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## RESEARCH REPORT

# Intergenerational mobility: new evidence from the Longitudinal Surveys of Australian Youth

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Department of Industry





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# About the research

## *Intergenerational mobility: new evidence from the Longitudinal Surveys of Australian Youth*

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A measure of the efficacy of educational systems in Australia and internationally is that young people's educational and employment achievements should result from their efforts and abilities rather than from their family background.

This report examines the extent of changes in intergenerational mobility in Australia since the 1970s using data from the Youth in Transition (YIT) study and the Longitudinal Surveys of Australian Youth (LSAY). The report investigates the ranking of children's educational achievement in literacy and numeracy tests at age 14–15 years and their tertiary entrance rank (TER) at age 18–19 years in the context of their parents' socioeconomic status (SES). The analysis takes into account, in broad terms, developments in educational, social and economic policies over that time and previous studies (which indicate mixed results on the extent of intergenerational mobility in Australia).

### Key messages

- In terms of *absolute* educational outcomes alone, the research suggests there have been some improvements to intergenerational mobility; for example, by 2009 the vast majority of students from all socioeconomic backgrounds are completing Year 12 compared with those in the 1970s.
- In relative terms, there is little evidence of an increase in intergenerational mobility. Children of high socioeconomic status parents are as likely to have higher tertiary entrance rank scores and better test results in the 2000s as in the 1970s. In other words there is little evidence of a change in intergenerational mobility in Australia since the 1970s.
- School socioeconomic status has grown in importance and over time is gradually replacing the effects of parental socioeconomic status and school sector (government, independent, Catholic).

While steps have been taken to account for limitations in the data, the authors note that the results should be treated with caution. Nevertheless, the findings contribute to our understanding of how family background affects educational outcomes and how this has changed over three decades.

Rod Camm  
Managing Director, NCVER

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# Executive summary

The aim of this report is to investigate change in one measure of intergenerational mobility in Australia since the mid-1970s. Intergenerational mobility can be defined as the relationship between parents' socioeconomic status and their children's socioeconomic status. Socioeconomic status is usually defined in terms of education, occupation or income (or a combination of all three). The measure we use in this analysis is the relationship between parents' socioeconomic status (as described by their highest level of education and their current or most recent occupation) and children's educational achievements at two age levels: 14–15 years and 17–19 years.

The study uses data from the Youth in Transition (YIT) study and the Longitudinal Surveys of Australian Youth (LSAY) for the period 1975 to 2006 to examine the following relationships:

- between the comparative rank of young people in literacy and numeracy tests in the 14–15 years age group and parents' socioeconomic status in selected YIT and LSAY surveys
- between young people's formal secondary education achievement (Year 10 or less, Year 11 or Year 12) and parents' socioeconomic status in selected YIT and LSAY surveys.

The relationship between young people's tertiary entrance rank (TER) at 18–19 years of age and parents' socioeconomic status in selected LSAY surveys between 1998 and 2009 is also examined.

The Youth in Transition project is a longitudinal study of four nationally representative cohorts of young people born in 1961, 1965, 1970 and 1975. The project followed respondents for ten years, interviewing them annually in order to study their transitions between school, post-school education and training, and work. In the Longitudinal Surveys of Australian Youth, annual interviews are undertaken with cohorts of young Australians, the aim being to study their transitions from school to further education or work. Data are available for cohorts of students who were in Year 9 in 1995 (that is, students who were born around 1981), 1998, 2003 and 2006. From 2003 the LSAY sample has been drawn from students who were respondents to the Australian version of the Programme for International Student Assessment (PISA).

The idea that young people's educational and employment achievements should be a consequence of their efforts and abilities rather than their family background is an important measure of the efficacy of educational systems in both Australia and internationally. Although a number of Australian studies have examined the relationship between parents' socioeconomic status and their children's outcomes, there is a diversity of views about whether and to what extent recent generations of Australians have enjoyed greater intergenerational mobility than previous generations. While there is consensus that absolute mobility has increased; that is, each generation is better educated than the previous one, there is less agreement on whether relative mobility – children's ranking in socioeconomic status compared with the ranking of that of their parents – has changed greatly. Perhaps the main reason for this lack of unanimity has been the fact that the blanket term 'intergenerational mobility' covers a myriad of indicators, all of which may not necessarily point in the same direction. In this analysis we focus mostly on this latter question. Our study is more contemporary than most other studies to date, with the most recent literature examining changes in intergenerational mobility up until the early 2000s. We examined both the 'unadjusted' relationship between parents' socioeconomic status and their children's educational outcomes (that is, not controlling for any other factors), and the 'adjusted' relationship (where we controlled for a range of factors, including students' sex, residence

in a metropolitan or non-metropolitan area, ethnic background, Indigenous status, school sector and school socioeconomic status<sup>1</sup>). Our findings can be summarised as follows:

- Socioeconomic status is a major influence on educational attainment. This was true in 1975 and is still true today.
- In terms of *absolute* outcomes (completion of Year 12), the relationship between parents' socioeconomic status and their children's outcomes has weakened, as more and more young people reach this milestone. This finding is consistent with a large body of existing research and our study provides an update on this research.
- In terms of *relative* outcomes (rankings in literacy/numeracy tests at age 14–15 years and tertiary entrance rank at 18–19 years), there is little evidence of an increase in intergenerational mobility. This is true whether or not the analysis was adjusted for a range of control variables.
- The nature of the relationship between socioeconomic status and relative student outcomes appears to have changed in two respects:
  - As might be expected, the relationship between mothers' socioeconomic status and student outcomes has grown since 1975 because the proportion of women with high educational attainment has increased relative to that of men in that period.
  - The strength of the relationship between school socioeconomic status and student outcomes may have strengthened since 1975, displacing somewhat the relationship between parents' socioeconomic status as well as school sector and student outcomes.

These findings are significant in a number of respects. On the one hand, considerable increases in public expenditure on education in Australia since the 1950s have certainly allowed more Australians to reach their educational potential. The vast majority of Australian students now complete Year 12, compared with only a minority in the 1970s. On the other hand, the increased choice in education (for example, allowing state schools to attract 'out of zone' students or increasing subsidies to non-government schools), reinforced by greater spatial inequality between suburbs – the income gap between the richest and the poorest postcodes in Australia – is perhaps associated with a greater divergence in students' educational performance. This can be seen in our findings of the growing strength in the association between school socioeconomic status and student outcomes from the 1970s to the present day.

Broader changes in Australian society may also have exerted contradictory effects. The expansion of education to people from lower socioeconomic backgrounds, the considerable resources given to schools with low socioeconomic status, and the increase in government cash transfers targeted at the most disadvantaged families should have had the effect of reducing inequality and promoting social mobility. But there have been very powerful factors working in the opposite direction. These include an increased demand by employers for educational credentials (the lack of a qualification is now more of a handicap in the labour market than was the case in earlier generations); a trend towards assortative mating (the increased likelihood that highly educated people will partner with other highly educated people and that people with few educational qualifications will also partner); and increasingly skilled migrant intakes (recent generations of migrants to Australia are on average more highly educated than the resident Australian population). All of these factors could have a dampening effect on intergenerational mobility.

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<sup>1</sup> The combined socioeconomic status of the school population.

However, it is also possible that the underlying features of Australian society are more important determinants of intergenerational mobility than social and educational policies and demographic changes. In this context, the findings in this report are consistent with the international evidence, which indicates remarkable stability in the level of intergenerational inequalities over time in different countries, despite changes in social and educational policies.

These findings have important implications for understanding how the background of Australian students affects their outcomes, and how this has changed over time. The findings that mothers' highest level of education and occupation are now much more significant factors than they were previously is important for the study of intergenerational mobility. This is in part because research has historically mainly focused on the transmission of socioeconomic status from fathers to sons and in part because women's increased educational and occupational achievement has become associated with a greater degree of assortative mating, which could in turn become a barrier to greater intergenerational mobility. Similarly, the finding that school socioeconomic status has grown in importance since the 1970s as a driver of intergenerational mobility is a pointer towards how educational and social policy might move forward to facilitate intergenerational mobility across future generations. A number of other experts on Australian education have made this point, but this study provides new evidence on the issue.

It is worth noting that, while the Youth in Transition and LSAY data are well suited to the task of examining changes in the relationship between parents' socioeconomic status and their children's educational outcomes, the data have a number of limitations. They include a high attrition rate in later waves of both surveys, comparability issues between earlier and later surveys, and less than comprehensive information on parents' socioeconomic status; for example, no data are collected on parents' income. While the analysis has attempted to take account of these limitations, the results should be treated with caution.

# Introduction

The idea that young people's achievements in education and employment should be a consequence of their own efforts and abilities rather than their family background is an important measure of the efficacy of education systems in both Australia and internationally (McGaw 2013). However, in all developed countries family background continues to play a significant role in determining young people's outcomes. Australia, the land of the 'fair go', is unusual in that intergenerational mobility is relatively high by international standards, but Australia also has high levels of social inequality. Although a number of studies have examined the relationship between parents' socioeconomic status and children's outcomes in Australia, the policy and demographic forces which drive intergenerational mobility are still poorly understood. This study contributes to this evidence base by using data from the Youth in Transition surveys and the Longitudinal Surveys of Australian Youth to examine how the relationship between young people's level of education and their parents' socioeconomic status has changed since the 1970s.

Intergenerational mobility can be defined as 'the relationship between a child's adult labour market and social success and his or her family background' (Aydemir, Chen & Corak 2005). Intergenerational mobility is often measured as children's place in the distribution of earnings (or other indicators of social status) relative to their parents' place in the corresponding distribution a generation earlier (Corak 2004; d'Addio 2007). In this study, we examine changes in the relationship between children's educational outcomes in two age groups, 14–15 years and 18–19 years, and their parents' socioeconomic status, as measured by their educational outcomes and occupational status. The focus on children's educational outcomes, while dictated to some extent by the data available, also has a strong precedent in the literature on intergenerational mobility (Hertz et al. 2007; Checchi, Fiorio & Leonardi 2013). Educational outcomes towards the end of universal schooling are also arguably the point in the intergenerational mobility chain at which policy has already exerted its greatest influence; for example, by establishing aims and aspirations for public education systems and directing resources to further those aims.

Australian educational policy has long emphasised the importance of maximising all school students' educational outcomes to promote equity and to increase productivity and economic development (Ministerial Council on Education, Employment, Training and Youth Affairs 2008). The ethical principle that young people should be able to achieve to their fullest potential, irrespective of their family background, is basic to most interpretations of fairness. From the point of view of economic efficiency, the goal of increased intergenerational mobility is associated with the meritocratic principle that all children should achieve to their fullest potential so that they can later maximise their productivity in the labour force (Marks 2009b). In order to achieve these goals of equity and economic efficiency, disadvantage must be recognised and compensated. This is the main driver of reforms currently being proposed by the recent *Review of funding for schooling* (Gonski 2011), which proposes a standard per-student resource, with extra loadings for students experiencing specified disadvantages, including low socioeconomic background, disability, low levels of English language proficiency and Indigeneity.

Equity, however, is only one aim of the education system in Australia. Parents' choice is also embedded in the education system in a number of ways: through parents' involvement in the schooling of their children (Lareau 2003 describes the differential effects of parental involvement in their children's schooling); and through facilitation of parental choice in the school their child

attends. Parental choice has become a major strand in Australian education policy since the 1970s at both the federal and state levels (Watson & Ryan 2010; Teese & Polesel 2003) and is seen as an important driver for improving excellence (as opposed to equity) in Australian education. However, increased parental choice is also often seen as perpetuating inequality, since it is one mechanism through which the social, economic and cultural capital of one generation can be passed onto the next generation (Brighouse & Swift 2009; Bourdieu 1986; Bourdieu & Passeron 1990).

We argue in this report that universal education, compensation for disadvantage and facilitation of parental choice form three major strands in Australian education policy. That said, it is reasonable to suggest that the overall success of policy in increasing intergenerational mobility also depends on wider macro-social and economic changes in society. For example, in times of increased economic and social inequality, policies to promote intergenerational mobility through the provision of education will arguably have to do more in order to achieve their goals. Migration policies and trends in family formation can also confound policy goals for the achievement of greater equality. The effects of policies or social and economic trends on intergenerational mobility may not be felt immediately but can take decades to emerge.

Identifying policy effects in an analysis of the trends in the relationship between children's education and their parents' socioeconomic status is therefore not a straightforward exercise. We tackle this task in two ways. First, we examine (in very broad terms) developments in educational policy, as well as social, economic and policy shifts, over the past four decades in Australia, in order to understand the dimensions of the different forces influencing intergenerational mobility and social inequality. Our summary analysis focuses on trends in public expenditure on education, policies to reduce inequalities in educational outcomes and policies to increase parents' choice in the education of their children. We also discuss broader social and economic trends, for example, in income inequality, women's economic participation, migration and family formation.

Second, we use Youth in Transition and LSAY data to examine changes in one indicator of intergenerational mobility – the relationship between parents' socioeconomic status and their children's educational outcomes. Research suggests that performance in academic tests at age 14–15 years (and later) has a strong correlation with more general tests of ability and is a strong predictor of adult socioeconomic status (OECD 2008; Marks & McMillan 2003). In addition, education comprises part of what Bourdieu (1986) terms 'cultural capital' as well as economic capital – it is intrinsically important for social positioning. Finally, while the Youth in Transition and LSAY data do follow respondents up to about 25 years old, the most detailed information (for example, academic test scores) is available only at ages 14–15 and 17–19 years. It is on these data that we focus the major part of our analysis. We focus first on examining the unadjusted relationship between parents' socioeconomic status and their children's educational outcomes at ages 14–15 years and 17–19 years (that is, not controlling for other factors). We then exploit the rich information in the Youth in Transition survey and LSAY to control for a range of other factors that might be expected to influence this relationship: children's sex, their Indigenous and ethnic status, whether they live in or outside a capital city, their school sector (state, Catholic or independent) and the average socioeconomic status of parents in their school.

In terms of trends in the relationship between parents' socioeconomic status and children's educational outcomes, we have two main findings. If we examine changes in the relationship between parents' socioeconomic status and their children's *absolute* educational outcomes, we find that intergenerational mobility has increased. For example, while only a minority of students completed Year 12 in 1978, the vast majority, from all points in the socioeconomic scale, were doing so by 2009.

However, if we examine changes in the relationship between parents' socioeconomic status and their children's relative position in academic test scores in the 14–15 and 18–19 years age groups, we find that intergenerational mobility did not change significantly. That is, the children of high socioeconomic status parents were as likely to be top scorers in the 2000s as they were in the 1970s.

When we control for this relationship other important trends emerge. Most significantly, we find the role of parents' socioeconomic status being gradually replaced over time by *school* socioeconomic status as a strong indicator of children's academic outcomes. Schools are more homogenous in terms of their socioeconomic make-up now than they were in the 1970s, and this appears to be driving students' outcomes. As schools became more socially homogenous, the role of the school *sector* also diminished over time. We conclude from these findings that the impact of increased public expenditure on education since the 1970s, much of it directed at more disadvantaged students, may have been blunted somewhat by increases in spatial inequality in Australia, coupled with policies to increase the scope of parents' choice in their children's education.

In the next chapter, we summarise Australian and international literature on intergenerational mobility. The chapter following discusses policy and other influences on intergenerational mobility in Australia, especially since the 1970s, focusing in particular on changes in education policy. The Youth in Transition and LSAY datasets are then described in the chapter 'Data and method', and the relationship between parents' socioeconomic status and indicators of their children's educational achievements at ages 14–15 and 17–19 years are then examined in the 'Results' chapter. The final chapter concludes with a discussion of the implications of these findings.

# Background

## Inequality and intergenerational mobility

Societies with high levels of intergenerational mobility provide more equality of opportunity and have relatively few barriers to individuals maximising their potential (Delorenzi 2005). Intergenerational mobility is valued because it facilitates individuals and families breaking the ‘intergenerational cycle of disadvantage’, which is a major contributor to social exclusion and a barrier to productivity.

The difference between intergenerationally mobile and immobile societies is that, in a highly immobile society, children’s developmental, educational and career outcomes mirror those of their parents: in immobile societies children of parents with minimal educational achievements also have relatively poor educational outcomes, while children of highly educated parents have relatively good outcomes, irrespective of their own abilities and efforts. That said, in highly mobile societies, children’s outcomes are less likely to be associated with their parents’ educational achievements, but are determined by their own abilities and efforts.

In theory, cross-sectional social inequality and intergenerational mobility are not necessarily related. It is theoretically possible for a society to have high levels of social and economic inequality combined with high levels of intergenerational mobility. In such societies childhood poverty would convey no disadvantage to individual children, who would easily be able to become successful adults (and, conversely, childhood wealth would convey no advantage), even though in every generation there would be large disparities in adult education and earnings. However, in reality there is a strong relationship between intergenerational mobility and social inequality. Countries where incomes and educational outcomes are more unequal tend to have lower levels of intergenerational mobility. In more equal societies, people from more disadvantaged backgrounds don’t have to ‘travel’ as far up the social scale; in less equal societies people from more disadvantaged backgrounds face greater hurdles in climbing the social scale, with wealthy parents able to use their own wealth, education, connections and social position to support their children to achieve good education and employment outcomes (Ermisch et al. 2012).

