigenous children and 84% of non-Indigenous children agreed or strongly agreed with this statement, when thinking about their school.

There were only three items for which the proportion giving the more positive response was significantly different for these groups. Indigenous children were less likely than non-Indigenous children to agree that their school was a place where they felt safe and secure (83% compared to 91%) less likely to say "I am good at my school work" (87% compared to 96%), and less likely to say that they enjoyed reading at home, when that reading was not part of school work (79% compared to 87%).

Though these child reports reveal very little difference between Indigenous and non-Indigenous children, this subsection on learning outcomes has shown some clear differences in terms of children's academic scores on a number of measures. The gaps between Indigenous and non-Indigenous children in these areas are to some extent related to different levels of socio-economic disadvantage, which reinforces the importance of addressing the possible effects of such disadvantage among Indigenous as well as non-Indigenous children.
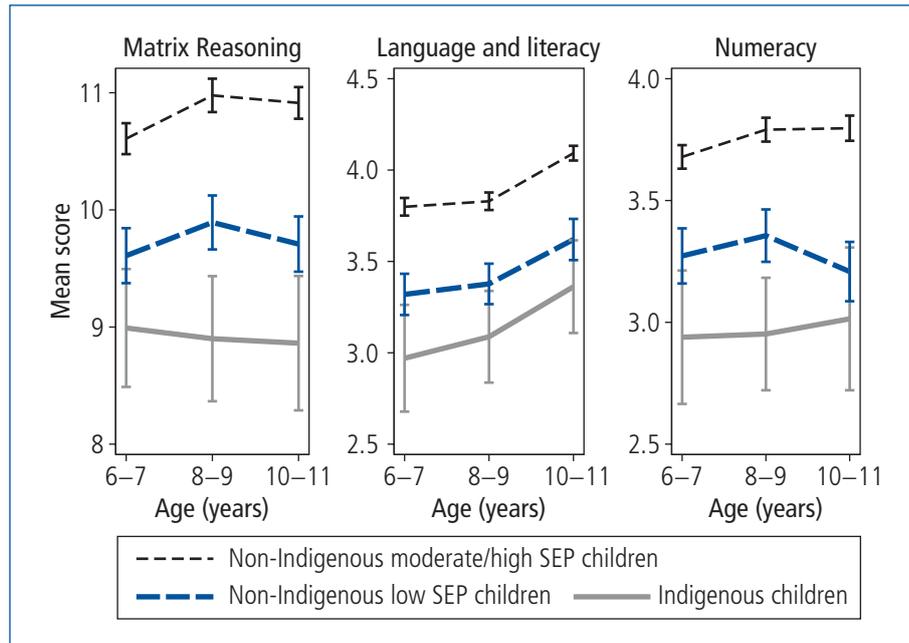
Note: The identification of the lowest socio-economic position group is based on being in the lowest quartile at the first wave of LSAC. Each figure only includes children present and with that score at each of these waves. Non-Indigenous moderate/ high SEP children: n = 3,067 for matrix reasoning (MR), 1,778 for language and literacy (LL), 1,745 for numeracy (Num); non-Indigenous low SEP children: n = 806 (MR), 428 (LL), 417 (Num); Indigenous children n = 101 (MR), 63 (LL), 62 (Num). The "I" bars indicate 95% confidence intervals.

Figure 10.5: Longitudinal analyses of children's selected learning outcomes, by socio-economic position and Indigenous status, K cohort Waves 2–4

Table 10.11: Children's reports of school liking, by Indigenous status, K cohort Wave 4		
	Indigenous children (%)	Non-Indigenous children (%)
Agreed or strongly agreed that "My school is a place where …":		
I always try to do my best	92.6	96.0
I feel safe and secure	83.0	91.0 *
I enjoy what I do in class	82.7	87.6
I get enjoyment from being there	88.1	87.4
The work we do is interesting	84.5	86.9
I like learning	85.6	84.0
I find that learning is a lot of fun	79.2	75.1
I like to ask questions in class	78.2	72.7
I really like to go to each day	72.1	72.6
I get excited about the work we do	72.5	69.5
I like to do extra work	39.8	41.1
Answered "yes" or "sometimes" that:		
I am good at my school work	87.3	95.5 **
I like reading and writing activities at school	94.6	91.0
I like maths and number work at school	87.0	88.9
I enjoy reading at home that is not part of my school work	79.1	87.1 *
No. of observations	115	3,978

