



Home-to-school transitions for financially disadvantaged children

Final Report



Australian Government

**Australian Institute of
Family Studies**



everyone's family

Home-to-school transitions for financially disadvantaged children

Final report

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Message from Elaine Henry, CEO The Smith Family

Giving our children the best start in life has never been more important.

As research from around the world makes clear, the early years provide the foundation for the development of skills and capacities that children need in order to reach their individual potential and make a broader contribution to society as adults. With their parents or carers as their first teachers, the relationships they form during this period will influence not only their own sense of belonging and self-worth but also the emotional empathy they bring to all of those with whom they will interact throughout their life.

The early years ought therefore to be filled with joyous first experiences of reading, playing and counting; of feeling healthy, safe and loved. These experiences are crucial in equipping young children for the many difficult transitions they will face as they progress through different stages in their life, the first and perhaps most critical of which is the transition from home to school.

For most children, leaving the security of their home environment to enter the institutional setting of the classroom is difficult enough. However, as this report makes clear, it is many times more challenging for children from disadvantaged families, whose parents often lack the basic support structures of family and the resources they need to promote the optimal development of their children in those crucial early years. Having missed out on these learning experiences and relationships, these children enter school already some years behind their peers, and without continued targeted support, this gap has been shown to widen.

At The Smith Family, we believe that every child should be given the best start in life, regardless of the circumstances into which they are born. Providing support to children when they enter school is not enough – a more preventive approach is required to build the capacity of parents in providing quality early childhood environments and experiences for their children *before* this key transition.

This preventive model underpins our work with disadvantaged families in communities across Australia. In the early years, we aim to ensure that when a child reaches school age, they will have the foundations of literacy and numeracy on which to build, and are better prepared socially and emotionally to make a

successful transition from home to school. We then continue through our *Learning for Life* suite of programs to provide these children with the support they need to successfully transition from primary to secondary school, and from secondary to tertiary education and/or the world of work.

This research on *Home to school transitions for financially disadvantaged children* is therefore extremely valuable in continuing to inform our support for the first critical stage of the life journey.

I hope you find this report enlightening.



Elaine Henry, OAM

Chief Executive Officer, The Smith Family

Executive summary

The transition from home to school is a major change in children's lives, being the first compulsory and universal point of contact between the child and broader social institutions. This can be a challenging period for children, as they adjust to a generally much larger institution than they have previously encountered—with its own culture, rules and expectations, along with new people (both teachers and school mates), and the new physical environments of classrooms and playgrounds.

There is clear evidence that children vary in their “readiness” for this transition, with marked differences visible in children's cognitive and social/emotional skills when they enter school. The importance of making a good transition into school is indicated by evidence that school readiness is predictive of later outcomes: children who are less “ready” are less likely to excel academically, are more likely to have behavioural and emotional problems, be retained in a grade and drop out of school (Blair, 2001; Duncan et al., 2007; Reynolds & Bezruczko, 1993). Such children are also more likely to become teenage parents, engage in criminal activities and have poorer employment records (Schweinhart, 2003).

Given this evidence that a “good start” to schooling is so influential for later wellbeing, researchers have tried to identify the factors and processes associated with children's readiness for school. School readiness encompasses not only a child's readiness for school, but also their school's, family's and community's readiness for this transition.

This report will focus on children's readiness for school, considering the role of families, schools and communities as facilitators and inhibitors. Current conceptualisations of children's school readiness (e.g. Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006) include multiple facets of children's lives, such as their language development, cognitive abilities, general knowledge, approaches to learning, social/emotional development, and physical health and development.

What the research is telling us

A literature review identified risk and protective factors related to disadvantaged children's readiness for school. Major conclusions were:

- Child, family and community characteristics all influence children's school readiness.

- Individual child factors and family factors appear to have a stronger impact on children's school readiness than community-level factors.
- The child characteristics of early cognitive ability and temperament have been consistently found to influence children's cognitive and behavioural readiness for school.
- Among numerous family characteristics, parenting style, the home learning environment, maternal education and family income seem to be the most influential in determining school readiness.
- Not only do parenting and the home environment have a strong direct effect on school readiness, they are also crucial mediators of the relationship between financial disadvantage (FD) and school readiness.
- Although community-level variables appear to have a minor impact on children's school readiness, child care and preschool attendance have been consistently found to affect early child development.

Most of the findings cited in the review came from North American and British studies. Relatively few Australian studies were located that specifically addressed factors associated with financial disadvantage and children's school readiness. *Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC)* appears to be the only comprehensive large-scale longitudinal Australian study examining children's cognitive, socio-emotional and physical development over the critical transition period into school, while also collecting extensive data on children's home, child care, preschool and school experiences (Sanson, Nicholson et al., 2002). It thus provides a unique opportunity to examine the factors impacting on the school readiness and early school progress of Australian children, particularly those living in financial disadvantage.

Growing Up in Australia: The Longitudinal Study of Australian Children

Growing Up in Australia, which commenced in 2004, was initiated and funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs and is managed in partnership with the Australian Institute of Family Studies. Two cohorts were recruited: 5,107 families with infants aged 0–1 year, and 4,983 families with 4–5 year olds. The children and families come

from urban and rural areas of all states and territories of Australia.

The older group of children is the focus of this report. Information was used from Wave 1 (4,983 children aged 4–5 years, collected in 2004) and from Wave 2 (4,464 children aged 6–7 years, collected in 2006). The response rate was 90% at Wave 2, at which time 68% of the children were in year 1 of school and 27% were in year 2. Information from parents and teachers, and direct assessments of the children's functioning were used.

Measures of financial disadvantage and children's school readiness and progress

Four types of *family financial disadvantage*, measured when children were 4–5 years of age, were used:

- equivalised family income in the lowest 15% of the LSAC cohort distribution—following Bradbury (2007; the average equivalised income of this group was \$183 per week);
- experience of financial hardship in the past 12 months—e.g., not being able to pay gas, electricity or telephone bills on time, or adults or children going without meals;
- the family's main source of income being derived from government support; and
- parental perceptions of the family as being poor or very poor.

Children's school readiness at 4–5 years was measured by:

- pre-literacy/pre-numeracy skills—the interviewer-administered Who Am I? (WAI) test (de Lemos & Doig, 1999);
- language skills—the interviewer-administered Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1997); and
- social/emotional behaviour—the parent-completed Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), with components of conduct problems, hyperactivity problems, emotional problems, peer problems and prosocial behaviour).

Children's school progress at 6–7 years was measured by:

- literacy/numeracy skills—teacher ratings on the Academic Rating Scale from the Early Childhood Longitudinal Study–Kindergarten Cohort (ECLS-K; National Center for Educational Statistics, 1998);
- engagement in learning—teacher ratings on the Approaches to Learning scale from the ECLS-K study; and

- social/emotional behaviour at school—the teacher-completed SDQ (Goodman, 1997).

What was found

Was financial disadvantage related to children's school readiness and school progress?

Relationships between family financial disadvantage and children's school readiness and early school progress were first explored without considering the effects of other child, family and broader environmental factors. The findings consistently revealed that:

- The group of children from financially disadvantaged families showed lower readiness for school at 4–5 years over all aspects than the group of children from non-financially disadvantaged families. Differences were most marked in the language area.
- Two years later, at 6–7 years, more children from financially disadvantaged families were experiencing literacy/numeracy difficulties than their peers from non-financially disadvantaged families. Likewise, children from financially disadvantaged families more often showed low engagement in learning.
- Children from financially disadvantaged families were also more likely to be reported by teachers as displaying difficult behaviour at 6–7 years, such as conduct problems, hyperactivity/inattention, emotional symptoms, and problems getting on with peers, and were less likely to show prosocial behaviour.
- Differences appeared most powerful on literacy/numeracy skills and approaches to learning at 6–7 years. However, the findings also indicated that many children from disadvantaged families showed adequate school readiness and subsequently made satisfactory school progress. Further, a significant number of children from non-financially disadvantaged families did show low school readiness and poor school progress.
- Trends were generally similar across the four types of family financial disadvantage examined, and hence for all subsequent analyses, equivalised family income in the lowest 15% was used as the measure of family financial disadvantage.

Overall, clear links between family financial disadvantage and children's readiness for school and their later academic achievement and adjustment were found.

What factors predict school readiness?

As previously seen, there was a relatively strong relationship between family financial disadvantage and school readiness. However, these analyses did not take into account the effect of other factors that might influence children's school readiness or mediate the links between family FD and school readiness. The next step was to use multivariate analysis to investigate connections between school readiness and other child, family and broader environmental factors that previous literature has suggested are risks for school readiness.

By examining these simultaneously, the factors that acted as unique predictors of school readiness could be identified. Further, we could determine whether FD itself remained a unique predictor of school readiness once these other factors were taken into account, and whether the role of other predictor variables differed across the FD and non-FD groups of children.

The findings were separated into two main areas: the first focused on predictors of children's *cognitive school readiness* (their pre-literacy/pre-numeracy skills and language skills), and the second on factors related to *social/emotional school readiness* (conduct problems, hyperactivity problems, emotional problems, peer problems and prosocial behaviour).

A large number of risk and protective factors were identified for *cognitive* aspects of school readiness. When included along with other factors, family financial disadvantage remained a significant, albeit modest, risk factor for low language skills, but was not a significant risk factor for low pre-literacy/pre-numeracy skills.

Other influential factors included:

- the child characteristics of *male gender* (risk), a *less persistent temperament style* (risk) and *being older* (protective);
- the parental characteristics of *maternal education* (less than year 12 attainment conferring risk and a university education being protective), *maternal age* of less than 26 years (risk), *maternal labour force participation* (being in employment tended to be protective), *maternal Indigenous background* (risk), *maternal birthplace* outside Australia (both risk and protective);
- an *inconsistent parenting style* (risk);
- aspects of the family educational climate, especially if the *child was read to* on fewer than 3 days per week and there were less than 30 *children's books in the home* (risks);
- *family residence* in a disadvantaged area (risk) and residence in a non-metropolitan but accessible area (protective); and

- children not being in *formal care or pre-school education* (risk) or *being in school* (protective).

Most risk and protective factors operated similarly across financially disadvantaged and non-financially disadvantaged groups, as demonstrated by the limited number of statistically significant interactions found. For the FD group of children only, maternal employment was associated with better performance on both cognitive measures. Similarly, children being read to on fewer than 3 days a week was a stronger risk for low language skills for FD than non-FD children. Thus, there was limited support for the notion that some parent and family factors may be more important for cognitive school readiness for FD children.

The risk and protective factors related to *social/emotional* aspects of school readiness were explored. Financial disadvantage itself was not a direct predictor of these social/emotional aspects of school readiness when the other child, family and broader environmental factors were included.

Significant influences on social/emotional aspects of school readiness were:

- the child characteristics of *male gender* and a *less persistent temperament style* (risk factors for all facets except emotional problems);
- the parental characteristics of *maternal labour force participation* (being in employment was protective against hyperactivity and emotional problems), *maternal education* (less than year 12 attainment was related to poorer prosocial behaviour, a university education with a lower risk of conduct and hyperactivity problems), *maternal age* of less than 26 years (risk for conduct and emotional problems), *maternal Indigenous background* (risk for hyperactivity), *maternal birthplace* outside Australia (protective against low prosocial behaviour), *maternal psychological distress* (risk for hyperactivity and peer problems and emotional symptoms), and *father absence* (risk for conduct and peer problems and low prosocial behaviour);
- a hostile and inconsistent *parenting style* (risk for all types of social/emotional problems), lower *parenting warmth* (risk for conduct and peer problems and low prosocial behaviour), and low *use of reasoning* (risk for low prosocial behaviour);
- the *child being read to* on fewer than 3 days per week, low levels of other *home learning activities*, and fewer than 30 *children's books in the home* (risks for low prosocial

- behaviour); high *television viewing* (risk for all aspects except prosocial behaviour);
- *family residence* in a disadvantaged area (risk for conduct and peer problems); and
- children not being in *formal care or pre-school education* (risk for prosocial behaviour).

Interaction analyses indicated that, in general, the risk and protective factors were similar in impact across FD and non-FD groups.

In summary, multiple influences on school readiness were identified, spanning the child, parental, family and community domains. In almost all cases, these influences seemed to operate similarly for financially disadvantaged and non-financially disadvantaged groups. When family financial disadvantage was included along with the full set of predictor variables, it was not a significant predictor of school readiness, with the exception of children's language skills. Thus, the effects of family financial disadvantage seemed to be exerted through other family factors and characteristics.

Total risk burden

There is evidence that poor outcomes can be related to the total number of risk factors encountered by a child.

A combined risk index was created that included the measures of parental characteristics, parenting style, family educational climate, and neighbourhood disadvantage used in the previous multivariate analyses. Clear differences in the number of risks present within FD and non-FD families were evident, with 41% of non-FD families having zero or one risk compared with only 11% of FD families. At the other extreme, 40% of FD families experienced five or more risks compared with 14% of non-FD families.

This analysis indicated that more risk factors were present in the financially disadvantaged group of families, particularly at the higher end of the risk range (from five risks onwards). Thus, the prevalence of many of the predictors of school readiness differs across financially disadvantaged and non-financially disadvantaged groups, and this helps explain the higher rate of low school readiness among children from financially disadvantaged families.

Links between financial disadvantage, school readiness, and subsequent school progress

Next, the combined influence of family financial disadvantage and school readiness at 4–5 years on children's school progress in the early primary school years was explored.

The findings demonstrated the importance of children entering school with well-developed cognitive and social/emotional skills. Thus:

- the highest rates of literacy/numeracy difficulties at 6–7 years were found among children who had shown poorer cognitive school readiness skills two years earlier;
- there were also noticeable differences in children's approaches to learning according to their level of cognitive and social/emotional school readiness; and
- higher levels of social/emotional problems at 4–5 years (as reported by parents) were significant risks for later social/emotional problems at 6–7 years (as reported by teachers).

Comparison of the school progress of children from financially disadvantaged and non-financially disadvantaged families revealed that financial disadvantage was a source of vulnerability for academic achievement, engagement in learning and social/emotional school adjustment:

- Children from FD families who were already at risk of later difficulties because of low school readiness tended to have higher rates of literacy/numeracy problems, lower engagement in learning, and more social/emotional difficulties than children from non-FD families who had shown low school readiness, indicating that family financial disadvantage continued to shape development.
- Among children with adequate school readiness at 4–5 years, more children from FD families exhibited lower school achievement, lower learning engagement or school adjustment problems at 6–7 years than did children from non-FD families.

The final set of analyses focused exclusively on the children from FD families, and explored the impact of continuous FD over time, along with cognitive and social/emotional aspects of school readiness, on school achievement and adjustment. These analyses included all facets of school readiness (cognitive and social/emotional) and the continuity of family financial disadvantage from 4–5 to 6–7 years, with other child, family and broader environmental characteristics at 4–5 years included to control for their effects.

Several aspects of school readiness (cognitive and social/emotional) were linked to a range of outcomes at 6–7 years.

- Cognitive aspects of school readiness (language and pre-literacy/pre-numeracy skills) were related to later literacy/numeracy outcomes and engagement in learning. Further, lower cognitive school readiness was associated with higher levels of hyperactivity and emotional problems.
- Early conduct problems were risks for multiple types of adjustment difficulties later on, and also for later numeracy problems.
- Emotional problems were related to lower levels of acting out problems in the school context.
- Continuous family financial disadvantage, in comparison to intermittent financial disadvantage, was a risk for literacy problems but not numeracy problems, low engagement in learning, or social/emotional school adjustment difficulties.

Thus, for children from families that were financially disadvantaged when children were 4–5 years old, their level of readiness for school was a very salient influence on their early primary school progress.

Why are there links between school readiness, financial disadvantage and other risk factors?

Two models have been proposed to explain why FD should be related to poorer school readiness. The *family stress model* proposes that the effect of income on children's school readiness is through its impact on family relationships and interactions. The *investment model* argues that poorer school readiness and progress results from constraints on parents' ability to invest in the most advantageous experiences and environments for their children, and is sometimes invoked also in relation to the psychological capital parents can offer their children. The links between school readiness and a number of predictors in the current study could be explained by either model.

Overall, the current findings are compatible with the general consensus from previous research, that the family stress model provides a better explanation for children's social/emotional outcomes, while the investment model may best explain children's cognitive outcomes. However, neither model on its own appears adequate; they are not mutually exclusive and probably most commonly act in unison or interactively.

Implications for intervention

Based on the current findings, it is evident that, with few exceptions, the same child, family and community factors affect school readiness in children from FD and non-FD families, but that these factors tend to be more common in the FD group. Additional support is thus needed for FD families, as they tend to carry a greater cumulative burden of risk. However, it is also important to recognise that the FD group comprises only 15% of the population and so does not include the bulk of those with low school readiness. Consequently, to focus policy and service provision efforts solely on FD children would miss many children in need of support to become school-ready.

An alternative approach is to focus efforts on risk factors that are strongly related to school readiness, irrespective of families' financial status. Because of the higher prevalence of these factors in the FD group, interventions targeting these variables would apply particularly, but not exclusively, to the FD group. Thus, the data suggest that interventions should not focus on low income per se, but rather on predictor variables that are often more prevalent in FD families. Possibilities for intervention in relation to some of the more central predictor variables were discussed.

Overall conclusions

Children from financially disadvantaged families are at greater risk of poor school readiness, due to the much higher rates of risk factors evident among this group and the accumulation of risks experienced. As anticipated, school readiness was a powerful predictor of school achievement and adjustment two years later, and the experience of FD compounded the probability of poor school progress, especially if it was experienced at both 4–5 and 6–7 years.

The two models that have been proposed to explain the association of FD with low school readiness both appear to have explanatory worth, not only to explain this association but also to account for direct associations between a number of predictors and school readiness, and later school achievement and adjustment. In general terms, the family stress model appears to account best for social/emotional problems, and the investment model best explains cognitive difficulties. However, the two models are not mutually exclusive and probably operate conjointly. A number of implications can be drawn from the findings to guide future interventions to reduce the gap between financially disadvantaged and non-financially disadvantaged children in school readiness, achievement and adjustment, as well as to promote optimal school progress for all children.

Chapter 1: Introduction

The Smith Family has commissioned the Australian Institute of Family Studies to undertake a project investigating the home-to-school transitions of children from financially disadvantaged families, focusing particularly on the families participating in *Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC)*. The Home-to-School Transitions project aims to elucidate the key influences on and practices of Australian children and their families in preparing for school and in guiding children's early school progress.

In this chapter, we outline the structure of the report and provide a brief overview of LSAC. Chapter 2 provides a literature review that discusses the significance of the transition to school for young children; conceptions of school readiness; differing types of financial disadvantage (FD) and social exclusion; factors associated with school readiness, including family financial disadvantage; the relative impact of family financial disadvantage compared with other predictors of school readiness; and explanatory models focusing on the role of family financial disadvantage in pathways to school readiness. It ends by noting the paucity of Australian data on this topic, and pointing to the value of LSAC in filling some of the gaps in current knowledge.

Chapter 3 briefly discusses the measures of family financial disadvantage, children's school readiness, and school progress used in the current analyses. It then focuses on the relationship between financial disadvantage and school readiness and school progress. It examines the relationship between four different measures of financial disadvantage, seven measures of school readiness and eight measures of school progress. This is followed by multivariate analyses in Chapter 4, where the links between various child, family and community factors, including low income, on school readiness at 4–5 years of age are examined. The distribution of each of these factors in financially disadvantaged and non-financially disadvantaged families is also examined. Chapter 5 focuses on children's school progress at 6–7 years of age, and investigates the influence of school readiness and family financial disadvantage on children's school progress. It also examines whether continuous family financial disadvantage is more detrimental to school achievement and adjustment than intermittent disadvantage and explores the role that cognitive and social/emotional school readiness plays in later school progress.

Chapter 6 discusses the findings in the light of previous research and draws out specific factors that play a crucial role in children's school readiness and progress. It also discusses intervention strategies that will most likely be successful in improving the school readiness of all children, particularly financially disadvantaged children, based on the current findings and previous research on existing programs. It

concludes by emphasising the importance of multimodal interventions in addressing a number of the risks for low school readiness.

1.1 Overview of Growing Up in Australia

Growing Up in Australia aims to shed light on the development of the current generation of Australian children, and to investigate the contribution of the children's social, economic and cultural environments to their adjustment and wellbeing. Multiple facets of children's development, health and wellbeing are examined in LSAC, including physical health, social, cognitive and emotional development. The study examines the complex interactions between children's attributes and the contexts in which they are raised, particularly their family, child care, school, neighbourhood and community experiences.

LSAC was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs, and is managed in partnership with the Australian Institute of Family Studies. A consortium of leading researchers and experts from universities and research agencies provides advice on design and methodological issues.¹

LSAC commenced in 2004 with the recruitment of children residing in urban and rural areas of all states and territories of Australia. Two cohorts of children were recruited: 5,107 families with infants aged 0–1 year, and 4,983 families with 4–5 year olds. The study collects a large body of information about the child and his/her family from the parents who live with the child (biological, adoptive or step-parents), the child (using physical measurement, cognitive testing and interview, depending upon the age of the child), home-based and centre-based carers for preschool children who are regularly in non-parental care, and teachers (for school-aged children). The use of multiple informants allows for information to be obtained about the child's behaviour across differing contexts.

The older cohort of children is the focus of the Home-to-School Transitions project. The data used in this report come from parent and teacher reports and assessments of children's functioning at Wave 1 (4,983 children aged 4–5 years, collected in 2004) and Wave 2 (4,464 children aged 6–7 years, collected in 2006). The response rate was 90% at Wave 2, at which time 68% of children were in year 1 of school and 27% were in year 2.

Further details about LSAC and its measures are available in Appendices A to D of this report, at www.aifs.gov.au/growingup, and Gray and Smart (2008).

Chapter 2: Transition from home to school

The transition from home to school is a major change in children's lives, being the first compulsory and universal point of contact between the child and broader social institutions. This can be a challenging period for children, as they adjust to a generally much larger institution than they have previously encountered—with its own culture, rules and expectations, along with new people (both teachers and school mates) and new physical environments of classrooms and playgrounds. There is clear evidence that children vary in their “readiness” for this transition, with marked differences in children's cognitive and non-cognitive skills when they enter school. The importance of making a good transition into school is indicated by evidence that school readiness is predictive of later developmental outcomes: children who are less “ready” are less likely to excel academically, more likely to have behavioural and emotional problems, and more likely to be retained in a grade and drop out of school (Blair, 2001; Duncan et al., 2007; Reynolds & Bezruczko, 1993). Such children are also more likely to become teenage parents, engage in criminal activities and have poorer employment records (Schweinhart, 2003). Given this evidence that a “good start” to schooling is so influential for later wellbeing, researchers have tried to identify the factors and processes associated with children's readiness for school.

2.1 Changing definitions of school readiness

While early conceptualisations of school readiness focused on children's readiness for school, there has been a recent expansion of these ideas to include the school's, families' and communities' readiness for this transition. This re-conceptualisation recognises the interaction between children's inherent characteristics and the environmental and cultural contexts of children's learning experiences in determining their readiness for school. It has been significantly influenced by Bronfenbrenner's (1979) ecological systems theory, which contextualises child development within the relationships that form the child's environment. This model incorporates factors that represent layers of influence on children's development, related to the child, the family, the child's early childhood care, and the broader neighbourhood, school, policy and cultural context. According to this model, child development occurs in the context of these

overlapping, interconnected influences and relationships.

Early definitions of *children's school readiness* were based on either the age or the cognitive/academic skills of the child. However, most current researchers consider school readiness to be multidimensional, recognising that children need more than narrowly defined academic or cognitive competencies in order to adjust well to school (Hair et al., 2006). Current conceptualisations often include virtually all aspects of early child development, such as physical health and development, social/emotional development, language development, cognition and general knowledge, and approaches to learning. *Physical health and development* encompasses characteristics such as motor skills, health status, growth and disabilities. *Social/emotional development* includes children's ability to form positive social relationships and positive self-perceptions, be sensitive to others' feelings and interpret and express their own feelings appropriately. *Language development* refers to oral language (which includes listening, speaking and vocabulary) and emerging literacy (which includes skills necessary for the development of reading and writing). *Cognition and general knowledge* includes knowledge about properties of objects and about societal conventions. *Approaches to learning* refers to the ability to use effective strategies to acquire skills and knowledge.

A *school's readiness for children* refers to the school's commitment to ensure the success of every child, parent and teacher who is involved in the transition. Processes that appear to foster such success include integration with the community, welcoming parents, ensuring continuity between early child care or preschool programs and school, accepting and adapting to diversity among children, and introducing or expanding on approaches known to raise achievement. The family's and community's readiness for the transition also affects the child's adjustment and success in school (Zaslow, Calkins, Halle, Zaff, & Margie, 2000). Families and communities can ensure successful transitions by providing high-quality preschool programs that prepare children for school. They can also ensure that children receive the nutrition, physical activity and health care they need, with prevention and early intervention programs in place so that children can arrive at school with healthy minds and bodies. Communities also need to ensure that parents have access to the support they require.

For conceptual clarity, this review will focus on the influences on children's readiness for school, considering the role of families, schools and communities as facilitators and inhibitors rather than as actual components of "readiness".