Studies of Australia and other similar societies indicate that the role of education as a driver of adult socioeconomic status has increased in recent decades. Marginson (1993) notes the growing association between highest level of education and labour market outcomes in Australia after the Second World War. Marks (2009b) similarly argues that the importance of education as a form of capital in Australian society (and in other wealthy countries) has increased substantially over the same period. This is because of an increased orientation towards meritocracy in the labour market, which was associated with greater recognition of, and return from, education (in other words, there was a convergence in cultural and economic capital). Wei (2010) attempts to quantify this growing return, showing that earnings associated with the achievement of a bachelor degree increased significantly between 1981 and 2006, while the income disadvantage associated with not completing Year 12 grew to an even greater extent. The small proportion of the population who now do not complete school are qualitatively different from the rest of the population and are much more likely to be socially excluded in a number of dimensions (Buddelmeyer, Leung & Scutella 2012).



## Trends in intergenerational mobility

The literature on inequality and intergenerational mobility in Australia is considerable and often points towards a significant level of entrenched disadvantage flowing from one generation to the next (Cassells, McNamara & Gong 2011; Considine & Zappalà 2002; Marks et al. 2001; Cardak & Ryan 2009). International comparisons however often show that the levels of intergenerational mobility in Australia are relatively high by comparison with other similar countries (Leigh 2007; OECD 2008). Much of the research in Australia is based on the analysis of the Youth in Transition and LSAY data, with a number of studies using these data to analyse trends in intergenerational mobility. Fullarton et al. (2003) used cross-sectional data from six YIT and LSAY cohorts (beginning with the cohort born in 1961) to examine changes in the association between parents' socioeconomic status and the probability of their children completing Year 12 at secondary school. Their analysis suggests that the influence of parents' socioeconomic status weakened significantly during the 1980s and 1990s as the proportions completing Year 12 increased. Marks and McMillan (2003), using the same data, also claim that the effects of socioeconomic status on Year 12 completion and on university entrance had declined. They argue moreover that, in all years, correlations between socioeconomic background and educational outcomes are 'moderate': 'many students from lower socioeconomic backgrounds have successful educational outcomes and a high socioeconomic background is no guarantee of educational success' (Marks & McMillan 2003, p.467).

Rothman (2003) used Youth in Transition and LSAY data for the years 1975 to 1998 to paint a more nuanced picture of intergenerational mobility. His examination of the relationship between absolute scores in reading and mathematics at age 14–15 years and parental occupation (divided into four categories) suggests that the strength of the relationship between parents' socioeconomic status and student performance declined between 1975 and 1995, but increased between 1995 and 1998. However, he also finds that the effect of school socioeconomic status on student performance increased throughout the period examined. He points to a number of contradictory trends in Australian society and in education policy that may have influenced this changing relationship, including the growing number of migrants to Australia from non-English-speaking backgrounds, increased choice for parents in their selection of their children's school and a more concentrated policy focus on improving student outcomes in low socioeconomic status schools. More recently, and consistent with this policy focus, Thomson and De Bortoli (2008) used PISA test scores in reading, mathematics and science literacy to argue that, between 2000 and 2006, the impact of parents' socioeconomic status on student test scores decreased significantly.

The literature is far from unanimous on the extent of intergenerational mobility in Australia, or on how it has changed over the past several decades. Leigh (2007), in a study of four surveys conducted between 1965 and 2004, looks at how the relationship of fathers' and sons' earnings changed in Australia for sons who were born between 1910 and 1979. He finds that mobility in Australia is reasonably high by international standards and has remained relatively constant during the twentieth century; that is, it has not decreased or increased. For his part, Marks (2009b) used some of the same data as Leigh to argue that there was an increase in meritocracy – the relationship between human capital and rewards in the labour market – during the second half of the twentieth century. The findings of Leigh and Marks do not necessarily conflict: increased meritocracy can go hand in hand with static intergenerational mobility, for example, if inherited wealth is used to purchase human capital.

## Issues that still need to be addressed

The existing literature on intergenerational mobility in Australia, whether it examines trends in terms of income and occupation or in terms of educational outcomes, leaves a number of questions unanswered. First, no study to date has attempted to examine the trends in the relationship between parents' socioeconomic status and their children's academic performance over the entire period of 1975 to the late 2000s. Those studies that find a decline in the relationship between socioeconomic status and educational outcomes have focused on the completion of Year 12 and university entrance (Fullarton et al. 2003; Marks & McMillan 2003). Yet the findings of Rothman (2003) and Thomson and De Bortoli (2008), who use more detailed academic test results, suggest inconsistent trends during this period. This study will attempt to measure and explain trends in the relationship between parents' socioeconomic status and student academic performance, measured using both the completion of Year 12 and academic test results, from the mid-1970s through the early 2000s.

Second, differences in the effect of parents' socioeconomic status and school socioeconomic status have not been adequately examined over the entire period. While Rothman's study notes the growing importance of school socioeconomic status as a factor in academic performance up to the late 1990s, this issue has arguably become even more important in the early 2000s, as the proportion of students enrolled in independent and Catholic schools continues to increase (Bonnor 2012). Indeed, the relationship between school socioeconomic status and schooling outcomes is one of the main focuses of the recently completed Gonski *Review of funding for schooling* (2011), one of whose main recommendations is to strengthen and systematise funding directed at disadvantaged children and schools. One major report commissioned for the review using recent LSAY data argues that the socioeconomic status of a school population has a considerably stronger association with student educational results than does the school sector (government, Catholic or independent) or parents' socioeconomic status (Nous Group 2011). Marks (2009a, 2012), however, argues that there remains a significant difference in student outcomes for different school sectors and that average school socioeconomic status is not an independent determinant of educational outcomes but may be a proxy for the contextual effects of prior achievement. This study cannot adequately address the issue of prior achievement, although it will attempt to disentangle trends in the relationship between parents' and school socioeconomic status, and student performance since the mid-1970s.

Third, while the main aim of this study is to track trends in the overall relationship between parents' socioeconomic status and their children's academic performance, we also attempt to take account of possible confounding or reinforcing factors. Here we include trends in the relative performance of male and female students, and regional, Indigenous and non-English-speaking background students, controlling for parents' socioeconomic status. These latter groups are the focus of much of the Australian Government's broader social inclusion agenda (Ministerial Council on Education, Employment, Training and Youth Affairs 2008; Australian Social Inclusion Board 2010).

Finally, existing studies have not comprehensively examined the factors influencing the trends that have been uncovered. As Marks (2009b) argues, there is insufficient understanding of the larger forces in society (policy, macroeconomic, demographic, cultural and value-related) that may be driving trends in intergenerational inequality. There have been enormous changes in Australian society and social policy over the past four decades, many of which could have had a significant impact on intergenerational mobility. For the most part, our data do not allow us to directly examine the effects of these changes on the relationship between socioeconomic status and student outcomes. However, in examining trends over a long period, we expect that some patterns can be loosely attributed to particular dynamics in policy and society. We discuss some of these dynamics in the next section.

# Policy and social influences

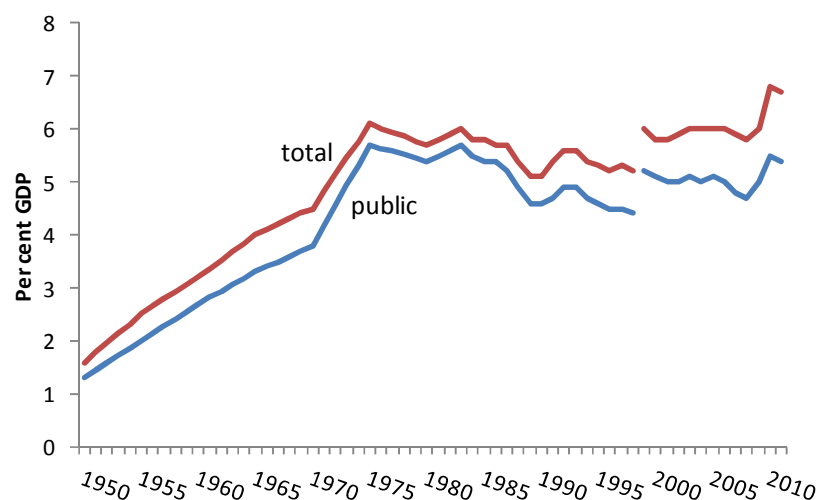
## Education policy

Education in Australia has undergone a massive transformation since the 1960s, and this transformation has continued up to the present. In the mid-1960s, only a minority of students completed Year 12, and an even smaller minority attained a tertiary qualification, for example, a bachelor degree. However, the number of Australians with university degrees increased five-fold between 1966 and 1986 – a period when the population only increased by half (Marginson 1993).

This growth in the number of Australians with educational qualifications has been accompanied by a reassessment of the purpose of education. Teese and Polesel (2003) argue that, up until the Second World War, education was for most people poorly integrated with economic life; that is, educational credentials were not seen as essential to occupational or career success for most occupations. The growth in service-type employment has seen an increase in the demand for school qualifications and other educational credentials, and trends from the 1980s have pointed to higher levels of retention at secondary school and greater access to university education.

Mirroring the demand for educational qualifications as economic credentials, figure 1 shows increasing long-term trends in public and total investment in education in Australia. Most notable is the steep rise in public investment in education from 1950, when it comprised just over 1% of gross domestic product (GDP), to 1975, when it comprised over 5%. After 1975 the trend in public investment in education as a proportion of GDP was gradually downwards, reaching just over 4% in 1998 (when the method of measuring investment changed). Trends in total expenditure on education for the most part tracked trends in public expenditure (the difference representing private expenditure). After about 1990 the two lines begin to diverge somewhat, suggesting an increase in private investment in education relative to public investment. This divergence has increased in recent years. In 1999 (the first year for which data were computed under a new algorithm) private expenditure on education represented about 13% of total expenditure. In 2011, private expenditure represented about 19% of the total.

**Figure 1 Public and total expenditure on education in Australia, 1950–2011**



Notes: There is a series break after 1998, due to changes implemented in methods for calculating national accounts.  
Source: Marginson (1993); ABS Social trends, various years.

Nonetheless, as private investment in education increased, a growing proportion of public investment benefited children from lower socioeconomic backgrounds. Using Australian Bureau of Statistics (ABS) fiscal incidence studies, Redmond (2012) showed that in 1988–89 public expenditure on education was fairly evenly distributed across all households with children. But, by 2003–04 not only had total public expenditure on education increased greatly in real terms (even though it remained fairly constant as a proportion of national income), the balance had shifted decisively in favour of low-income households. Over the same period, private investment in education also increased greatly, with most of it concentrated in high-income households. The net result of these two trends was to largely negate the ‘advantage’ from public expenditure accruing to low-income households, so that the distribution of the combined public and private investment in education across all households was as flat in 2003–04 as it had been in 1988–89 (Redmond 2012).

Linked to the increased importance of educational credentials for career choices and also to government policies aimed at facilitating parental choices, the proportion of children enrolled in independent and Catholic schools gradually increased. Watson and Ryan (2010) show that from the early 1960s to the late 1970s, enrolments in non-government schools declined, but that the decline was reversed after a new Australian Government policy was introduced in 1974 to subsidise non-government schools on the basis of assessed financial ‘need’. Between 1970 and 2007, per capita federal funding for secondary students in non-government schools increased seven-fold in real terms. By the late 2000s, over a third of all secondary school students were enrolled in non-government schools (Watson & Ryan 2010).

Since children from higher socioeconomic status families have tended to go to non-government schools (although this has been less the case with the Catholic sector), the trend towards increased enrolments in these schools represents a segmentation of primary, and especially secondary, education by socioeconomic status. But other factors have also been at work, including government schools in effect competing with private schools through selective policies to attract high-performing students (Lamb 2007). The effect, as Bonnor (2012) showed in studies of medium-sized Australian towns, has been a growing homogenisation in Australian schools, with some (overwhelmingly government sector) schools catering to children from low socioeconomic status backgrounds, and other schools (from all three sectors) catering to children from more advantaged backgrounds. The Organisation for Economic Co-operation and Development (OECD; 2001, 2004, 2007) emphasises the importance of average school socioeconomic status as a key determinant of educational outcomes, independent of differences in the socioeconomic status of families, an argument that has been echoed by some Australian researchers (Rothman 2003), but questioned by others (Marks 2012).

To summarise, three major trends in education policy are evident: first, growing public investment in education, with an increasing proportion of that investment going towards low-income households; second, growing private investment in education, with most of that investment going towards children in high-income households; and third, declining enrolments in public schools as more (higher-income) parents choose a private education for their children, coupled with a greater segmentation of the public school sector by socioeconomic status. Together, these trends suggest the better resourcing of schooling for all Australian students (potentially equalising in terms of educational outcomes) but a growing polarisation in children’s socioeconomic status across schools and a dampening of intergenerational mobility resulting from increases in private expenditure on schooling (potentially dis-equalising). All things being equal, a stronger positive relationship between parents’ socioeconomic status and their children’s educational outcomes would suggest that increased public investment in education, even where aimed at disadvantaged students, was not sufficient to counteract trends relating to parental choice.

## Macro-social and economic trends

In large part, education in Australia has undergone significant changes since the 1970s (and even earlier) because Australian society as a whole has undergone significant change. Here we summarise some of the major changes in policy, demography and economy. Based on our reading of the literature (both Australian and international), we outline the likely effect of these developments on the relationship between parents' socioeconomic status and their children's educational outcomes, and also indicate whether we can actually test this effect with the data available to us.

### Economic growth

In terms of Australia's economic growth, there is little doubt that Australia is vastly richer as a nation now than it was in the 1970s. However, while it might be expected that economic growth is associated with improved absolute educational outcomes, it is difficult to project an impact on the distribution of educational outcomes.

### Income inequality

The international literature suggests a fairly robust relationship between economic inequality and the distribution of educational outcomes and intergenerational mobility (OECD 2008). Atkinson and Leigh (2007) show that through the 1960s and until the early 1980s the share of incomes going to the top 10% of Australian earners was falling, but after the early 1980s the share going to the top rose steadily, so that by 2003, almost a third of all income earned in Australia was going to the top 10% of individuals on the ladder. Another analysis, however, shows a minor increase in income inequality among working-age families over the 1980s and 1990s (Austen & Redmond, forthcoming) and an increase in spatial inequality – the income gap between the richest and the poorest postcodes in Australia (Harding, Yap & Lloyd 2004; Vu et al. 2008). This latter trend has been linked to growing socioeconomic segmentation in schooling (Lamb 2007).

### Child poverty

Trends in child poverty reveal a somewhat different story. Over the 1980s and until 1995, the rates of child poverty fell. Since 1995, progress in reducing child poverty has been uneven (Redmond 2012). The decline in poverty in the 1980s was closely connected to public policies to invest more in children, especially through increases in family payments, policies that continued through to the first years of the 2000s (Harding & Szukalska 1999; Redmond 2012; Whiteford, Redmond & Adamson 2011). We cannot directly test the impact of changes in poverty and inequality on the relationship between parents' socioeconomic status and their children's educational outcomes in this analysis. Relatively flat trajectories in both poverty and income inequality since the 1990s might suggest little change in intergenerational mobility through this period, although increased spatial inequality might suggest greater stratification in schooling and a reduction in intergenerational mobility, as less affluent families are likely to live in areas where local schools are of low quality.

### Women's education

There has been significant growth in women's participation and achievements in education. In 1984, 5% of women in the 15–69 years age group had a bachelor degree or higher, compared with 9% of men. By contrast, females now outperform males in nearly all areas of formal education (ABS 2012).

This change appears to have occurred across the socioeconomic spectrum. While higher education in mothers is associated with better educational outcomes in their children, the effect of higher overall levels of maternal education on intergenerational mobility is uncertain.

## Labour force participation and assortative mating

Diversity in education levels among women suggests greater diversity in both labour force participation and assortative mating. Women's participation in the labour force increased from 34% in 1961 to 59% in 2011. Men's labour force participation decreased slightly during this period. Overall, the proportion of families with two earners, and with no earners, increased, suggesting greater polarisation among families in terms of their employment. This trend was probably reinforced by a further growing trend: for people to select marital partners from similar socioeconomic backgrounds to themselves. In the middle of the twentieth century it was common for men to partner women of lower socioeconomic status than themselves, but with increased education and employment among women, this has become less common (Austen & Redmond, forthcoming; Dawkins, Gregg & Scutella 2002). Trends towards greater diversity in women's employment and more assortative mating are likely to result in reduced intergenerational mobility, all other factors being equal. By looking separately at the relationship between mothers' and fathers' socioeconomic status, as well as parents' joint socioeconomic status and children's educational outcomes, we can build a picture of the impact of these trends on intergenerational mobility.

## Diversity of family structure

Increased diversity in women's labour market participation is also likely to be associated with increased diversity in family structures. First, families are smaller, on average (allowing more mothers to take up paid employment). Second, there has been an increase in single-parent families and consequently a decrease in two-parent families. The number of blended families has also increased with the rising divorce rate (De Vaus 2004; Australian Institute of Family Studies 2012). Children from lower socioeconomic status backgrounds are more likely to live in large families, blended families and single-parent families. However, given the lack of data on family formation in the Youth in Transition survey and LSAY, we are unable to test the impact of changes in family structure on intergenerational mobility.

## Parenting

The culture of parenting has changed greatly in Australia and elsewhere since the 1970s, with a greater awareness among parents about child development and nurturing. This has been brought about, in part, through the increased exposure of children to early childhood care and education. The phenomenon of parents taking a much more active role in stimulating and preparing their children for education and achievement may be for the most part a 'middle class' trend (Nelson 2011). Redmond et al. (2011) show that Australian parents' higher education levels appear to be a more significant factor for children's early outcomes now than it was in the early 1980s. While we cannot examine the relationship between the cumulative effects of parenting and children's educational outcomes in this study, Redmond et al.'s analysis suggests that, all else being equal, we should not expect to find that the relationship between parents' socioeconomic status (which is in part defined by their education) and their children's educational outcomes to have weakened significantly since the 1970s.