Note: Due to the poor psychometric properties of the school liking scale, individual item analysis was used in the table. Sample sizes vary slightly across items. Chi-square tests were used to test for differences by Indigenous status for each of the indicators of school liking. For the first block, this compares the percentage saying "agree" or "strongly agree", versus "false", "mostly false", "sometimes false" or "sometimes true". For the second block, this compares the percentage saying "yes" or "sometimes", rather than "no". Statistically significant differences are noted: * $p < .05$; ** $p < .01$.

10.5 Summary and discussion

This chapter has used the LSAC data to provide a comparison of Indigenous and non-Indigenous children who are living in non-remote parts of Australia. While the relatively small sample of Indigenous children in LSAC created some restrictions on the analyses that could be undertaken, the findings have helped to build a picture of how the lives of Indigenous children compare to those of non-Indigenous children.

The Longitudinal Study of Indigenous Children will provide valuable opportunities to look in more detail at these issues for remote, regional and metropolitan areas, using a study that is specifically designed for this population.

The analyses confirmed that there is more socio-economic disadvantage among families with Indigenous children than families with non-Indigenous children, with considerable differences found in parents' education levels, parental employment rates and experiences of financial disadvantage. This is likely to be related also to the higher rate of families of Indigenous children being without two resident parents. As shown in this chapter, the level of socio-economic disadvantage does matter. When we put aside differences in socio-economic position by just focusing on those in the lowest quartile, then for some of the child outcome measures explored, the gap between Indigenous and non-Indigenous children lessens.

While the effects of socio-economic disadvantage have been a recurrent factor throughout this chapter, it is important to highlight that these analyses did not consistently find Indigenous children as being disadvantaged in every way relative to non-Indigenous children. Indeed, when examining the activities children do with adults in their household, Indigenous children had higher percentages undertaking everyday activities, or playing outdoors or exercising with an adult in their household every day in the previous week. Generally, parents reported quite high rates of involvement with their children's activities for Indigenous as well as non-Indigenous children. It was also apparent that parents of Indigenous children had quite high expectations for their children's likely educational achievement, if considered in the context of these parents' own educational attainment. Further, Indigenous children more often live with an extended family than do non-Indigenous children. While this, along with the greater number of siblings, may result in some difficulties for children finding a quiet place to read or to study, it may create more opportunities for the development of close relationships with a larger network of family members.

There were measures also presented here that did not vary according to the Indigenous status of children. This was apparent, for example, in relation to parents' reports of being concerned about aspects of their child's health. It was also apparent, using Wave 4 of the K cohort (the 10–11 year olds), that Indigenous and non-Indigenous children did not differ on a range of measures of physical health and wellbeing, general self-concept, peer relations self-concept and school liking.

While these findings may reflect the relatively small sample of Indigenous children involved, the exclusion of remote parts of Australia from the LSAC sampling frame, and selection biases related to attrition from Waves 1 to 4 of LSAC, it is also a reminder that Indigenous children do not always have poorer outcomes than their non-Indigenous peers. In fact, even though we do find that gaps persist on some outcome measures, there is still considerable diversity among Indigenous as well as non-Indigenous children. Some children do well, and some do not, and there will be a range of factors, other than whether or not children are Indigenous, that matter to these different outcomes.

Just as is the case for non-Indigenous children, it is important to continue to look closely at the outcomes of Indigenous children of Australia, in order to identify and build on those factors that lead children to do well. By comparing Indigenous and non-Indigenous children in this sample, we have identified some of the differences between these groups of children, highlighting some of the risks and protective factors these children face. Further research will be needed, using studies such as LSIC, to understand how these protective factors can be engaged to enhance the development of Indigenous children.

10.6 References

Australian Bureau of Statistics. (2010). *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples, 2010* (Cat. No. 4704.0). Canberra: ABS.

Australian Institute of Health and Welfare. (2011). *The health and welfare of Australia's Aboriginal and Torres Strait Islander people: An overview* Canberra: AIHW.