2.2 Financial disadvantage

This report is particularly focused on the school readiness of children growing up in financial disadvantage. There is a long history of research on the financial disadvantage that flows from poverty. Although poverty has traditionally been defined and measured in terms of low income, this has been criticised as being too narrow and not necessarily reflecting underlying living standards. The concept of social exclusion provides an alternative approach to understanding differing types of family financial disadvantage. While poverty is clearly one cause of social exclusion, one can suffer financial disadvantage or be socially excluded without being in poverty (see Bradshaw, 2003; Saunders et al., 2007; Saunders, 2008). Thus, family financial disadvantage may be indicated by the experience of financial pressures and hardship (e.g., going without meals, being unable to heat one's home), or by reliance on government welfare, as well as by poverty or low income. Individuals may be excluded from access to opportunities by factors such as a lack of adequate resources, difficulty in accessing services, unemployment, intergenerational disadvantage, locational disadvantage, family type, broader social and economic inequality, and problems in relating to others as a result of mental health, environmental or social issues. Although there are strong linkages and overlaps between these areas of disadvantage, all these factors have been identified as impacting on child development and can be a source of vulnerability. Therefore, in examining the influence of family financial disadvantage on children's readiness for school, it is important to consider the broad indicators of disadvantage.

This review will focus on identifying the risk and protective factors of school readiness in financially disadvantaged children. Given the interconnectedness of the influences on a child's development, it is also important to attempt to identify those factors that impact on school readiness, irrespective of family financial status, and any that operate in the particular context of financial disadvantage. The role of differing types of financial disadvantage as predictors of school readiness also needs examination.

2.3 Factors associated with school readiness

The literature suggests that numerous factors are associated with children's school readiness. As noted above, these include factors at the level of the individual child, their family, and their community.

Child characteristics

Research has identified various child characteristics that play a role in school readiness. One such factor is children's *early cognitive ability*, which has consistently been found to influence cognitive and language abilities when starting school (Dearing, McCartney, & Taylor, 2001; Duncan & Brooks-Gunn, 1994). Early cognitive ability has been found to be a relatively strong predictor of school readiness, having a larger impact than other child characteristics (e.g., gender, birth weight) and family characteristics (e.g., maternal education, family structure, ethnicity, income) (Dearing et al., 2001).

Children's *temperament* is another factor affecting school readiness, having been found to explain between 25% and 30% of variance in classroom behaviour (Guerin & Gottfried, 1994). When considering various aspects of temperament, lower levels of activity and distractibility and higher levels of persistence have been found to be particularly important for academic achievement, while lower levels of reactivity and higher levels of adaptability and sociability have been found to be important for social/emotional adaptation to the school environment (Sanson, Hemphill, & Smart, 2002).

While both cognitive ability and temperament have a large genetic component, both can be modified through the child's interactions with the environment, such as the provision of stimulating play experiences and sensitive caregiving.

Findings regarding the influence of child *general health* on school readiness are less consistent. Wave 1 of LSAC data indicates that children's health is positively related to socio-emotional development, but not physical, cognitive or overall development (Wake et al., in press). In contrast, a large Canadian study found that children with poorer general health were almost twice as likely to be vulnerable to poorer overall development (Janus & Duku, 2007). However, this association may have been inflated by a small degree of overlap between the measure for general health (Health Utilities Index) and the measure of overall development (Early Development Instrument),

which included a “physical health” component. Therefore, although it is likely that children’s school readiness will be affected by poor health, direct evidence of this is limited by the scarcity of studies using appropriate instruments to measure general health and school readiness.

Low birth weight has also consistently been found to be associated with lower cognitive abilities in children entering school, including problem-solving, colour and shape recognition, and math and literacy skills (Blair, 2001; Dearing et al., 2001; Korenman, Miller, & Sjaastad, 1995; Yeung, Linver, & Brooks-Gunn, 2002). The influence of low birth weight on children’s non-cognitive development is less clear-cut, with two large studies and a meta-analysis finding a relationship with poorer socio-emotional development (Bhutta, Cleves, Casey, Craddock, & Anand, 2002; Hair et al., 2006; Reijneveld, 2006), but other studies have not identified such a relationship (Dearing et al., 2001; Duncan & Brooks-Gunn, 1994; Yeung et al., 2002).

Family characteristics

Various aspects of a child’s family experiences have been found to be critical to their readiness for and success in school. This is unsurprising, as the family is a child’s primary environment in the years before school.

Parenting and the parent–child relationship

Parenting style, which refers to the ways in which parents go about raising their children, has been found to strongly impact on child outcomes. Supportive authoritative parenting (characterised by firm control, calm discussion, proactive teaching and warmth) has been found to be related to stronger cognitive skills and fewer behaviour problems (Linver, Brooks-Gunn, & Kohen, 2002; Pettit, Bates, & Dodge, 1997). Conversely, hostile and authoritarian parenting (characterised by a high value being placed on obedience, little verbal give and take, few explanations of rules, a punitive orientation, and low warmth) has been found to be related to poorer cognition and more behaviour problems (Hill, 2001; Linver et al., 2002; Pettit et al., 1997). Hostile, non-affectionate and coercive parenting (characterised by yelling, insults, swearing, meanness and physical punishment) has been found to be related to higher levels of behaviour problems, such as aggression (McFadyen-Ketchum, Bates, Dodge, & Pettit, 1996; Miller-Lewis et al., 2006). The importance of parenting in early childhood is evident from the finding that less effective parenting at 6 months of age was related to academic, social, emotional and behavioural problems in the first and second grade (Egeland, Pianta, & O’Brien, 1993).

Other aspects of the parent–child relationship have also been identified as important determinants of school readiness. For example, *parent–child attachment* influences children’s social and behavioural development—kindergarteners who are less securely attached to their mothers are less liked by their peers and teachers, are regarded as being less socially competent and having more behaviour problems by their teachers, and are perceived as being more aggressive by their classmates (Cohn, 1990).

One study found that higher levels of *sensitivity in father’s interactions* with the child was related to lower behaviour problems, emotional problems and conflict with the teacher, and higher social skills (National Institute of Child Health and Human Development, Early Child Care Research Network [NICHD ECCRN], 2004). It also found that *maternal parenting beliefs* affected school readiness, as children whose mothers had more child-centred beliefs (supporting the development of child autonomy) compared to adult centred-beliefs (directive and intrusive), exhibited fewer behaviour problems and higher social skills (NICHD ECCRN, 2004).

Children’s home learning environment

Studies have identified *parental involvement in child learning* (including reading to the child, teaching songs and nursery rhymes, playing with letters and numbers, painting and drawing, and visiting the library) as being an important predictor of school readiness. In relation to cognitive development, a meta-analysis revealed that regular parental reading to preschoolers was related to stronger literacy skills prior to starting school, explaining 8% of the variance in child outcomes (Bus, Vanijendoorn, & Pellegrini, 1995). More specifically, studies have found that higher levels of parental involvement in such activities with the child are related to better vocabularies and faster vocabulary growth, better listening comprehension and better understanding of print concepts during early childhood (Hart & Risley, 1995; High, LaGasse, Becker, Ahlgren, & Gardner, 2000; Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Senechal, LeFevre, Hudson, & Lawson, 1996). In relation to social and behavioural development, the large UK Effective Provision of Preschool Education (EPPE) study found that higher levels of parental involvement were related to more independence, concentration, cooperation, conformity, peer sociability and less anti-social/worried behaviour in children (Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004).

A more inclusive measure of families’ support of children’s home learning is the *home learning*

environment. Most North American studies investigating this use the Home Observation for Measurement of the Environment (HOME) inventory, a composite measure incorporating parents' engagement with children, the availability of cognitively stimulating materials and the physical condition of the home. Studies have consistently found that higher HOME scores are related to higher cognitive and language abilities in children, including IQ, memory, attention, and knowledge of colours, shapes, letters and numbers (Duncan & Brooks-Gunn, 1994; Linver et al., 2002; NICHD ECCRN, 2003b). This effect has been found across black, white and Hispanic children (Ricciuti, White, & Fraser, 1993). Studies have also found that higher HOME scores are related to better social competence and self-control and fewer behaviour problems, although this relationship appears to be less strong than that with cognitive outcomes (Foster, Lambert, Abbott-Shim, McCarty, & Franze, 2005; Jackson, Brooks-Gunn, Huang, & Glassman, 2000; NICHD ECCRN, 1998, 2003b).

The significant extent to which the home learning environment impacts on children's school readiness is evident from findings that it accounts for one-third to one-half of the variance in cognitive abilities after controlling for a range of other child and family characteristics (Korenman et al., 1995; Yeung et al., 2002). These trends are similar for the general population as well as for disadvantaged samples (Storch & Whitehurst, 2001). Relative to other factors, the home environment has been found to be a stronger predictor of cognitive abilities than family income, maternal vocabulary and stimulation, and a range of child care characteristics (NICHD ECCRN, 2000). The EPPE study found that the home environment during early childhood continues to impact on children's intellectual and social/behavioural development up to 7 years of age (Sylva et al., 2004). Furthermore, this study found that the home learning environment was only moderately related to parents' income, education and occupation, leading to the conclusion that "what parents do is more important than who parents are" (Sylva et al., 2004, p. ii).

Interestingly, Australian research using Wave 1 data from LSAC found that the home learning environment accounted for only 7% of the variability in children's overall development at 4–5 years of age, after accounting for the contribution of child and family variables (Wake et al., in press). This may be because the measure of the home learning environment used in the LSAC analysis was less inclusive than the HOME index.

Family functioning and structure

Links between children's school readiness and certain family functioning characteristics, such as maternal depression, marital conflict and maternal substance abuse, are either weak or non-existent in research to date. Although *maternal depression* has consistently been found to be related to higher levels of behaviour problems in children, most studies have found that it accounts for only a small proportion of variance (Coiro, 1998; Jackson et al., 2000; Wake et al., in press). Its relationship is less consistent with cognitive ability, with some studies identifying maternal depression as being weakly related to poorer cognitive outcomes (Coiro, 1998; Linver et al., 2002) and others not finding a relationship (Jackson et al., 2000; Taylor, Dearing, & McCartney, 2004). *Marital conflict* has also been identified as a risk factor for children's socio-emotional development (Amato & Keith, 1991; Sanders, Nicholson, & Floyd, 1997), specifically for higher levels of behaviour and emotional problems (Criss, Pettit, Bates, Dodge, & Lapp, 2002; Holden & Ritchie, 1991; Nievar & Luster, 2006). Depression and marital conflict most likely influence school readiness via their effects on parenting practices, where they can lead to a more disrupted parenting style, especially in regard to parental responsiveness, irritability and negativity (Bradley, 1995; Sanders et al., 1997). Most studies have failed to identify an effect of *maternal substance abuse* on children's school readiness (Blair, 2001; Janus & Duku, 2007; Wake et al., in press).

Various aspects of family structure have been investigated in relation to school readiness, but generally have not been found to impact on school readiness. For example, one large study drawing on data from the large Early Childhood Longitudinal Study—Kindergarten cohort (ECLS-K) found that younger *maternal age* at birth was related to poorer health and socio-emotional development (Hair et al., 2006). However, other studies drawing on data from the National Longitudinal Survey of Youth (NLSY) have not identified such a relationship with children's behaviour problems or cognitive abilities (Guo & Harris, 2000; Korenman et al., 1995; McLeod & Shanahan, 1993). The results are even less consistent regarding *family size*, with some studies finding that children from larger families have worse outcomes (Korenman et al., 1995; Yeung et al., 2002), some finding that they have better outcomes (Sylva et al., 2004), and others finding no significant relationship (Guo & Harris, 2000; Janus & Duku, 2007).

Despite there being a large amount of research on the effect on children's school readiness

of the *number of parents* in the home and their relationship, no consistent effect has been identified. Studies using a composite measure of school readiness have found that children from intact, two-parent families were more prepared for school than children from single-parent families (Hair et al., 2006; Janus & Duku, 2007). A few studies have also found that children from single-parent families are more likely to have more behaviour problems (Korenman et al., 1995; McLeod & Shanahan, 1993). However, most studies have not identified a relationship between single parenthood and children's cognitive and behavioural development (Dearing et al., 2001; Guo & Harris, 2000; Ricciuti, 1999; Ricciuti et al., 1993; Yeung et al., 2002). It is possible that marital status is less important than marital stability in predicting children's behaviour problems, as an Australian study found that children whose mothers were consistently single (had no partners) had similar rates of behaviour problems to children of mothers who were married since birth, but children whose mothers had one or more changes in marital partner exhibited higher rates of behavioural and emotional problems (Najman et al., 1997).

Family background

Family background characteristics, such as ethnicity and language spoken at home, have consistently been found to be related to children's school readiness. Numerous North American studies have found that *ethnicity* is related to school readiness, with African-American and Hispanic-American children having poorer cognitive, behavioural and socio-emotional development compared to children of other backgrounds (Coley, 2002; Marks & Coll, 2007; Vandivere, Pitzer, Halle, & Hair, 2004). However, two large US studies using data from ECLS-K found that the impact of ethnicity was substantially reduced after accounting for socio-economic status (SES, a composite measure that usually combines parental education, occupational status and/or income), suggesting that income is responsible for a large part of the developmental differences between children from different ethnic backgrounds (Fryer & Levitt, 2004; Lee & Burkam, 2001). Other family and child background characteristics, such as maternal age, the availability of stimulating materials at home, child gender and health, also reduced the ethnic gap in school readiness, although not as substantially as SES (Fryer & Levitt, 2004). Nevertheless, Australian research using data from Wave 1 of LSAC indicated that Aboriginal and Torres Strait Islander children had poorer overall development at 4–5 years of age compared to children of other backgrounds, even after controlling for a range of child and

family characteristics, including indicators of SES (Wake et al., in press). North American and Australian research also suggests that children who speak a *language other than English* at home have poorer cognitive and overall development (Vandivere et al., 2004; Wake et al., in press).

Parental education and occupation

Parental education and occupation are often seen as key psychological resources that they bring to the task of childrearing, with both factors affecting the time, money and knowledge that parents can offer their children. Higher levels of *parental education* have been found to be related to better socio-emotional, language and cognitive development in children of various ethnic backgrounds (Hair et al., 2006; Marks & Coll, 2007; Wake et al., in press). Numerous studies have also found that higher levels of *maternal education* are related to better cognitive and language abilities (Britto & Brooks-Gunn, 2001; Linver et al., 2002; Ricciuti, 1999). Most studies have also found that higher levels of maternal education are related to better social and behavioural development, but this relationship is not as strong as that with cognitive outcomes (Dearing et al., 2001; Jackson et al., 2000; McLeod & Shanahan, 1993).

Very few studies have examined the relationship between *parent occupational status* and children's school readiness. However, analysis of Wave 1 LSAC data indicated that children whose parents were employed in a "professional field" had better overall development than children whose parents were employed in "skilled labour or clerical" or children whose parents are unemployed, after taking account for a number of other socio-demographic factors (Wake et al., in press).

Unlike occupational status, *maternal employment* has been comprehensively studied in relation to child development. An extensive review of the literature by Goldberg, Prause, Lucas-Thompson, & Himsel (2008) found that most studies did not identify a relationship between maternal employment (compared to non-employment) and outcomes for children under 5 years, with only small effect sizes in the few studies that did find a significant relationship. Goldberg et al. also found that children with mothers employed part-time had slightly higher levels of achievement compared to those with mothers employed full-time, possibly due to the increased maternal supervision in these families. Importantly, the effect of maternal employment was found to be moderated by family income, which had a positive effect on child outcomes in working/lower middle-class families, but a negative

effect in middle/upper middle-class families. Furthermore, the positive effects of maternal employment were evident in studies of single-parent families and those that included both single- and two-parent families, but not in studies focused exclusively on two-parent families. This suggests that the increased economic resources made available through employment to typically poorer single-parent families may account for its beneficial effects in this group.

Financial disadvantage

As noted above, there are a number of indicators of *financial disadvantage*, including poverty, low income, the experience of financial hardship and strain, reliance on the government as the main source of income, and low socio-economic status. Numerous studies have found that children from financially disadvantaged families begin school with poorer cognitive and language abilities, regardless of which measure of financial disadvantage that is used (Duncan & Brooks-Gunn, 1994; Foster et al., 2005; Hair et al., 2006; Hodgkinson, 2003; Janus & Duku, 2007; Taylor et al., 2004). Family income has been found to have a significant effect on child development, with the strongest impact being during early childhood (birth to 5 years of age; Duncan, Yeung, Brooks-Gunn, & Smith, 1998). A review by Ryan, Fauth, Brooks-Gunn, Spodek, & Saracho (2006) of recent US research concluded that, starting at 2 years of age, children reared in poverty generally scored between 15% and 40% of a standard deviation lower on standardised cognitive assessments compared with their non-poor peers.

In relation to non-cognitive outcomes, most studies have found that children from financially disadvantaged families exhibit higher levels of behaviour problems and lower social competence (Dearing et al., 2001; Linver et al., 2002; NICHD ECCRN, 1998; Taylor et al., 2004; Wake et al., in press; Yeung et al., 2002). However, this relationship has not been consistently observed, with some studies not finding a significant association between income and social/behavioural development (Duncan & Brooks-Gunn, 1994; NICHD ECCRN, 1998, 2002). Furthermore, analysis of data from the large-scale NICHD Study of Early Child Care and Youth Development found that, while increases in family income were associated with large increases in children's IQ, they were linked to only small decreases in behavioural and emotional problems (Dearing et al., 2001). The negative effects of financial disadvantage are most likely explained by the stress and/or the lack of resources that financial hardship brings.

The persistence of poverty has been found to affect children's school readiness. Large US studies have found that children who live in

persistent poverty perform worse on cognitive tests compared to children who live in transient poverty (Duncan & Brooks-Gunn, 1994; Smith, Brooks-Gunn, & Klebanov, 1997). A study using Infant Health and Development Program (IHDP) data found that children who had been poor for 4 out of their first 5 years scored nine points lower on a preschool intelligence test than children who had never been poor, while children who had been poor for a shorter period had IQ scores that were on average only four points lower (Duncan & Brooks-Gunn, 1994). Therefore, it seems that the longer a child spends in poverty, the further the child lags behind their non-poor classmates on measures of cognition and intelligence.

Children who live in persistent poverty have also been found to display more behavioural and emotional problems compared to children who experience short-term poverty and those who have never been poor (Duncan & Brooks-Gunn, 1994). However, the persistence of poverty may affect emotional and behavioural symptoms differently, as short-term poverty has been found to be related to more behaviour problems (antisocial behaviour) and long-term poverty has been found to be related to more emotional problems (depression) in 4–8 year olds (McLeod & Shanahan, 1993). Another study found that American Indian children lifted out of poverty experienced a reduction in behaviour problems that put them on par with non-poor children, but their emotional problems remained elevated (Costello, Compton, Keeler, & Angold, 2003).

Research regarding how much children benefit from increases in family income found that a one-point increase in the ratio of family income to needs led to an improvement of roughly 13% of a standard deviation on children's IQ, school readiness and language scores. However, this relationship was significantly weakened when maternal intelligence and child health outcomes were taken into account, falling to only 3–5% of a standard deviation (Taylor et al., 2004). Similarly, Smith et al. (1997) found that a one-point increase in income-to-needs ratio led to a small 3–4 point increase in children's scores on cognitive tests in both the NLSY and IHDP datasets, after controlling for family structure, ethnicity, mother's education, child age and birth weight.

Community characteristics

Although the family is the young child's primary socialising and care environment, the wider community can also impact—directly and indirectly—on the child's school readiness.

Location and neighbourhood disadvantage

One such community characteristic is the *rural or urban location* in which children are brought

up. Non-metropolitan status, compared to metropolitan status, has been found to be weakly associated with lower literacy scores in children of different ethnic backgrounds in the first year of school (Durham & Smith, 2006; Marks & Coll, 2007; Yeung et al., 2002).

Neighbourhood disadvantage has also been found to be related to school readiness. High levels of neighbourhood poverty are related to poorer child cognitive outcomes and physical health, both in urban and rural locations (Edwards, 2005; Evans, 2003; Evans & English, 2002; Lapointe, Ford, & Zumbo, 2007; Leventhal & Brooks-Gunn, 2000, 2003). The proportion in the neighbourhood of unemployed males, residents with Aboriginal status and those with no knowledge of an official language have also been found to affect children's school readiness negatively (Lapointe et al., 2007).

Disparities in children's school readiness between rural and urban areas, and between poor and non-poor neighbourhoods may be explained by inequalities in the distribution of facilities and services, with rural areas and poor neighbourhoods having fewer cognitive resources, such as libraries, colleges and museums, and fewer social resources, such as local clubs, parent-school groups, high-quality preschools, child care and social support services.

Non-parental child care

One prominent and increasingly important aspect of many children's worlds is *non-parental child care*, which can vary in terms of quality, quantity and type. Research drawing on the large-scale longitudinal NICHD study provides one of the most authoritative sources of knowledge on the relationship between the features of child care and children's school readiness, although the differences between the US and Australian contexts for child care need to be kept in mind when interpreting results (Wise et al., 2002).

Child care quality can vary in terms of adult-to-child ratio, the group size, the caregivers' training and educational level, and positive caregiving. Children experiencing high-quality child care have been found to exhibit better cognitive function, expressive and receptive language, and functional communication skills over time (NICHD ECCRN, 2000, 2003b). They have also been found to be more cooperative and compliant, and exhibit less aggressive and disobedient behaviour (NICHD ECCRN, 1998). The positive effects of high-quality care appear to be due to caregivers being more sensitive and more likely to stimulate cognitive development and engage children

in conversations. High-quality child care may also impact on child outcomes via its effect on the home environment by improving maternal knowledge of childrearing and decreasing parenting stress (Magnuson, Ruhm, & Waldfogel, 2007b). Child care providers can offer informal parenting education during drop-off and pick-up and formal parenting education via home visits, informational materials and other organisational activities (Magnuson et al., 2007b).

The quality of child care experienced has been found to differ according to ethnicity, with white American children on average experiencing child care that is substantially higher in quality than that experienced by African-American children (Burchinal & Cryer, 2003). In regard to the relative impact of child care quality on disadvantaged and non-disadvantaged children, one longitudinal US study found that high-quality child care was more beneficial for the literacy skills of children whose mothers had lower levels of education (Peisner-Feinberg et al., 1999). However, the NICHD study found that the relationship between child care quality and children's developmental outcomes was similar across family structure, income and ethnicity (Dworkin, 2003; NICHD ECCRN, 2000, 2002). It should be noted that the NICHD study did not include a large number of extremely poor children or children whose mothers were younger than 18 years of age.

Child care quantity prior to school entry, when considered independently of quality, has not been found to affect children's cognitive or language abilities (NICHD ECCRN, 2000). Some US data indicate that more hours at child care is related to higher levels of behaviour problems, such as externalising problems ("acting out"), conflict with adults, disobedience, aggression and uncooperative behaviour (NICHD ECCRN, 1998, 2003a, 2006). However, analyses of programs such as the US Early Head Start program found that more hours of high-quality child care was associated with higher levels of cognitive and language development, better social adjustment and lower levels of behaviour problems (Love et al., 2003). These findings indicate that the impact of child care quantity on behaviour may be moderated by child care quality; that is, when quality is high, more hours lead to better outcomes.

In terms of *child care type*, Australian and US research has found that formal centre-based care is related to higher levels of cognitive and language development compared to informal home-based care (Harrison & Ungerer, 2002; NICHD ECCRN, 1998, 2002). The effect of child care type on behavioural development may also be moderated by child care quality. The NICHD study found that centre-based care was

related to higher levels of behaviour problems in 4-year-old children (NICHD ECCRN, 2003a). However, the Sydney Family Development Project did not find such a relationship, but instead found that children attending formal care were more outgoing and extroverted and less shy and anxious (Harrison & Ungerer, 2002).

It should be borne in mind that, although most research indicates that child development is affected by child care variables, these effects are relatively small compared to child and family characteristics (NICHD ECCRN, 1999, 2002; Peisner-Feinberg et al., 1999).

Preschool programs

Another important factor impacting on children's school readiness is their experience of structured before-school-age programs, called pre-kindergarten in the US and usually either preschool or kindergarten in various states of Australia (and in this report termed "preschool", for convenience). Large UK and US studies, using data from the EPPE and ECLS-K datasets respectively, have found that children attending *preschool programs* are more prepared for entry into school in terms of cognitive ability (Magnuson, Meyers, Ruhm, & Waldfogel, 2004; Magnuson et al., 2007a, 2007b; Sylva et al., 2004). However, inconsistent results were obtained for the relationship between preschool attendance and social/behavioural outcomes: the EPPE study found that children who attended preschool were more sociable and had better self-regulation (Sylva et al., 2004), whereas the US study found that preschool attendance increased behaviour problems, specifically aggression, and decreased self-control (Magnuson et al., 2007a). The EPPE study also found that the impact of preschool on cognitive benefits persisted, while behavioural effects faded out (Sylva et al., 2004). In contrast, the ECLS-K study found that the negative behavioural effects persisted, while the cognitive effects faded rapidly (Magnuson et al., 2007a). Similar to child care findings, these inconsistencies may possibly be attributed to differences in the average quality of preschool programs between the US and UK.

There have also been inconsistent findings regarding the relative progress of disadvantaged and non-disadvantaged children during their preschool programs. The UK EPPE program found that preschool attendance was more beneficial for children from higher SES families for most cognitive outcomes, such as language attainment, early literacy skills and early number concepts. However, black African and black Caribbean children (compared to white children), and children for whom English was a second language (compared to

children for whom English was a first language) made more progress on certain cognitive outcomes, such as pre-reading skills, during preschool (Sylva et al., 2004). Comparatively, the US ECLS-K study found that attending preschool programs was more beneficial for disadvantaged children on a range of outcomes, including reading, maths, receptive language and other communication skills (Magnuson et al., 2007a). Similarly, a smaller Canadian study found that gains in receptive language and other communication skills made by children in early care were stronger for children from low-income and single-parent families (Schliecker, White, & Jacobs, 1991). The inconsistency between these studies may once again be attributed to differences between preschool programs in North America and UK, as well as differences in the measurement, extent and distribution of disadvantage.