## Macro trends

A number of macro trends that have also had a profound impact on Australian society are worth highlighting. First, there has been increasing cultural and political recognition of *Indigenous people* and the disadvantages they face in education, as in other fields; governments have invested more heavily in the education of Indigenous children since the 1970s. Although sample sizes are small, we can attempt to control for Indigenous status in our analysis. Second, since the 1970s there has been a significant increase in the diversity of *migrants* to Australia, which has affected the demographic make-up of the country. Since the 1990s, increasing proportions of migrants have come with high levels of skills and education. Therefore, while in the past the children of migrants might not have been expected to perform well at school, more recent evidence suggests that this may now not be the case (Thomson & De Bortoli 2008). We can indirectly examine the influence of migration on the relationship between parents' socioeconomic status and their children's educational outcomes by controlling for the language that Youth in Transition and LSAY respondents speak at home. Third, we can similarly control for the effects of *urbanisation* on intergenerational mobility since the 1970s using the YIT and LSAY data. This may be important, as there has been a large-scale shift of the Australian population from regional and rural to urban areas over the past four decades (ABS 2012).

# Data and method

## Approach

Our null hypothesis is that the relationship between young people's performance in tests and their parents' socioeconomic status has remained constant over time. Ideally, comparisons would be made in *absolute* terms and in *relative* terms. A finding of no *absolute* change in the relationship between young people's educational outcomes and their parents' socioeconomic status would mean that the type or level of parental socioeconomic status associated with a given outcome, for example, the completion of Year 12, remained constant over time. A finding of no *relative* change in the relationship would mean that, even if absolute levels of achievement changed, the relationship between the ranking of young people in terms of their educational outcomes and the ranking of their parents in terms of socioeconomic status remained constant.

This comparison of changes in the relationship between young people's educational achievement and their parents' socioeconomic status embodies a number of assumptions about the relationship between young people's educational achievement and their subsequent career outcomes (Hanushek 1979). In comparing absolute educational outcomes, we are assuming that a given score or credential had the same implications for young people's subsequent performance in the labour market or other areas of long-term achievement in the late 1970s as in more recent years. As Wei's (2010) analysis discussed in the background chapter shows, this is clearly not the case, and the interpretation of absolute results needs to take account of this. In comparing relative outcomes, we are assuming that the implications for future socioeconomic status of a given ranking in a distribution of young people's educational outcomes would have remained constant through the 1970s and the 2000s. The growth in credentialism noted by Marks (2009b), also discussed in the background chapter, suggests that this assumption may also be problematic. However, it can perhaps be fairly asserted that changes in the relationship between young people's educational outcomes and their subsequent socioeconomic positioning have been uni-directional; that is, educational rankings are now likely to be much stronger predictors of subsequent socioeconomic status than was the case previously.

At a conceptual level, assumptions about absolute parental socioeconomic status are also problematic, for much the same reasons as for young people's educational achievements: the social meaning and importance of many indicators of status, including those that we use in this analysis, are likely to have changed over time. In relative terms, however, this is less likely to be problematic, as long as our chosen measure is a reasonable reflection of the actual distribution of socioeconomic status in both the 1970s and the early 2000s. This issue is discussed in greater detail when we consider the data below.

Todd and Wolpin (2003) propose the following formal model for determining the factors associated with children's cognitive achievement, analogous in this case to young people's scores in academic tests, or other academic achievements:

$$T_{ija} = f(T_a, F_{ij}a, S_{ij}a, 1_{ij0}, e_{ija}) \quad (1)$$

Where achievement  $T$  for child  $i$  residing in household  $j$  measured at a particular age  $a$ , is the product of four elements:

- cumulative parent-supplied inputs  $F_{ij}a$
- cumulative school-supplied inputs  $S_{ij}a$



- the child's innate mental capacity  $1_{ij0}$ , (where 1 represents the child's ability at one year old)

with measurement error denoted by  $e_{ija}$ . The impact of inputs varies according to the age of the child  $T_a$ . This model can be simplified in cases where only contemporaneous information is available; that is, where there is no information available on cumulative achievement or inputs:

$$T_{ija} = f(T_a, F_{ija}, S_{ija}, e_{ija}) \quad (2)$$

where the  $a$  subscript to  $F$  and  $S$  refers only to current inputs and there is no measure of innate mental capacity. In this case the error term  $e_{ija}$  includes cumulative inputs that are excluded from the model. Todd and Wolpin (2003) note that the inclusion of only contemporaneous information in the model suggests that strong assumptions are needed to justify its application. This applies to the present analysis, since the Youth in Transition and LSAY data we use mostly include contemporaneous data. However, we are not seeking to explain young people's academic outcomes per se, but to explain changes over time in the factors associated with their outcomes. Our main assumption is therefore that the error in the model is roughly equivalent whether applied to 1970s data or to data for the early 2000s. This assumption depends on the comparability of the data we use in our analysis.

## Data

The project uses data from the Youth in Transition survey and the Longitudinal Surveys of Australian Youth (1975 to 2006) to examine the following relationships:

- between the ranking of young people's literacy and numeracy tests in the 14–15 years age group and parents' socioeconomic status in selected surveys
- between young people's formal secondary education achievement (left school at Year 10 or less, Year 11, or Year 12) and their tertiary entrance rank in the 18–19 years age group and parents' socioeconomic status in selected surveys.

The Youth in Transition project is a longitudinal study of four nationally representative cohorts of young people born in 1961, 1965, 1970 and 1975. The project followed respondents for ten years, interviewing them annually in order to study their transitions between school, post-school education and training, and work. Variables in the datasets include overall test results, qualifications attained at secondary school level, educational and employment plans for the future, views on school, type of school attended, reasons for leaving school before completing Year 12, post-secondary education/training, employment history and details on unemployment.

The Longitudinal Surveys of Australian Youth project undertakes annual interviews with cohorts of young Australians in order to study their transitions from school to further education or work.<sup>2</sup> Data are available for cohorts of students who were in Year 9 in 1995 (that is, students who were born around 1981) and 1998, and 15 years of age in 2003 and 2006. From 2003, the LSAY sample has been drawn from the sample of students who were respondents to the Australian version of the Programme for International Student Assessment (PISA). Academic knowledge tests are therefore those carried out for PISA. Apart from the academic knowledge tests, the LSAY data largely encompass information on school subjects studied, perceived ability, homework, participation in work experience schemes, education/work plans for the following year and after leaving school, and extracurricular activities.

<sup>2</sup> Note that the nomenclature for the YIT differs from that for the LSAY. YIT cohorts are generally known by the year of birth of the respondents (for example, 1961 for respondents first interviewed in 1975). LSAY cohorts are known by the year in which each cohort was first surveyed 1995, 1998, 2003, 2006 etc.

Background variables for both the Youth in Transition and LSAY surveys include date of birth, sex, country of birth, marital status, parents' level of education and occupation, main language spoken at home, size of residence, respondents' income, types of benefits and payments received by the respondent, types of disabilities or health problems, and general attitudes/levels of happiness.

## Young people's educational outcomes

The first indicators of young people's achievement we use in this analysis are the literacy and numeracy test scores of the 14–15 years age group in the first waves of the Youth in Transition and the more recent waves of LSAY. These test scores have been compared across the Youth in Transition and earlier LSAY cohorts by Rothman (2002, 2003), who states that the tests completed by 14-year-olds in the different Youth in Transition and LSAY samples between 1975 and 1998 are comparable. A comparison of the earlier and the later test scores should nevertheless be treated with caution because respondents to the 1975 Youth in Transition survey were not actually tested for their literacy or numeracy; rather, their teachers were asked to rate them. Among subsequent cohorts, actual written tests were administered to respondents. To our knowledge, the research carried out for this project is the first time that respondent achievement scores from the later LSAY waves have been compared with the earliest Youth in Transition cohorts. In comparing teacher assessments and test scores for literacy and numeracy from selected YIT and LSAY cohorts, we are assuming, not that the absolute scores are comparable, but that the rankings are comparable. This is consistent with the conceptual approach explained above.

Distributions for the different test scores in the 14–15 years age group are shown in appendix table A1. In all cohorts, the number of respondents for whom test scores are missing is very small. Note that respondents to the Youth in Transition survey were graded (by teachers) according to a scale ranging from 1 to 20, with considerable 'clumping' in the top half of the distribution, while scoring for academic tests in LSAY is finely grained, allowing for more precise ranking.

We also analyse respondents' highest year of completion at secondary school (as reported by the respondents themselves) for the 17–19 years age group (appendix table A2). While the reporting of respondents' highest secondary education levels changed somewhat between the Youth in Transition survey and LSAY, it is possible to compare the earliest and the more recent cohorts according to the following categories: Year 10 or below, Year 11, and Year 12 (including those who are still studying in Year 12 when surveyed). A sizeable number of respondents in the 1961 birth cohort (463) reported being still at school and in Year 9 or Year 10 when they were interviewed at the age of 17–18 years. These are counted as 'missing' in our analysis. In every survey year, some respondents reported being still at school and in Year 11 for the 17–18 or 18–19 years age groups. We assume that this group went on to complete Year 12.

Tertiary entrance rank<sup>3</sup> scores are reported by respondents to the 1995 LSAY and subsequent surveys. However, the purpose of the different rankings has been to place all potential university candidates in a distribution to be used by universities in selecting students for courses. TER scores have been calculated on an almost national basis since the mid-1990s. (The Overall Position score in Queensland

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<sup>3</sup> The TER has been known by several different names in different states, for example, Equivalent National Tertiary Entrance Rank in Victoria, University Admission Index and Australian Tertiary Admission Rank in NSW, and Overall Position in Queensland.

needs to be adjusted in order to be accommodated in the national ranking.) The tertiary entrance rank scores of the LSAY respondents are presented in appendix table A3.<sup>4</sup>

## Parents' socioeconomic status

Information on parents' education and occupation is broadly comparable across the different waves (even though there have been changes), and the data on occupation in particular have been analysed extensively across several cohorts of the Youth in Transition survey and LSAY (see, for example, Fullarton et al. 2003; Rothman 2003). Other indicators of parents' socioeconomic status are collected from respondents in some cohorts of LSAY. These include measures of parents' wealth and economic, social and cultural possessions in the home, although these alternative indicators are not measured consistently (Marks 1999).

In both the YIT survey and LSAY, respondents were asked about their parents' highest educational achievement. There is some inconsistency from survey to survey in how this variable is measured. The classification in appendix table B1 represents a summary categorisation common to all survey years. It is worth noting the relatively high number of missing variables. The survey documentation does not explain this fully, but presumably a large part of this is explained by respondents not being sure of their parents' educational achievements.

The coding of the parents' occupation variable also changed considerably from survey to survey. To account for this, we have reduced occupation to an approximation of the Australian Standard Classification of Occupations (ASCO) two-digit occupational classification, which gives a nine-category broadly hierarchical classification of occupations, ranging (roughly) from professional/manager, to unskilled/labourer (see appendix table B2). Although the documentation does not explain this clearly, we assume that respondents' fathers and mothers who were never in paid work are classed as 'other'; this would explain the large proportion of mothers of respondents in the 1961 birth cohort who fall into this classification.

While mothers' and fathers' education and occupation are both likely to be associated with their children's educational outcomes, these impacts are not likely to be independent of each other. We attempt to examine the joint effect of these four variables by deriving a set of latent indicators of socioeconomic status using the statistical data-reduction technique of principal components analysis. This technique is commonly used to derive a single indicator from a set of variables that are likely to be correlated with each other. 'Ordinary' principal components analysis assumes that relationships between variables in the model can be described by a Pearson correlation matrix of continuous interval level variables. However, the education and occupation data available to us are not continuous but are ordinal. We therefore base our principal components analysis for deriving socioeconomic status on a polychoric correlation matrix (Kolenikov & Angeles 2009). We use this technique to derive indicators of mothers' socioeconomic status, fathers' socioeconomic status and parents' socioeconomic status. Appendix table C1 shows eigenvalues and the percentage of variation in education and occupation explained by the latent socioeconomic status variables in the four

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<sup>4</sup> We also analysed respondents' highest educational achievements in the 23–24 years age group (in the 1975 YIT) and in the 24–25 years age group (in the 1995, 2003 and 2006 LSAY). High attrition rates from the survey between waves meant that these results needed to be interpreted with caution (even though reweighting compensated for this attrition to some extent). In general, however, an analysis of the outcomes for the 23–25 years age group in the different cohorts did not add greatly to understanding the changing relationship between parents' socioeconomic status and their children's educational outcomes.

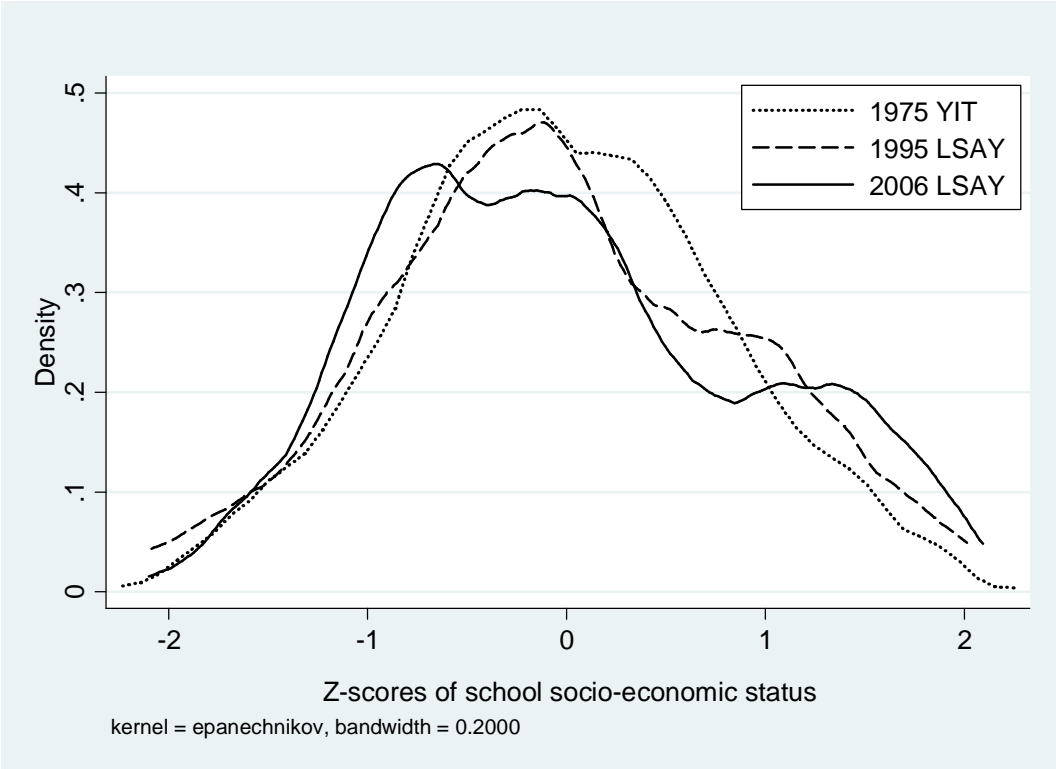
surveys examined. In general, the percentage of variation explained is greater in the later years than in the earliest year. This is consistent with the trend in Australia over this period for a closer match between educational credentials and occupation.

It is worth noting that, while in general parents' educational achievements are positively associated with their occupations, the relationship between an individual's education and their occupation is not always straightforward. This is the case, for example, among parents (mostly mothers) of respondents whose occupation is classified as 'other'. And among both fathers and mothers, those with the highest educational qualifications in 1975 in particular were likely to be in 'professional' occupations, while mothers and fathers who had 'managerial' occupations (categorised in the ABS classifications as 'higher' than professional) tended to have lower educational qualifications. Overall, however, the analysis of the relationship between parents' education or parents' occupation and their children's educational outcomes reveals substantially similar results.

In order to test the extent to which segmentation between schools on the basis of parents' socioeconomic status is associated with educational outcomes, we also compute a 'school socioeconomic status' indicator. This is simply the weighted mean of the parents' socioeconomic status indicators (as derived using the principal components analysis described above) for each school, irrespective of the number of valid observations for the school.

Figure 2 shows how the distribution of school socioeconomic status changes between the 1975 Youth in Transition survey, the 1995 LSAY and the 2006 LSAY. Distributions for all three years are expressed in z-scores with mean = 0 and standard deviation = 1. Therefore the point of interest is how they disperse from the mean. The 1975 distribution is the most compressed and has the highest modal point. The 2006 distribution has a significantly lower mode and a notable bulge towards the right-hand tail, as well as a fatter left-hand tail. This difference in the distributions between the two years shows that the distribution of school socioeconomic status became less concentrated after 1975, suggesting an increased correlation between parents' socioeconomic status within schools. This finding is consistent with the progressive stratification of schools by socioeconomic status discussed in the chapter above, which examines policy and social influences.

**Figure 2 Kernel density estimate of distribution of school socioeconomic status, 1975–2006**



Source: YIT and LSAY, authors' calculations.

# Results

In this chapter, we examine the relationship between parents' socioeconomic status and their children's educational achievements for the 14–15 and 18–19 years age groups. For the most part, we focus on comparisons of two cohorts: respondents to the 1975 Youth in Transition survey and their parents and respondents to the 2006 LSAY and their parents. Respondents to the earlier survey were born in 1961, and respondents to the later survey were born around 1991. In practice, therefore, we are examining changes in the relationship between respondents' educational outcomes and their parents' socioeconomic status that occurred over a 30-year period. First, we examine the unadjusted relationship between these two variables. We then examine the relationship between parents' socioeconomic status and their children's educational outcomes in a multivariate analysis that controls for a range of different factors available to us in the data and whose likely effects are discussed in the chapter on policy and social influences.