Briggs-Gowan, M., Carter, A., & Schwab-Stone, M. (1996). Discrepancies among mother, child, and teacher reports: Examining the contributions of maternal depression and anxiety. *Journal of Abnormal Child Psychology*, *24*(6), 749–765.

Daly, A., & Smith, D. (2005). Indicators of risk to the wellbeing of Australian Indigenous Children. *Australian Review of Public Affairs*, *6*(1), 39–57.

Daraganova, G., & Sipthorp, M. (2011). *Wave 4 weights* (LSAC Technical Paper No. 9). Melbourne: Australian Institute of Family Studies.

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

Dunn, L. M., & Dunn, L. M. (1997). *Peabody Picture Vocabulary Test: Manual* (3rd ed.). Circle Pines, MN: American Guidance Services.

Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child & Adolescent Psychiatry*, *40*(11), 1337–1345.

Hunter, B. (2008). Benchmarking the Indigenous sub-sample of the Longitudinal Study of Australian Children. *Australian Social Policy Journal*, 7, 61–84.

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. et al. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, *32*(6), 959–976.

Leigh, A., & Gong, X. (2009). Estimating cognitive gaps between Indigenous and non-Indigenous Australians. *Education economics*, *17*(2), 239–261.

Malin, M., Campbell, K., & Agius, L. (1996). Raising children in the Nunga Aboriginal way. *Family Matters*, *43*, 43–47.

Marsh, H. W. (1990). *Self Description Questionnaire-I (SDQ-I) manual*. Sydney: University of Western Sydney.

Morphy, F. (2006). Lost in translation?: Remote Indigenous households and definitions of the family. *Family Matters*, *73*, 23–31.

Ou, L., Chen, J., Hillman, K., & Eastwood, J. (2010). The comparison of health status and health services utilisation between Indigenous and non-Indigenous infants in Australia. *Australian and New Zealand Journal of Public Health*, *34*(1), 50–56.

Priest, N., Baxter, J. A., & Hayes, L. (2012). Social and emotional outcomes of Australian children from Indigenous and culturally and linguistically diverse backgrounds. *Australian and New Zealand Journal of Public Health*, *36*(2), 183–190.

Rothman, S. (2009). *The development and use of educational measures in the Longitudinal Study of Australian Children*. Paper presented at the 2nd LSAC Research Conference, Melbourne.

Shepherd, C. C. J., Li, J., & Zubrick, S. R. (2012). Social gradients in the health of Indigenous Australians. *American Journal of Public Health*, *102*(1), 107–117.

Silburn, S., Zubrick, S., De Maio, J., Shepherd, C., Griffin, J., Mitrou, F. et al. (2006). *The Western Australian Aboriginal Child Health Survey: Strengthening the capacity of Aboriginal children, families and communities*. Perth: Curtin University of Technology and Telethon Institute for Child Health Research.

Smart, D. (2011). How young children are faring: Behaviour problems and competencies. In Australian Institute of Family Studies, *The Longitudinal Study of Australian Children Annual statistical report 2010* (pp. 91–106). Melbourne: AIFS.

Smart, D., Sanson, A., Baxter, J. A., Edwards, B., & Hayes, A. (2008). *Home-to-school transitions for financially disadvantaged children*. Sydney: The Smith Family.

Steering Committee for the Review of Government Service Provision. (2011). *Overcoming Indigenous disadvantage: Key indicators 2011*. Canberra: Productivity Commission.

Victorian Curriculum and Assessment Authority. (2010). *National Assessment Program Literacy and Numeracy: NAPLAN 2009 reporting guide: Year 3, Year 5, Year 7 and Year 9*. Melbourne: VCAA.

Walker, R., & Shepherd, C. (2008). *Strengthening Aboriginal family functioning: What works and why*. (AFRC Briefing No. 7). Melbourne: Australian Family Relationships Clearinghouse.

Zubrick, S. (2004). *Western Australian Aboriginal Child Health Survey: Improving the educational experiences of Aboriginal children and young people*. Subiaco, WA: Telethon Institute for Child Health Research.

Zubrick, S., Lawrence, D., Silburn, S., Blair, E., Milroy, H., Wilkes, T. et al. (2004). *The Western Australian Aboriginal Child Health Survey: Vol. 1. The health of Aboriginal children and young people*. Perth: Telethon Institute for Child Health Research.