A few studies have also examined the impact of *full-day versus half-day attendance* in preschool programs. Analysis of ECLS-K data indicated that children attending full-day programs made greater maths and reading improvements, but had more behaviour problems, than children attending half-day kindergarten (Cannon, Jackowitz, & Painter, 2006). Numerous studies using ECLS-K data have found that the benefits of full-day kindergarten attendance on children's cognition do not vary by SES (Cannon et al., 2006; Lee, Burkam, Ready, Honigman, & Meisels, 2006; Walston, West, & Rathbun, 2005).

The transition from preschool to school

Transition practices that are aimed at enhancing the link between preschool and school include visits to schools by preschool children and their teachers, orientation programs for children and parents, and individual meetings between preschool teachers, school teachers and parents. The little research that has been conducted in this area has found that the number of transition activities conducted is positively related to children's academic achievement and their social and behaviour competence during the first year of school (LoCasale-Crouch, Mashburn, Downer, & Pianta, 2008; Schulting, Malone, & Dodge, 2005). Children from low-income families were also found to benefit more from transition activities, possibly because their parents had weaker or more negative prior connections with schools.

Teacher-child relationships

The teacher-child relationship has also been found to play an important role in children's school success and adjustment. Close teacher-child relationships in child care and kindergarten—characterised by positive

interactions, open communication and warm affect—have been found to be related to better academic performance and social competency, and more favourable attitudes towards school (Birch & Ladd, 1997; Howes, Matheson, & Hamilton, 1994). Conversely, relationships characterised by high levels of conflict, including negative interactions and affect, have been found to be related to poorer academic achievement, more negative attitudes towards school, school avoidance and lower cooperation in class (Birch & Ladd, 1997; Ladd & Burgess, 2001). High levels of dependency on the teacher have been found to be related to greater difficulty in adjusting to school, including social withdrawal, aggression towards peers, and less positive engagement with the school environment (Birch & Ladd, 1997; Ladd & Burgess, 2001).

2.4 Relative impact of financial disadvantage on school readiness.

A limited set of studies provide clear comparative data about the significance of financial disadvantage relative to other predictors of children's school readiness. These studies tend to find that the influence of financial disadvantage is less strong than some variables, but stronger than others. Measures of the child's characteristics and family processes (such as parenting and home learning environment) are often stronger predictors, while distal and extra-familial factors—such as family structure, family size, child care and neighbourhoods—generally account for smaller proportions of variance (Dearing et al., 2001; Janus & Duku, 2007; Lee & Burkam, 2001; NICHD ECCRN, 2000; Yeung et al., 2002). However, making clear distinctions about the importance of different factors for school readiness is complicated by the fact that these factors interact with each other, and some act as moderators or mediators of others (see section 2.5 below).

Further, a compelling body of research identifies the importance of cumulative effects; that is, the more risk factors a child is exposed to, the greater the likelihood of poor outcomes in cognitive, behavioural and social outcomes (Ackerman, Izard, Schoff, Youngstrom, & Kogos, 1999). It is not so much the presence of any one particular risk factor (such as financial disadvantage), but rather the combination of multiple risks that best predicts the emotional and academic status of children over time (Burchinal, Roberts, Hooper, & Zeisel, 2000).

An important question is whether the same factors predict school readiness for children

who are growing up in financially disadvantaged families as for those in better-off families. Very little research directly addresses this question. An exception is Goldberg et al.'s (2008) review, which indicates that maternal employment has a positive impact on children in low SES families, but a negative impact for children in high SES families. As mentioned earlier, numerous studies have examined whether preschool attendance is more beneficial for financially disadvantaged families, and some have identified a greater benefit for disadvantaged children, while others have not. Therefore, on present evidence, it cannot be concluded that income is a moderator in the relationship between preschool attendance and children's school readiness. In general, it appears that the factors identified in the research using disadvantaged samples are similar to those that have used general population samples.

2.5 Pathways mediating the income effect

While there is still speculation regarding the mechanisms or pathways through which poverty operates to affect children's school readiness, most of the proposed pathways can be grouped under two theories: the family stress model and the investment model.

The family stress model

The family stress model, which focuses on the socio-emotional climate in the family, proposes that the effect of income on children's school readiness is through its impact on family relationships and interactions. For example, financial stress and poverty have been found to influence children's behaviour problems through their effect on parents' emotional health, marital relationships and parenting practices (Duncan & Brooks-Gunn, 1994; Jackson et al., 2000; Linver et al., 2002; Yeung et al., 2002). While parenting style has also been found to mediate the relationship between income and children's cognitive outcomes (Guo & Harris, 2000), this pathway is weaker and less consistent than for behavioural outcomes, accounting for roughly 2% of the difference in IQ scores between children in and out of poverty, compared to 6% of the difference in behaviour problems (Jackson et al., 2000; Linver et al., 2002). Therefore, it seems that financial disadvantage influences children's behavioural outcomes, and to a lesser extent their cognitive and learning capacities, by draining parents' psychological and emotional resources, which in turn can disrupt parent-child interactions and parenting styles.

The investment model

The investment model, which focuses on the cognitive and intellectual climate in the family, postulates that children from low-income families have fewer opportunities to develop their skills because financial strain limits their parents' ability to invest in a cognitively stimulating home environment, nutritious food, high-quality child care and safe living conditions. Longer work hours can also limit the time parents can spend with children.

Higher income levels have been found to be associated with higher levels of parental involvement and increased availability of stimulating materials (Bradley, Corwyn, McAdoo, & Coll, 2001; Hart & Risley, 1995; Votruba-Drzal, 2003). More specifically, the HOME index has been found to be a strong mediator of the relationship between income and children's cognitive outcomes, accounting for a significant percentage of the variation in IQ scores between children in and out of poverty (Duncan & Brooks-Gunn, 1994; Linver et al., 2002; Smith et al., 1997). Higher HOME scores have also been found to reduce the harmful impact on children's school readiness of a reduction in family income (Dearing et al., 2001). The quality of the home environment has also been found to be an intervening link between income and children's emergent literacy, behavioural and emotional adjustment (Foster et al., 2005).

However, evidence for the complexity of the relationship between financial disadvantage and school readiness comes from a study that found that maternal emotional distress and parenting practices mediated the relationship between HOME scores and children's behaviour problems, suggesting that the family stress model may also be involved in mediating the relationship between home environment and behavioural development (Yeung et al., 2002). Others have found that parenting practices (Linver et al., 1999), the availability of cognitively stimulating materials (Duncan & Brooks-Gunn, 1994) and the physical environment of the home (Dunifon, Duncan, & Brooks-Gunn, 2001) each operate as independent pathways mediating the relationship between income and children's developmental outcomes. Inconsistent results have emerged from research that attempts to distinguish the impact of each of these factors in accounting for income effects. Yeung et al. (2002) found that the physical environment was a stronger mediator of the income effect on cognition than the presence of cognitively stimulating materials and parental involvement, while Guo and Harris (2000) found that cognitive stimulation was a stronger mediator of income effects on intellect than

parenting style and physical setting. Therefore, the complex relationship between income and children's developmental outcomes is yet to be fully understood.

Financial disadvantage can also affect the choice of neighbourhoods that families live in. Low-income families are often forced to reside in impoverished neighbourhoods that are characterised by high crime and unemployment rates, and limited availability of resources such as playgrounds, parks, child care and health-care facilities. Although there is evidence that neighbourhood variables affect school readiness above and beyond the impacts of immediate family-level economic wellbeing, there is little direct evidence that neighbourhood variables mediate the relationship between income and children's school readiness.

The non-maternal child care and preschool programs in which parents enrol children are also affected by financial disadvantage. Parents with higher levels of income and education can not only afford more expensive (and hence generally high-quality) care, but are also more likely to be concerned about the characteristics of the preschool their children attend (Melhuish et al., 1999; NICHD ECCRN, 1999). Research on disadvantaged children attending high-quality child care programs, such as the High Scope/Perry Preschool Program, Early Head Start program and Abecedarian Project, indicates that high-quality preschool programs can improve children's cognitive and social/behavioural readiness for school (Frede & Barnett, 1992; High/Scope Educational Research Foundation, 2006; Ramey & Ramey, 2004; Reynolds, 1995; Schweinhart, 2003; Schweinhart, Barnes, & Weikart, 1993). Furthermore, the finding that preschool and child care attendance was more beneficial for disadvantaged children suggests that high-quality early care programs can have a compensatory effect by providing a more stimulating environment than is present in impoverished homes.

Summing up, although the complex relationship between income and child development is yet to be fully understood, there is general consensus that the family stress model may provide a better explanation for the relationship between income and children's behavioural outcomes (through parenting practices), while the investment model may best explain the relationship between income and children's cognitive outcomes (through the home physical and learning environment). Further, these are not mutually exclusive and probably most commonly act in unison or interactively.

2.6 Summary

The current conceptualisation of “children’s readiness for school” incorporates most aspects of early child development. This review focuses on the school readiness of children from financially disadvantaged families, who may suffer from higher levels of disability, chronic health problems, unemployment, social exclusion and less access to adequate resources. All these factors can impact on child development, as they are sources of family stress and limit the resources that parents can provide for their children.

Examination of the current literature indicates that child, family and community characteristics all influence children’s school readiness. Individual child factors and family factors appear to have a stronger effect on children’s school readiness than community-level factors. The child characteristics of early cognitive ability and temperament have been consistently found to influence children’s cognitive and behavioural readiness for school. Among the numerous family characteristics, parenting practices, the home environment and maternal education, and family income, seem to be the most influential in determining school readiness. Not only do parenting and the home environment have a strong direct effect on school readiness, they are also crucial mediators of the relationship between financial disadvantage and school readiness. Although community-level variables only play a minor role in affecting children’s school readiness, child care and preschool attendance have been consistently found to affect early child development.

Most of the findings included in this review come from North American studies. Relatively few Australian studies were located that specifically address factors associated with financial disadvantage and children’s school readiness. Notably, most of these studies focus on children’s socio-emotional development rather than their cognitive readiness for school. *Growing Up in Australia: The Longitudinal Study of Australian Children* appears to be the only comprehensive large-scale longitudinal Australian study examining children’s cognitive, socio-emotional and physical development over the critical transition period into school, while also collecting extensive data on children’s home, child care, preschool and school experiences (Sanson, Nicholson et al., 2002). It thus provides a unique opportunity to examine the factors impacting on the school readiness of Australian children, with a particular interest in those living in financial disadvantage.

Chapter 3: Financial disadvantage and children's school readiness and progress

This chapter provides a brief overview of the LSAC measures used in the Home-to-School Transitions Project. It then addresses the question: "Is family financial disadvantage related to children's school readiness and to their school progress in the early primary school years?" It examines relationships between the four aspects of family financial disadvantage (low income, experience of financial hardship, main source of income derived from government support, and parental perceptions of the family as being poor/very poor) and children's cognitive and social/emotional school readiness at 4–5 years, and their academic achievement and social/emotional adjustment at 6–7 years. Also investigated is the possibility that particular types of family financial disadvantage have differing implications for school readiness and primary school progress.

In this chapter, we look at these relationships in isolation. The next chapter will look at these relationships in the context of other child, family and broader environmental factors.

3.1 Measures of school readiness and progress

Children's readiness for school plays a pivotal role in assisting them to make a successful transition to primary school. As discussed in Chapter 2, school readiness is now recognised to be a multidimensional construct that has been measured in many different ways in research to date. In this report, we focus on core cognitive, social/emotional skills that equip children to meet the intellectual and social challenges of the early school years. The specific indices used to assess school readiness at 4–5 years of age (preschool for the great majority of children) comprised two language/cognitive measures and five measures of social/emotional functioning. The language/cognitive measures were both standardised direct assessments administered by interviewers, namely the Who Am I? (WAI) test, which assessed children's ability to perform pre-literacy/pre-numeracy tasks such as reading, copying, and writing letters, words and numbers, and the Peabody Picture Vocabulary Test (PPVT), which assessed receptive language and vocabulary. Social/emotional skills were tapped by parent reports on the well-established Strengths and Difficulties Questionnaire (SDQ) that assessed children's conduct, hyperactivity, emotional and peer problems, and, on the positive side,

their prosocial behaviour (see Table 3.1 and Appendices C.1 and D.1). The measures of school readiness were thus broad and robust.

None of the scales used provide established cut-off points by which to identify children who are not "school ready". The lowest quintile was chosen as the cut-off point for each of these indicators to identify children with low school readiness.

School readiness is not a meaningful construct if it does not actually predict later school achievement and adjustment. LSAC Wave 2 data gave us the opportunity to examine how children were progressing when most were in Year 1 at school (6–7 years). While parent reports and child self-report measures and some direct assessment measures were available, we considered teachers to be the best informants on school achievement and adjustment and therefore used teacher-completed measures, namely the Academic Rating Scale (which assessed language/literacy and numeracy/mathematical thinking skills), the Approaches to Learning scale (which measured children's engagement in learning), and the Strengths and Difficulties Questionnaire (which assessed social/emotional adjustment). (See Table 3.1 and Appendices C.1 and D.1 for further details.)

The strength of using this approach to assess the relationship of school readiness to later school achievement is its multi-method and multi-informant nature. Whereas school readiness measures included standardised direct assessment and parent reports, Wave 2 measures came from teachers. Therefore the relationship between Wave 1 and 2 measures was not confounded by any tendency for one informant to be positively or negatively biased. (For interest, we also examined relationships of school readiness to parent-reported SDQ at 6–7 years, and found stronger relationships than for teacher reports. However, since these could be influenced by the single-source nature of the data, we have not reported these in detail.)

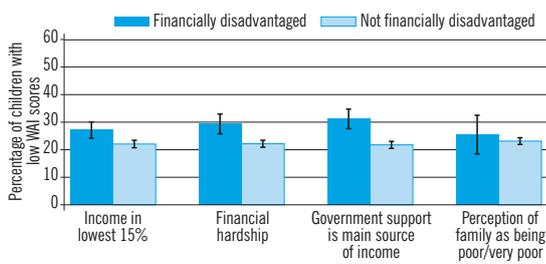


Figure 3.1 Children from financially disadvantaged (FD) and non-financially disadvantaged (non-FD) families with low Who am I (WAI) scores

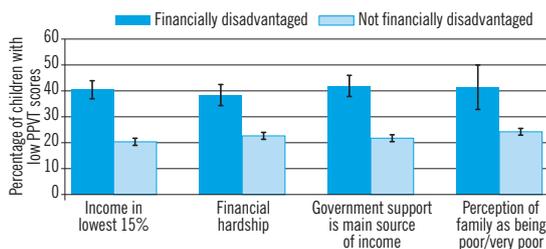


Figure 3.2 Children from FD and non-FD families with low PPVT (receptive language) scores

3.2 Measures of financial disadvantage

As noted in Chapter 2, there are a number of possible indicators of FD, but most research to date has used either income or a composite measure like socio-economic status. Several candidate measures were available within the LSAC dataset, including low income, financial hardship, parental perceptions of being “poor” or “very poor”, and parental reports that their major source of income was derived from government allowances or benefits (see Table 3.1 and Appendix B.1). Close to three-quarters of the LSAC sample did not experience any of these four types of financial disadvantage, but when they did, most commonly this was on more than one indicator of FD. As each indicator provides a somewhat different picture of family financial disadvantage, and may have different policy and practice implications, we first investigated the association of each of these FD measures with the measures of school readiness and progress. (Refer to Appendix B.2 for information on the percentage of families experiencing one or more types of financial disadvantage.)

We found a very similar picture across the four measures of FD, so despite them tapping partially distinct aspects of disadvantage,

as far as school readiness is concerned, they appeared to operate similarly. We thus chose family income as the measure of FD for subsequent analyses, since this is the most robust and also the most commonly used indicator in the literature.

The measure of income was derived from the primary carer’s report of her own income as well as her partner’s, if she had one. We adjusted the gross weekly income of both sources for household size and composition in order to take into account differences in the costs of living, using the Organisation for Economic Co-operation and Development (OECD) equivalence scale. Following Bradbury (2007), families whose income was in the lowest 15% of the LSAC sample distribution of equivalised income were categorised as being financially disadvantaged. The average income level for this group was \$183 per week; most (90%) were in the range from \$83 to \$236. Children in this 15% of families are the focus of this report.

3.3 Financial disadvantage and cognitive aspects of school readiness at 4–5 years

Figure 3.1 shows relationships between the four indicators of financial disadvantage and children’s cognitive skills, as assessed by the Who am I test. It shows the proportion of children with low pre-literacy/pre-numeracy skills from financially disadvantaged and non-financially disadvantaged families.

The “I” bars at the top of the columns represent the 95% confidence intervals (CIs). Where confidence intervals for the columns being compared in the statistical analyses do not overlap, we can be 95% confident that the values are significantly different. As an example, on the left of Figure 3.1, the CI for the group of children from FD families does not overlap with the CI for the group of children from non-FD families, indicating that there were significant differences in the percentage of children in these two types of families who had low WAI scores.

The findings were consistent across three of the four indicators of financial disadvantage (low income, experience of financial hardship, and main source of income derived from government support), with children from FD families being significantly more likely to have lower levels of pre-literacy/pre-numeracy skills, as evident from their WAI scores. On the fourth type of financial disadvantage, “parent perceives the family to be poor/very poor”, no significant differences were found.

A similar, more powerful, pattern of differences was found for receptive language skills measured by the Peabody Picture Vocabulary test (see Figure 3.2). Approximately twice as many children from FD families were in the low PPVT category (40%) than their peers from non-FD families (around 20%). Results were consistent across all four types of family financial disadvantage.

3.4 Financial disadvantage and social/emotional aspects of school readiness at 4–5 years

Figures 3.3 to 3.7 show differences between children from FD and non-FD families on parent-reported behaviour problems and

prosocial behaviour, as measured by the Strengths and Difficulties Questionnaire.

As found for the WAI and PPVT, children from FD families were significantly more often reported to display difficult behaviours (more conduct problems, see Figure 3.3; greater hyperactivity/inattention, Figure 3.4; more emotional problems, Figure 3.5; and more peer problems, Figure 3.6), which are taken as indicators of low school readiness and may place children at risk of making poor transitions to primary school. As shown in Figure 3.7, they also significantly more often showed lower levels of prosocial behaviour than their non-FD peers, except on the indicator “parent perceives the family to be poor/very poor”.

Table 3.1 Measures of family financial disadvantage, school readiness and progress

Indicator	Measure	Assessment mode
Measures of family financial disadvantage at 4–5 years		
Low family income	In the lowest 15% of the LSAC cohort on equivalised family income (the group's average equivalised weekly income was \$183)	Parent report
Family experience of financial hardship in the previous 12 months	Experienced one or more hardship because of lack of money in the past 12 months (e.g., gone without meals, unable to pay bills)	Parent report
Government benefits/support from the major source of income	Government pension, allowance or income support was the family's primary source of income	Parent report
Perceptions of the family as being poor or very poor	Choice of “poor” or “very poor” response categories to a question on how the family was getting on financially	Parent report
Measures of school readiness at 4–5 years		
Pre-literacy/pre-numeracy skills	Who Am I (WAI) test (de Lemos and Doig, 1999); e.g., copying and writing letters, numbers and shapes	Interviewer-administered
Receptive language and vocabulary skills	Peabody Picture Vocabulary Test (PPVT), short form (Dunn & Dunn 1997); the child chooses the picture closest to in meaning to an orally presented word	Interviewer-administered
Positive and negative child behaviour:	Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997)	Parent report
■ conduct problems	5 items, e.g., fights with other children	
■ hyperactivity	5 items, e.g., restless, overactive	
■ emotional problems	5 items, e.g., unhappy, depressed or tearful	
■ peer problems	5 items, e.g., picked on or bullied by other children	
■ prosocial behaviour	5 items, e.g., considerate of others' feelings	
Measures of school progress at 6–7 years		
Language/literacy and numeracy/maths skills	Academic Rating Scale (ARS; ECLS-K); e.g., for literacy—reads age-appropriate books independently, with comprehension; for numeracy—counts change with two different types of coins	Teacher report
Engagement in learning	Approaches to Learning Scale (ECLS-K); e.g., shows eagerness to learn new things, works independently	Teacher report
Positive and negative child behaviours at 4–5 years	Strengths and Difficulties Questionnaire (Goodman, 1997)	Teacher report

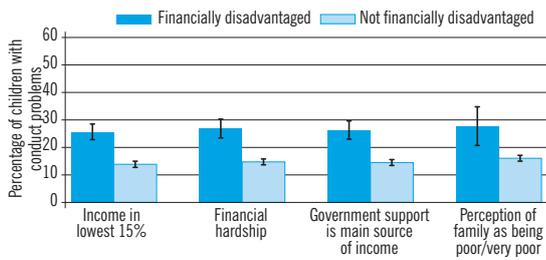


Figure 3.3 Children from FD and non-FD families showing conduct problems on the SDQ at 4–5 years, parent reports

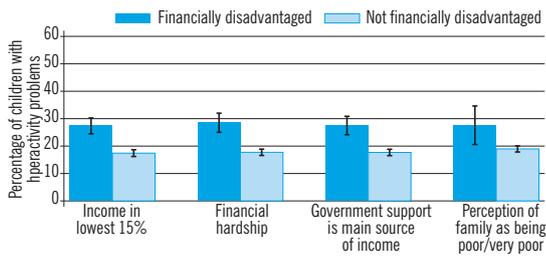


Figure 3.4 Children from FD and non-FD families showing hyperactivity problems on the SDQ at 4–5 years, parent reports

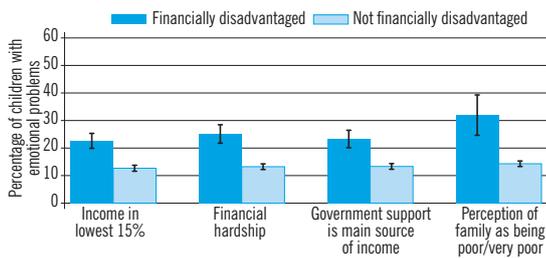


Figure 3.5 Children from FD and non-FD families showing emotional problems on the SDQ at 4–5 years, parent reports

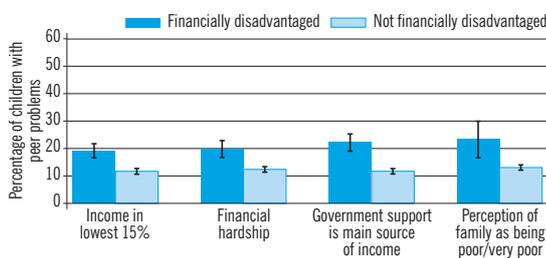


Figure 3.6 Children from FD and non-FD families showing peer problems on the SDQ at 4–5 years, parent reports

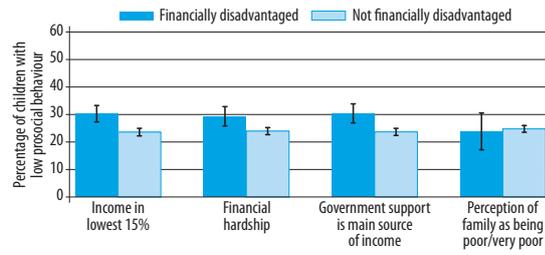


Figure 3.7 Children from FD and non-FD families showing low prosocial behaviour on the SDQ at 4–5 years, parent reports

3.5 Financial disadvantage and academic achievement and engagement in learning at 6–7 years

The percentages of children from FD and non-FD families who were reported by teachers to have literacy/numeracy problems at 6–7 years are shown in Figures 3.8 and 3.9 below. Trends were consistent across both academic areas, with between 30% and 40% of children from FD families reported to have low levels of skills compared with approximately 20% of their non-FD peers. Trends were also similar across the four types of family financial disadvantage. Disadvantage thus seemed to double the risk of poor literacy/numeracy outcomes.

Similar trends were found on the Approaches to Learning Scale (see Figure 3.10), with significantly more children from FD families (33% to 36% over the four types of disadvantage) reported to show low engagement in learning than children from non-FD families (for whom rates were 20% to 22%).