Our main indicators of respondents' educational outcomes are academic ability at the age of 14–15 years, as measured for literacy and numeracy in teachers' assessments (in the earlier YIT cohorts) and tests (in LSAY); highest year attained in secondary school by respondents at the age of 17–19 years; and tertiary entrance rank among respondents at the age of 18–19 years; this latter indicator is only available from 1995 (that is, for the cohort of respondents born around 1977). For most of this analysis, our main indicator of parents' socioeconomic status is the indicator derived from both mothers' and fathers' education and occupation, as described in the previous chapter. However, we also examine some results using separate measures of fathers' and of mothers' socioeconomic status.

## Measures of academic ability for the 14–15 years age group

We first examine the unadjusted relationship between parents' socioeconomic status and their children's educational outcomes using concentration curves. A concentration curve provides a method of assessing the degree of inequality in explanatory variable X (in this case, parents' socioeconomic status) in the distribution of a dependent variable Y (in this case, respondent educational outcomes). A concentration curve is like a Lorenz curve, where a cumulative distribution of an indicator is compared with a hypothetical distribution where all values are equal (or in this case, where all parents' socioeconomic status is equal to the sample mean). The size of the gap between the Lorenz curve and the hypothetical distribution represents the extent of inequality in the distribution (which can be expressed as a gini coefficient). In this analysis, our aim is to compare the curves derived from different years of the Youth in Transition survey and LSAY, with the aim of examining trends in inequalities over time.

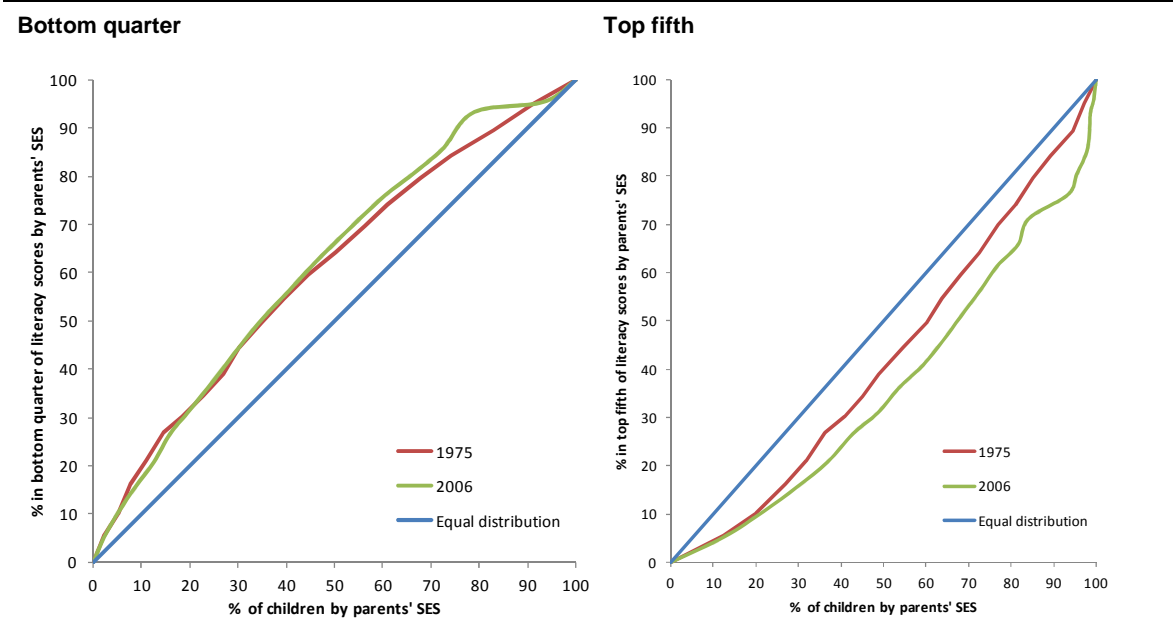
Figure 3 shows concentration curves that map the cumulative distribution of parents' socioeconomic status among respondents in the bottom quarter (left-hand graph) and the top fifth (right-hand graph) of the distribution of literacy scores in 1975 and 2006.<sup>5</sup> The further a curve is from the diagonal line, the greater is the concentration of low-achieving students among parents with low socioeconomic status rankings (left-hand graph), or the concentration of high-achieving students among parents with

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<sup>5</sup> An examination of parents' socioeconomic status in the bottom quartile and the top fifth of the literacy distributions is necessary because of the concentration of students in the 1975 Youth in Transition survey (according to teachers' assessments) into relatively few categories of achievement: most students fall into one or two of 20 categories.

high socioeconomic status (right-hand graph). A comparison of the two curves in each graph gives an intuitive visual picture of how the relationship between students' academic achievement and parents' socioeconomic status changed between 1975 and 2006. In the left-hand panel, the curves lie above the diagonal line because in both years there is a concentration of parents with lower socioeconomic status rankings among respondents at the bottom of the literacy distribution. In the right-hand panel, the curves lie below the diagonal line because parents with higher socioeconomic status rankings are concentrated among respondents at the top of the literacy distribution.

**Figure 3 Concentration curve of being in bottom quarter and top fifth of literacy distribution in the 14–15 years age group by parents' socioeconomic status**



Notes: The estimation of parents' socioeconomic status is discussed in the chapter on data and method. Background data for this figure are in appendix table C2.  
 Source: YIT and LSAY, authors' calculations.

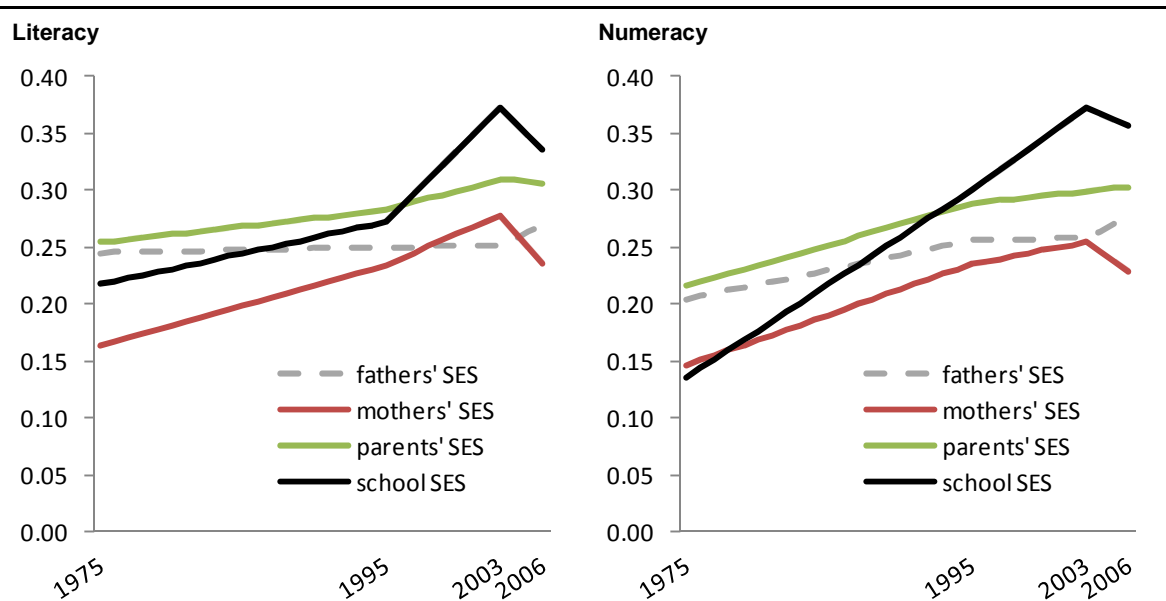
At the bottom of the literacy distribution, there is little difference between the 1975 and the 2006 distributions of parents' socioeconomic status. At the top of the literacy distribution, however, the 2006 result is further curved away from the diagonal than the 1975 result. This suggests that more students whose parents were of high socioeconomic status were in the top literacy quartile in 2006 than was the case in 1975. Among students in the bottom quartile, the difference between the 1975 and 2006 curves is most evident in the top half of the socioeconomic status distribution. Students in the bottom quartile at the 90th percentile of parents' social and economic status were at about the 83rd percentile of parents' socioeconomic status overall in 1975, but at about the 79th percentile in 2006. Among students in the top fifth, the 50th percentile of parents' socioeconomic status was equivalent to about the 60th percentile of parents' socioeconomic status overall in 1975 and about the 68th percentile in 2006, suggesting a strengthening of the relationship between the two variables over the past 30 years. Similar patterns are evident for numeracy scores.

Moving to a more summary measure of association, the correlation coefficient, figure 4 shows the correlations between literacy and numeracy scores and the four different composite measures of socioeconomic status across all four waves of the YIT and LSAY surveys examined in this analysis. In no case is there a consistent decrease in association, while in most cases there is an apparent increase. The exception is the correlation between fathers' socioeconomic status and literacy, which declines

between 1975 and 1995 and increases thereafter, ending at about the same level as in 1975. (However, the difference between coefficients for the different years is not statistically significant.) The trend in association between socioeconomic status and child outcomes is generally clear in the post-1995 period, where the associations between the measures of socioeconomic status and both literacy and numeracy almost all increase.

The low correlations between mothers' socioeconomic status and both literacy and numeracy rankings in 1975 are worth noting. It is possible that this reflects the fact that occupation was a poor predictor of mothers' personal capabilities in 1975. If so, this suggests caution in interpreting the results for the mothers' and parents' socioeconomic status measures, as the increase in correlation might be simply reflecting the fact that mothers' occupations are becoming a better measure of socioeconomic status over time. (That is, this change might imply less measurement error in socioeconomic status.) However, the fathers' socioeconomic status measure is not influenced by this and the school socioeconomic status measure is only indirectly affected. Appendix table C3 shows these patterns separately for boys and girls, with the picture broadly similar for both.

**Figure 4 Correlations between literacy and numeracy in the 14–15 years age group and socioeconomic status over time**



Notes: The estimation of parents' socioeconomic status is discussed in the chapter on data and method. Data points are in appendix table C3.

Source: YIT and LSAY, authors' calculations.

## Completion of secondary education

Figure 5 shows the relationship between parents' socioeconomic status (divided into quartiles) and the probability of their children leaving high school at or before Year 10, or the probability of their completing Year 12 in the 1961 YIT cohort and the 2006 LSAY cohort. The interpretation of the association between parental and child outcomes is complicated by the fact that the distribution of parental and child characteristics both changed significantly over this period. By the early 2000s, parents had, on average, higher levels of education than had been the case 30 years earlier and were less likely to be employed in occupations based in manufacturing and were more likely to be

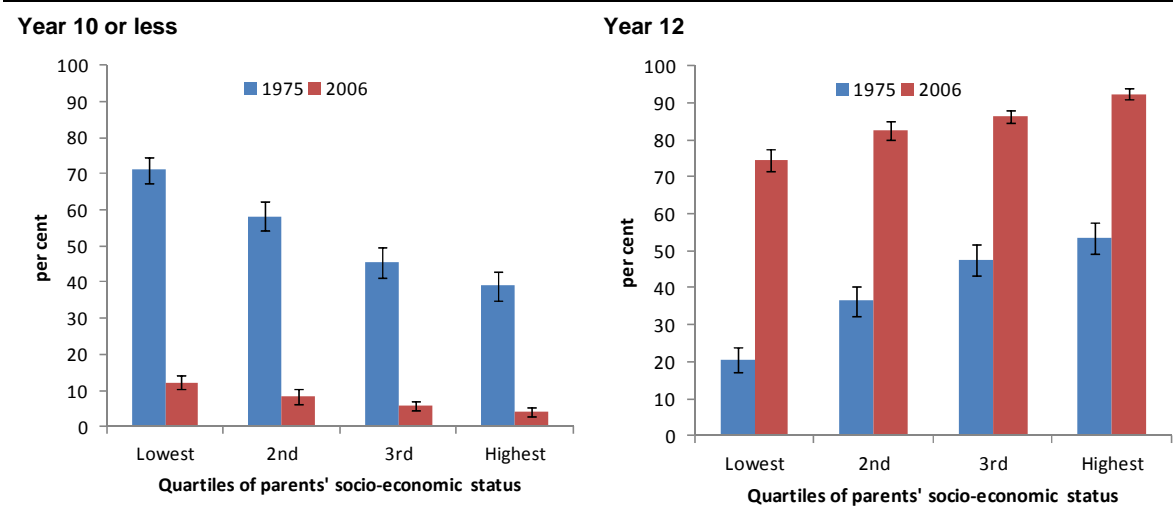


employed in professional occupations. By the early 2000s, young people were significantly more likely to complete Year 12 than had been the case in previous decades.

Increased levels of Year 12 completion rates in the early 2000s, irrespective of parents' socioeconomic status, are clearly evident in figure 5. Dispersion in Year 12 completion rates across the different levels of parents' socioeconomic status is also lower in the later than in the earlier cohort. That is, since the late 1970s, there has been an equalisation in the probability that respondents from different socioeconomic backgrounds would complete Year 12. Among the earlier cohort, respondents whose parents were in the top quartile of socioeconomic status were 2.6 times more likely than those whose parents were in the lowest quartile to complete Year 12. By the early 2000s, this ratio had declined to 1.3.

Parallel to increased Year 12 completion rates has also been a reduction in the probability that students would leave school at Year 10 or earlier. In this case, however, it seems that the socioeconomic gradient has steepened. In the earlier cohort, respondents whose parents were in the lowest quartile of socioeconomic status were 1.7 times more likely to leave schools at or before Year 10 than respondents whose parents were in the highest quartile of socioeconomic status. In the later cohort, this ratio had increased to 2.4.

**Figure 5 High school completion in the 17–19 years age group, by quartiles of parents' socioeconomic status, 1975 and 2006 (%)**



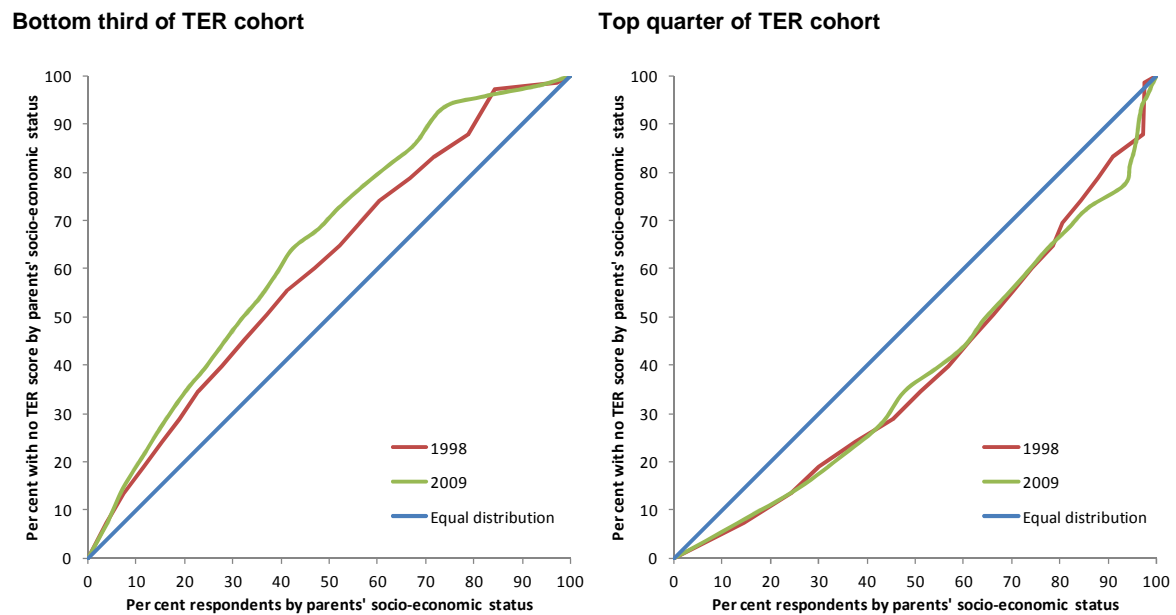
Notes: The estimation of parents' socioeconomic status is discussed in the chapter on data and method. Error bars show 95% confidence intervals on weighted estimates. Cell frequencies and confidence intervals are in appendix table C4. Source: YIT and LSAY, authors' calculations.

### Tertiary entrance rank scores in the 18–19 years age group

Figure 6 shows the concentration curves associated with the TER distribution by the parents' socioeconomic status index in 1998 (the earliest year for which TER scores are available in LSAY data) and 2009. TER scores are only allocated to the top 70% of students in every cohort. Appendix table A3 shows that TER scores were available for 51% of respondents to the 1998 interview of the 1995 LSAY, and for 61% of respondents to the 2009 interview of the 2006 LSAY. A third (33%) in the earlier survey, and 28% in the later survey reported either not completing Year 12 or not being awarded a tertiary entrance rank. Among the remainder, some did not give any information on receiving a TER, or said they received a TER but gave an invalid score. The left-hand graph on figure 6 shows cumulative parents'

socioeconomic status among the 33% who were not awarded a TER in 1998, the 33% at the bottom of the 2009 TER distribution. The right-hand graph shows cumulative parents' socioeconomic status among students whose TER was in the top quarter of all scores. Among those in the bottom third of TER scores, there is some indication of an increase in the gradient associated with parents' socioeconomic status: the curve for the 2009 data is for the most part further from the diagonal than the curve for 1998. A comparison of curves among respondents in the top quartile on the other hand suggests little change in the distribution of parents' socioeconomic status within this group between 1998 and 2009.

**Figure 6 Concentration curve of non-award of TER and TER in top quartile in the 18–19 years age group by parents' socioeconomic status, 1995 and 2006**



Notes: The estimation of parents' socioeconomic status is discussed in the chapter on data and method. Background data for this figure are in appendix table C5.

Source: YIT and LSAY, authors' calculations.

## Controlling for other factors

As discussed in the chapter on policy and social influences, Australia in the early 2000s is a very different country from Australia in the 1970s. It is immensely richer but also perhaps more unequal in the distribution of its material wealth; it is more diverse in terms of ethnic make-up and family formation; it is a more urban society; women's roles have changed immeasurably, and women, on average, have overtaken men in terms of their educational achievements; new inequalities have arisen in terms of access to digital technologies; and, in terms of the effects of assortative mating, people are more likely to partner within their own social class than was the case previously. The importance of education to Australian society has also increased greatly. Governments spend more on education than they did in the 1970s and they pay more attention to improving educational performance among disadvantaged groups. However, governments have also facilitated greater parental choice in education, which could be associated with cementing inequalities in educational outcomes.

The purpose of this final analytical section is to examine the relationship between parents' socioeconomic status and their children's educational outcomes in the 14–15 and 17–19 years age groups, controlling for a number of these exogenous factors, and to examine trends in this adjusted relationship. We adapt the contemporaneous model proposed by Todd and Wolpin (2003), as discussed in the chapter on data and method (Equation 2), where parent-supplied inputs  $F$  include parents'

socioeconomic status, where school-supplied inputs *S* include school sector (government, Catholic, independent) and school socioeconomic status (as defined in the same chapter). We also add the following respondent characteristics, the importance of which, as the discussion in the chapter on policy and social influences indicates, may have changed since the 1970s: gender; whether the respondent lives in a metropolitan or a non-metropolitan area; whether the respondent is Indigenous; and whether the respondent speaks a language other than English at home (mean values for these variables are shown in appendix tables D1 and D2).

In order to examine the extent to which these factors mediated the relationship between parents' socioeconomic status and respondents' literacy scores in the 14–15 years age group, we analysed five different models using ordinary least squares (OLS) stepwise regression:

- 1 literacy score =  $f(\text{respondent characteristics, school sector})$
- 2 literacy score =  $f(\text{respondent characteristics, school sector, fathers' socioeconomic status})$
- 3 literacy score =  $f(\text{respondent characteristics, school sector, mothers' socioeconomic status})$
- 4 literacy score =  $f(\text{respondent characteristics, school sector, parents' socioeconomic status})$
- 5 literacy score =  $f(\text{respondent characteristics, school sector, parents' socioeconomic status, school socioeconomic status})$ .

To facilitate comparison across cohorts, literacy scores and socioeconomic status scores are in *z*-scores (mean = 0, standard deviation = 1). All other indicators in the model are dummy variables. The regression analyses are weighted using sampling weights, adjusted for clustering at the school level.

Table 1 shows selected results of models 2, 3, 4 and 5 in the 1975 YIT and 2006 LSAY, where data for both years are included in the same regression analysis, with interaction terms added for 2006. Only beta coefficients for socioeconomic status variables are shown. (The full regression results for all five models are shown in appendix table E1.) The beta coefficients in the columns labelled '1975' show the marginal effect on respondents' literacy scores of a one-standard deviation increase in each socioeconomic status variable among the earlier cohort sample. In order to obtain the marginal impact of each socioeconomic status variable in 2006, the relevant coefficients for 2006 should be added to that for 1975.

Table 1 shows that, under model 2, fathers' socioeconomic status is highly significant in 1975, with little change in 2006; in other words, its effect is highly significant but unchanging in both years. The effect of mothers' socioeconomic status (in addition to that of fathers – model 3) is also significant in 1975, and increasing in 2006. The replacement of fathers' and mothers' socioeconomic status with that of parents (model 4) shows a similar effect to mothers' socioeconomic status, with a significant beta coefficient in 1975 and increasing somewhat in 2006. The addition of school socioeconomic status in model 5 does not change the coefficient for parents' socioeconomic status greatly in 1975, but has a significant independent impact on literacy scores. The additional impact of school socioeconomic status on literacy scores in 2006 is both large and significant. This partial transfer of the effects of socioeconomic status from parents to schools represents the biggest change in the impact of socioeconomic status on literacy scores between 1975 and 2006.

The main findings in table 1 – of the strong effects of parents' socioeconomic status in 1975 and 2006 and the growing effects of school socioeconomic status between 1975 and 2006 – are still apparent if alternative analysis techniques are applied, including OLS regression analyses carried out separately on the 1975, 1995, 2003 and 2006 cohorts (appendix table E2), or a hierarchical linear model approach on 1975 and 2006 data (appendix table E3). The tables in appendix E also show that both

school sector and school socioeconomic status are associated with literacy scores in 1975, but the effects of school socioeconomic status gradually replace those of school sector over time.

**Table 1 OLS regression of explanatory and control variables on literacy scores in the 14–15 years age group, YIT and LSAY**

	Model 2		Model 3		Model 4		Model 5	
	1975	with 2006 interaction	1975	with 2006 interaction	1975	with 2006 interaction	1975	with 2006 interaction
Fathers' socioeconomic status	0.191***	0.025	0.166***	0.006				
	(0.018)	(0.021)	(0.019)	(0.021)				
Mothers' socioeconomic status			0.091***	0.040*				
			(0.019)	(0.022)				
Parents' socioeconomic status					0.210***	0.037*	0.189***	-0.014
					(0.019)	(0.021)	(0.021)	(0.023)
School socioeconomic status							0.062**	0.167***
							(0.025)	(0.027)
Observations	16,898		16,898		16,898		16,898	
R-squared	0.140		0.152		0.151		0.172	

Notes: Standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The null models are shown in appendix table E1. Source: YIT 1975 and LSAY 2006 surveys (Wave 1 data), authors' calculations.

In order to test the association between parents' socioeconomic status and whether respondents completed Year 12 in the 17–19 years age group, we use logistic regression models that take into account the control variables outlined above. Again, we try the five different models discussed above. Selected results from models 2, 3, 4 and 5 are shown in table 2. (The full results for all models in all years are in appendix tables E4 and E5.) Here, the results are somewhat different, with the impact of all socioeconomic status variables on the completion of Year 12 decreasing between 1978 and 2009. This result is not unexpected, given the massive increase in the percentage of students from all socioeconomic backgrounds completing Year 12 since 1975 (see figure 5).

**Table 2 Logistic regression of explanatory and control variables on completion of Year 12 in the 17–19 years age group, YIT and LSAY**

	Model 2		Model 3		Model 4		Model 5	
	1978	with 2009 interaction	1978	with 2009 interaction	1978	with 2009 interaction	1978	with 2009 interaction
Fathers' socioeconomic status	0.099***	-0.056***	0.077***	-0.046***				
	(0.010)	(0.012)	(0.010)	(0.012)				
Mothers' socioeconomic status			0.073***	-0.041***				
			(0.010)	(0.012)				
Parents' socioeconomic status					0.121***	-0.068***	0.110***	-0.067***
					(0.010)	(0.011)	(0.010)	(0.012)
School socioeconomic status							0.033**	-0.001
							(0.013)	(0.015)

Notes: Standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The full models are shown in appendix table E6.

Source: YIT 1975 and LSAY 2006 surveys (Wave 3 data), authors' calculations.

Table 3 shows results for an OLS regression of the same set of explanatory variables on tertiary entrance rank scores (expressed in z-scores) when the respondent was in the 18–19 years age group in the 1995 and 2006 LSAY cohorts. (The full results are presented in appendix table E6.) This analysis therefore covers a shorter period than that covered by the other regression analyses in this chapter. Appendix table E7 shows the full results using the 1995, 2003 and 2006 LSAY datasets, where the analysis is conducted independently on each dataset. Appendix table E8 shows the results from a hierarchical linear model analysis conducted on the 1995 and 2006 datasets. The results are consistent across all analyses.

Table 3 shows that the relationship between parents' and school socioeconomic status, controlling for student characteristics and TER scores, is generally much the same as with the literacy tests at age 15 years. The beta coefficients for fathers', mothers', and parents' socioeconomic status variables remain fairly similar and positively significant in 1998 and 2009. The coefficient for school socioeconomic status is significantly higher in 2009 compared with 1998. However, as appendix tables E6, E7 and E8 show, the effect of attending an independent school or a Catholic school is reduced somewhat once school socioeconomic status is added to the model.

**Table 3 OLS regression of explanatory and control variables on TER scores in the 18–19 years age group, LSAY**

	Model 2		Model 3		Model 4		Model 5	
	1998	with 2009 interaction	1998	with 2009 interaction	1998	with 2009 interaction	1998	with 2009 interaction
Fathers' socioeconomic status	0.240***	0.008	0.188***	0.007				
	(0.015)	(0.022)	(0.017)	(0.024)				
Mothers' socioeconomic status			0.129***	0.025				
			(0.017)	(0.023)				
Parents' socioeconomic status					0.263***	0.032	0.216***	0.008
					(0.015)	(0.021)	(0.017)	(0.024)
School socioeconomic status							0.142***	0.093***
							(0.020)	(0.028)
Observations	9,772		9,772		9,772		9,772	
R-squared	0.127		0.144		0.144		0.164	

Notes: Standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The full models are shown in appendix table E6.  
Source: LSAY 1995 and 2006 surveys (Wave 3 data), authors' calculations.

# Discussion

## Parents' socioeconomic status and students' achievements

Our major conclusions about the relationship between the educational achievements of Youth in Transition and LSAY respondents and the socioeconomic status of their parents can be summarised as follows:

- Socioeconomic status is a major influence on school performance. This was true in 1975 and is still true today.
- In terms of absolute outcomes (completion of Year 12), the relationship between parents' socioeconomic status and their children's outcomes has weakened as more and more young people reach these standards.
- However, in terms of relative outcomes (rankings in literacy/numeracy tests in the 14–15 years age group and tertiary entrance rank scores in the 18–19 years age group), there is little evidence of an increase in intergenerational mobility. This is true whether the 'unadjusted' relationship between parents' socioeconomic status and student outcomes is examined, or whether this relationship is examined in the context of other 'control' variables.

Nonetheless, the nature of the relationship between socioeconomic status and relative student outcomes has changed in two respects:

- As might be expected, the relationship between mothers' socioeconomic status and student outcomes was muted in 1975, but has grown since then.
- The relationship between school socioeconomic status and student outcomes has strengthened significantly since 1975, displacing to some extent the relationship between parents' socioeconomic status and student outcomes, and between school sector and student outcomes. This suggests that an increasing proportion of young people from low socioeconomic status backgrounds are likely to be excluded from schools with above-average performance and are therefore relatively less likely to improve their socioeconomic status relative to that of their parents.

This study has added to knowledge by focusing on the relationship between relative measures of socioeconomic status and academic performance, and by examining recent as well as distal trends. Unlike studies that have focused on absolute measures of achievement (Fullarton et al. 2003; Marks 2009b), we do not find that the relative relationship between parents' socioeconomic status and their children's educational outcomes has diminished over time. However, our findings are consistent with Rothman's (2003) finding of an increasing association between school socioeconomic status and respondents' academic performance through the 1980s and 1990s – and into the 2000s.<sup>6</sup> Our finding that relative intergenerational mobility has not increased over the period of study is also consistent with Leigh (2007), who found little change in intergenerational mobility in occupations and incomes in Australia in the decades since the Second World War. Indeed, we note that our findings are consistent with a number of international studies that suggest little change in the relative relationship between parents' socioeconomic status and their children's education during the twentieth century (Hertz et al. 2007; Checchi, Fiorio & Leonardi 2013; Blanden & Machin 2007).

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<sup>6</sup> Nonetheless, it is important to acknowledge that some commentators have questioned whether school socioeconomic status can be conceptually separated from parents' socioeconomic status (Marks 2012).

## Policy and other drivers

These findings of increased absolute mobility, coupled with little overall change in relative mobility, are not inconsistent with other developments in Australian society over recent decades. As we indicate in the chapter on policy and social influences, a number of drivers of intergenerational mobility appear to have been pushing in different directions since the 1970s. While the substantial increase in public expenditure on education in Australia since the 1950s may have allowed more Australians to reach their education potential, the increased choice in education (for example, allowing state schools to attract 'out of zone' students and burgeoning subsidies to non-government schools), reinforced by greater spatial inequality between suburbs, is perhaps associated with a greater divergence in students' educational performance, especially in comparisons across schools.

Other changes in Australian society may also have had contradictory effects. The expansion of education to people from lower socioeconomic status backgrounds, the considerable resources expended on schools with low socioeconomic status, and increased government cash transfers targeted to the most disadvantaged families should have had the effect of reducing inequality and promoting intergenerational mobility. But there have been very powerful factors working in the opposite direction. These include increased credentialism in occupations (the lack of a qualification is now more of a handicap in the labour market than was the case in earlier generations), a trend towards assortative mating, and increasingly skilled migrant intakes. All of these factors could have a dampening effect on intergenerational mobility.

It is also possible that all of these social and educational policies and demographic changes have not been powerful drivers of intergenerational mobility because the underlying features of Australian society are more important determinants of intergenerational mobility than social policy or demography. As the work of Lareau (2003) suggests, deep-seated social and cultural structures; for example, those captured by the concept of *habitus* (Bourdieu 1984), may be difficult to change with government policies. In this context, our findings do not contradict the international evidence that indicates remarkable consistencies over time in the level of intergenerational inequalities in different countries, despite changes in social and educational policies (OECD 2008; Checchi, Fiorio & Leonardi, 2013; Blanden & Machin 2007).

Our study has a number of limitations that may also have impacted on the results presented here. As we point out in the chapter on data and method, the Youth in Transition and LSAY datasets are constrained with respect to the operationalisation of parents' socioeconomic status as well as the operationalisation of outcomes for the young people. It is possible that alternative indicators for the estimation of socioeconomic status might produce different results. For example, family income, an important component of socioeconomic status, is not measured. The attrition rates in the YIT and LSAY datasets are relatively high, although we have attempted to control for that by only using earlier waves of the surveys (where attrition rates are lower), by reweighting the data, and by taking the clustered nature of the dataset into account in calculating confidence intervals. The comparison of indicators across the different years of the Youth in Transition survey and LSAY (especially the earlier and the later years) is problematic. More importantly, the meaning of both educational achievements and occupation has changed considerably since the 1970s. Some professions have risen in social status, while others have fallen, and so comparisons over this time period, even in the absence of data issues, are challenging.

Finally the YIT and LSAY data do not capture some of the more subtle cumulative aspects of parenting and schooling that may have important effects on school completion (Todd & Wolpin 2003). Indeed,



our findings should perhaps also be read in the context of the literature which argues that the effects of parents' background on their children's outcomes is strongest in the children's youngest years, and that this is also where policy can have its biggest impact (Heckman & Masterov 2007; Shonkoff & Phillips 2000). By the time children reach school, they are already stratified by ability and family background. The effects of parents' socioeconomic status do not necessarily exacerbate these differences as the child progresses through school, although other factors do not necessarily diminish them either. However, with the data available to us, we cannot estimate the relationship between early childhood experiences and later intergenerational mobility (what Todd & Wolpin 2003 conceptualise as the cumulative effect of family and schooling up to age  $a$ ) in our analysis.

Caveats aside, our findings have important implications for understanding how students' backgrounds affect their outcomes and how these factors have changed over time. The finding that the mothers' education and occupation are now much more significant factors than they were previously is important for the study of intergenerational mobility. Earlier research historically focused mainly on the passing on of socioeconomic status from fathers to sons. In addition, women's increased levels of education and occupation have become associated with a greater degree of assortative mating, which could in turn become a barrier to greater intergenerational mobility. Similarly, the finding that school socioeconomic status has grown in importance since the 1970s as a driver of intergenerational mobility is a pointer towards how educational and social policy might move forward to facilitate intergenerational mobility across future generations.

Nevertheless, there is still need for more analysis on intergenerational mobility in Australia. Mobility is subject to a large number of interacting factors, which are constantly changing, and therefore findings such as those presented here may well be subject to reinterpretation in future years, as demographic, economic and policy contexts change.

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# Appendices

## A Respondents' educational achievements

**Table A1 Respondents' literacy and numeracy achievement scores in the 14–15 years age group, 1975–2006**

Quartiles	1975 YIT (born 1961) 14-year-olds in 1975		1995 LSAY (born around 1980) 15-year-olds in 1995		2003 LSAY (born around 1988) 15-year-olds in 2003		2006 LSAY (born around 1991) 15-year-olds in 2006	
	N	Per cent (weighted)	N	Per cent (weighted)	N	Per cent (weighted)	N	Per cent (weighted)
Literacy scores:								
Lowest	1,408	22.6	3,188	24.5	2,249	23.0	3,496	23.0
2nd	1,489	24.4	3,123	23.2	2,423	24.1	3,341	24.0
3rd	2,189	34.6	4,272	31.4	3,698	35.0	4,840	35.0
Highest	1,147	18.5	2,853	20.9	2,000	17.9	2,493	18.0
Missing	27		177		0		0	
<b>Total</b>	<b>6,260</b>	<b>100.0</b>	<b>13,613</b>	<b>100.0</b>	<b>10,370</b>	<b>100.0</b>	<b>14,170</b>	<b>100.0</b>
Numeracy scores:								
Lowest	1,376	21.8	2,985	23.2	2,164	22.1	3,342	22.1
2nd	1,686	26.7	3,759	28.4	3,068	30.2	4,200	30.0
3rd	1,872	30.1	3,827	28.3	2,700	25.7	3,598	26.0
Highest	1,305	21.4	2,817	20.1	2,438	22.0	3,030	21.9
Missing	21		225		0		0	
<b>Total</b>	<b>6,260</b>	<b>100.0</b>	<b>13,613</b>	<b>100.0</b>	<b>10,370</b>	<b>100.0</b>	<b>14,170</b>	<b>100.0</b>

Source: YIT and LSAY, authors' calculations.