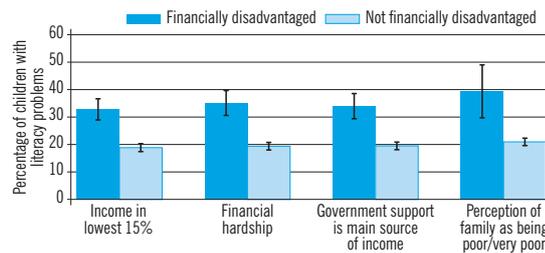


Figure 3.8 Children from FD and non-FD families showing literacy problems at 6–7 years on the Academic Rating Scale

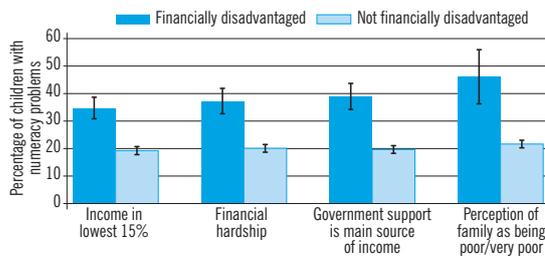


Figure 3.9 Children from FD and non-FD families showing numeracy problems at 6–7 years on the Academic Rating Scale

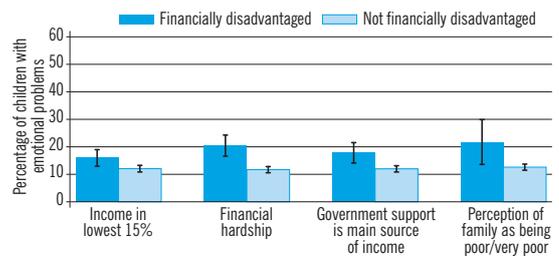


Figure 3.13 Children from FD and non-FD families showing emotional problems on the SDQ at 6–7 years, teacher reports

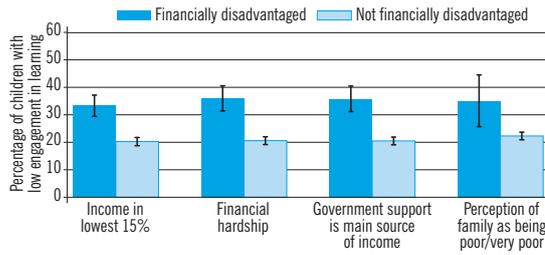


Figure 3.10 Children from FD and non-FD families showing low engagement in learning at 6–7 years on the Approaches to Learning scale

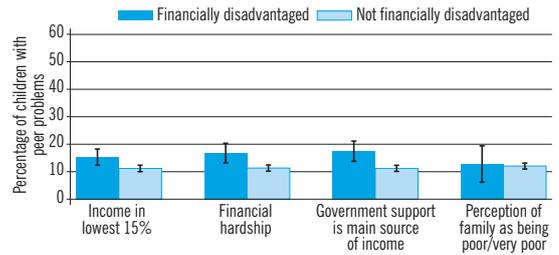


Figure 3.14 Children from FD and non-FD families showing peer problems on the SDQ at 6–7 years, teacher reports

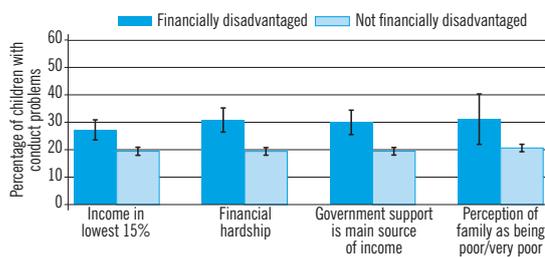


Figure 3.11 Children from FD and non-FD families showing conduct problems on the SDQ at 6–7 years, teacher reports

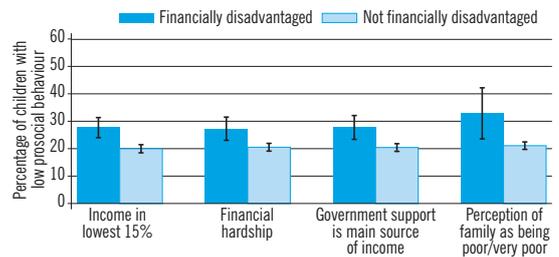


Figure 3.15 Children from FD and non-FD families showing low prosocial behaviour on the SDQ at 6–7 years, teacher reports

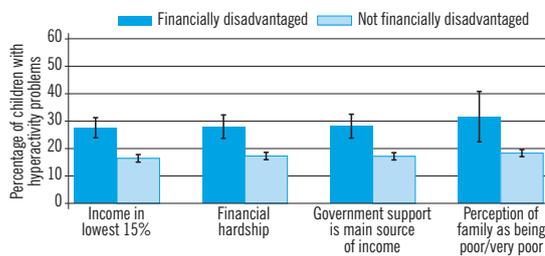


Figure 3.12 Children from FD and non-FD families showing hyperactivity problems on the SDQ at 6–7 years, teacher reports

3.6 Financial disadvantage and social/emotional school adjustment at 6–7 years

Teacher ratings of children’s behaviour using the SDQ were used to investigate differences between children from FD and non-FD households. Trends were similar to those found at 4–5 years by parent report, but were less powerful. Thus, significantly more children from FD families displayed elevated levels of all types of behaviour problems (conduct problems, Figure 3.11; hyperactivity/inattentive, Figure 3.12; emotional symptoms, Figure 3.13,

but note exceptions below; and peer problems, Figure 3.14). The gap between children from FD and non-FD households in rates of problems ranged from 8% to 11% on conduct problems, from 11% to 13% on hyperactivity problems, from 4% to 9% on emotional problems, from 1% to 6% on peer problems, and from 7% to 12% on low prosocial behaviour. Trends were similar across all types of family financial disadvantage, but differences were not statistically significant for emotional problems when using the “low income” and “parental perceptions of the family as poor/very poor” indicators of financial disadvantage, nor on peer problems for the indicator “parent perceives the family to be poor/very poor”.

On prosocial behaviour too, significantly more children from FD families were reported to display low levels than their peers from non-FD families, as shown Figure 3.15. These differences were evident across all types of financial disadvantage.

3.7 Summary

Over all the indices of school readiness—pre-literacy/pre-numeracy skills on the Who am I test, receptive language skills on the Peabody Picture Vocabulary test, and social/emotional problems on the Strengths and Difficulties Questionnaire—children from financially disadvantaged families showed lower readiness for school than their peers from non-financially disadvantaged families. Differences were most marked on the PPVT.

These trends were evident over all types of family financial disadvantage (low income, financial hardship, main source of income being government support, and parent perceptions of the family as being poor/very poor), with the exceptions of the WAI and prosocial behaviour, where no significant differences were found for the indicator “parent perceives the family to be poor/very poor”.

Two years later, at 6–7 years, more children from financially disadvantaged families were experiencing literacy/numeracy difficulties than their peers from non-financially disadvantaged families. Likewise, children from financially disadvantaged families more often showed low engagement in learning. As for school readiness, these trends were evident across all types of financial disadvantage.

Children from financially disadvantaged families were also more likely to be reported by teachers as displaying difficult behaviours, such as conduct problems, hyperactivity/inattention, emotional problems

and problems getting on with peers. Finally, more financially disadvantaged children displayed low levels of prosocial behaviour than their peers from non-financially disadvantaged families.

Differences appeared most powerful on literacy/numeracy skills and approaches to learning. However, these results also indicated that many children from disadvantaged families showed adequate school readiness and subsequently made satisfactory school progress. Further, a significant number of children from non-financially disadvantaged families did show low school readiness and poor school progress.

Overall, these analyses demonstrated clear links between family financial disadvantage and children’s readiness for school and their later school progress.

Trends were generally similar across the four types of family financial disadvantage examined (income in the lowest 15%, experience of financial hardship, the main source of income being from government support, and parental perceptions of the family as being poor or very poor). Given these similar findings, a decision was taken to focus on low income as our indicator of family financial disadvantage in the subsequent statistical analyses.

Chapter 4: Risk factors for low school readiness

This chapter addresses the questions: What are the predictors of school readiness for children? and What role does financial disadvantage play in this? The analyses in Chapter 3 indicated that there is a reasonably strong relationship between family financial disadvantage and school readiness, but they did not take into account the effect of other factors that might influence children's school readiness, or mediate the links between family FD and school readiness.

The next step was to use multivariate analysis to identify the relationship between low school readiness and a number of child, family and broader environmental factors that previous literature has suggested are risks for school readiness. By examining these simultaneously, we are able to identify which of these factors act as unique predictors of school readiness. Further, we can determine whether FD itself remains a unique predictor of low school readiness once these other factors are taken into account, and whether the role of the other predictor variables differs across the FD and non-FD groups. In order to help explain the findings of these analyses, we also examine the distribution of these child, family and environmental factors within the FD and non-FD groups.

The three indices described in Chapter 3 (WAI, PPVT and five sub-scales of the SDQ) were used to assess school readiness at 4–5 years of age. Because each of these taps distinct aspects of school readiness, they were analysed separately. However, the similarity of findings across the various types of financial disadvantage noted in Chapter 3 led to a decision to focus on low income as the sole indicator of family financial disadvantage in these analyses.

4.1 Variables included as predictors of school readiness

Variables suggested as important by our literature review and available within the LSAC dataset were included in these analyses. These included:

- *child characteristics*—gender, persistent temperament style, and age;
- *parental characteristics*—paternal absence/presence and employment status, and maternal employment status (those directly linked to low income); and maternal age, maternal education, maternal Aboriginal

and Torres Strait Islander background, maternal country of origin/facility with English, and maternal mental health (those not directly linked to low income);

- aspects of *parenting style*—parental warmth, hostile parenting, parental consistency and use of reasoning;
- *family educational climate*—frequency of reading to the child, other home learning activities, number of children's books in the home, and amount of television watching;
- *neighbourhood characteristics*—neighbourhood disadvantage, and metropolitan/non-metropolitan and remoteness of residence; and
- children's *child care/preschool experiences*.

To aid interpretation, these variables were divided into categories before the statistical analyses were undertaken. For the statistical analysis technique used here (described below), one category must be designated as the reference to which the other categories are compared (i.e., it acts as a “normative” comparison²). For example, “Australian-born mothers” was the reference group to which “non-Australian born mothers with good English”, and “non-Australian born mothers with poor English”, were compared. The variables investigated, how they were categorised, and the categories designated as the reference are described next.

Child characteristics

Gender. Child gender was included, with the category “female” used as the reference.

Persistent temperament style. The persistence temperament measure (adapted from Sanson, Prior, Smart, and Oberklaid, 1993) includes items such as: “the child likes to complete one task or activity before going onto the next”, and “when a toy or game is difficult, this child quickly turns to another activity” (this item was reverse scored). Parents rated their children on a 6-point scale, ranging from “almost never” to “almost always”. The mean of the 4 items assessing persistence was computed, and children whose scores were in the lowest quintile were classified as low on persistence, while the remainder constituted the reference group. The total LSAC cohort mean score on persistence was 3.8, indicating that children were “usually” persistent. Thus, while children in the lowest quintile were lower on persistence, they were not necessarily extremely non-persistent.

Age. Although 72% of the sample was aged between 54 and 59 months when assessed in Wave 1, child ages ranged from 51 to 67 months. To control for age effects (which are not of interest for the present investigation), child age was entered in the multivariate analyses.

Parental characteristics

Directly linked to low income

Paternal absence/presence and employment status. A composite variable was formed to indicate whether the child's biological father was resident in the home and whether he was in employment. The three-level variable formed was: a) father does not reside in the home; b) father is resident and is not employed; and c) father is resident and is employed. The category "resident, employed father" was used as the reference.

Maternal employment status. Four categories were used here: a) mother is not currently in the labour force; b) mother is unemployed; c) mother is in part-time work; and d) mother is in full-time work. The first category, "mother is not in the labour force", was used as the reference.

In addition, low income (see Appendix B.1.1 for more detail), was also included in the multivariate analyses to determine its unique and interactive effects.

Not directly linked to low income

Maternal age. Maternal age was classified into "less than 26 years of age", and "26 years or older" at the time the family first took part in the LSAC study. The reference category was "26 years or older".

Maternal education. Three categories were used: a) completed a bachelor or postgraduate university degree; b) completed year 12 (may also have completed a non-university post-secondary qualification); and c) completed less than year 12. The reference was "completed less than year 12".

Maternal Aboriginal and Torres Strait Islander background. Mothers from an Indigenous background were compared to the reference group of non-Indigenous mothers.

Maternal country of origin/facility with English. As well as asking about the country in which mothers were born, their self-reported fluency with English was sought, with a 4-point scale of "very well", "well", "not well" and "not at all" being employed. Three categories were formed: a) Australian-born mother, b) non-Australian born mother who speaks English well or very well, and c) non-Australian born mother who speaks English not well or not at all. The reference group was Australian-born mother.

Maternal mental health. Maternal psychological distress was measured via the 6-item K6 scale (Kessler et al., 2002). Mothers rated how often they had felt "nervous", "hopeless", "restless or fidgety", "worthless", that "everything was an effort", and "so sad that nothing could cheer them up" in the past 4 weeks on a 5-point scale ranging from "none of the time" to "all of the time". Responses were summed and, as recommended by Kessler et al., a score of 19 or greater was used to indicate the presence of clinically significant levels of psychological distress. Those in the clinical range were compared to the remainder, who constituted the reference group.

Parenting style

Parental warmth. Parents completed 6 questions about how often they displayed warm affectionate behaviour towards their child; for example, "How often do you enjoy doing things with this child?" and "How often do you express affection by hugging, kissing and holding this child?" A 5-point response format, ranging from "never/almost never" to "always/almost always" was used. Scores were summed and those falling in the lowest quintile were classified as indicating lower warmth. It should be noted that parents generally gave positive answers to these questions (usually in the "often" or "always/almost always" range) and hence a position in the lowest quintile does not indicate very low warmth; rather that scores were lower than the remainder of the sample. The higher warmth category was used as the reference.

Hostile parenting. Five items were used to assess hostile parenting, using a 10-point response format ranging from "not at all" to "all the time". Example items are: "I have raised my voice with or shouted at this child" and "I have been angry with this child". Scores were summed and those in the upper quintile were classified as indicating higher hostility. As was the case for parental warmth, parents generally did not report much hostility (most scores were between 1 and 2), hence this classification indicates higher but not extreme hostility. The lower hostility category formed the reference.

Parental consistency. Five items assessed parental consistency; for example, "How often does this child get away with things you feel should have been punished?" (this item was reverse scored), and "When you give this child an instruction or make a request to do something, how often do you make sure that he/she does it?" Responses used the same 5-point scale as for parental warmth. The sum of scores was computed and those in the lowest quintile were classified as showing lower consistency. As was the case for the

other parenting scales, parents generally reported high levels of consistency (parents tended to use the top 2 responses), thus the classification does not imply substantial parental inconsistency. The higher consistency category was used as the reference.

Use of reasoning. The items “How often do you explain to this child why he/she is being corrected?” and “How often do you talk it over and reason with this child when he/she misbehaves?” were used to assess parents’ use of reasoning. The same response format and process for deriving a total score were used as for parental warmth. Scores in the lowest quintile were classified as reflecting low use of reasoning, although, as before, the positive bias in parents’ responses meant that scores in this quintile indicated lower rather than very low use of reasoning. The category “higher use of reasoning” was used as the reference.

Family educational climate

Frequency of reading to the child. Parents reported on how many days in the past week a family member had read to the child from a book, with responses of “none”, “1–2 days”, “3–5 days” and “every day (6–7)” available. For these analyses, answers were divided into “fewer than 3 days a week” and “3 or more days a week”, with the higher category used as the reference.

Other home learning activities. Parents reported how often a family member had undertaken six other home learning activities with the child; for example, “told the child a story not from a book” and “played music, sang songs, danced or did other musical activities with the child”. The response format was identical to that used to measure reading to the child. The six scores were summed and those in the lowest quintile were classified as indicating lower at-home activities. The higher category was used as the reference.

Number of children’s books in the home. Parents also reported how many children’s books the child had at home (including library books), with the response choices “none”, “less than 10”, “10 to 20”, “21 to 30” and “more than 30” available. Scores were divided into “30 or fewer books in the home” and “more than 30 books in the home”, with the higher category forming the reference.

Amount of television watching. Parents were asked approximately how many hours their child watched TV or videos at home on: a) a typical weekday; and b) a typical weekend day. Response options of “does not watch TV or videos”, “less than 1 hour”, “1 up to 3 hours”, “3 up to 5 hours” and “5 or more hours” were provided. If children typically watched 3 or more

hours of TV on either a weekday or weekend day, they were classified as being a high TV watcher. Less than 3 hours a day of TV watching was used as the reference.

Neighbourhood characteristics

Neighbourhood disadvantage. The Australian Bureau of Statistics (ABS) Socio-Economic Index for Areas (SEIFA) provides a summary measure of neighbourhood advantage or disadvantage using information collected in the 2001 Census. LSAC postcode information (rounded to the nearest 10 to preserve confidentiality) was used to derive SEIFA rankings for all LSAC families. The LSAC distribution on SEIFA was divided into quintiles and position in the lowest quintile was classified as reflecting high levels of neighbourhood disadvantage. The other category, SEIFA ranking higher than the lowest quintile, was used as the reference.

Metropolitan/non-metropolitan and remoteness of residence. Information about the family’s residence location was combined to form a composite indicator of metropolitan/non-metropolitan locality, and level of remoteness. The ABS definition of living in a capital city statistical division was used to differentiate metropolitan and non-metropolitan locations, and the ABS Remoteness Indicator for Areas (ARIA; ABS, 2001) was used to differentiate families living in accessible and remote non-metropolitan areas. The ARIA is based on the distance of the area from key services such as medical services and food supplies. A three-level variable was formed for these analyses: a) metropolitan; b) accessible non-metropolitan; and c) remote non-metropolitan location. Metropolitan location was the reference category.

Child care/preschool experiences

The child care or preschool type currently attended by the child was classified to reflect the educational orientation of the care children were receiving. A four-level variable was formed with categories of: a) parental or informal home-based care; b) formal child care (and doesn’t attend preschool); c) preschool (including those who attended preschool and child care); and d) primary school (15% of children had commenced primary school when assessed in Wave 1). The reference criterion was the preschool category.

4.2 Statistical analysis strategy

For each of the seven aspects of school readiness previously defined (see Table 3.1), binary logistic regression was used to compare

children who showed low school readiness with their peers who showed adequate school readiness. These two groups were compared on the set of child, parental, family and child care variables described above. Family financial disadvantage (measured as low income) was also included in these analyses to determine whether it retained a significant independent association with school readiness after the other predictor variables were included. Thus, all variables were entered simultaneously to investigate their relationships with school readiness, while controlling for the effects of the other variables.

Findings are displayed in terms of odds ratios (OR), which show whether characteristics are associated with higher risk (an odds ratio greater than 1.0) of poor school readiness, or lower risk (an odds ratio less than 1.0—often interpreted as a “protective” effect). The comparison group in all cases is the reference category (as described above). As an example, when examining gender, the odds ratio indicates the effect of being male, in comparison to the reference category of female. The odds ratio of 3.68 for boys on the WAI means that the odds of low WAI scores for boys are 3.68 times that of girls. Again, for mother’s labour force status and the WAI, the odds ratio of 0.78 indicates that for children of unemployed mothers, their odds of low scores are 1.28 (1 divided by 0.78) times lower than those whose mothers are not in the labour force.

As interpretation of these odds ratios can be difficult, where differences are significant we also provide predicted percentages³ of children who would be expected to show low school readiness, while holding the effects of the other variables constant. Predicted percentages are calculated separately for FD and non-FD groups, which is important since the two groups often differed considerably on these characteristics (as shown in section 4.5), and these differences are likely to explain at least some of the difference in outcomes of the two groups.

In order to determine if particular factors have different effects for children from FD families than their non-FD counterparts, interaction effects were examined. These test whether a factor has a stronger or weaker effect on school readiness for one group compared to the other. For reader ease, the full results for these interaction analyses are not presented,⁴ but significant interaction effects are described. To aid understanding of these interaction effects, we calculated the predicted probability that individuals in a specific group would experience low school readiness. All variables were tested for interactions.

The results are presented in two separate sections. The first examines cognitive components of school readiness (pre-literacy/pre-numeracy skills as measured by the WAI, and receptive language and vocabulary skills as measured by the PPVT). The second analyses social/emotional indices of school readiness (conduct problems, hyperactivity, emotional problems, peer problems and prosocial behaviour, as measured by the SDQ). These are followed by a brief summary of the findings.

4.3 Factors associated with children’s cognitive school readiness

This section examines associations between cognitive aspects of school readiness, as measured by the PPVT and WAI, and the predictor variables. Results of multivariate analyses are shown in Table 4.1, with significant odds ratios shown in bold and by asterisks, and are discussed below.

Financial disadvantage

As shown in Chapter 3, children from FD families were more likely to have low outcome scores on the PPVT and the WAI. However, when FD was included along with other variables in the multivariate analyses, it remained a significant, albeit modest, risk factor for low PPVT scores (24% of the financially disadvantaged group of children were predicted to have low PPVT scores, compared to 19% of the non-disadvantaged group, OR = 1.38; see Table 4.1), but was not a significant risk for low WAI scores.

The fact that family financial disadvantage was not a strong predictor of these indices of school readiness makes it particularly important to understand the role played by other predictor variables. The following sections present these findings.

Child characteristics

The odds ratios in Table 4.1 indicate that boys were at substantially greater risk of low WAI scores (29% of boys and 10% of girls were predicted to have low scores, OR = 3.68) and low PPVT scores (23% of boys and 17% of girls, OR = 1.46). Similarly, children displaying lower persistence were at much greater risk of low scores on both measures, especially for WAI (for WAI, 27% of those with low persistence compared to 14% with higher persistence, OR = 2.20; for PPVT, 25% of those with low persistence compared to 17% with higher

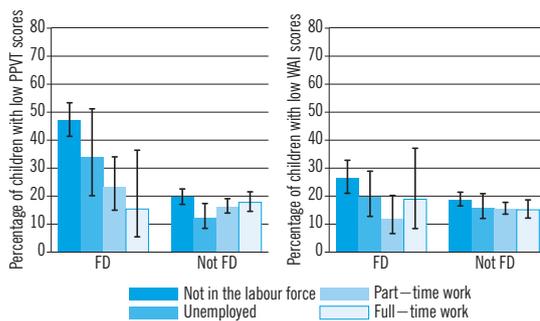
persistence, OR = 1.61). Older children were, as might be expected, at lower risk.

Parental characteristics

Directly linked to low income

Fathers' residence in the home and labour force participation were not significantly related to cognitive aspects of school readiness; however, mother's labour force participation was. Children whose mothers worked part-time or full-time and who were unemployed, were at less risk of low scores on one or both of the cognitive school readiness measures, compared to children with mothers who were not in the labour force.

When interaction analyses were used to explore this finding in more detail, it emerged that the protective effects of working part-time or full-time were stronger for the FD group (Figure 4.1). Both maternal part-time and full-time employment, relative to not being in the labour force, were related to better outcomes on the PPVT for the FD group of children only. For the WAI, this association was found for part-time employment only, and was stronger in the FD group.



Note: 95% confidence intervals indicated by the error bars.⁵

Figure 4.1 **Cognitive outcomes, family financial disadvantage and mothers' employment**

Not directly linked to low income

Maternal age was related to receptive language skills as assessed by the PPVT, with children of younger mothers more likely to have low scores (30% compared to 19% for children of older mothers, OR = 1.66), but was not related to WAI scores.

Higher maternal education was associated with less risk of low WAI and PPVT scores (OR = 0.66 for WAI and 0.56 for PPVT, when comparing the highest education and lowest education groups). For example, holding all but education constant, for children whose mothers had a bachelor degree or higher, the predicted percentages with low outcomes were 16% for the WAI and 15% for PPVT. In contrast, when

mothers had completed less than year 12 of education, 22% of children were predicted to have a low WAI score and 25% a low PPVT score.

Children with Indigenous mothers were at risk of low WAI scores. For the PPVT, there was increased risk only for those in the financially disadvantaged group (see Figure 4.2).

For children of mothers who were born overseas, the associations were not consistent across the two cognitive measures. Compared to children of Australian-born mothers, children of mothers born overseas who had fluent English were less likely to be at risk of low WAI scores (13% versus 19% for Australian-born), but had substantially higher risk on the more language-oriented PPVT (29% versus 17%). Children with a mother born overseas who did not speak English fluently also had a substantially raised risk of low PPVT scores (33% versus 17%).

Maternal psychological distress substantially increased the risk of low PPVT scores (35% versus 19% for non-distressed mothers, OR = 2.11), but was unrelated to WAI scores.

Parenting style

Overall, parenting style did not have strong associations with the cognitive measures of school readiness. The strongest relationship was for parental consistency—children in families that were less consistent were at somewhat greater risk of low PPVT scores (25% compared to 18% when consistency was higher, OR = 1.43).

Surprisingly, lower parental warmth was predictive of better PPVT scores, but the interaction analyses showed that this was only in FD families. This counter-intuitive finding was unexpected and may reflect a chance association.

Family educational climate

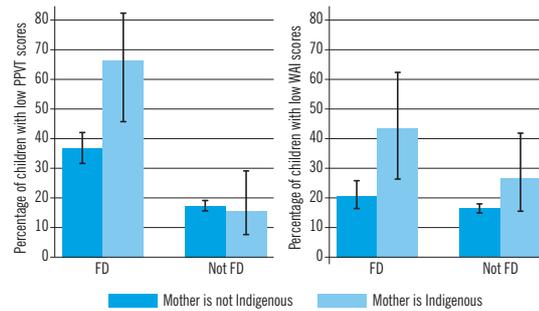
No aspect of the family educational climate (reading to the child, other home learning activities, number of books in the home and amount of television watching) was significantly associated with WAI scores. However, children were at greater risk of low PPVT scores if they were read to on fewer than 3 days a week (28% versus 18% of those who were read to more frequently, OR = 1.73) or if they had fewer than 30 children's books in the home (33% versus 17% of those with more books, OR = 2.25).