**Table A2 Respondents' highest educational achievements in the 17–19 years age group, 1978–2009**

Highest education reached	1975 YIT (born 1961) 17 to 18-year-olds in 1978		1995 LSAY (born around 1980) 18 to 19-year-olds in 1998		2003 LSAY (born around 1988) 18 to 19-year-olds in 2006		2006 LSAY (born around 1991) 18 to 19-year-olds in 2009	
	N	Per cent (weighted)	N	Per cent (weighted)	N	Per cent (weighted)	N	Per cent (weighted)
Year 10 or below	2,074	53.8	1,151	12.5	532	6.9	485	6.4
Year 11	364	7.0	825	7.9	663	8.1	624	7.3
Year 12	1,693	39.2	7,597	79.6	6,503	85.0	6,174	86.3
Missing	790		165		0		0	
Not in wave	1,339		3,875		2,672		6,887	
<b>Total</b>	<b>6,260</b>	<b>100.0</b>	<b>13,613</b>	<b>100.0</b>	<b>10,370</b>	<b>100.0</b>	<b>14,170</b>	<b>100.0</b>

Notes: 'Year 12' includes respondents who reported being still at school in Year 11 or Year 12. In the 1975 YIT survey, 'Missing' includes 463 observations where the respondent reported being in Year 10 or less at the 17 to 18 years age group. 'Not in wave' includes only observations where the respondent was not interviewed at the wave in question.

Source: YIT and LSAY, authors' calculations.

**Table A3 Respondents' TER scores, 1998–2009**

TER status	1995 LSAY (born around 1980) 18 to 19-year-olds in 1998		2003 LSAY (born around 1988) 18 to 19-year-olds in 2006		2006 LSAY (born around 1991) 18 to 19-year-olds in 2009	
	N	Per cent (weighted)	N	Per cent (weighted)	N	Per cent (weighted)
Did not reach Year 12	1,975	20.0	1,178	14.8	1,091	13.6
Reached Year 12, no information on TER	858	8.9	347	3.9	306	3.5
Reached Year 12, reported valid TER	4,865	51.2	4,336	57.7	4,209	61.1
Reached Year 12, reported invalid TER, or did not know TER	764	7.2	741	9.4	623	7.7
Reached Year 12, reported not having a TER	1,276	12.6	1,119	14.2	1,070	14.1
Not in wave	3,875		2,649		6,871	
<b>Total</b>	<b>13,613</b>	<b>100.0</b>	<b>10,370</b>	<b>100.0</b>	<b>14,170</b>	<b>100.0</b>

Notes: Respondents who did not complete Year 12 were not awarded a TER. Some respondents who did complete Year 12 reported not being awarded a TER. Some respondents who completed Year 12 did not give any information on their TER status. 'Not in wave' includes only observations where the respondent was not interviewed at the wave in question.

Source: LSAY, authors' calculations.

## B Parents' highest education qualifications and occupations

**Table B1 Parents' highest educational qualifications across selected YIT and LSAY surveys**

Highest education reached	1975 YIT (born 1961) 17 to 18-year-olds in 1978		1995 LSAY (born around 1980) 15-year-olds in 1995		2003 LSAY (born around 1988) 15-year-olds in 2003		2006 LSAY (born around 1991) 15-year-olds in 2006	
	N	Per cent (weighted)	N	Per cent (weighted)	N	Per cent (weighted)	N	Per cent (weighted)
<i>Fathers</i>								
Primary school or less	906	19.0	340	3.9	376	4.2	469	3.4
Some secondary school	1,428	33.9	2,669	29.9	1,889	19.8	2,562	18.9
Completed secondary school	927	20.0	1,598	17.1	337	3.5	581	4.3
Trade/technical qualification	625	13.8	2,078	22.7	3,014	30.9	4,245	32.9
Degree/diploma/postgraduate	606	13.2	2,477	26.3	4,064	41.7	5,191	40.4
Missing	429		4,451		690		1,122	
Not in wave	1,339		0		0		0	
<b>Total</b>	<b>6,260</b>	<b>100.0</b>	<b>13,613</b>	<b>100.0</b>	<b>10,370</b>	<b>100.0</b>	<b>14,170</b>	<b>100.0</b>
<i>Mothers</i>								
Primary school or less	507	10.4	316	3.6	394	4.5	360	2.5
Some secondary school	1,746	41.6	3,367	36.7	2,064	20.8	2,669	19.4
Completed secondary school	1,347	29.0	2,645	27.9	319	3.1	576	4.2
Trade/technical qualification	473	10.6	721	7.4	3,174	31.9	4,459	32.6
Degree/diploma/postgraduate	395	8.4	2,312	24.4	4,073	39.9	5,540	41.2
Missing	453		4,252		346		566	
Not in wave	1,339		0		0		0	
<b>Total</b>	<b>6,260</b>	<b>100.0</b>	<b>13,613</b>	<b>100.0</b>	<b>10,370</b>	<b>100.0</b>	<b>14,170</b>	<b>100.0</b>

Notes: 'Missing' includes observations where respondents do not know fathers' or mothers' education. 'Not in wave' includes only observations where respondents were not interviewed at the wave in question. (In the 1975 YIT survey, respondents were only asked their parents' education and occupation in the 1978 interview.)

Source: YIT and LSAY, authors' calculations.

**Table B2 Parents' occupation across YIT and LSAY surveys**

Occupation	1975 YIT (born 1961) 17 to 18-year-olds in 1978		1995 LSAY (born around 1980) 15-year-olds in 1995		2003 LSAY (born around 1988) 15-year-olds in 2003		2006 LSAY (born around 1991) 15-year-olds in 2006	
	N	Per cent (weighted)	N	Per cent (weighted)	N	Per cent (weighted)	N	Per cent (weighted)
<i>Fathers</i>								
Managers	1,031	21.7	2,205	18.5	922	12.2	3,004	23.5
Professionals	593	13.3	2,587	21.5	1,556	20.3	2,272	17.2
Technical/trades workers	1,017	21.1	2,618	22.4	1,353	18.2	4,232	31.5
Community/service workers	371	7.6	639	4.7	1,451	19.9	880	6.4
Clerical/admin/sales workers	517	10.4	987	8.5	393	5.0	273	1.9
Machinery operators/drivers	733	15.2	1,023	9.0	728	10.0	1,413	11.0
Labourers	293	6.6	1,309	11.2	607	7.9	1,018	7.3
Others	206	4.1	471	4.1	488	6.6	182	1.2
Missing	160		1,774		2,872		896	
Not in wave	1,339		0		0		0	
<b>Total</b>	<b>6,260</b>	<b>100.0</b>	<b>13,613</b>	<b>100.0</b>	<b>10,370</b>	<b>100.0</b>	<b>14,170</b>	<b>100.0</b>
<i>Mothers</i>								
Managers	175	3.9	729	6.1	287	3.4	1,590	12.2
Professionals	576	11.5	2,587	21.6	2,277	27.6	3,174	23.7
Technical/trades workers	29	0.6	627	5.6	864	10.3	2,054	14.6
Community/service workers	637	12.7	1,997	16.8	268	3.5	2,081	15.6
Clerical/admin/sales workers	1,066	21.9	1,985	17.3	2,404	30.2	2,059	15.1
Machinery operators/drivers	230	6.3	142	1.3	134	1.9	327	2.6
Labourers	58	1.4	1,081	9.0	1,167	14.8	2,041	15.3
Others	1,935	41.8	2,546	22.4	642	8.3	118	0.8
Missing	215		1,919		2,327		726	
Not in wave	1,339		0		0		0	
<b>Total</b>	<b>6,260</b>	<b>100.0</b>	<b>13,613</b>	<b>100.0</b>	<b>10,370</b>	<b>100.0</b>	<b>14,170</b>	<b>100.0</b>

Notes: 'Missing' includes observations where respondents do not know fathers' or mothers' education. 'Not in wave' includes only observations where respondents were not interviewed at the wave in question. (In the 1975 YIT survey, respondents were only asked their parents' education and occupation in the 1978 interview.)

Source: YIT and LSAY, authors' calculations.



## C Parents' socioeconomic status and children's educational outcomes

**Table C1 Eigenvalues for estimation of latent socioeconomic status variables, 1975–2006**

	Number of observations	Eigenvalue	Per cent variation explained
Fathers' education and occupation			
YIT 1975	4,448	1.285	64.2
LSAY 1995	8,742	1.267	63.4
LSAY 2003	7,227	1.368	66.8
LSAY 2006	12,677	1.314	66.6
Mothers' education and occupation			
YIT 1975	4,356	1.236	61.7
LSAY 1995	8,696	1.371	68.5
LSAY 2003	7,847	1.444	72.2
LSAY 2006	13,058	1.314	65.7
Fathers' and mothers' education and occupation			
YIT 1975	4,194	1.686	42.1
LSAY 1995	7,660	1.946	48.6
LSAY 2003	6,498	2.014	50.4
LSAY 2006	12,164	1.854	46.4

Source: YIT and LSAY, authors' calculations.

**Table C2 Cumulative distributions of parents' socioeconomic status in the bottom quartile and top fifth of respondents' literacy achievement in the 14–15 years age group (parents' overall ranking at each 5-percentile point in bottom quartile and top fifth), 1975 and 2006**

Percentile point	1975 YIT bottom quarter	2006 LSAY bottom quarter	Difference	1975 YIT top fifth	2006 LSAY top fifth	Difference
0	0.0	0.0	0.0	0.0	0.0	0.0
5	2.3	2.3	0.0	12.2	12.6	0.3
10	5.2	5.3	0.1	20.1	21.8	1.7
15	7.7	8.7	1.0	27.0	29.7	2.8
20	11.1	12.6	1.5	32.0	36.9	4.9
25	14.6	15.9	1.4	36.3	42.8	6.5
30	18.5	19.5	1.0	40.8	48.7	7.9
35	22.7	23.6	0.9	45.1	53.5	8.4
40	27.0	27.4	0.4	49.0	59.3	10.3
45	30.2	31.2	1.0	54.7	63.9	9.2
50	35.0	35.4	0.4	60.0	68.1	8.1
55	39.7	40.5	0.8	63.7	72.7	8.9
60	44.5	45.2	0.8	68.1	76.7	8.6
65	50.3	49.7	-0.7	72.4	81.6	9.2
70	56.3	55.2	-1.1	76.9	84.1	7.2
75	61.0	60.6	-0.4	81.2	93.4	12.2
80	67.8	66.2	-1.6	85.3	95.5	10.1
85	74.3	72.5	-1.7	89.4	98.0	8.6
90	83.0	79.0	-4.0	94.4	98.7	4.2
95	91.1	93.4	2.2	97.3	99.3	2.0
100	100.0	100.0	0.0	100.0	100.0	0.0

Notes: The table shows that at the 50th percentile point of the bottom quartile of respondents' literacy scores, parents' socioeconomic status was at the 35th percentile point of the overall distribution of parents' socioeconomic status in 1975, and the 35.4th percentile point in 2006. At the 50th percentile point of the top fifth of respondents' literacy scores, parents' socioeconomic status was at the 60th percentile point of the overall distribution of parents' socioeconomic status in 1975, and the 68.1st percentile point in 2006.

Source: YIT and LSAY, authors' calculations.

**Table C3 Correlation coefficients between literacy and numeracy achievement in the 14–15 years age group, and socioeconomic status 1975–2006, by gender**

	Literacy				Numeracy			
	1975 YIT (born 1961) 14 years old in 1975	1995 LSAY (born around 1980) 15 years old in 1995	2003 LSAY (born around 1988) 15 years old in 2003	2006 LSAY (born around 1991) 15 years old in 2006	1975 YIT (born 1961) 14 years old in 1975	1995 LSAY (born around 1980) 15 years old in 1995	2003 LSAY (born around 1988) 15 years old in 2003	2006 LSAY (born around 1991) 15 years old in 2006
<i>All</i>								
Fathers' socioeconomic status	0.245	0.250	0.251	0.269	0.204	0.256	0.258	0.276
Mothers' socioeconomic status	0.164	0.234	0.278	0.236	0.146	0.235	0.254	0.228
Parents' socioeconomic status	0.254	0.282	0.310	0.305	0.216	0.288	0.299	0.303
School socioeconomic status	0.217	0.272	0.372	0.335	0.135	0.300	0.372	0.356
<i>Boys</i>								
Fathers' socioeconomic status	0.264	0.243	0.236	0.269	0.200	0.258	0.239	0.273
Mothers' socioeconomic status	0.178	0.216	0.267	0.243	0.123	0.231	0.238	0.237
Parents' socioeconomic status	0.278	0.267	0.296	0.308	0.201	0.285	0.280	0.307
School socioeconomic status	0.208	0.302	0.364	0.353	0.145	0.335	0.367	0.371
<i>Girls</i>								
Fathers' socioeconomic status	0.224	0.261	0.292	0.274	0.212	0.254	0.276	0.282
Mothers' socioeconomic status	0.146	0.256	0.297	0.213	0.173	0.240	0.273	0.210
Parents' socioeconomic status	0.228	0.302	0.344	0.295	0.234	0.291	0.320	0.297
School socioeconomic status	0.223	0.246	0.385	0.309	0.131	0.266	0.382	0.328

Source: YIT and LSAY, authors' calculations.

**Table C4 High school completion in the 17–19 years age group, by quartiles of parents' socioeconomic status, 1978–2009**

	Highest level is Year 10				Highest level is Year 12			
	N	Per cent (weighted)	LB	UB	N	Per cent (weighted)	LB	UB
1978								
Lowest	592	71.0	67.5	74.5	203	20.6	17.4	23.7
2nd	449	58.2	54.2	62.3	342	36.5	32.6	40.5
3rd	394	45.6	41.4	49.8	449	47.4	43.2	51.5
Highest	338	39.0	35.0	43.1	554	53.4	49.4	57.5
All	1,773	53.5	51.6	55.4	1,548	39.5	37.6	41.3
1998								
Lowest	234	18.5	16.2	20.8	990	70.9	68.3	73.5
2nd	185	14.0	12.0	16.0	1,188	78.6	76.2	80.9
3rd	133	9.7	8.0	11.5	1,324	83.6	81.6	85.7
Highest	76	5.2	4.0	6.4	1,529	89.9	88.3	91.6
All	628	11.9	10.9	12.8	5,031	80.7	79.7	81.8
2006								
Lowest	187	12.6	10.6	14.6	1,181	75.2	72.4	77.9
2nd	129	8.2	6.6	9.8	1,454	82.5	80.1	84.9
3rd	103	5.6	4.4	6.8	1,719	86.6	84.8	88.5
Highest	47	3.5	2.3	4.7	1,801	92.2	90.6	93.8
All	466	7.5	6.7	8.2	6,155	84.1	83.0	85.2
2009								
Lowest	186	12.3	10.3	14.4	1,155	74.5	71.7	77.3
2nd	99	8.3	6.4	10.3	1,358	82.5	80.0	85.1
3rd	90	5.9	4.6	7.3	1,559	86.4	84.5	88.2
Highest	49	4.1	2.9	5.3	1,770	92.4	90.9	93.9
<b>All</b>	<b>424</b>	<b>7.7</b>	<b>6.9</b>	<b>8.5</b>	<b>5,842</b>	<b>83.9</b>	<b>82.7</b>	<b>85.0</b>

Notes: LB and UB are lower bound and upper bound respectively of 95% confidence intervals.

Source: YIT and LSAY, authors' calculations.

**Table C5 Cumulative distributions of parents' socioeconomic status among respondents in the bottom third and top quartile of TERs in the 18–19 years age group (parents' overall socioeconomic status ranking at 5-percentile points in each group), 1998 and 2009**

Percentile point	Bottom third			Top quarter		
	1998	2009	Difference	1998	2009	Difference
0	0.0	0.0	0.0	0.0	0.0	0.0
5	3.8	4.0	0.2	14.6	13.1	-1.4
10	7.4	7.3	-0.1	24.1	25.8	1.6
15	11.4	11.6	0.2	29.9	35.2	5.3
20	15.3	15.5	0.1	37.6	42.8	5.2
25	18.8	20.2	1.4	45.3	47.8	2.4
30	22.9	24.1	1.2	51.2	54.2	3.0
35	27.9	27.5	-0.3	56.7	60.1	3.4
40	32.4	31.8	-0.6	61.5	64.3	2.8
45	37.1	35.5	-1.6	66.3	68.3	2.1
50	41.3	39.2	-2.1	70.4	73.2	2.8
55	46.9	42.5	-4.4	74.2	77.4	3.3
60	52.1	47.8	-4.3	78.7	81.6	3.0
65	56.4	52.0	-4.5	80.5	85.8	5.3
70	60.5	57.3	-3.2	84.5	93.4	8.9
75	66.9	62.5	-4.4	88.0	94.5	6.5
80	71.8	67.7	-4.0	90.8	95.7	4.9
85	79.0	73.6	-5.4	97.2	96.8	-0.4
90	84.5	81.6	-2.9	97.4	98.0	0.6
95	97.2	93.4	-3.9	97.6	99.0	1.4
100	100.0	100.0	0.0	100.0	100.0	0.0

Notes: TER distributions include respondents who were not awarded a TER (approximately a third of all respondents in both years). The table shows that at the 50th percentile point of the bottom third of respondents' TERs, parents' socioeconomic status was at the 41.3rd percentile point of the overall distribution of parents' socioeconomic status in 1998, and the 39.2nd percentile point in 2009. At the 50th percentile point of the top fifth of respondents' literacy scores, parents' socioeconomic status was at the 70.4th percentile point of the overall distribution of parents' socioeconomic status in 1998, and the 73.2nd percentile point in 2009.

Source: LSAY 1995 and 2006 (third wave), authors' calculations.

## D Literacy scores, Year 12 completion and demographic characteristics

**Table D1 Mean literacy scores (z-scores) in the 14–15 years age group for different categories of respondents, 1975–2006**

	1975 YIT (born 1961) 14-year-olds in 1975	1995 LSAY (born around 1980) 15-year-olds in 1995	2003 LSAY (born around 1988) 15-year-olds in 2003	2006 LSAY (born around 1991) 15-year-olds in 2006
Male	-0.057	-0.099	-0.191	-0.184
Female	0.053	0.085	0.194	0.199
Non-metro	-0.030	-0.054	-0.096	-0.151
Metro	0.020	0.046	0.062	0.061
Non-Indigenous	0.002	0.016	0.009	0.005
Indigenous	-0.513	-0.729	-0.674	-0.729
English-speaking background	0.033	0.044	0.014	0.016
Non-English-speaking background	-0.752	-0.506	-0.159	-0.169
Government school	-0.102	-0.095	-0.143	-0.151
Catholic school	0.198	0.054	0.061	0.104
Independent school	0.519	0.331	0.349	0.413

Source: YIT and LSAY, authors' calculations.

**Table D2 Proportion attaining Year 12 for different categories of respondents 1978–2009**

	1975 YIT (born 1961) 17 to 18-year-olds in 1978	1995 LSAY (born around 1980) 18 to 19-year-olds in 1998	2003 LSAY (born around 1988) 18 to 19-year-olds in 2006	2006 LSAY (born around 1991) 18 to 19-year-olds in 2009
Male	0.314	0.761	0.823	0.781
Female	0.364	0.861	0.889	0.879
Non-metro	0.306	0.754	0.794	0.780
Metro	0.363	0.866	0.895	0.847
Non-Indigenous	0.340	0.820	0.857	0.826
Indigenous	0.052	0.543	0.742	0.889
English-speaking background	0.340	0.805	0.848	0.815
Non-English-speaking background	0.309	0.922	0.938	0.932
Government school	0.286	0.772	0.816	0.777
Catholic school	0.488	0.888	0.895	0.880
Independent school	0.719	0.902	0.93	0.959
<b>All</b>	<b>0.339</b>	<b>0.815</b>	<b>0.856</b>	<b>0.827</b>

Source: YIT and LSAY, authors' calculations.

## E Regression models

**Table E1 OLS regression of explanatory and control variables on literacy scores in the 14–15 years age group, 1975 and 2006**

	Model 1		Model 2		Model 3		Model 4		Model 5	
	1975	with 2006 interaction	1975	with 2006 interaction	1975	with 2006 interaction	1975	with 2006 interaction	1975	with 2006 interaction
Female	0.106*** (0.037)	0.332*** (0.041)	0.100*** (0.036)	0.332*** (0.040)	0.090** (0.036)	0.334*** (0.040)	0.090** (0.036)	0.334*** (0.040)	0.088** (0.036)	0.342*** (0.040)
Metro	0.039 (0.037)	0.112*** (0.042)	0.006 (0.037)	0.119*** (0.042)	-0.005 (0.037)	0.123*** (0.042)	-0.010 (0.037)	0.126*** (0.042)	-0.036 (0.039)	0.092** (0.044)
ATSI	-0.532** (0.253)	-0.113 (0.259)	-0.398 (0.246)	-0.144 (0.253)	-0.373 (0.242)	-0.158 (0.250)	-0.382 (0.242)	-0.158 (0.249)	-0.379 (0.245)	-0.120 (0.252)
NESB	-0.726*** (0.105)	0.487*** (0.112)	-0.616*** (0.104)	0.385*** (0.111)	-0.628*** (0.103)	0.415*** (0.110)	-0.641*** (0.102)	0.428*** (0.109)	-0.620*** (0.102)	0.395*** (0.108)
Independent school	0.598*** (0.062)	-0.103 (0.066)	0.438*** (0.063)	-0.083 (0.067)	0.414*** (0.064)	-0.098 (0.068)	0.428*** (0.064)	-0.106 (0.068)	0.337*** (0.073)	-0.314*** (0.078)
Catholic school	0.295*** (0.047)	-0.062 (0.052)	0.249*** (0.047)	-0.074 (0.052)	0.240*** (0.047)	-0.083 (0.052)	0.238*** (0.047)	-0.079 (0.052)	0.209*** (0.049)	-0.178*** (0.053)
Fathers' socioeconomic status			0.191*** (0.018)	0.025 (0.021)	0.166*** (0.019)	0.006 (0.021)				
Mothers' socioeconomic status					0.091*** (0.019)	0.040* (0.022)				
Parents' socioeconomic status							0.210*** (0.019)	0.037* (0.021)	0.189*** (0.021)	-0.014 (0.023)
School socioeconomic status									0.062** (0.025)	0.167*** (0.027)
Year 2006 dummy		-0.221*** (0.041)		-0.210*** (0.040)		-0.209*** (0.040)		-0.205*** (0.040)		-0.112*** (0.043)
Constant	-0.144*** (0.036)		-0.101*** (0.035)		-0.086** (0.035)		-0.087** (0.035)		-0.060 (0.038)	
Observations	16,898		16,898		16,898		16,898		16,898	
R-squared	0.099		0.140		0.152		0.151		0.172	

Notes: Each model is tested on a combined dataset of observations from the first waves of the 1961 birth cohort of the YIT survey (surveyed in 1975) and the 2006 LSAY (surveyed in 2006). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

Source: YIT and LSAY, authors' calculations.

**Table E2 OLS regression of explanatory and control variables on literacy scores in the 14–15 years age group, 1975–2006**

	1975					1995				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Female	0.106*** (0.037)	0.100*** (0.036)	0.090** (0.036)	0.090** (0.036)	0.088** (0.036)	0.185*** (0.024)	0.191*** (0.023)	0.191*** (0.023)	0.192*** (0.023)	0.193*** (0.023)
Metro	0.039 (0.037)	0.006 (0.037)	-0.005 (0.037)	-0.010 (0.037)	-0.036 (0.039)	0.098*** (0.024)	0.061** (0.024)	0.058** (0.024)	0.056** (0.024)	0.014 (0.024)
ATSI	-0.532** (0.253)	-0.398 (0.246)	-0.373 (0.242)	-0.382 (0.242)	-0.379 (0.245)	-0.714*** (0.091)	-0.606*** (0.092)	-0.578*** (0.090)	-0.582*** (0.090)	-0.566*** (0.091)
NESB	-0.726*** (0.105)	-0.616*** (0.104)	-0.628*** (0.103)	-0.641*** (0.102)	-0.620*** (0.102)	-0.615*** (0.046)	-0.550*** (0.046)	-0.515*** (0.046)	-0.519*** (0.047)	-0.472*** (0.046)
Independent school	0.598*** (0.062)	0.438*** (0.063)	0.414*** (0.064)	0.428*** (0.064)	0.337*** (0.073)	0.404*** (0.030)	0.275*** (0.031)	0.243*** (0.031)	0.246*** (0.031)	0.045 (0.037)
Catholic school	0.295*** (0.047)	0.249*** (0.047)	0.240*** (0.047)	0.238*** (0.047)	0.209*** (0.049)	0.156*** (0.029)	0.091*** (0.028)	0.073** (0.028)	0.076*** (0.028)	-0.028 (0.030)
Fathers' socioeconomic status		0.193*** (0.018)	0.168*** (0.019)				0.205*** (0.012)	0.154*** (0.014)		
Mothers' socioeconomic status			0.088*** (0.018)					0.123*** (0.014)		
Parents' socioeconomic status				0.206*** (0.018)	0.186*** (0.020)				0.234*** (0.012)	0.181*** (0.013)
School socioeconomic status					0.062** (0.024)					0.163*** (0.015)
Constant	-0.144*** (0.036)	-0.104*** (0.035)	-0.089*** (0.035)	-0.086** (0.035)	-0.058 (0.038)	-0.168*** (0.024)	-0.128*** (0.023)	-0.121*** (0.023)	-0.122*** (0.023)	-0.054** (0.024)
Observations	4,187	4,187	4,187	4,187	4,187	8,074	8,074	8,074	8,074	8,074
R-squared	0.064	0.098	0.105	0.103	0.105	0.074	0.113	0.125	0.124	0.138

Notes: Each model is tested on a separate dataset of observations from the first waves of the 1961 birth cohort of the YIT survey (surveyed in 1975), and the 1995, 2003 and 2006 LSAY (surveyed in 1995, 2003 and 2006, respectively). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

Source: YIT and LSAY, authors' calculations.

**Table E2 OLS regression of explanatory and control variables on literacy scores in the 14–15 years age group, 1975–2006 (continued)**

	2003					2006				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Female	0.373*** (0.024)	0.388*** (0.023)	0.379*** (0.023)	0.380*** (0.023)	0.366*** (0.022)	0.438*** (0.019)	0.432*** (0.018)	0.424*** (0.018)	0.424*** (0.018)	0.430*** (0.018)
Metro	0.087*** (0.023)	0.060*** (0.023)	0.054** (0.023)	0.052** (0.023)	-0.006 (0.023)	0.151*** (0.021)	0.125*** (0.020)	0.119*** (0.020)	0.115*** (0.020)	0.056*** (0.021)
ATSI	-0.696*** (0.073)	-0.608*** (0.073)	-0.599*** (0.072)	-0.598*** (0.072)	-0.543*** (0.070)	-0.644*** (0.059)	-0.541*** (0.059)	-0.530*** (0.060)	-0.541*** (0.060)	-0.499*** (0.059)
NESB	-0.251*** (0.050)	-0.216*** (0.049)	-0.183*** (0.048)	-0.185*** (0.048)	-0.114** (0.046)	-0.239*** (0.039)	-0.230*** (0.038)	-0.212*** (0.037)	-0.213*** (0.037)	-0.225*** (0.036)
Independent school	0.502*** (0.031)	0.385*** (0.030)	0.335*** (0.030)	0.333*** (0.030)	0.004 (0.035)	0.495*** (0.023)	0.354*** (0.024)	0.317*** (0.024)	0.322*** (0.024)	0.022 (0.027)
Catholic school	0.264*** (0.026)	0.207*** (0.026)	0.182*** (0.026)	0.183*** (0.026)	0.022 (0.027)	0.233*** (0.021)	0.175*** (0.021)	0.157*** (0.021)	0.159*** (0.021)	0.031 (0.022)
Fathers' socioeconomic status		0.213*** (0.012)	0.137*** (0.013)				0.215*** (0.010)	0.171*** (0.010)		
Mothers' socioeconomic status			0.177*** (0.012)					0.132*** (0.010)		
Parents' socioeconomic status				0.268*** (0.011)	0.180*** (0.012)				0.248*** (0.010)	0.175*** (0.011)
School socioeconomic status					0.275*** (0.014)					0.229*** (0.012)
Constant	-0.347*** (0.025)	-0.310*** (0.024)	-0.291*** (0.024)	-0.291*** (0.024)	-0.163*** (0.024)	-0.365*** (0.020)	-0.310*** (0.020)	-0.294*** (0.020)	-0.293*** (0.020)	-0.173*** (0.021)
Observations	9,514	9,514	9,514	9,514	9,514	12,711	12,711	12,711	12,711	12,711
R-squared	0.094	0.136	0.160	0.160	0.203	0.111	0.153	0.168	0.167	0.195

Notes: Each model is tested on a separate dataset of observations from the first waves of the 1961 birth cohort of the YIT survey (surveyed in 1975), and the 1995, 2003 and 2006 LSAY (surveyed in 1995, 2003 and 2006, respectively). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

Source: YIT and LSAY, authors' calculations.



**Table E3 Hierarchical linear model of explanatory and control variables on literacy scores in the 14–15 years age group, 1975 and 2006**

	1975				2006			
	Model 0	Model 1	Model 4	Model 5	Model 0	Model 1	Model 4	Model 5
<i>Fixed effects</i>								
Female		0.047 (0.032)	0.034 (0.032)	0.032 (0.032)		0.435*** (0.018)	0.421*** (0.017)	0.422*** (0.017)
Metro		0.072 (0.051)	0.070 (0.052)	-0.004 (0.053)		0.244*** (0.048)	0.247*** (0.048)	0.105*** (0.038)
ATSI		-0.655*** (0.199)	-0.544*** (0.197)	-0.548*** (0.196)		-0.592*** (0.034)	-0.532*** (0.034)	-0.528*** (0.034)
NESB		-0.550*** (0.081)	-0.508*** (0.080)	-0.490*** (0.080)		-0.388*** (0.032)	-0.366*** (0.031)	-0.366*** (0.031)
Independent school		0.492*** (0.095)	0.494*** (0.095)	0.263** (0.107)		0.414*** (0.062)	0.414*** (0.062)	-0.018 (0.056)
Catholic school		0.270*** (0.072)	0.271*** (0.072)	0.203*** (0.072)		0.255*** (0.056)	0.255*** (0.056)	0.046 (0.045)
Parents' socioeconomic status			0.149*** (0.013)	0.149*** (0.013)			0.151*** (0.007)	0.152*** (0.007)
School socioeconomic status				0.223*** (0.054)				0.553*** (0.037)
Constant	-0.017 (0.028)	-0.134*** (0.043)	-0.130*** (0.043)	-0.059 (0.046)	-0.076*** (0.028)	-0.442*** (0.041)	-0.443*** (0.041)	-0.200*** (0.036)
<i>Random effects</i>								
Intercept	0.133 (0.017)	0.100 (0.014)	0.102 (0.018)	0.093 (0.013)	0.193 (0.021)	0.181 (0.020)	0.181 (0.020)	0.081 (0.010)
Residual	0.879 (0.020)	0.869 (0.020)	0.841 (0.019)	0.841 (0.019)	0.809 (0.014)	0.770 (0.014)	0.746 (0.013)	0.747 (0.013)
Interclass correlation coefficient	0.131	0.103	0.108	0.100	0.193	0.190	0.195	0.098
<i>Model fit</i>								
AIC	11,660	11,575	11,452	11,437	34,663	33,512	33,074	32,899
BIC	11,679	11,633	11,515	11,507	34,685	33,529	33,148	32,981
-2LL	11,654	11,558	11,432	11,416	34,656	33,596	33,054	32,876
df	3	9	10	11	3	9	10	11

Notes: Each model is tested on a separate dataset of observations from the first waves of the 1961 birth cohort of the YIT (surveyed in 1975), and the 2006 LSAY (surveyed in 2006). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1. A hierarchical linear model takes into account the grouping of respondents in the YIT and LSAY into schools. It is useful for analytical purposes to separate variation in the dependent variable between schools from other sources of variation in the data. Model 0 shows that the proportion of variation in the dependent variable that is accounted for by differences between schools (the interclass correlation coefficient) is 0.13 in 1975 and 0.19 in 2006. As control and explanatory variables are added to the analysis (models 1, 4 and 5 as defined in the results chapter), the proportion of variation accounted for by differences between schools declines somewhat in 1975, and steeply in 2006, once school socioeconomic status is added (model 5). The effect of parents' socioeconomic status remains relatively constant in 1975 and 2006, once differences between schools are taken into account.

Source: 1975 YIT and 2006 LSAY (Wave 1), authors' calculations.

**Table E4 Logistic regression of explanatory and control variables on probability of reaching Year 12, 1978 and 2009**

	Model 1		Model 2		Model 3		Model 4		Model 5	
	1978	with 2009 interaction	1978	with 2009 interaction	1978	with 2009 interaction	1978	with 2009 interaction	1978	with 2009 interaction
Female	0.036*	0.0433*	0.032	0.049**	0.025	0.055**	0.027	0.053**	0.026	0.056**
	(0.020)	(0.023)	(0.020)	(0.023)	(0.020)	(0.023)	(0.020)	(0.023)	(0.020)	(0.023)
Metro	0.038*	0.015	0.022	0.026	0.015	0.030	0.012	0.033	-0.001	0.038
	(0.020)	(0.025)	(0.020)	(0.025)	(0.020)	(0.025)	(0.020)	(0.025)	(0.021)	(0.026)
ATSI	-0.256***	0.234**	-0.167**	0.166*	-0.147*	0.145	-0.151*	0.149	-0.146*	0.149
	(0.083)	(0.092)	(0.082)	(0.092)	(0.084)	(0.094)	(0.082)	(0.091)	(0.081)	(0.091)
NESB	0.031	0.074	0.104	0.005	0.108*	0.006	0.108*	0.005	0.120**	-0.008
	(0.065)	(0.066)	(0.063)	(0.065)	(0.059)	(0.061)	(0.059)	(0.061)	(0.059)	(0.061)
Independent school	0.395***	-0.246***	0.310***	-0.186***	0.288***	-0.173***	0.293***	-0.178***	0.242***	-0.170***
	(0.038)	(0.040)	(0.039)	(0.040)	(0.040)	(0.041)	(0.039)	(0.041)	(0.044)	(0.046)
Catholic school	0.193***	-0.101***	0.169***	-0.087***	0.161***	-0.084***	0.159***	-0.082***	0.144***	-0.085***
	(0.029)	(0.031)	(0.029)	(0.031)	(0.028)	(0.031)	(0.029)	(0.031)	(0.029)	(0.032)
Fathers' socioeconomic status			0.099***	-0.056***	0.077***	-0.046***				
			(0.010)	(0.012)	(0.010)	(0.012)				
Mothers' socioeconomic status					0.073***	-0.041***				
					(0.010)	(0.012)				
Parents' socioeconomic status							0.121***	-0.068***	0.110***	-0.067***
							(0.010)	(0.011)	(0.010)	(0.012)
School socioeconomic status									0.033**	-0.001
									(0.013)	(0.015)
Year 2006 dummy		0.395***		0.379***		0.370***		0.373***		0.375***
		(0.024)		(0.024)		(0.024)		(0.024)		(0.025)
Constant	0.312***		0.335***		0.347***		0.346***		0.360***	
	(0.019)		(0.019)		(0.019)		(0.019)		(0.021)	

Notes: Each model is tested on a combined dataset of observations from the third waves of the 1961 birth cohort of the YIT survey (surveyed in 1978) and the 2006 LSAY (surveyed in 2009). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

Source: YIT and LSAY, authors' calculations.