Table 4.1 Association of predictor variables to low scores on the WAI and PPVT: Odds ratios

Predictor variables	WAI	PPVT
Family financial disadvantage	0.85	1.38*
Child characteristics		
Male gender	3.68***	1.46***
Low persistence	2.20***	1.61***
Age	0.82***	0.87***
Parental characteristics		
<i>Directly linked to low income</i>		
Father not employed	1.23	1.13
Father absent	1.26	1.23
Mother unemployed	0.78	0.58**
Mother works part-time	0.73***	0.71**
Mother works full-time	0.74*	0.78
<i>Not directly linked to low income</i>		
Mother < 26 years	0.96	1.66*
Mother completed year 12 education	0.68***	0.81
Mother completed bachelor degree	0.66**	0.56***
Mother is of Indigenous background	2.15**	1.59
Mother is non-Australian born, good English	0.64***	1.93***
Mother is non-Australian born, poor English	0.90	2.19*
Maternal psychological distress	1.18	2.11***
Parenting style		
Lower warmth	0.88	0.77*
Higher hostility	0.87	0.97
Lower use of reasoning	1.01	1.09
Lower consistency	1.21	1.43***
Family educational climate		
Reading to child < 3 days per week	1.18	1.73***
Low other home learning activities	0.93	0.99
< 30 children's books in home	1.04	2.25***
High TV watching	1.05	1.12
Neighbourhood characteristics		
High SEIFA disadvantage	1.33*	1.30*
Accessible non-metropolitan	0.97	0.63***
Remote non-metropolitan	1.50	0.58
Child care		
Informal or parent-only care	1.49*	1.68**
Child care	0.94	1.08
School	0.27***	1.13
Constant	0.11***	0.13***
<i>N</i>	4,407	4,007

Notes: * = $p < .05$; ** = $p < .01$; *** = $p < .001$

As shown in Figure 4.3 on the left, links between being read to and low PPVT scores were stronger for the FD group. While reading to the child was not significantly related to WAI scores across the whole sample (see Table 3.2), exploration of interaction effects showed that lower levels of reading were a weak risk within non-FD families, but not FD families (20% of non-FD children who were read to less often had low WAI scores compared to 16% who were read to more frequently, OR = 1.32), (see Figure 4.3, right side).



Note: 95% confidence indicated by the error bars

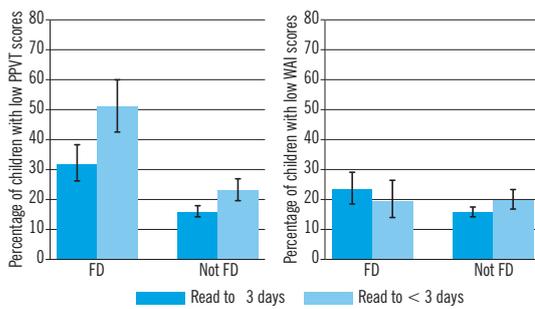
Figure 4.2 Cognitive outcomes, family financial disadvantage and mothers' Indigenous status

Neighbourhood characteristics

Residence in a disadvantaged SEIFA area was significantly but modestly associated with a higher risk of low scores on both cognitive school readiness measures. Compared to children who lived in metropolitan areas, those in accessible non-metropolitan regions had a lower risk of low PPVT scores.

Child care/preschool experiences

As might be expected, children who were attending school were at considerably less risk of low WAI scores (reflecting skills in activities such as writing, copying, and symbol recognition), relative to those in preschool or child care. However, these associations were not found on the PPVT. Children not in any form of formal care or early education setting were at a higher risk of low scores on both cognitive measures.



Note: 95% confidence intervals indicated by error bars

Figure 4.3 Cognitive outcomes, family financial disadvantage and reading to children

Summary of factors associated with cognitive outcomes

A large number of risk and protective factors were related to cognitive aspects of school readiness. These were:

- the child characteristics of male gender (risk), a less persistent temperament style (risk) and being older (protective);
- the parental characteristics of maternal education (less than year 12 attainment conferring risk and a university education providing protection), maternal age of less than 26 years (risk), mothers' labour force participation (being in employment tended to be protective), maternal Indigenous background (risk) and maternal birthplace outside Australia (both risk and protective);
- an inconsistent parenting style (risk);
- aspects of the family educational climate, especially if the child was read to on fewer than 3 days per week and there were fewer than 30 books in the home (risks);
- family residence in a disadvantaged area (risk) and residence in a non-metropolitan but accessible area (protective); and
- children not being in formal care or preschool education (risk) and being in school (protective).

Most of these risk and protective factors operated similarly across financially disadvantaged and non-financially disadvantaged groups, as demonstrated by the limited number of statistically significant interactions. Of the significant interactions, most indicated stronger relationships between predictors and cognitive measures for the FD

group than the non-FD group. Maternal work was positively related to the PPVT cognitive measure only for the FD group, and was more powerfully related to the WAI for the FD group. There was an unexpected relationship between lower parental warmth and better PPVT scores for FD children. Being read to for fewer than three days a week was a stronger predictor of low PPVT scores for the FD than non-FD group. In contrast, low levels of being read to were weakly predictive of low WAI scores only for the non-FD group. These results give some partial support to the notion that some parent and family factors may be more important for cognitive school readiness in the FD group.

4.4 Factors associated with social/emotional indices of school readiness

The next section examines the multivariate results for the social/emotional indices of school readiness, assessed with the Strengths and Difficulties Questionnaire.

Financial disadvantage

As shown in Chapter 3, there were significant differences between children from FD and non-FD families on all five social/emotional indices of school readiness. However, when included in the multivariate analyses along with the set of child, family and environmental variables, low income (the financial disadvantage indicator) did not have an independent effect on family financial disadvantage. That is, the difference between FD children and other children appears to work through the associations of family financial disadvantage with other characteristics of children and families. As with the cognitive measures, we explore the nature of these associations in the sections below.

Child characteristics

As was the case for cognitive measures of school readiness, child characteristics of gender and temperamental persistence were associated with social measures, but not emotional problems. Boys were at somewhat increased risk of conduct problems (14% of boys compared to 12% of girls, OR = 1.23), hyperactivity problems (19% of boys compared to 12% of girls, OR = 1.77) and peer problems (13% for boys compared to 9% for girls, OR = 1.53) and low prosocial behaviour (27% of boys compared to 19% of girls, OR = 1.59). Children displaying lower persistence were at much higher risk for hyperactivity problems (33% compared to 11%, OR = 3.92) and somewhat higher risk for conduct

problems (17% compared with 11%, OR = 1.71), peer problems (13% compared with 10%, OR = 1.30), and low prosocial behaviour (29% compared with 21%, OR = 1.56). This demonstrates the centrality for children's development of their capacity to control and sustain their attention. Age was not related to any of these school readiness indices (see Table 4.2).

Parental characteristics

Directly linked to low income

Compared to families in which the father was resident and employed, children whose father did not live in the home were at somewhat greater risk of conduct problems (17% compared to 12%, OR = 1.49), peer problems (13% compared to 10%, OR = 1.38) and low prosocial behaviour (27% compared to 22%, OR = 1.37). There were no differences between children whose fathers were resident in the family according to whether or not resident fathers were employed, except when interactions were explored. In non-FD families, children were at increased risk of emotional problems when their fathers were not employed (20% had emotional problems compared with 12% of children whose fathers were employed, OR = 1.88).

Only for hyperactivity and emotional problems were there associations with maternal employment. Children were at lower risk of hyperactivity problems when their mothers were unemployed (12%, OR = 0.64) or worked part-time (13%, OR = 0.69), compared to not being in the labour force (18%). For emotional problems, there was slightly lower risk when mothers were employed, either part-time (12%, OR = 0.80) or full-time (11%, OR = 0.73), compared to not being in the labour force (15%). Interaction analyses showed that only in FD families were children more likely to have low prosocial behaviour if their mothers worked part-time (34%), compared to being not in the labour force (23%).

Not directly linked to low income

Children of younger mothers, compared to those with older mothers, were at greater risk of conduct problems (21% and 12% respectively, OR = 1.96) and emotional problems (18% and 13% respectively, OR = 1.46).

Findings regarding maternal education indicated that children whose mothers had a bachelor degree or higher were at somewhat reduced risk of conduct problems, peer problems and hyperactivity (10%, 10% and 13% respectively among children of more highly educated mothers, compared to 14%,

12% and 18% among children of mothers with less than year 12; OR = 0.69, 0.73 and 0.68 respectively). Children whose mothers had incomplete secondary education were at somewhat increased risk of low prosocial behaviour, compared to children whose mothers had completed year 12, but interaction analyses showed this was true only in FD families (33% compared to 19%, OR = 0.47).

Children with an Indigenous mother had a higher risk of hyperactivity (24% compared to 15% of children with non-Indigenous mothers, OR = 1.74), but no other significant associations were apparent.

Children whose mothers were born in Australia had a greater risk of low prosocial behaviour compared to children with overseas-born mothers, irrespective of English fluency (16% if mothers were not fluent, and 19% if fluent, as against 24% of children with Australian-born mothers, OR = 0.62 and 0.77 respectively). Interaction analyses showed that the difference in prosocial behaviour between children of Australian-born and non-Australian born mothers with poor English language skills was apparent only for FD children, where there was a sizeable difference (in this group, 28% and 8% respectively had low prosocial behaviour).

Maternal psychological distress was associated with a greater risk of hyperactivity (23% compared to 15% of children whose mothers did not experience psychological distress, OR = 1.70) and peer problems (18% compared to 11%, OR = 1.88), and especially for emotional problems (29% compared to 13%, OR = 2.71).

Parenting style

As summarised in Table 4.3, lower maternal warmth was a weak risk factor for conduct problems, peer problems and low prosocial behaviour. In contrast, higher levels of maternal hostility were strongly linked with lower school readiness on all measures, especially conduct problems (34% compared to 11% for children who did not experience hostile parenting, OR = 4.28). Lower consistency was also associated with increased risk on all measures. Lower use of reasoning increased the risk of low prosocial behaviour.

These associations were generally similar for children from FD and non-FD families. However, parental hostility was a more powerful risk for hyperactivity in non-FD than FD families.

Family educational climate

Being read to on fewer than 3 days per week, versus more than 3 days per week, was related to a higher risk of low prosocial behaviour.

This association was stronger in FD families (Figure 4.4, left side). Additionally, low family engagement in other home learning activities increased the risk of poor prosocial skills. However, interaction analyses showed differing effects for FD and non-FD children. For non-FD

children, family engagement increased the risk for low prosocial behaviour (surprisingly), while trends were in the opposite direction for FD children (Figure 4.4, right side). Having fewer children's books in the home increased the risk

Table 4.2 Association of predictor variables to social/emotional indices of school readiness: Odds ratios

Predictor variables	Conduct problems	Hyperactivity problems	Emotional problems	Peer problems	Low prosocial behaviour
Family financial disadvantage	0.96	1.03	1.12	0.89	0.94
Child characteristics					
Male gender	1.23*	1.77***	0.92	1.53***	1.59***
Low persistence	1.71***	3.92***	1.08	1.30*	1.56***
Age	0.99	1.01	1.01	1.01	0.99
Parental characteristics					
<i>Directly linked to low income</i>					
Father not employed	1.24	0.93	1.20	1.33	1.17
Father absent	1.49**	1.14	1.15	1.38*	1.37*
Mother unemployed	0.95	0.64***	0.76	1.07	0.94
Mother works part-time	0.85	0.69**	0.80*	0.99	0.95
Mother works full-time	0.80	0.88	0.73*	0.98	0.84
<i>Not directly linked to low income</i>					
Mother < 26 years	1.96***	1.42	1.46*	1.18	0.82
Mother completed year 12 education	0.99	0.87	0.99	0.85	0.79*
Mother completed bachelor degree	0.69*	0.68**	0.98	0.73*	0.96
Mother is of Indigenous background	0.99	1.74*	1.42	0.99	1.07
Mother is non-Australian born, good English	0.80	0.91	0.86	1.15	0.77**
Mother is non-Australian born, poor English	0.97	0.83	1.37	1.68	0.62*
Maternal psychological distress	1.36	1.70**	2.71***	1.88**	1.08
Parenting style					
Lower warmth	1.29*	1.00	1.13	1.36*	1.67***
Higher hostility	4.28***	2.50***	1.99***	1.50**	2.08***
Lower use of reasoning	0.96	1.13	1.00	1.25	1.52***
Lower consistency	1.79***	1.34**	1.47***	1.53***	1.40***
Family educational climate					
Reading to child < 3 days per week	1.19	1.10	1.11	1.14	1.35**
Low other home learning activities	1.10	1.12	1.05	1.09	1.28**
< 30 children's books in home	0.84	0.89	1.26	1.46**	1.09
High TV watching	1.56***	1.40***	1.28**	1.51***	1.14
Neighbourhood characteristics					
High SEIFA disadvantage	1.25*	1.16	1.10	1.32*	1.04
Accessible non-metropolitan	1.18	0.94	0.84	1.01	0.98
Remote non-metropolitan	0.76	1.11	0.73	0.82	1.40
Child care/preschool experiences					
Informal or parent-only care	0.99	1.08	0.86	1.22	0.52***
Child care	1.04	1.22	0.98	0.89	0.84
School	1.07	1.16	1.06	0.97	0.90
Constant	0.07***	0.07***	0.12***	0.05***	0.13***
N	4,494	4,494	4,493	4,494	4,494

Notes: * = $p < .05$; ** = $p < .01$; *** = $p < .001$

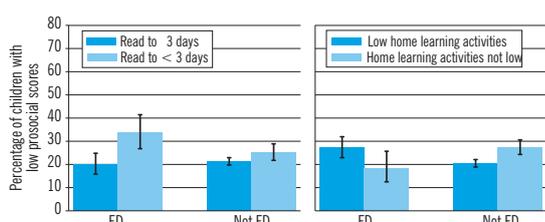
Table 4.3 Association of parenting style with social/emotional indices of school readiness: Predicted percentages

Predictor variables	Conduct problems	Hyperactivity problems	Emotional problems	Peer problems	Low prosocial behaviour
%					
Warmth					
Lower	15			13	30
Higher	12			10	21
Hostility					
Lower	11	14	12	10	21
Higher	34	28	21	15	36
Use of reasoning					
Lower					29
Higher					21
Consistency					
Lower	19	18	17	14	27
Higher	11	14	12	10	21

Note: Percentages only shown if significant differences between “higher” and “lower” parenting exist.

of peer problems (14% versus 10% for more than 30 books).

Higher rates of children’s TV viewing was a risk for all forms of problem behaviours. Comparing those who watched more TV with those who watched less, the percentages, respectively, for problem outcomes were 15% and 12% for emotional problems, 17% and 11% for conduct problems, 19% and 14% for hyperactivity problems, and 14% and 10% for peer problems. TV watching was not related to low prosocial behaviour.



Note: 95% confidence intervals indicated by the error bars

Figure 4.4 Low prosocial behaviour, family financial disadvantage, and (left) being read to, and (right) other home learning activities

Neighbourhood characteristics

Residence in a disadvantaged area was associated with a slightly higher risk of conduct problems (15% for more disadvantaged areas compared to 12%) and peer problems (13% compared to 10%). Metropolitan/non-metropolitan residence was not related to social/emotional measures.

Child care/preschool experiences

Generally, children’s attendance at school, child care or preschool was not related to social/emotional outcomes at 4–5 years except that informal or parent-only care was linked to less risk of low prosocial behaviour relative to being in preschool (14% in informal/parent-only care and 24% in preschool had low prosocial behaviour, OR = 0.52).

Interaction analyses showed that FD children in informal or parent-only care were more likely to have hyperactivity problems than those in preschool (34% and 19% respectively, OR = 2.2). For children from non-FD families, informal or parent-only care was associated with higher rates of peer problems compared to those in preschool (17% compared to 10%).

Summary of risk factors associated with social/emotional aspects of School Readiness

A large number of risk and protective factors were found to be relevant for social/emotional aspects of school readiness. These were:

- the child characteristics of male gender and a less persistent temperament style (risk factors for all aspects except emotional problems);
- the parental characteristics of maternal labour force participation (being in employment was protective against hyperactivity and emotional

problems), maternal education (less than year 12 attainment was related to low prosocial behaviour, and a university education with a lower risk of conduct problems and hyperactivity), maternal age of less than 26 years (risk for conduct and emotional problems), maternal Indigenous background (risk for hyperactivity), maternal birthplace outside Australia (protective against low prosocial behaviour), maternal psychological distress (risk for hyperactivity, peer problems and emotional symptoms), and father absence (risk for conduct and peer problems and low prosocial behaviour);

- a hostile and inconsistent parenting style (risk for all types of social/emotional problems), lower parenting warmth (risk for conduct and peer problems and low prosocial behaviour), and low use of reasoning (risk for low prosocial behaviour).
- read to on fewer than 3 days per week, low levels of other home learning activities, and fewer than 30 books in the home (risks for low prosocial behaviour), and high TV viewing (risk for all areas except prosocial behaviour);
- family residence in a disadvantaged area (risk for conduct and peer problems); and
- children not being in formal care or preschool education (risk for low prosocial behaviour).

For none of these social/emotional measures was FD itself a direct predictor.

The interaction analyses indicated that, in general, the risk and protective factors had a similar impact across FD and non-FD groups. Most of the significant interactions involved prosocial behaviour. Low maternal education, non-Australian born mothers with poor English, reading to the child fewer than 3 times a week, and mothers working part-time (versus not in the labour force) were all related to low prosocial behaviour only, or more strongly, in the FD group. Family engagement in other educational activities was a risk for low prosocial behaviour for non-FD children.

Other interactions related to hyperactivity, where higher parental hostility predicted hyperactivity more strongly in the non-FD than FD group, and experience of informal or

parent-only care was a risk for hyperactivity only for the FD group.

Finally, peer problems were more likely to be experienced by non-FD children if they were in informal or parent-only care rather than preschool.

These interaction results provide little support for the view that the social/emotional readiness of FD children is particularly vulnerable to the presence of the risk factors examined here.

Appendix E contains a summary of findings on both cognitive and social/emotional aspects of school readiness (including the main effects but not the interaction results). In this appendix, factors found to increase the risk of low school readiness are labelled “x”, while those that decrease the risk of low school readiness (i.e., were protective) are labelled “✓”.

4.5 Number of risk and protective factors present in the FD and non-FD groups

In order to help interpret the multivariate findings reported above, it is important to examine the circumstances of FD and non-FD children. Although FD was not found to be a significant unique predictor of most indicators of school readiness, we know from Chapter 3 that low school readiness is much more common in this group. It is therefore probable that the prevalence of many of the predictors of school readiness differs across groups, and this explains the higher rate of low school readiness in the FD group. In other words, a range of risk factors for low school readiness may be more common in financially disadvantaged families and may underpin links between financial disadvantage and children's outcomes. Some of these factors (e.g., parental employment) presumably have a direct impact on finances, whereas others may not be directly related to financial disadvantage (e.g., less effective parenting) but could also explain poorer levels of school readiness among children from financially disadvantaged families. We next profile the child and parental characteristics, parenting style, family educational climate, neighbourhood characteristics, and children's child care/preschool experiences of FD and non-FD families. These are summarised in Table 4.4 and described below. We conclude by examining the overall risk burden of the two groups by summing risks into a combined risk index.

Child characteristics

Children in the FD and non-FD groups were very similar in personal characteristics, with similar proportions of boys and of children with a less persistent temperament style, and no differences on child age.

Parental characteristics

Directly linked to low income

As is to be expected, there were sizable differences between the FD and non-FD groups on parental characteristics that are likely to have a direct link to low income. Fathers of children in FD households were less often resident in the home and, when resident, were more often not employed. Thus, 30% of fathers in FD households were resident in the home and employed, compared with 90% of fathers in non-FD households. Twice as many mothers in FD households were not in the labour force, whereas more than twice as many mothers in non-FD households were in part-time or full-time employment.

Not directly linked to low income

Differences on parental factors that have a less direct link to income tended to be less extreme, but still notable, as described below:

- While few mothers in the total cohort were aged less than 26 years, rates of early motherhood were higher among the FD group.
- More mothers in FD households had less than a year 12 education, while in contrast, three times as many mothers in non-FD households had a university qualification.
- There were very few Indigenous mothers overall, but the percentage of Indigenous mothers was higher in the FD group.
- Slightly more mothers were Australian-born in the non-FD group, similar proportions were born overseas but had good English, while there were more mothers born overseas with poor English in the FD group.
- Rates of maternal psychological distress, although rare, were twice as high among the FD group.

It is clear that the FD and non-FD groups differ substantially, and largely in expected ways. However, it is notable that there is considerable heterogeneity within the FD group, so that generally only a minority of FD families had any particular risk factor. With the exception of mothers not in the labour force, this was even true for factors that one might expect to be causally related to financially disadvantaged status.

Parenting style

The parenting styles of parents in the FD and non-FD groups were generally similar, although on each measure a slightly higher proportion of FD families exhibited more negative parenting styles. Additionally, one-third of parents in FD families reported lower consistency, compared to one-fifth of parents in non-FD families.

Family educational climate

Sizable differences were evident on three of the four aspects of educational climate, with parents in FD households less likely to read to their children, and children in FD families more likely to have fewer books and to be high television watchers than their counterparts from non-FD families. Again, these risk factors were present in less than one-half of the FD sample.

Neighbourhood characteristics

As might be expected, FD and non-FD families differed markedly on the SEIFA, with 41% of children in FD families living in the lowest SEIFA quintile. However, there were relatively small differences on metropolitan/non-metropolitan location.

Child care/preschool experiences

Somewhat fewer children from FD families were in a form of formal child care or preschool and more were in informal care or parent-only care or at school, than their counterparts from better-off families.

Total risk burden

As noted in Chapter 2, there is evidence that poor outcomes can be related to the total number of risk factors encountered by a child, rather than to any single risk factor. We therefore examined the extent to which multiple environmental risks were present within FD and non-FD families. A combined risk index was developed that included the following factors:

- the parental characteristics of father absence, father unemployment, mother unemployment, mother less than 26 years of age, mother having completed less than year 12 of education, mother born overseas and having poor English, and maternal psychological distress;
- the parenting style aspects of lower warmth, higher hostility, lower use of reasoning and lower consistency;
- the family educational climate aspects of reading to the child on fewer than 3 days per week, lower other home learning activities, fewer than 30 children's books in the home,

and high levels of child television watching; and

- the neighbourhood characteristics of high SEIFA disadvantage and remote non-metropolitan area.

Yes/no dichotomies were formed for each characteristic, with “yes” scored as 1 and “no” scored as 0. The dichotomies were then summed to form the combined risk index, which reflected the total number of risk factors experienced by a child.

Figure 4.5 shows the distribution of risks within FD and non-FD families. For example, 3% of FD families had no risks, compared with 18% of non-FD families. Clear differences were evident, with 41% of non-FD families exhibiting zero or one risk, compared with only 11% of FD families. At the other extreme, 40% of FD families experienced five or more risks, compared with 14% of non-FD families.



Figure 4.5 Distribution of risks among financially disadvantaged and non-financially disadvantaged families

Summary

These analyses clearly indicate that more risk factors were present in the FD group of families, particularly at the higher end of the risk range (from four risks onwards). This higher prevalence helps explain the lower school readiness in the FD group of children, even though low income was not a unique predictor in the multivariate analysis. These findings and their implications are discussed further in Chapter 6.

Table 4.4 Profile of financially disadvantaged and non-disadvantaged groups

	Financially disadvantaged	Not financially disadvantaged
Child characteristics		
Male gender	52%	51%
Low persistence	22%	24%
Age (months)	57	57
Parental characteristics		
Directly linked to low income		
Father resident in home, employed	30%	90%
Father resident in home, not employed	24%	2%
Father absent	46%	8%
Mother not in the labour force	66%	35%
Mother unemployed	11%	8%
Mother works part time	18%	42%
Mother works full-time	6%	16%
Not directly linked to low income		
Mother < year 12 education	44%	23%
Mother completed year 12 education	47%	49%
Mother completed bachelor degree or higher	9%	28%
Mother aged < 26 years	12%	4%
Mother is of Indigenous background	6%	2%
Mother is Australian-born	68%	76%
Mother is non-Australian born, good English	24%	22%
Mother is non-Australian born, poor English	8%	2%
Maternal psychological distress	7%	3%
Parenting style		
Lower warmth	23%	21%
Higher hostility	16%	12%
Lower use of reasoning	19%	17%
Lower consistency	36%	20%
Family educational climate		
Reading to child < 3 days per week	37%	22%
Low other home learning activities	29%	27%
< 30 children's books in home	35%	16%
High TV watching	43%	28%
Neighbourhood characteristics		
High SEIFA disadvantage	41%	22%
Metropolitan	58%	65%
Accessible non-metropolitan	38%	31%
Remote non-metropolitan	4%	4%
Child care		
Informal or parent-only care	11%	4%
Child care	18%	22%
Preschool	51%	59%
School	21%	16%

Chapter 5: School progress at 6–7 years

This chapter explores links between family financial disadvantage, school readiness, and children's school progress in the early primary school years. We saw in Chapter 3 that more children from FD households showed academic difficulties at 6–7 years, lower levels of motivation, and more behaviour problems, than did children from non-FD families. Differences were most marked for literacy/numeracy skills and approaches to learning. However, these analyses did not consider the effects of other important factors, such as children's school readiness.

Accordingly, we next explore the influence of family financial disadvantage on children's school progress once the effect of children's readiness for school is taken into account. This analysis aims to answer the question: "Is family financial disadvantage still influential after children's readiness for school is included?" In these analyses, children from FD households are compared with their counterparts from non-FD households. Aspects of school readiness that are closely related to particular indicators of school progress are included (e.g., in the analyses of children's literacy/numeracy skills, the two cognitive/language aspects of school readiness are included).