**Table E5 Logistic regression of explanatory and control variables on reaching Year 12 in the 17–19 years age group, 1978–2009**

	1978					1998				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Female	0.158*	0.147	0.116	0.125	0.125	0.678***	0.711***	0.710***	0.707***	0.712***
	(0.089)	(0.091)	(0.093)	(0.092)	(0.093)	(0.078)	(0.079)	(0.079)	(0.079)	(0.079)
Metro	0.166*	0.104	0.077	0.059	-0.005	0.568***	0.515***	0.519***	0.525***	0.486***
	(0.090)	(0.093)	(0.094)	(0.094)	(0.100)	(0.081)	(0.082)	(0.082)	(0.082)	(0.083)
ATSI	-1.521**	-1.189	-1.097	-1.102	-1.106	-1.138***	-0.961***	-0.916***	-0.909***	-0.894***
	(0.742)	(0.753)	(0.759)	(0.736)	(0.742)	(0.232)	(0.228)	(0.229)	(0.231)	(0.236)
NESB	0.132	0.479*	0.506*	0.503*	0.561**	0.800***	1.019***	1.068***	1.057***	1.202***
	(0.274)	(0.279)	(0.268)	(0.265)	(0.265)	(0.203)	(0.205)	(0.207)	(0.208)	(0.211)
Independent school	1.712***	1.388***	1.326***	1.344***	1.098***	0.913***	0.675***	0.631***	0.641***	0.271*
	(0.205)	(0.206)	(0.215)	(0.213)	(0.233)	(0.119)	(0.121)	(0.121)	(0.121)	(0.145)
Catholic school	0.795***	0.722***	0.700***	0.691***	0.621***	0.746***	0.618***	0.587***	0.589***	0.394***
	(0.117)	(0.122)	(0.124)	(0.124)	(0.127)	(0.114)	(0.117)	(0.117)	(0.117)	(0.124)
Fathers' socioeconomic status		0.450***	0.362***				0.445***	0.385***		
		(0.047)	(0.050)				(0.041)	(0.044)		
Mothers' socioeconomic status			0.334***					0.155***		
			(0.049)					(0.044)		
Parents' socioeconomic status				0.558***	0.510***				0.458***	0.371***
				(0.049)	(0.052)				(0.042)	(0.046)
School socioeconomic status					0.150**					0.299***
					(0.060)					(0.059)
Constant	-0.787***	-0.750***	-0.722***	-0.715***	-0.657***	0.590***	0.695***	0.706***	0.699***	0.814***
	(0.087)	(0.089)	(0.090)	(0.090)	(0.094)	(0.064)	(0.066)	(0.067)	(0.066)	(0.071)
Observations	3,530	3,530	3,530	3,530	3,530	5,942	5,942	5,942	5,942	5,942

Notes: Each model is tested on a separate datasets of observations from the third waves of the 1961 birth cohort of the YIT survey (surveyed in 1978), and the 1995, 2003 and 2006 LSAY (surveyed in 1998, 2006 and 2009, respectively). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

Source: YIT and LSAY, authors' calculations.

**Table E5 Logistic regression of explanatory and control variables on reaching Year 12 in the 17–19 years age group, 1978–2009 (continued)**

	2006					2009				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Female	0.443*** (0.091)	0.485*** (0.091)	0.485*** (0.091)	0.485*** (0.091)	0.475*** (0.091)	0.626*** (0.089)	0.647*** (0.089)	0.650*** (0.090)	0.651*** (0.090)	0.666*** (0.090)
Metro	0.488*** (0.087)	0.448*** (0.087)	0.446*** (0.088)	0.445*** (0.088)	0.411*** (0.089)	0.351*** (0.093)	0.318*** (0.095)	0.305*** (0.094)	0.300*** (0.094)	0.247** (0.096)
ATSI	-0.452** (0.189)	-0.317* (0.192)	-0.328* (0.192)	-0.329* (0.191)	-0.281 (0.193)	-0.104 (0.233)	0.035 (0.245)	0.027 (0.247)	0.027 (0.247)	0.062 (0.247)
NESB	0.918*** (0.238)	0.966*** (0.246)	1.047*** (0.251)	1.043*** (0.251)	1.102*** (0.251)	1.139*** (0.238)	1.172*** (0.241)	1.222*** (0.244)	1.224*** (0.244)	1.227*** (0.244)
Independent school	1.091*** (0.144)	0.912*** (0.147)	0.837*** (0.148)	0.839*** (0.148)	0.557*** (0.161)	1.599*** (0.155)	1.406*** (0.157)	1.341*** (0.157)	1.335*** (0.157)	0.951*** (0.174)
Catholic school	0.770*** (0.109)	0.691*** (0.110)	0.655*** (0.110)	0.656*** (0.110)	0.501*** (0.115)	0.709*** (0.110)	0.639*** (0.111)	0.599*** (0.112)	0.599*** (0.112)	0.407*** (0.116)
Fathers' socioeconomic status		0.335*** (0.044)	0.238*** (0.048)				0.307*** (0.045)	0.227*** (0.049)		
Mothers' socioeconomic status			0.275*** (0.047)					0.253*** (0.049)		
Parents' socioeconomic status				0.426*** (0.045)	0.361*** (0.049)				0.401*** (0.046)	0.324*** (0.049)
School socioeconomic status					0.225*** (0.055)					0.282*** (0.055)
Constant	0.859*** (0.081)	0.939*** (0.082)	0.976*** (0.084)	0.976*** (0.084)	1.089*** (0.086)	0.756*** (0.086)	0.840*** (0.090)	0.883*** (0.089)	0.888*** (0.089)	1.042*** (0.095)
Observations	7,170	7,170	7,170	7,170	7,170	6,766	6,766	6,766	6,766	6,766

Notes: Each model is tested on a separate datasets of observations from the third waves of the 1961 birth cohort of the YIT survey (surveyed in 1978), and the 1995, 2003 and 2006 LSAY (surveyed in 1998, 2006 and 2009, respectively). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

Source: YIT and LSAY, authors' calculations.

**Table E6 OLS regression of explanatory and control variables on TERs in the 18–19 years age group, 1998 and 2009**

	Model 1		Model 2		Model 3		Model 4		Model 5	
	1998	with 2009 inter-action	1998	with 2009 inter-action	1998	with 2009 inter-action	1998	with 2009 inter-action	1998	with 2009 inter-action
Female	0.163*** (0.031)	0.015 (0.044)	0.178*** (0.031)	0.009 (0.042)	0.174*** (0.030)	0.016 (0.042)	0.173*** (0.030)	0.018 (0.042)	0.176*** (0.030)	0.030 (0.042)
Metro	0.112*** (0.032)	0.087* (0.048)	0.075** (0.031)	0.086* (0.047)	0.075** (0.031)	0.076 (0.047)	0.074** (0.031)	0.072 (0.047)	0.030 (0.032)	0.045 (0.048)
ATSI	-0.450*** (0.145)	-0.176 (0.167)	-0.368*** (0.139)	-0.126 (0.162)	-0.328** (0.134)	-0.168 (0.158)	-0.327** (0.134)	-0.18 (0.157)	-0.305** (0.136)	-0.177 (0.158)
NESB	0.088 (0.057)	0.105 (0.080)	0.183*** (0.054)	0.041 (0.078)	0.222*** (0.053)	0.028 (0.078)	0.218*** (0.054)	0.034 (0.078)	0.258*** (0.053)	-0.016 (0.077)
Independent school	0.534*** (0.041)	-0.013 (0.055)	0.386*** (0.041)	-0.003 (0.056)	0.354*** (0.041)	-0.003 (0.056)	0.359*** (0.041)	-0.007 (0.055)	0.173*** (0.049)	-0.116* (0.065)
Catholic school	0.305*** (0.037)	0.001 (0.051)	0.234*** (0.037)	0.033 (0.051)	0.213*** (0.037)	0.039 (0.050)	0.216*** (0.037)	0.036 (0.050)	0.127*** (0.039)	0.009 (0.052)
Fathers' socioeconomic status			0.240*** (0.015)	0.008 (0.022)	0.188*** (0.017)	0.007 (0.024)				
Mothers' socioeconomic status					0.129*** (0.017)	0.025 (0.023)				
Parents' socioeconomic status							0.263*** (0.015)	0.032 (0.021)	0.216*** (0.017)	0.008 (0.024)
School socioeconomic status									0.142*** (0.020)	0.093*** (0.028)
Year 2006 dummy		-0.112** (0.048)		-0.098** (0.048)		-0.095** (0.047)		-0.090* (0.047)		-0.037 (0.049)
Constant	-0.306*** (0.032)		-0.267*** (0.031)		-0.257*** (0.031)		-0.258*** (0.031)		-0.186*** (0.032)	
Observations	9,772		9,772		9,772		9,772		9,772	
R-squared	0.072		0.127		0.144		0.144		0.164	

Notes: Each model is tested on a combined dataset of observations from the first waves of the 1995 and the 2006 LSAY (surveyed in 1998 and 2009, respectively). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

Source: 1995 and 2006 LSAY (Wave 3), authors' calculations.

**Table E7 OLS regression of explanatory and control variables on TERs in the 18–19 years age group, LSAY 1995, 2003 and 2006 surveys**

	1995					2003					2006				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Female	0.159*** (0.032)	0.175*** (0.031)	0.171*** (0.030)	0.170*** (0.030)	0.174*** (0.030)	0.217*** (0.030)	0.237*** (0.030)	0.232*** (0.029)	0.231*** (0.029)	0.222*** (0.029)	0.178*** (0.030)	0.187*** (0.030)	0.189*** (0.029)	0.190*** (0.029)	0.206*** (0.029)
Metro	0.111*** (0.032)	0.074** (0.031)	0.073** (0.031)	0.072** (0.031)	0.030 (0.032)	0.150*** (0.030)	0.122*** (0.029)	0.119*** (0.029)	0.119*** (0.029)	0.055* (0.029)	0.199*** (0.036)	0.161*** (0.035)	0.150*** (0.035)	0.145*** (0.035)	0.075** (0.036)
ATSI	-0.527*** (0.130)	-0.427*** (0.132)	-0.380*** (0.129)	-0.379*** (0.129)	-0.359*** (0.132)	-0.651*** (0.075)	-0.551*** (0.076)	-0.553*** (0.080)	-0.560*** (0.080)	-0.489*** (0.079)	-0.626*** (0.083)	-0.495*** (0.083)	-0.496*** (0.083)	-0.507*** (0.083)	-0.482*** (0.080)
NESB	0.097* (0.057)	0.191*** (0.054)	0.229*** (0.054)	0.225*** (0.054)	0.265*** (0.054)	0.166*** (0.059)	0.208*** (0.057)	0.239*** (0.056)	0.239*** (0.056)	0.296*** (0.055)	0.193*** (0.057)	0.224*** (0.056)	0.250*** (0.056)	0.252*** (0.057)	0.242*** (0.055)
Independent school	0.528*** (0.041)	0.381*** (0.041)	0.349*** (0.041)	0.354*** (0.041)	0.174*** (0.049)	0.677*** (0.040)	0.558*** (0.042)	0.514*** (0.043)	0.515*** (0.043)	0.263*** (0.049)	0.520*** (0.037)	0.383*** (0.038)	0.351*** (0.037)	0.352*** (0.037)	0.057 (0.043)
Catholic school	0.306*** (0.038)	0.235*** (0.038)	0.215*** (0.037)	0.218*** (0.037)	0.131*** (0.039)	0.311*** (0.034)	0.261*** (0.034)	0.246*** (0.033)	0.248*** (0.033)	0.129*** (0.034)	0.306*** (0.035)	0.267*** (0.034)	0.252*** (0.034)	0.253*** (0.034)	0.135*** (0.035)
Fathers' socioeconomic status		0.241*** (0.016)	0.187*** (0.017)				0.232*** (0.017)	0.174*** (0.019)				0.246*** (0.015)	0.193*** (0.017)		
Mothers' socioeconomic status			0.133*** (0.017)					0.156*** (0.018)					0.151*** (0.016)		
Parents' socioeconomic status				0.269*** (0.015)	0.222*** (0.017)				0.275*** (0.016)	0.201*** (0.018)				0.288*** (0.015)	0.218*** (0.016)
School socioeconomic status					0.143*** (0.021)					0.227*** (0.018)					0.228*** (0.019)
Constant	-0.303*** (0.032)	-0.264*** (0.031)	-0.256*** (0.031)	-0.256*** (0.031)	-0.192*** (0.032)	-0.423*** (0.030)	-0.385*** (0.031)	-0.371*** (0.029)	-0.371*** (0.029)	-0.254*** (0.030)	-0.418*** (0.037)	-0.364*** (0.036)	-0.350*** (0.035)	-0.347*** (0.035)	-0.216*** (0.037)
Observations	4,506	4,506	4,506	4,506	4,506	5,493	5,493	5,493	5,493	5,493	5,235	5,235	5,235	5,235	5,235
R-squared	0.058	0.111	0.125	0.123	0.134	0.105	0.156	0.176	0.176	0.205	0.085	0.141	0.161	0.162	0.189

Notes: Each model is tested on a separate dataset of observations from the third waves of the 1995, 2003 and 2006 LSAY (surveyed in 1998, 2006 and 2009, respectively). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

Source: LSAY, authors' calculations.

**Table E8 Hierarchical linear model of explanatory and control variables on TERs in the 18–19 years age group, 1998 and 2009**

	1998				2009			
	Model 0	Model 1	Model 4	Model 5	Model 0	Model 1	Model 4	Model 5
<i>Fixed effects</i>								
Female		0.159*** (0.031)	0.169*** (0.031)	0.169*** (0.030)		0.214*** (0.028)	0.216*** (0.028)	0.216*** (0.027)
Metro		0.052 (0.043)	0.042 (0.043)	0.029 (0.040)		0.141*** (0.049)	0.143*** (0.049)	0.052*** (0.041)
ATSI		-0.424*** (0.129)	-0.35*** (0.126)	-0.338*** (0.126)		-0.479*** (0.072)	-0.416*** (0.071)	-0.406*** (0.070)
NESB		0.157*** (0.055)	0.218*** (0.054)	0.259*** (0.053)		0.138*** (0.049)	0.183*** (0.048)	0.204*** (0.047)
Independent school		0.552*** (0.073)	0.558*** (0.073)	0.256*** (0.073)		0.510*** (0.060)	0.515*** (0.060)	0.227*** (0.054)
Catholic school		0.305*** (0.066)	0.308*** (0.066)	0.158*** (0.061)		0.304*** (0.054)	0.309*** (0.054)	0.202*** (0.045)
Parents' socioeconomic status			0.181*** (0.012)	0.182*** (0.012)			0.177*** (0.012)	0.180*** (0.012)
School socioeconomic status				0.355*** (0.042)				0.426*** (0.035)
Constant	-0.023 (0.029)	-0.274*** (0.041)	-0.287*** (0.041)	-0.248*** (0.038)	0.005 (0.026)	-0.349*** (0.046)	-0.371*** (0.046)	-0.270*** (0.040)
<i>Random effects</i>								
Intercept	0.171 (0.020)	0.117 (0.016)	0.122 (0.016)	0.085 (0.012)	0.168 (0.018)	0.104 (0.013)	0.108 (0.013)	0.055 (0.009)
Residual	0.865 (0.019)	0.858 (0.019)	0.816 (0.018)	0.816 (0.018)	0.823 (0.017)	0.808 (0.016)	0.772 (0.016)	0.773 (0.016)
Interclass correlation coefficient	0.165	0.120	0.130	0.094	0.193	0.190	0.195	0.098
<i>Model fit</i>								
AIC	12,612	12,517	12,307	12,244	14,303	14,114	13,893	13,771
BIC	12,631	12,575	12,372	12,315	14,322	14,173	13,958	13,843
-2LL	12,606	12,500	12,288	12,222	14,296	14,096	13,872	13,750
df	3	9	10	11	3	9	10	11

Notes: Each model is tested on a separate dataset of observations from the third waves of the 1995 and 2006 LSAY (surveyed in 1998 and 2009, respectively). Standard errors in parentheses. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1. A hierarchical linear model takes into account the grouping of respondents in LSAY into schools. It is useful for analytical purposes to separate variation in the dependent variable between schools from other sources of variation in the data. Model 0 shows that the proportion of variation in the dependent variable that is accounted for by differences between schools (the interclass correlation coefficient) is 0.165 in 1998, and 0.193 in 2009. As control and explanatory variables are added to the analysis (models 1, 4 and 5 as defined in the results chapter), the proportion of variation accounted for by differences between schools declines in both 1998 and 2009, with a steep decline notable in 2009 once school socioeconomic status is added (model 5). The effect of parents' socioeconomic status remains relatively constant in 1998 and 2009 once differences between schools are taken into account.

Source: 1995 and 2006 LSAY (Wave 3), authors' calculations.

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