A particular focus of this report is the progress of children from financially disadvantaged families. We therefore focus exclusively in the second set of analyses on the outcomes of children in these circumstances. In investigating the influence of family financial disadvantage, it is important to consider the impact of movement in and out of disadvantage over time. A total of 40% of families that were financially disadvantaged when their children were 4–5 years were no longer financially disadvantaged when the children were 6–7 years (see Appendix B.3 for further details). The school progress of children from families experiencing continuous financial disadvantage may be different to those whose family circumstances improve. Therefore, this chapter also focuses on the impact of continuous vs intermittent family financial disadvantage. These analyses aim to answer the question: "Are children who experience continuous disadvantage at greater risk of school achievement and adjustment difficulties than children whose family circumstances improve?" This second set of analyses takes into account children's readiness for school and other child, family and environmental factors measured at 4–5 years.

5.1 Family financial disadvantage and school readiness at 4–5 years, and children's subsequent school progress

Children who were living in FD and non-FD households at 4–5 years were compared on the various indices of school achievement and adjustment at 6–7 years.

Literacy/numeracy skills

Literacy/numeracy skills at 6–7 years are first examined. Four groups of children at 6–7 years were compared: those from FD families who had poorer cognitive school readiness skills at 4–5 years; those from FD families who had adequate cognitive skills at 4–5 years; those from non-FD families who had poorer cognitive skills at 4–5 years; and those from non-FD families who had adequate cognitive skills at 4–5 years. The aspects of cognitive school readiness measured were receptive language skills (via the PPVT), and pre-literacy/pre-numeracy skills (via the WAI).

Figures 5.1 and 5.2 show that cognitive school readiness skills at 4–5 years were powerful precursors of learning outcomes at 6–7 years. Thus, the highest rates of literacy/numeracy difficulties at 6–7 years were found among children who had shown poorer cognitive school readiness skills two years earlier, with this being most evident for children from FD families. Children from non-FD families with adequate cognitive skills at 4–5 years were the least likely to have poor learning outcomes, while children from FD families with adequate cognitive skills were the second least likely.

Family financial disadvantage was clearly a significant factor in children's literacy/numeracy progress at school. Children from FD families who had shown lower cognitive school readiness skills at 4–5 years were at greater risk of poor learning outcomes at 6–7 years than children with similarly low levels of cognitive school readiness skills from non-FD families. For example, almost one in two children (47%) from FD families who had low PPVT scores at 4–5 years were reported by teachers to have literacy difficulties at 6–7 years (Figure 5.1), whereas one in three children from non-FD families had such difficulties (33%). (These are the actual percentages rather than the predicted percentages reported for the multivariate analyses in Chapter 4.) A similar gap was found for numeracy skills (Figure 5.2),

and when WAI skills were examined (Figures 5.1 and 5.2).

Family financial disadvantage was also related to school progress for children who had shown adequate cognitive skills at 4–5 years, with these children being at greater risk of later literacy/numeracy difficulties than their peers from non-FD families. As an example, Figure 5.1 shows that 21% of children from FD households with PPVT scores in the adequate range were later reported by teachers to have literacy difficulties, compared with 14% of children from non-FD households. As before, trends were similar for numeracy skills (Figure 5.2), and when cognitive skills were assessed via the Who Am I test.

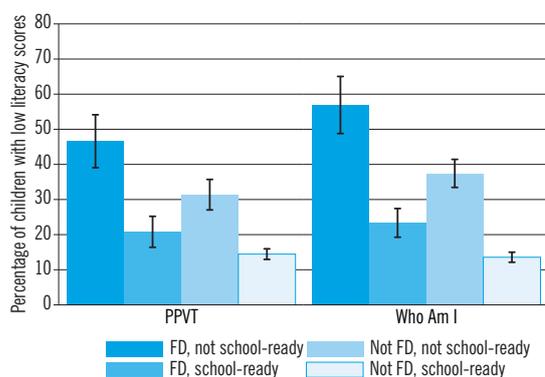


Figure 5.1 Children from FD and non-FD families with literacy difficulties at 6–7 years, by low or adequate PPVT and WAI scores at 4–5 years

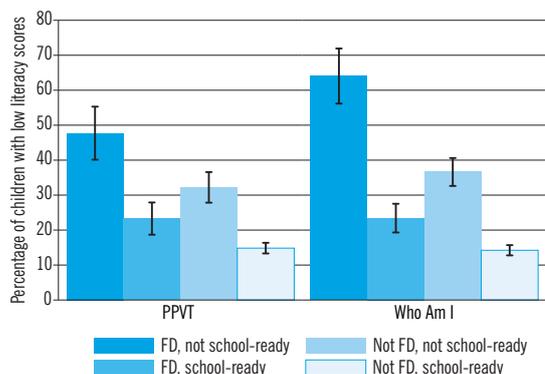


Figure 5.2 Children from FD and non-FD families with numeracy difficulties at 6–7 years, by low or adequate PPVT and WAI scores at 4–5 years

Engagement in learning

We turn next to children’s engagement in learning, as assessed by the Approaches to Learning scale. Children’s approaches to learning may be influenced by their cognitive capacities as well as their social/emotional adjustment. Thus, for these analyses, cognitive

and social/emotional indices of school readiness were included. Again, four groups were compared, according to whether children were from FD or non-FD families, and whether they had shown low or adequate cognitive and social/emotional school readiness. The findings are displayed in Figure 5.3.

There were generally clear differences in children’s approaches to learning according to their level of cognitive school readiness skills, with children who had shown lower PPVT and WAI scores at 4–5 years tending to be less engaged in learning at 6–7 years than those with higher scores. Interestingly, the percentage of children showing learning engagement problems was similar for children from FD families who had shown adequate receptive language skills on the PPVT and children from non-FD families who had shown low skills (see Figure 5.3). This could imply a protective effect for family financial wellbeing.

Children showing higher levels of social/emotional problems at 4–5 years also tended to show lower engagement in learning, suggesting that these problems were risks for children’s school engagement and motivation.

As found for literacy/numeracy outcomes, family financial disadvantage was linked to higher rates of learning engagement problems. Most strikingly, 59% of children with low WAI scores who were living in FD households showed low engagement in learning, compared with 36% of children with low WAI scores from non-FD households (a difference of 23%). A similar, but less powerful, trend was evident on the PPVT (a gap of 12%). Likewise, FD children with adequate cognitive school readiness skills more often showed learning engagement problems than their peers from non-FD families.

The same pattern of differences between children from FD and non-FD families emerged for social/emotional school readiness. However, differences were not statistically significant for children with poor school readiness, but interestingly, they were for children with adequate school readiness. Reminiscent of the findings for the PPVT, non-FD children with early conduct problems had similar rates of learning engagement problems as FD children without earlier conduct problems. Likewise, non-FD children with earlier emotional problems had fewer learning engagement problems than FD children without earlier emotional problems, hinting again of a potential protective effect for family financial wellbeing.

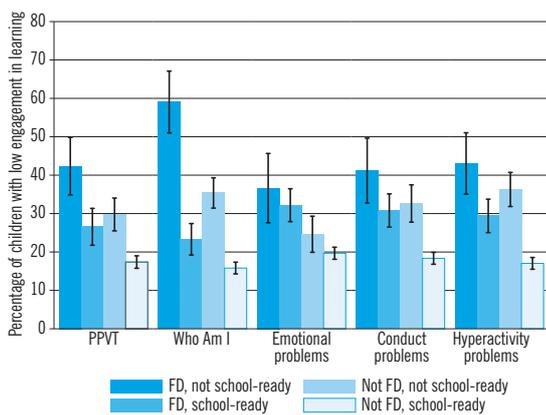


Figure 5.3 Children from FD and non-FD families with low engagement in learning at 6–7 years, by low or adequate PPVT and WAI scores and social/emotional problems at 4–5 years

Social/emotional problems

Lastly, children’s social/emotional problems at 6–7 years are examined in relation to family financial disadvantage and social/emotional problems at 4–5 years. Figures 5.4 to 5.8 display differences on children’s social, emotional and behavioural outcomes on the teacher-reported Strengths and Difficulties Questionnaire at 6–7 years, according to parent-reported social/emotional school readiness at 4–5 years and family financial disadvantage.

As with learning outcomes, children with the highest scores on the SDQ at 4–5 years were at the greatest risk of social/emotional problems at 6–7 years. For instance, looking at Figure 5.5, 40% of children from FD families with hyperactivity problems at 4–5 years were showing high levels two years later, as were 33% of children from non-FD families who had similar scores at 4–5 years. Trends were generally similar across all types of problems (conduct, hyperactivity and peer problems). These findings suggest that early social/emotional problems are significant risks for later adjustment problems. The one exception was teacher reports of emotional problems at 6–7 years, which were not related to previous parent-reported emotional problems at 4–5 years. This is not an unexpected finding, as the behaviours measured by the emotional symptoms subscale are not as easily observable as the other scales (e.g., conduct and hyperactivity problems) and hence, may be more difficult for teachers to detect.⁶

Family financial disadvantage conferred a greater risk for school-age social/emotional problems, although trends were not as strong as for literacy/numeracy skills and school engagement. Among children with high social/emotional problem scores at 4–5 years, a larger percentage of children from FD households

generally showed later problems than children from non-FD households. For example, rates of later conduct problems for children with high scores at 4–5 years were 40% among children in FD families, compared with 33% among children from non-FD families (see Figure 5.4). The one exception to these trends was peer problems, where children from non-FD families showed slightly higher rates of peer problems than children from FD families.

Among children who had not exhibited low social/emotional school readiness at 4–5 years, those from FD families were at higher risk of later problems on conduct problems, hyperactivity problems, peer problems and low prosocial behaviour at 6–7 years. Thus, family financial disadvantage was associated with a higher risk of school achievement and adjustment problems for children with adequate social/emotional school readiness.

5.2 School readiness, continuous family disadvantage and school progress

As noted earlier, our major interest is the home-to-school transition of children from financially disadvantaged families, and the factors that may facilitate or impede their progress in early primary school. A particular interest is whether continuous family financial disadvantage has a more detrimental effect on children than intermittent financial disadvantage. This question needs to be considered within the context of other critical influences, such as children’s readiness for school and other child, family and broader environmental factors that underpin school readiness (as shown in Chapter 4).

This section explores this issue using logistic regression analyses of the financially disadvantaged group of children only (i.e., the non-FD group of children is excluded). Included in these analyses were all the indicators of school readiness at 4–5 years (low vs adequate), and stability or change in family financial disadvantage (see Appendix B.3 for further details), plus the other variables examined in Chapter 4 as predictors of school readiness (e.g., parenting style, family educational climate, etc.) Besides giving insight into the impact of continuous or intermittent FD, this analysis allowed investigation of the possibility that cognitive aspects of school readiness contribute to later social/emotional adjustment at school, or that earlier social/emotional difficulties contribute to later academic difficulties. The various school achievement and adjustment outcomes are investigated separately.

We display only the findings relating to the continuity of family disadvantage and school readiness in Tables 5.1 and 5.2, as this is our major interest and the other variables are included to control for their effects.⁷ To a great extent, the effects of these variables are already included through their contribution to school readiness (see Chapter 4).

Table 5.1 shows the logistic regression analyses results investigating predictors of low vs adequate literacy/numeracy achievement, and approaches to learning. (Here, predicted percentages are reported, which take into account the effects of the other variables included in the analyses.) It shows that continuous family financial disadvantage, in comparison to moving out of disadvantage, was a risk for literacy problems (29% of

the continuously FD group and 16% of the intermittently FD group were predicted to have low scores, OR = 2.15). However, continuity of family financial disadvantage was not significantly related to numeracy problems or low engagement in learning.

The skills assessed by the Who Am I test were strongly related to later literacy/numeracy achievement and engagement in learning. Holding all but the WAI constant, the predicted percentages of children with literacy problems, numeracy problems and low engagement in learning at 6–7 years were 52%, 66% and 62% respectively for children with low WAI scores, compared with 17%, 18% and 19% for children with WAI scores in the adequate range (OR = 5.02, 8.61 and 6.70 respectively).

Low PPVT scores were risks for later literacy/numeracy difficulties, although differences were less powerful than on the WAI. For literacy, 37% of children with low PPVT scores were predicted to have literacy problems, compared with 17% of children with adequate PPVT scores (OR = 2.54). For numeracy, the rates were 38% versus 22% respectively (OR = 2.03). There was little indication that social/emotional problems at 4–5 years impinged on achievement and motivational aspects of school progress, with the exception of conduct problems. The predicted risk of numeracy problems at 6–7 years was 43% for children with conduct problems at 4–5 years, compared with 24% for children without conduct problems (OR = 2.36).

Table 5.1 Predictors of literacy/numeracy problems and low engagement in learning at 6–7 years for children from financially disadvantaged families

	Literacy problems	Numeracy problems	Low engagement in learning
Family financial disadvantage from 4–5 to 6–7 years			
Continuous financial disadvantage	2.15*	1.33	1.38
School readiness at 4–5 years			
Receptive language skills (PPVT)	2.54**	2.03*	1.27
Pre-literacy/pre-numeracy skills (WAI)	5.02***	8.61***	6.70***
Conduct problems	1.48	2.36*	0.66
Hyperactivity problems	1.31	1.11	1.67
Emotional problems	0.88	1.00	0.82
Peer problems	2.05	1.83	1.57
Low prosocial behaviour	0.73	0.69	0.70
(Other child and family characteristics not shown)			
Constant	0.10***	0.21***	0.17***
N	333	331	333

Notes: * p < .05; ** p < .01; *** p < .001

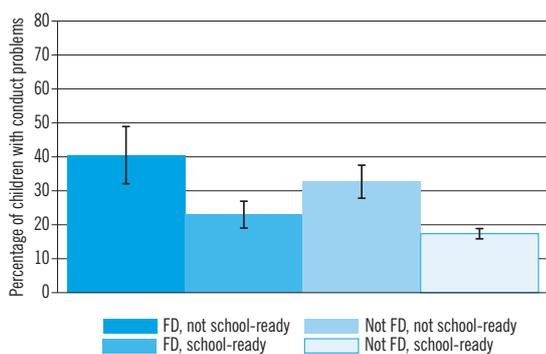


Figure 5.4 Children from FD and non-FD families with conduct problems at 4-5 years and 6-7 years

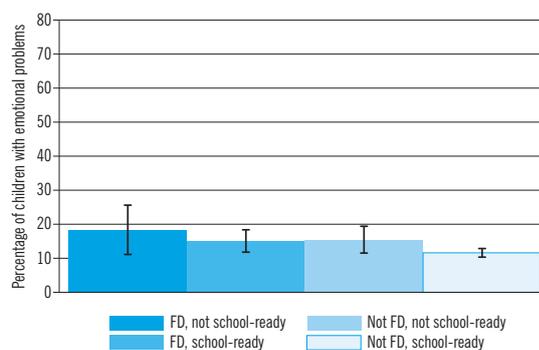


Figure 5.6 Children from FD and non-FD families with emotional problems at 4-5 years and 6-7 years

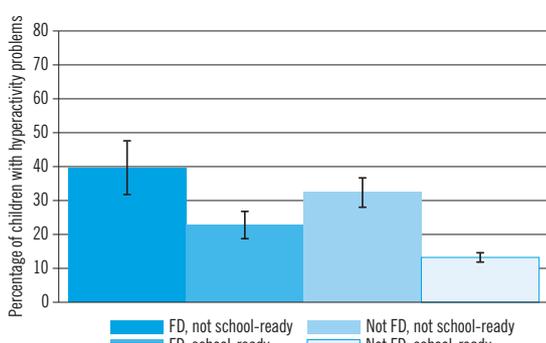


Figure 5.5 Children from FD and non-FD families with hyperactivity problems at 4-5 years and 6-7 years

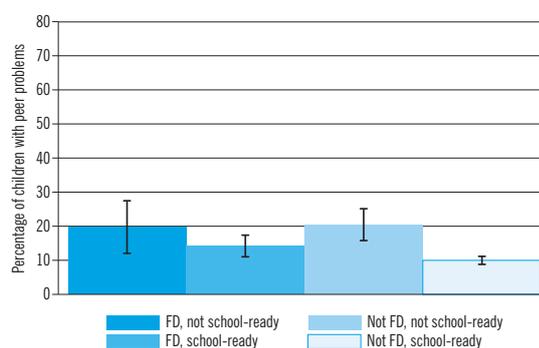


Figure 5.7 Children from FD and non-FD families with peer problems at 4-5 years and 6-7 years

Table 5.2 Predictors of school social/emotional adjustment difficulties for children from financially disadvantaged families

	Conduct problems	Hyperactivity problems	Emotional problems	Peer problems	Low prosocial behaviour
Family financial disadvantage from 4-5 to 6-7 years					
Continuous financial disadvantage	0.99	1.41	0.88	1.89	1.11
School readiness at 4-5 years					
Receptive language skills (PPVT)	1.20	1.65	1.33	1.20	1.39
Pre-literacy/pre-numeracy skills (WAI)	1.30	2.77*	3.13*	3.20	1.21
Conduct problems	2.82*	0.60	0.93	4.49***	3.32**
Hyperactivity problems	1.42	1.52	0.77	1.21	0.77
Emotional problems	0.21**	0.29*	0.70	2.67	1.15
Peer problems	0.79	1.29	1.51	0.68	1.19
Low prosocial behaviour	1.05	1.36	1.27	0.82	1.33
(Other child and family characteristics not shown)					
Constant	0.20**	0.11***	0.18*	0.07***	0.15**
N	318	318	280	309	330

Notes: * p < .05; ** p < .01; *** p < .001

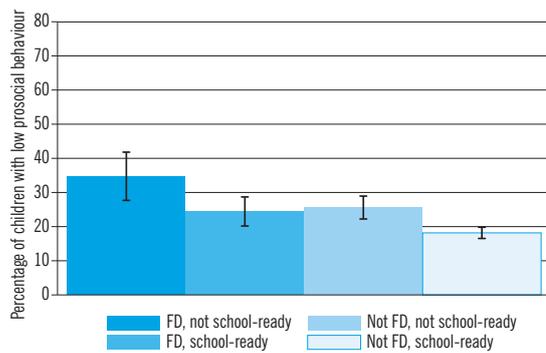


Figure 5.8 Children from FD and non-FD families with low prosocial behaviour at 4–5 years and 6–7 years

The findings concerning social/emotional adjustment at school are displayed in Table 5.2. Continuous family financial disadvantage was not a source of additional risk for social/emotional adjustment difficulties. Conduct problems as reported by parents at 4–5 years were risks for later teacher-reported conduct problems, peer problems and low prosocial behaviour. The percentage of children with conduct problems, peer problems and low prosocial behaviour at 6–7 years was 39%, 19% and 40% respectively for children with conduct problems at 4–5 years, compared with 18%, 5% and 17% for children without earlier conduct problems (OR = 2.82, 4.49 and 3.32 respectively). Emotional problems at 4–5 years were associated with fewer conduct and hyperactivity problems at 6–7 years. The rate of conduct and hyperactivity problems at 6–7 years was predicted to be 7–8% among children with emotional problems, as against 27% and 23% for children without emotional problems (OR = 0.21 and 0.29 respectively). There was some evidence that poorer WAI pre-literacy/pre-numeracy skills contributed to later conduct and hyperactivity problems. Thus, rates of conduct problems were 25% among children with low WAI scores, compared with 21% of children with adequate scores, and were 34% vs 16% for hyperactivity problems (OR = 2.77 and 3.13).

Summary

This examination of the relationship of school readiness to school achievement and adjustment clearly demonstrates the importance of children entering school with well-developed cognitive and social/emotional skills. The highest rates of literacy/numeracy difficulties at 6–7 years were found among children who had shown poorer cognitive school readiness skills two years earlier. Further, there were clear differences in children’s engagement in learning according to their level of cognitive

and social/emotional school readiness. Likewise, higher levels of social/emotional problems at 4–5 years (such as conduct, hyperactivity, emotional and peer problems) were significant risks for later social/emotional problems.

Comparison of the school progress of children from financially disadvantaged and non-financially disadvantaged families reveal that family financial disadvantage was a source of vulnerability for academic achievement, engagement in learning, and social/emotional adjustment. Firstly, children from disadvantaged families who were already at risk of later difficulties because of low school readiness tended to have higher rates of literacy/numeracy problems, lower engagement in learning, and more social/emotional difficulties, indicating that family financial disadvantage continued to shape children’s development. Secondly, among children who showed adequate school readiness at 4–5 years, more children from financially disadvantaged families exhibited later school achievement, engagement or adjustment problems than did children from better-off families.

Focusing specifically on children from financially disadvantaged families, continuity of financial disadvantage was a risk for later literacy problems when this group was compared to those whose financial circumstances improved. However, continuous financial disadvantage was not associated with increased risk for numeracy or social/emotional problems.

The importance of including multiple types of school readiness in the analyses was demonstrated by findings that several aspects (cognitive and social/emotional) were linked to a range outcomes at 6–7 years. Cognitive aspects of school readiness were related to later literacy/numeracy outcomes and engagement in learning. Further, lower cognitive school readiness was associated with higher levels of hyperactivity and emotional problems. Conduct problems were risks for multiple adjustment difficulties and numeracy problems, while emotional problems were related to lower levels of acting out problems. Thus, for children from families that were financially disadvantaged when they were 4–5 years old, their level of readiness for school was a very salient influence on their early primary school progress.

Chapter 6: Discussion

In summarising and discussing the findings of this study, we first reflect on the way school readiness has been conceptualised and measured in this and other research, noting a number of advantages to the approach taken here. We then summarise our findings in relation to four different indicator variables of family financial disadvantage, explaining the adoption of equivalised household income as the indicator for multivariate analyses. The findings on the association between FD and both school readiness at 4–5 years and school progress at 6–7 years are then discussed.

The following section then discusses the multivariate analyses used to examine a wide range of other factors identified in the literature as potentially associated with school readiness. These analyses indicate that child, parent, family and broader contextual factors are all important to school readiness, and that most variables operate similarly in both FD and non-FD children. Most of these variables have also been identified in previous (overseas) research, and some are more amenable than others to intervention. FD itself was seldom a unique predictor of school readiness in these analyses, indicating that its association with school readiness can be explained by other factors in these children's lives. There were relatively few instances where FD interacted with other predictor variables, suggesting that these variables differed in salience for the FD and non-FD groups, and these are described and discussed. In order to interpret these findings, attention is also drawn to the prevalence of risk and protective factors among FD and non-FD children. These clarify that many risks are more common among FD children and hence explain the higher rate of low school readiness in this group. This message is reinforced by the findings on the combined risk index, which clearly demonstrates the extra burden of risks carried by the FD families and children.

Discussion then centres on the substantial relationship found between both school readiness and FD at 4–5 years and children's progress at school at 6–7 years. All aspects of school readiness that were investigated showed a substantial relationship with at least one measure of school progress. Children with both low school readiness and FD consistently showed the poorest academic achievement, and almost always showed poorer social/emotional adjustment. However, multivariate analysis of the FD group showed that improvements in financial status between 4–5 and 6–7 years of age reduced the probability of poor school progress in this group.

We then return to the question of the mechanisms that account for the relationship between FD and school readiness and progress. Two integrative models introduced in Chapter 2 are used to help explain the nature of this relationship, as well as to shed light on the role of other risk and protective factors.

Finally, the findings are considered in their entirety in relation to their possible implications for programs seeking to reduce the gap in school readiness and school progress between children in FD and non-FD families.

6.1 Measures of school readiness and progress and financial disadvantage

In this report, we focused on core cognitive, social/emotional skills that equip children to meet the intellectual and social challenges of the early school years. The language/cognitive measures were the WAI test, which assessed children's ability to perform pre-literacy/pre-numeracy tasks such as reading, copying, and writing letters, words and numbers, and the PPVT, which assessed receptive language and vocabulary. Social/emotional skills were tapped by parent reports on the well-established Strengths and Difficulties Questionnaire that assessed children's conduct, hyperactivity, emotional and peer problems, and, on the positive side, their prosocial behaviour.

LSAC Wave 2 data gave us the opportunity to examine how children were progressing when most were in Year 1 at school (6–7 years). We considered teachers to be the best informants on school achievement and adjustment and therefore used teacher-completed measures, namely the Academic Rating Scale, which assessed language/literacy and numeracy/mathematical thinking skills; the Approaches to Learning scale, which measured children's engagement in learning; and the Strengths and Difficulties Questionnaire, which assessed social/emotional adjustment.

The strength of using this approach to assess the relationship of school readiness to later school achievement was its multi-method and multi-informant nature.

The measures used to assess financial disadvantage were low income, financial hardship, parental perceptions of being "poor" or "very poor", and parental reports that their major source of income was derived from government allowances or benefits. In our

preliminary analyses, we found a very similar picture across the four measures of FD, so despite them tapping partially distinct aspects of disadvantage, as far as school readiness is concerned, they appeared to operate similarly. We thus chose family income as the measure of FD for subsequent analyses, since this is the most robust and also the most commonly used indicator in the literature.

The measure of income was derived from the primary carer's report of her own income as well as her partner's, if she had one, adjusted for household size and composition using the OECD equivalence scale, in order to take into account differences in costs of living. Families whose income was in the lowest 15% of the LSAC sample distribution of equivalised income were categorised as being financially disadvantaged and were the focus of this report.

6.2 Association of financial disadvantage with school readiness and progress

Our initial question was whether children in FD families were more likely to experience low school readiness than those in non-FD families. The answer to this was clearly "yes". Children from financially disadvantaged families showed significantly lower school readiness on all areas assessed. Differences were particularly marked in the language area (PPVT); for example, approximately 40% of children in low-income families had low PPVT scores, compared to 20% of children from families with higher incomes. Smaller differences (5–10%) were evident on pre-literacy skills (WAI) and prosocial behaviour, and on the other measures of school readiness they were intermediate between these. This is consistent with many overseas studies (reviewed in Chapter 2), which have found that children from FD families begin school with poorer cognitive and language abilities, regardless of which measure of financial disadvantage is used, and the somewhat less consistent finding that FD children exhibit higher levels of behaviour problems and lower social competence at school. However, it is notable that, whichever measure of school readiness was investigated, the majority of FD children were not classified as being low in school readiness, whereas, depending on which measure of school readiness was used, roughly 17% of non-FD children did exhibit low school readiness. Consequently, it is clear that growing up in a FD household does not condemn a child to low school readiness, nor is it a necessary condition for low school readiness.

The differences between FD and non-FD children persisted into the school years, two years later, when most children were in Year 1. Significantly more children from financially disadvantaged families showed language/literacy and numeracy/mathematical thinking difficulties than their non-disadvantaged peers (with discrepancies of around 15%), lower engagement in school learning activities (around 10%), and were more often reported by teachers as displaying difficult behaviour (averaging around 8%). Differences were again most marked for literacy/numeracy skills and engagement in learning. However, it is once again notable that the majority of FD children were performing at least adequately on all measures, and a sizable minority of non-FD children were showing poor school achievement and adjustment. Thus, it is by no means true that all FD children, or only FD children, will perform poorly in Year 1 at school.

A very significant issue to consider in examining the role of FD in children's school readiness and progress is whether experiencing FD at any point in life, or only continuous FD, leads to poor outcomes. Overseas research suggests that the greater the length of time in poverty, the further the child lags behind their non-FD peers (see Chapter 2). With only two waves of data to examine, we were not able to investigate this fully, but we did examine the impact of being FD at both 4–5 and 6–7 years, versus 4–5 years only (see Chapter 5 for details). This analysis showed that continuity of financial disadvantage increased the risk for later literacy problems, but was not associated with increased risk for problems in the other areas of school achievement and adjustment in comparison to those who had been in FD at 4–5 years but not 6–7 years. These results suggest that the experience of FD at 4–5 years carried most of the risk for low school achievement and adjustment, and that moving out of FD did not result in immediate "recovery". It was beyond the scope of this research to examine those who moved into disadvantage between 4–5 and 6–7 years, but this group is also worthy of examination. Further, tracking the school progress of those with different patterns of FD over time will be a critical analysis task as further waves of LSAC data become available.

Overall, these findings clearly illustrate the school-related disadvantage experienced by a substantial number of children growing up in FD families, as is consistent with much past literature. The pattern of results reflects the early origins of the well-recognised socio-economic gradients in school achievement (Feinstein, 2003). However, these initial findings left unanswered a number of questions: whether FD is directly associated with school

readiness or whether its effects are explained or mediated by other factors; how strong the role of FD is in comparison with other factors; and whether the predictors of low school readiness are the same in FD and non-FD families. The answers to these questions are clearly important for considering where best to focus intervention efforts. As noted in Chapter 2, there is limited previous research on these questions and some inconsistency in findings, and very little Australian research. The multivariate analyses attempted to shed light on these questions.

6.3 Other factors accounting for school readiness

The finding that FD is not a necessary or sufficient condition for low school readiness or low school achievement and adjustment two years later reinforces the importance of identifying the circumstances that lead to FD children having poor school readiness and progress, and of examining if these are similar for non-FD children. In order to identify child, family and broader environmental factors that have unique associations with school readiness, multivariate analyses were undertaken. In contrast to associations found in univariate analyses (which can be artefactual), variables that remain significant in multivariate analyses are those that are associated with school readiness even when all other factors are taken into account, providing greater certainty about the robustness of their relationship. Further, by examining interactions between these variables and FD status (disadvantaged or not), we could ascertain whether or not they operated differently across the two groups. In interpreting these results, it is important to relate them to our analysis of the prevalence of each of these potential risk and protective factors within the FD and non-FD groups (see section 4.5).

The variables examined in these analyses were those identified as being predictive in past research (as reviewed in Chapter 2) and available within the LSAC dataset. These included our measure of FD (low income), child characteristics, parental characteristics, parenting style, family educational climate, neighbourhood characteristics, and children's child care/preschool experiences.

The multivariate analyses indicated that the influences on school readiness are clearly multifactorial and cover individual, parental, family and community domains. However, in almost all cases, these factors appear to operate similarly for FD and non-FD groups. The results for each of these domains are discussed below.

Child characteristics

The analyses showed that children's personal characteristics were consistently linked to their school readiness. Boys were more likely to have poor school readiness than girls for all types of school readiness except emotional problems. Differences were particularly strong in the cognitive area; for example, the predicted probability of boys having low WAI scores was almost 3 times the rate for girls. The greater vulnerability of young boys to a range of poor developmental outcomes is well-established (Ruble & Martin, 1998). Since the gender distribution in FD and non-FD groups was the same, there was no greater vulnerability for FD boys than non-FD boys. However, it is arguable that not enough attention has been given by social and educational policy makers to boys' greater likelihood of entering school "not ready" (Wake et al., in press).

Children displaying lower persistence were at greater risk of low school readiness on all but one of the school readiness measures, with the probability of having low WAI scores being twice that for more persistent children, and for hyperactivity being three times as high. This reflects the critical importance of children's ability to sustain and control their attention for school performance (Sanson, Hemphill, & Smart, 2004). As for gender, there were no differences in persistence between FD and non-FD children, thus efforts to help children gain mastery of their attentional processes are important for all children who struggle to maintain focus and effort. There are some programs available that seek to achieve this goal (e.g., McClowry, 2003). Older child age was associated with better cognitive school readiness, as could be expected.

Parental characteristics

Some, but not all, of the parental characteristics that are directly linked to families having low income were consistently related to children's school readiness. Fathers' absence from the family was much more common in FD than non-FD families (46% of FD families, versus 8% of non-FD), but it showed only a modest relationship to children's conduct and peer problems and prosocial behaviour, and no relationship to cognitive problems. This is consistent with previous studies (which have focused on single-parenthood as opposed to the absence of fathers, as reviewed in Chapter 2), which report no relationship between single-parenthood and children's cognitive outcomes, although some find relationships with behavioural development.

Mothers' labour force participation also differed markedly between FD and non-FD groups (66% and 35% respectively of mothers were not in the labour force), but its relationship with school readiness was rather complex and differed for FD and non-FD groups. Maternal part-time work appeared to be protective against cognitive problems (both WAI and PPVT) and low prosocial behaviour, only or more strongly for FD children, and it was weakly related to fewer emotional and hyperactivity problems overall. Full-time work was protective against language and emotional problems for the FD group (although very few mothers in financially disadvantaged families were working full-time). Being unemployed versus not in the labour force was also weakly related to fewer hyperactivity problems.

As discussed in Chapter 2, relatively few past studies have found a relationship between maternal employment and early childhood development, but when they do, they tend to suggest that part-time employment leads to better outcomes than full-time employment, which is partially consistent with the current findings. Past research also suggests that maternal employment has a positive effect on child outcomes in working/lower-middle-class families, but a negative effect in middle/upper-middle-class families (Goldberg et al., 2008). In the LSAC data, it appears that the effect is positive for both groups, but stronger in FD families. Given this general consistency in findings, there appears to be reasonably strong evidence of the benefits of employment, and particularly part-time employment, for mothers in FD families, which can most likely be attributed to the increased economic resources gained from employment, without the stressors involved in full-time work.

Although fathers' labour force participation strongly differentiated FD from non-FD groups (24% of FD versus 2% of non-FD fathers were not employed), it was not a unique predictor of school readiness, except for non-FD children in relation to emotional problems. Interestingly, few past studies have focused on paternal employment in relation to school readiness.

Importantly, our indicator of FD itself (low income) was not a unique predictor of any school readiness measures, except for the PPVT in these multivariate analyses. Further, despite the strong differences between FD and non-FD families on these characteristics, there was little evidence that they operated any differently in the two groups, since for almost all indicators of school readiness and these predictor variables, there were no significant interactions with FD status. The exception was for maternal employment, as noted above, where effects were, in general, stronger in FD

families. This important finding is discussed more fully below.

A number of other parental characteristics that are not directly linked to low income were also associated with school readiness. While relatively uncommon overall, more FD than non-FD mothers were less than 26 years of age at the time of recruitment to the study, when children were 4–5 years old (12% versus 4%). Having a younger mother was a relatively strong risk for low language skills and conduct problems, and a weaker predictor of emotional problems, but it was not related to the other four school readiness measures. Previous research has revealed weak and inconsistent results regarding maternal age, as discussed in Chapter 2. It should be noted that our dichotomy between those under and over 26 years did not focus on very young mothers, whose children may be more vulnerable to low school readiness.

Mothers' educational attainment differed significantly between groups, with 44% of FD and 23% of non-FD mothers having less than Year 12 education, and this showed a reasonably strong relationship with six of the seven school readiness measures. For cognitive school readiness, low maternal education resulted in a 6–10% difference in the proportions of FD and non-FD children likely to have low scores on the two cognitive measures, while differences were less marked for conduct, peer and hyperactivity problems. For low prosocial behaviour, the effect of low maternal education was evident only in the FD group. The current findings are in general consistent with previous research, which has found maternal education to be linked to cognitive and language abilities, and less strongly to social and behavioural development (see Chapter 2).

Children whose mothers are Indigenous were more likely to have low cognitive scores (with effects stronger in the FD group) and hyperactivity problems. Other research using Wave 1 data from LSAC has also documented the poorer overall development of Aboriginal and Torres Strait Islander children at 4–5 years of age compared to children of other backgrounds, even after controlling for a range of child and family characteristics, including indicators of socio-economic status (Wake et al., in press). We note that the numbers here are too low for confident conclusions (6% of FD and 2% of non-FD mothers were Indigenous), and that the Indigenous sample in LSAC is unlikely to be fully representative (Hunter, 2006).

Nevertheless, the current findings confirm much other evidence of the "gap" between Australian Indigenous and non-Indigenous

children in school readiness. Despite undoubted cultural strengths, a number of historical, societal, community and personal challenges are faced by many Indigenous families. Particularly in light of the current political determination to “close the gap” of Indigenous disadvantage, there is need for further development of culturally appropriate ways to support Indigenous children and their families. In this regard, the issue of transition practices, and of schools’ readiness for children, are particularly pertinent.

In previous, mainly North American, research, the family background characteristics of ethnicity and language spoken at home have consistently been found to be related to children’s school readiness. The current findings are consistent with these results. Maternal non-Australian background, which did not differ substantially between FD and non-FD groups, was strongly related to low language skills, irrespective of mothers’ English fluency. The additional need for English language development of children from non-English speaking backgrounds in order for them to start school “on a level playing field” are indicated by these findings. On the other hand, overseas-born mothers with fluent English were less likely to have children with school-relevant pre-literacy/pre-numeracy problems, or with low prosocial behaviour, compared to Australian-born mothers. This highlights the diversity present in families with overseas-born parents, and alludes to differences in cultural values, where some cultures value helpful, caring behaviour more than others (Yagmurlu & Sanson, in press).

Past research has found maternal depression to be weakly related to behaviour problems but inconsistently related to cognitive skills. In this study, maternal psychological distress (which mainly indicated depressive symptoms) was very low in prevalence (7% in FD and 3% in non-FD groups), but was strongly linked to low language skills and emotional problems, and less strongly but still substantially related to hyperactivity and peer problems. The current findings point to the importance of providing support to mothers experiencing mental health problems and their children.

Parenting style

The parenting styles of FD and non-FD groups were in general very similar. The only area where FD parents showed less effective parenting was in the consistency in their disciplinary approaches, as it is likely to be more difficult for parents to maintain a consistent discipline style when they are stressed by the various concomitants of FD

(see section 6.7 for further discussion). As reflected in previous research (see Chapter 2), parenting was related to all five social/emotional areas, and two aspects of parenting were related to cognitive school readiness.

Parental hostility was strongly associated with all five areas of social/emotional functioning, especially conduct problems, where there was three times the probability of problems when hostility was higher. This is a notable finding, given that levels of reported hostility were low in the LSAC sample overall, so “higher hostility” did not imply particularly extreme levels of hostility. Lower consistency was also moderately related to all five social/emotional areas, as well as low language skills. Lower warmth was weakly related to more conduct and peer problems and lower prosocial behaviour. The measure of warmth was also strongly skewed in the LSAC sample, so lower warmth should not be equated with coldness. The use of inductive reasoning strategies was related only to prosocial behaviour—both parental warmth and explaining the reasons for rules and how behaviour affects others is likely to build children’s capacity for empathy and understanding of others (Yagmurlu & Sanson, in press). Parenting generally appeared to have similar effects in the FD and non-FD groups, although parental hostility was a stronger risk for hyperactivity in non-FD than FD families and, surprisingly, lower parental warmth appeared to protect against low language scores, but only for FD families.

Thus, findings support the importance of encouraging responsive and effective parenting skills in both FD and non-FD families, with a colder, more punitive style (often described as “authoritarian” in contrast to “authoritative”) being particularly detrimental, and consistency being a particular challenge for FD families.

Family educational climate

Sizeable differences between FD and non-FD families were evident in family educational climate, although only a minority of FD families showed low educational involvement on any single indicator. Consistent with international research, family educational climate was an important influence on school readiness overall. One in three FD families reported reading to the child on fewer than three days a week, versus one in five in the non-FD group. This low level of reading was quite strongly related to low language scores, especially in the FD group, but interestingly was related to the pre-literacy/pre-numeracy skills tapped by the WAI only for children from non-FD families. Thus, our findings are only partially consistent with the findings of the meta-analysis by Bus

et al. (1995) that regular parental reading to preschoolers was related to stronger literacy skills prior to starting school (see Chapter 2 for details). A low amount of reading was also related to low prosocial behaviour, especially for children from disadvantaged families, but not to any other aspects of social/emotional readiness for school.

More FD families had fewer than 30 children's books in the home (35% versus 16%), and this variable was strongly related to low language scores for both groups, and to peer problems, but not to other social or emotional problems. This is consistent with past research, which has identified children's HOME scores to be strongly and consistently related to their cognitive development, and less so to their social/emotional development. More FD children watched many hours of TV than their non-disadvantaged counterparts (43% versus 28%), and a high level of TV watching was linked to all types of social/emotional problems, but not to cognitive or prosocial outcomes, for both groups. This is consistent with past research indicating that extensive TV watching is linked to lower school readiness and academic achievement (Anderson, Huston, Schmitt, Linebarger, & Wright, 2001). There were generally no differences on other types of parental involvement, such as telling stories, singing and dancing.

Overall, the current findings on the role of family educational involvement (like analyses of LSAC data by Wake et al., in press) appear to suggest a rather weaker relationship than found in international research such as EPPE and studies using the HOME inventory, reviewed in Chapter 2. Nevertheless, the findings do indicate the importance of encouraging these activities in all families. Since there were few differences between groups, this recommendation would apply to families regardless of financial status. The conclusion drawn by the EPPE study in relation to the home learning environment would seem to also apply here: "what parents do is more important than who parents are" (Sylva et al., 2004, p. ii).

Neighbourhood characteristics

As might be expected, FD and non-FD families differed markedly on SEIFA rankings, with four-tenths of children in FD families living in the lowest SEIFA quintile, compared to one-fifth in the non-FD group. The significant but modest relationships between living in a disadvantaged neighbourhood and cognitive, conduct and peer problems were consistent with past research in Australia and overseas (Edwards, 2005; Edwards & Bromfield, in press).

The limited previous research suggests that non-metropolitan status, compared to metropolitan status, is weakly associated with lower literacy. There were small differences between FD and non-FD groups on metropolitan/non-metropolitan location (38% of FD and 31% of non-FD lived in non-metropolitan but accessible areas), and in general, location was not linked to school readiness. In the one association found, living in a non-metropolitan area with accessibility to resources appeared to be protective for language skills, in comparison to living in metropolitan areas.

Child care/preschool experiences

Differences in the type of child care/preschool experienced by FD and non-FD children were small, but FD children were a little more likely to receive informal or parent-only care and non-FD children were a little more likely to attend preschool or child care with an educational program. Consistent with a large body of previous research, children's child care experiences were relevant for cognitive aspects of school readiness. Those with informal or parent-only care were more likely to have poor cognitive outcomes, but better prosocial behaviour. Such care is typically family-based, intimate and small-group, and may be expected to encourage caring and helpful behaviour, but may provide less educational stimulation. The value of structured educationally oriented preschool programs has been well demonstrated in previous research (see Chapter 2). However, in general, the data suggest that home is a more salient influence on social/emotional components of school readiness than child care experiences, consistent with previous research.

These child care effects did not differ between FD and non-FD groups. This contrasts with some overseas research suggesting that child care can be especially advantageous for FD children's school readiness, although as noted in Chapter 2 the findings in this area have been inconsistent. However, other research studies emphasise the importance of quality of care. The categories used in the current research focused on type of care (informal/parent-only, formal child care, preschool or school), so the only indicator of quality was the presence of an educationally oriented program. Other research using more of the quality measures in LSAC Wave 1 data does indicate that both higher quality and educationally oriented programs are linked to improved cognitive, and sometimes behavioural, outcomes in children (Harrison, 2008). Overall, considering the current research and other evidence, it is clear that the provision of high-quality, educationally oriented experiences prior to school entry is

a critical component for ensuring children's school readiness. The positive relationship between informal/parent-only care and prosocial behaviour serves to remind us of the importance of also providing opportunities and encouragement for cooperative and caring behaviour.

Summary

Overall, this multivariate analysis revealed a large amount of information on the specific factors associated with children's school readiness, each of interest in itself. It is notable that such a large set of factors, covering child, parent, parenting style, neighbourhood and child care variables, make unique contributions to school readiness. Although few previous studies have examined such a comprehensive set of predictors, along with such a comprehensive set of indicators of school readiness, the findings were in general compatible with past research. Factors varied in their strength of association with school readiness, but none accounted for more than a portion of the variance in school readiness, reinforcing the need to consider these factors as a "package". Thus, no one factor can explain either low school readiness or the relationship between FD and school readiness. This suggests that a holistic approach to prevention and intervention is needed, which targets as many of these predictor (risk or protective) factors as possible (see section 6.8 for further discussion).

6.4 Financial disadvantage as a predictor of school readiness

An important finding in this study was that, when FD was included in the analysis along with the full set of other predictor variables, FD itself was *not* a predictor of the measures of school readiness, with the exception of the PPVT. Furthermore, FD rarely interacted with other predictor variables, indicating that, in general, the other predictors operated similarly in FD and non-FD groups. However, it is clear that the overall prevalence of risk factors was much higher in the FD than the non-FD group. This suggests that the association of FD with school readiness is largely because a number of these other predictors are more common in the FD group. This is reinforced by the results of the combined risk index analysis (section 4.5), which examined the incidence of the parent and family risk factors within FD and non-FD families. It clearly demonstrates the extra risk burden experienced by many FD families.

Around 4 in 10 FD families experienced 5 or more risks, compared with only 1 in 10 non-FD families. At the other extreme, almost 4 in 10 non-FD families had 0 to 1 risk factors, whereas this was true for only 1 in 10 FD families. This is consistent with the research discussed in Chapter 2, which demonstrates the importance of cumulative effects; that is, the more risk factors to which a child is exposed, the greater the likelihood of poor outcomes in cognitive, behavioural and social outcomes.

As reviewed in Chapter 2, a number of previous studies have reported or implied a direct association between FD and at least some aspects of school readiness. The explanation for the divergence in findings between these studies and the current study is likely to revolve around the examination in this study of a more comprehensive set of factors that are associated with both school readiness and FD.

6.5 Financial disadvantage, school readiness and other factors in children's school progress at 6–7 years

Chapter 5 described a number of analyses examining the association of FD, school readiness and the other predictor variables with measures of children's school progress. As already noted, our early analyses showed that children in FD families tended to be faring less well at 6–7 years, with higher rates of academic difficulties, lower levels of motivation, and more behaviour problems than children from non-FD families. When we examined school readiness and FD together, the importance of entering school with well-developed cognitive and social skills became very evident. Children with low school readiness were at substantially higher risk of low literacy/numeracy skills, poorer engagement with learning and more social problems than those who entered school-ready.⁸

Previous research has also indicated that low school readiness has longer-term consequences, such as a higher probability of grade retention, school drop-out, teen pregnancy and antisocial behaviour (Blair, 2001; Duncan et al., 2007; Reynolds & Bezruczko, 1993; Schweinhart, 2003). It is obviously too soon to know if low school readiness will be linked to such future difficulties in the LSAC sample, but this will be an important question to examine as further waves of data become available.

The experience of FD clearly compounded the difficulties of children with low school readiness, such that children who were both

“unready” for school and from FD families were almost always the group with the most school difficulties. Indicating that FD is detrimental to young children’s school progress even if they enter school with reasonable skills, children from FD families who had adequate school readiness at 4–5 years also showed more school achievement or adjustment problems than did children from non-FD families with similar school readiness skills. This is reminiscent of Feinstein’s (2003) analysis of children in the UK longitudinal study of children born in 1970, which showed that children with good early cognitive skills but low socio-economic status were overtaken at around the age of six years by children with poorer early cognitive skills but high socio-economic status, in terms of cognitive, emotional and personal development.

In further multivariate analysis of the FD group only, the significance of continuous versus intermittent FD was revealed, as already discussed. Further, the importance of a multi-factorial concept of school readiness was demonstrated by findings that all aspects of school readiness (cognitive and social/emotional) predicted the 6–7 year outcomes. Of particular relevance were the pre-literacy/pre-numeracy skills measured by the WAI, which were predictive of both cognitive and social/emotional aspects of school progress. Similarly, conduct problems at 4–5 years were predictive of a range of later problems, both cognitive and social/emotional. Thus, these characteristics appear to be particularly salient for FD children’s school transitions.

6.6 Future research directions

The variables included in the multivariate analyses covered the great majority of factors identified in past research as being relevant to school readiness. However, a few additional factors have been implicated in some studies. These were not included for a range of reasons, including the analytic and pragmatic necessity to limit the number of variables examined, their absence from the LSAC dataset or their lack of variability and, more importantly, the need to focus on those factors most strongly implicated in existing research and/or those most amenable to change.

The variables not considered in these analyses included: fuller assessment of children’s cognitive ability, other aspects of temperament (e.g., reactivity, adaptability and sociability), parental cognitive ability, aspects of parental physical and mental health, marital conflict, parenting beliefs and expectations regarding children’s development, overcrowding in the home, social support available to parents, and

measures of the quality of child care. While there were good grounds for excluding these variables from the current analyses, they are all worthy of further research in relation to children’s school readiness and progress.

6.7 What accounts for the associations between school readiness, financial disadvantage and other variables?

As noted in Chapter 2, two models have been proposed to explain why FD should be related to poorer school readiness, namely the family stress model and the investment model. Given the weak direct association between school readiness and FD, it makes sense to consider these models more broadly; that is, in relation to the association between school readiness and the full range of predictor variables. The evidence from the current analyses provides some support for both these models.

The *family stress model* proposes that the effect of income on children’s school readiness is through its impact on family relationships and interactions. A limited amount of previous research suggests that financial disadvantage influences children’s behavioural outcomes and, to a lesser extent, their cognitive and learning capacities, by draining parents’ psychological and emotional resources, which in turn can disrupt parent–child interactions and parenting styles. A number of the current predictor variables could be interpreted as operating through stress, even though that stress is not necessarily related to FD. For example, it is likely to be more difficult to maintain a consistent discipline style when a parent is stressed, either by the various concomitants of FD or for other reasons. Parental hostility and lower warmth are also known to be exacerbated by stress (Critchley & Sanson, 2006). The relationship of maternal distress to school readiness is clearly compatible with this model, and the finding that part-time maternal work was more protective than full-time work against low school readiness could also be interpreted in terms of avoiding undue parental stress.

The *investment model* argues that poorer school readiness and progress results from constraints on parents’ ability to invest in the most advantageous experiences and environments for their children, and is sometimes invoked also in relation to the psychological capital parents can offer their children. The operation of predictors such as maternal education, the number of books in the home, mothers working part-time

(for school readiness) and full-time (for school progress), and neighbourhood disadvantage could all be explained in terms of investment. Although we have no direct evidence of this, the fact that slightly fewer FD children attended educationally oriented child care/preschool programs may reflect affordability, and hence be compatible with the investment model. The finding that mother's employment was most beneficial for the FD group may reflect the importance of additional income to FD families' capacity to invest in their children.

However, the relationship between school readiness, FD and other predictor variables is likely to be complex. For instance, as noted in Chapter 2, maternal distress and parenting practices (potentially related to the family stress model) have been found to mediate the relationship between HOME scores (reflecting investment) and children's behaviour problems, suggesting that neither model can fully explain the origins of low school readiness on its own. The link between school readiness and a number of its predictors in the current study could be explained by either model. Thus, being a young mother could lead to lower child school readiness because of the greater stress and lack of support she experiences, or the lower human capital she has available to invest in her child. Similar arguments could be made for Indigenous mothers and those from non-Australian backgrounds. Low levels of reading to a child, and allowing high amounts of TV viewing, can again be interpreted as a response to family stress or a sign of low investment. It may be possible to unpack some of these relationships using meditational analyses, but these are beyond the scope of the current project.

Overall, the current findings are compatible with the general consensus from previous research—that the family stress model provides a better explanation for social/emotional outcomes, while the investment model may best explain children's cognitive outcomes. However, neither model on its own appears adequate; they are not mutually exclusive and probably most commonly act in unison or interactively.

6.8 Implications for intervention

In considering the appropriate policy and practice responses to the data presented here, a number of decisions need to be made. There is the question of how much resources and effort should be allocated to universal programs (available to all children and families), as opposed to interventions targeted at disadvantaged or other selected populations. The decision to address either or both of upstream, distal, or "macro" factors,

versus more downstream, proximal, or "micro" factors, also needs to be made. Furthermore, the options of focusing interventions on single versus multiple risk factors and one versus several contexts of a child's life need to be considered. Questions also arise regarding the sustainability and scale of any given intervention. Although it is beyond the scope of this report to draw firm conclusions about these issues, attention is drawn to some salient aspects of the findings with implications for practice and policy.

In terms of emphasis on upstream (distal) or downstream (proximal) determinants of school readiness, both types are among the factors examined here. More upstream factors include low income and other indicators of FD, early parenthood, neighbourhood disadvantage, and child care service systems. More downstream factors include maternal distress, parenting style and the family educational climate.

Regarding the question of whether interventions should be focused on specific risk factors or multifaceted, the evidence provided here that multiple factors are associated with school readiness, with no single factor having a dominant influence, suggests that interventions should target a number of risks. Further, the home, child care/preschool and neighbourhood are all implicated, suggesting a need to consider all these settings of a child's life. This is discussed further below.

Based on the current findings, it is evident that, with few exceptions, the same child, family and community factors affect school readiness in children from FD and non-FD families, but that these factors tend to be more common in the FD group. Additional support is thus needed for FD families as they tend to carry a greater cumulative burden of risk. However, it is also important to recognise that the FD group comprises only 15% of the population and so does not include the bulk of those with low school readiness. Consequently, to focus policy and service provision efforts solely on FD children would miss many children in need of support to become school-ready. An alternative approach is to focus efforts on risk factors that are strongly related to school readiness, irrespective of families' financial status. Because of the higher prevalence of these factors in the FD group, interventions targeting these variables would apply particularly but not exclusively to the FD group. Below, we first discuss FD itself and then other significant predictors of school readiness.

Possible factors for intervention

Financial disadvantage. There are a range of arguments in support of policies and programs

that seek to raise families out of poverty, including social justice and equity issues and the socio-economic gradients related to many child health and development indices besides school readiness. However, the fact that FD itself does not have direct relationships to school readiness when considered in conjunction with other predictor variables suggests that these other variables are more appropriate targets for intervention when considering school readiness as the outcome of interest. Further, past US research indicates that increasing the income of FD families has a relatively small impact on children's academic achievement after controlling for other family and child factors (Smith et al., 1997; Taylor et al., 2004).

Thus, the data suggest that interventions should not focus on low income per se, but rather on predictor variables that are often more prevalent in FD families. Possibilities for intervention in relation to some of the more central variables are discussed below, building on comments made earlier (section 6.3).

Child gender. As noted, a higher proportion of boys had difficulties in terms of school readiness as well as school progress. Of course, most boys were school-ready at 4–5 years and making good progress two years later, and some girls were not. Nevertheless, there is need for acknowledgement by all those responsible for children that, in any group of same-aged children, the boys overall are likely to be less mature and ready for school than the girls. This is thought to be due partly to biological factors associated with slower maturation, and partly with social and cultural expectations (e.g., the greater acceptability of acting-out behaviour in boys, and greater demands for helpfulness from girls) (Prior, Smart, Sanson, & Oberklaid, 1993; Sanson, Prior, Smart et al., 1993). While targeting interventions specifically to boys may not be an appropriate strategy, it may be that further consideration should be given to strategies to support boys' transitions into school, including effective transition programs, the provision of role models and mentors, staggering school entry ages or modifying preschool and school curricula and teaching methods to better fit the needs of boys.

Child persistence. Low levels of persistence were shown to be important predictors of low school readiness and progress. Extremely low persistence can be a symptom of attention-deficit hyperactivity disorder (ADHD), but even at less extreme levels, low attentiveness and distractibility can disrupt children's social relationships and their capacity to learn. There are individual and group-based programs that aim to help children to develop strategies to manage their own attentional

resources, but parents, carers and teachers also need to recognise the varying capacities of children in attention regulation, and modify their management and teaching strategies accordingly (e.g., McClowry, 2003). It is arguable that too little attention is given to such aspects of child individuality in training programs for parents, carers and teachers. Some of the components in such training would include the importance of tailoring approaches to “fit” the child's capacities, such as tasks of varying lengths and complexities, short timeframes, careful management of increasing demands, structured rather than unstructured approaches, and providing small achievable goals and tangible rewards.

Parental style. Parental consistency in child management techniques and use of cold, punitive disciplinary strategies had strong effects on school readiness, especially social/emotional aspects, with warmth towards the child and use of inductive reasoning strategies having somewhat weaker effects. Parenting has been a focus of a great number of interventions, the majority of which adopt a social learning/behavioural model and/or a relationship/attachment model. The main aim of *social learning/behavioural models* is to develop parents' ability and strategies to identify, observe and respond effectively to children's behaviour problems. An example of a social learning/behavioural parenting intervention is The Incredible Years program, which has been used in the US and UK. Targeted at children with behaviour problems, it has been shown to reduce harsh, over-reactive and lax parenting, as well as child behaviour problems (Gardner, Burton, & Klimes, 2006). Another example is Triple P, which has been widely used in Australia and overseas and has been found to reduce lax parenting and improve child behaviour (Roberts, Mazzucchelli, Studman, & Sanders, 2006), although evaluation of its long-term effects and with non-volunteer families is not yet available. The main focus of *relationship/attachment models* is building the parent-child relationship and strategies that foster warm, sensitive and positive relationships. An example is the Brief Psycho-educational Group-Based Program, also targeted at children with behaviour problems, which has successfully reduced hostile, aggressive and anxious child behaviour, as well as over-reactive and “verbose” parenting (Bradley et al., 2003). Given the salience of parental hostility and inconsistency for school readiness, it appears that social learning/behavioural programs may be very effective.

Maternal education. Low maternal education was only modestly related to social/emotional problems. The current findings therefore do not

point to maternal education as being a critically important target for intervention. Further, while the provision of opportunities for mothers to further their education is likely to have a number of indirect positive effects on children, its timing (in relation to the child's age) may affect its impact on school readiness. It should be noted that very few interventions in the US have been able to increase maternal schooling (Rouse, Brooks-Gunn, & McLanahan, 2005).

Family educational climate. Family-based reading to the child, their amount of TV watching and other educational activities in the home were related to a number of aspects of children's school readiness among both FD and non-FD families, although low levels of reading mattered more in the context of FD. As noted in Chapter 2, a stronger educational climate (as reflected in HOME scores) has been found to have a compensatory effect on children's school readiness among low-income families (Dearing et al., 2001). These findings suggest that "what parents do is more important than who parents are" (Sylva et al., 2004, p. ii), and that encouragement of a strong educational focus in the home is a worthwhile target of intervention. Family literacy programs are focused on changing parent reading habits and their use of language with the child. Let's Read, Support at Home for Early Language and Literacies, and Play and Learn are some programs in Australia that aim to promote school readiness in young children by supporting and encouraging parents and carers. Let's Read is an initiative of the Centre for Community Child Health that is being developed and implemented across Australia in 90 communities in partnership with The Smith Family. It is a community early literacy program aimed at promoting the importance of reading to children from birth by providing training by professionals and educational resources to help parents improve their reading habits with children (Centre for Community Child Health, 2005).

Neighbourhood disadvantage. Children living in disadvantaged areas were more likely to have cognitive and social school readiness problems, although effects were relatively modest. Recent years in Australia have seen a number of national and state-based programs targeting disadvantaged communities, seeking to support young children and their families. Examples include programs under the Stronger Families and Communities Strategy (such as the Stronger Families Fund, and Communities for Children), as well as a number of smaller programs run by NGOs, with arguably smaller reach. While these programs seldom directly address disadvantage itself, they do aim to provide more effective and integrated services and build community

cohesion. Evaluation data in terms of impact on children's school readiness are not yet available.

Child care/preschool experiences. The current data confirmed overseas findings that the experience of an educationally oriented preschool curriculum was important for school readiness, especially for FD children. As noted in Chapter 2, North American research on disadvantaged children attending high-quality child care programs, such as High Scope/Perry Preschool Program, Head Start and the Abecedarian Project, indicates that high-quality preschool programs can improve these children's cognitive and social/behavioural readiness for school (Frede & Barnett, 1992; High/Scope Educational Research Foundation, 2006; Ramey & Ramey, 2004; Reynolds, 1995; Schweinhart, 2003; Schweinhart et al., 1993). Current government initiatives that aim to provide 15 hours per week of high-quality early childhood education to all children in their pre-school year may help to increase the school readiness of all children (Productivity Agenda Working Group, 2008). However, more intensive efforts may be needed for the most vulnerable groups, including the financially disadvantaged.

Multimodal interventions

To date, the most promising strategy for improving school readiness among disadvantaged children in the US has been the delivery of multimodal programs that combine high-quality early education with parent support. Such programs are characterised by not only a cognitively stimulating curriculum, but also attention being paid to health, nutrition, parenting and family support services, and are delivered by well-trained staff in small groups. An example is the combination of the Head Start program (National Head Start Association [NHSA] Research & Evaluation Department, 2008), which contains both a child and parent program, with Webster-Stratton's The Incredible Years parenting program (Webster-Stratton & Reid, 2008). Together they result in improvements in most aspects of school readiness, including greatly improved child behaviour. An Australian model is The Smith Family's Families Learning Together model, which will combine the education and care of children, the enhancement of parents' education and parenting skills, and healthcare. Families Learning Together will integrate four streams of learning within a single cohesive learning system for parents and their children by providing:

- *early education and development for children*—to aid their cognitive and non-cognitive development and assist their transition to school;

- *parenting education for adults*—to build their confidence and capacity to provide a stable home environment;
- *parent and child together time*—to improve skills and strengthen relationships and communication within families; and
- *adult education for parents*—to assist them in engaging in learning opportunities and improving their prospects for entering the workforce.

Similarly, the Australian Pathways to Prevention program promotes child language and social development in a highly deprived community, and has been found to improve language, cognitive school readiness, and many aspects of children's behaviour.

These combined programs address a number of the risk factors identified in this report, such as parenting, educational stimulation and neighbourhood disadvantage.

The Australian Government's proposed network of Parent and Child Centres for all children aged 0–5 years, which would integrate maternal and infant health services with long day care, preschool education, playgroups and parental support, may provide another model for multimodal support (Department of the Prime Minister and Cabinet, 2008). These centres are intended to enable universal access to low-cost services in a convenient "one-stop" location. Whether they can meet the diverse needs of disadvantaged families and provide intensive enough support remains to be seen.

6.9 Overall conclusion

In conclusion, the findings from this large-scale, Australian longitudinal study show many consistencies with the international research in the type of factors found to be relevant to children's school readiness. Most factors applied similarly to children from financially disadvantaged and non-financially disadvantaged households, although some distinct relationships were found for particular groups.

The findings make clear that children from financially disadvantaged families are at greater risk of poor school readiness, due to the much higher rates of risk factors evident among this group and the accumulation of risks experienced. As anticipated, school readiness was a powerful predictor of school progress two years later, and the experience of financial disadvantage compounded the probability of poor school progress, especially if it was experienced at both 4–5 and 6–7 years.

The two models that have been proposed to explain the association of financial

disadvantage with low school readiness both appear to have explanatory worth, not only to explain this association but also to account for direct associations between a number of predictors and school readiness, and later school progress. In general terms, the family stress model appears to account best for social/emotional problems, and the investment model best explains cognitive difficulties. However, the two models are not mutually exclusive and probably operate conjointly.

A number of implications can be drawn from the findings to guide future interventions to reduce the gap between financially disadvantaged and non-financially disadvantaged children in school readiness, achievement and adjustment, as well as to promote optimal school progress for all children.

Endnotes

- 1 The members of the Consortium Advisory Group are Professor Ann Sanson (Principal Scientific Advisor), University of Melbourne; Professor Stephen Zubrick (Chair), Telethon Institute for Child Health Research; Dr John Ainley, Australian Council for Educational Research; Associate Professor Donna Berthelsen, Queensland University of Technology; Dr Michael Bittman, University of New England; Professor Bruce Bradbury, University of New South Wales; Dr Linda Harrison, Charles Sturt University; Associate Professor Jan Nicholson, Murdoch Childrens Research Institute; Professor Bryan Rogers, Australian National University; Professor Michael Sawyer, University of Adelaide; Professor Sven Silburn, Telethon Institute for Child Health Research; Dr Lyndall Strazdins, Australian National University; Professor Graham Vimpani, University of Newcastle; and Associate Professor Melissa Wake, Murdoch Childrens Research Institute. Associate Professor Judy Ungerer, Macquarie University, was a member until 2007.
- 2 Here, the term “normative” does not imply any value statements, but rather represents the group that is most prevalent. For example, Australian-born mothers was the most prevalent group.
- 3 To calculate predicted percentages for a particular variable, all other variables in the model need to be held constant. To do this, variables are set to their mean values, and the means are calculated separately for the financially disadvantaged and non-financially disadvantaged groups.
- 4 Full details are available upon request.
- 5 Confidence intervals are displayed by means of the vertical “I” bars. Where confidence intervals for the columns being compared in the statistical analyses do not overlap, we can be 95% confident that the values are significantly different.
- 6 For this reason, we repeated these analyses using parent reports of emotional problems at 6–7 years and did, as expected, find considerable continuity of emotional problems. However, as discussed further in Chapter 3, we have focused on teacher reports to avoid problems (such as “eye of the beholder” effects) associated with using the same source as the informants for both predictors and outcomes.
- 7 Details are available upon request.
- 8 Incidentally, the strong relationships between 4–5 year measures of school readiness and later school achievement and adjustment serve to validate that the indicators chosen were indeed indexing school readiness.

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Appendices

Appendix A: Overview of *Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC)*

Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC) aims to shed light on the development of the current generation of Australian children, and to investigate the contribution of the children's social, economic and cultural environments to their adjustment and wellbeing. More specifically, it seeks to improve understanding of the complex interplay of factors that foster or impede healthy early childhood development; to identify opportunities for early intervention and prevention in policy areas concerning children; and to inform the policy debate in general. This next section is based on Gray and Smart's (2008) and Gray and Sanson's (2005) overview of the LSAC study.

Multiple facets of children's development, health and wellbeing are examined in LSAC, including physical health, social, cognitive and emotional development. The study seeks to identify the risk and protective processes underlying children's development, looking at the interaction between children's attributes (such as their temperament) and the contexts in which they are raised, particularly their family, child care, school, neighbourhood and community experiences. The study also examines dynamics within these settings; for example, the parenting practices and the quality of co-parental relationships to which children are exposed, and the quality of care received in differing types of non-parental care. A set of 14 key research questions guides the study, clustered around the themes of child and family functioning, health, child care, and education (see Sanson et. al. 2002, for a detailed discussion of these questions).

The study was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs, and is managed in partnership with the Australian Institute of Family Studies. A consortium of leading researchers and experts from universities and research agencies provides advice on design and methodology issues.

The study commenced in 2004 with the recruitment of two cohorts: 5,107 families with infants aged 0–1 year, and 4,983 families with 4–5 year olds. The study is using an accelerated cross-sequential design in which the two cohorts of children will be followed initially for 6 years (and possibly longer). This design will enable information on children's development

over the first 10 or 11 years of life to be collected in 6 years. From Wave 3 onwards, the two cohorts will be able to be compared at overlapping ages (e.g., at 4–5 and 6–7 years), to gauge the effect of growing up in differing social conditions and policy settings.

The Medicare Australia (formerly the Health Insurance Commission) enrolments database was used to derive the sample. During 2004, details of families of more than 18,500 children within a particular range of birth dates was taken from the Medicare database. First, a random selection of 330 postcodes was drawn. Next, children and families within these postcodes were randomly selected for invitation into the study. Stratification was used to ensure that the numbers of children in each state/territory and within and outside each capital city were roughly proportionate to the population of children in these areas.

As noted above, 10,090 children and their families participated in Wave 1. The sample is broadly representative of all Australian children (citizens and permanent residents) in each of two selected age bands: children born between March 2003 and February 2004 (infant cohort) and children born between March 1999 and February 2000 (child cohort). In Wave 2, conducted in 2006, responses were received from 4,606 of the infancy cohort families whose children were then 2–3 years old, and 4,464 of the child cohort families whose children were then 6–7 years old (68% of children were in Year 1 and 27% were in Year 2). This was a response rate of 90%.

A large body of information about the children and their families is collected. Reports of multiple informants are sought in order to obtain information about the child's behaviour across differing contexts and to reduce respondent bias that may occur when the reports of one type of informant are relied upon. Information is being collected from the parents who live with the child (biological, adoptive or step-parents), the child (using physical measurement, cognitive testing and interview, depending upon the age of the child), home-based and centre-based carers for pre-school children who are regularly in non-parental care, and teachers (for school-aged children).

The fieldwork for Wave 1 was conducted by I-view, and is being undertaken by the Australian Bureau of Statistics for Waves 2–4. Face-to-face interviews are conducted with the primary carer of the child (Parent 1). At Wave 1, this was the child's biological mother

in 97% of families. In addition, Parent 1 was asked to complete questionnaires, either during the home visit or later and to return these by mail. Parents also completed and mailed back time-use diaries about the child's activities. The other resident parent (biological, adoptive or step-parent) was asked to complete a leave-behind questionnaire. Consent was sought to send a self-complete questionnaire to home-based carers, centre-based carers and teachers, with almost all parents providing consent. In addition, the interviewers recorded some observations about the neighbourhood, family and child.

In Wave 1, physical measurements of all children were taken (e.g., weight, height, girth, head circumference), and cognitive testing of the 4–5 year old children, who are the focus of this Home-to-School Transitions Project. The cognitive testing involved the Peabody Picture Vocabulary Test (PPVT) to assess children's language competency and the Who am I? (WAI) test to assess the general pre-literacy/pre-numeracy skills needed for beginning school. In Wave 2, physical measurements and cognitive testing were again undertaken of the children (the same physical measures, the PPVT, and the Matrix Reasoning sub-test from the Wechsler Intelligence Scale for Children–IV). In addition, in Wave 2 children took part in a brief interview.

The numerous measures collected in the study will not be described here (see the study website at www.aifs.gov.au/growingup for details, or Gray and Smart (2008) for a summary). We focus here on the measures used to assess family financial disadvantage, children's school readiness, and their progress in the early years of school.

For the analyses presented in this paper, a small number of restrictions were imposed. Families were excluded if they were headed by a single father ($N = 37$ excluded), or by non-parent carers such as grandparents ($N = 47$ excluded). This was to avoid some difficulties in deriving appropriate characteristics for these families. A total of 4,899 children was therefore available for inclusion in these analyses.

For specific outcome measures, some respondents were excluded because there was missing data for particular questions.

At Wave 2, due to non-responses, a smaller number of respondents was available. The total number was reduced to 4,399.

Sample weights were used throughout the analyses.

Appendix B: Measures of family financial disadvantage

This appendix describes the four measures of financial disadvantage and the degree of overlap among these measures. It also examines movement into and out of financial disadvantage and the average income levels experienced by families when children were 4–5 and 6–7 years of age.

B.1 Measures of financial disadvantage

The LSAC study contains four measures used to identify family financial disadvantage when children were 4–5 years of age (Wave 1): income, financial hardship, parental perceptions of being “poor” or “very poor”, and parental reports that their major source of income was derived from government allowances or benefits.

B.1.1 Income

Income details were collected from the child's primary carer (in 97% of families this was the child's mother), who was asked for details of her own income as well as her partner's, if she had one. The gross weekly income of both sources was summed to derive total parental income. A total of 93% of families provided income details (306 families were excluded because of missing income data); with 82% of families supplying the exact amount, and the mid-range amount being used for 11% of families.

When comparing incomes across differing population groups for the purposes of assessing living standards, it is necessary to adjust household income for household size and composition in order to take into account differences in the costs of living. The widely used OECD equivalence scale was utilised in this project to adjust household family income for household size and composition.

The equivalised income data were used in the subsequent analyses. Bradbury (2007) has categorised families whose income is in the lowest 15% of the LSAC sample distribution as “living in poverty”. Following Bradbury (2007), this criterion was used to define families as “financially disadvantaged” in terms of income ($N = 689$ families), enabling comparisons to the remainder of the LSAC sample that was classified as “not financially disadvantaged”. The average equivalised income level of the LSAC financially disadvantaged group was \$183 per week, most (90%) in the range from \$83 to \$236.

B.1.2 Financial hardship

As the income measure does not take into account other financial pressures, such as levels of regular committed expenditure or debt, it may not give a complete picture of how different families are faring financially. Another way of looking at financial disadvantage is to consider the extent to which parents report the experience of financial hardships during the last year.

The primary carer was asked whether, due to a shortage of money, any of the following had occurred in the previous twelve months: a) not being able to pay gas, electricity or telephone bills on time; b) not being able to pay the mortgage or rent on time; c) adults or children going without meals; d) being unable to heat or cool their home; e) having to pawn or sell something; and f) having to seek assistance from a welfare or community organisation (11 families had missing data on these items and were excluded).

Following Bray (2001), the first two items were deemed to constitute cash flow problems, and were not included in the determination of whether a household had experienced financial hardships. The other four items were considered to constitute financial hardships. Families who reported experiencing at least one of these events were classified as having experienced financial hardship, yielding 652 families (13% of the sample) who were identified in this way. The average equivalised income of these families was \$314 per week, with 90% being within the range from \$132 to \$707.

B.1.3 Perception of the family as being “poor” or “very poor”

Another approach to measuring financial disadvantage is to use information on parents’ perceived overall financial wellbeing. This measure is derived from the following question asked of the primary carers: “Given your current needs and financial responsibilities, how would you say you and your family are getting on?” There were six response categories: “very poor”, “poor”, “just getting along”, “reasonably comfortable”, “very comfortable” and “prosperous”. Parents who reported being “poor” or “very poor” were classified as financially disadvantaged (9 families had missing data and were excluded). The number of families who perceived themselves to be poor or very poor totalled 161, which represents 3.6% of the sample. The average equivalised income of these families was \$273 per week, with most being between \$97 and \$594.

B.1.4 Government benefits/allowance as the main source of income

The fourth indicator of financial disadvantage was whether the parents’ main source of income was government benefits/allowances (for example, unemployment benefits or parenting payment). This information was ascertained from a question about the family’s major source of income (25 families had missing data and were excluded). Parents who reported that their main source of income was a government pension, allowance, or income support, without another main source of parental income (such as wages) were classified as having government benefits or allowances as their main source of income. The number of families whose main source of income was from government benefits/allowances was 686, or 16% of the sample. The average equivalised income of these families was \$224 per week, with most falling within the range \$121 to \$342.

B.2 Overlap between the four indicators

Overlap between the four indicators of family financial disadvantage is to be expected. The degree of overlap is next explored and is shown in Table B.1 below.

As Table B.1 shows, approximately three-quarters of the LSAC sample did not experience any of the four types of financial disadvantage, 12.7% experienced one type of disadvantage, 8.0% experienced two types, 4.6% experienced three types, and 0.8% experienced all types of disadvantage.

Focusing now only on the families who experienced financial disadvantage, between 18–43% experienced one disadvantage, 21–43% two types, 28–32% three types and 6–24% all types (depending on the indicator examined). Thus, families tended to experience multiple disadvantages, although a sizable minority experienced one type of disadvantage only.

As noted earlier, the separate indicators may yield differing explanations of the effects of family financial disadvantage on children, and their policy and practice implications may differ. Additionally, a moderately large sample size is needed to reliably compare children from financially disadvantaged families who have positive and problematic outcomes. Therefore, separate preliminary analyses (see Chapter 3) using all of these measures of financial disadvantage were conducted to assess their associations with school readiness and children’s progress in the early primary school years.

Table B.1 **Overlap between the four indicators of financial disadvantage**

Low income	Financial hardship	Poor or very poor	Main income government benefit/ allowance	Percentage of sample	N
–	–	–	–	74.0	3,384
✓	–	–	–	3.9	177
–	✓	–	–	5.4	249
–	–	✓	–	0.6	28
–	–	–	✓	2.8	127
✓	✓	–	–	0.8	36
✓	–	✓	–	0.1	4
✓	–	–	✓	4.9	226
–	✓	✓	–	0.8	37
–	✓	–	✓	1.2	54
–	–	✓	✓	0.1	4
✓	✓	✓	–	0.4	17
✓	–	✓	✓	0.3	12
✓	✓	–	✓	3.7	170
–	✓	✓	✓	0.2	11
✓	✓	✓	✓	0.8	37

Notes: – = not financially disadvantaged on this indicator; ✓ = financially disadvantaged on this indicator. This tables excludes families with missing data on any measure of financial disadvantage, so sample counts do not match those in the above descriptions of individual financial disadvantage measures.

B.3 Stability of family financial disadvantage

The financial situation of families may change over time, and the impact of family financial disadvantage may differ substantially according to whether disadvantage is continuous or intermittent. We therefore examined income levels at Waves 1 and 2 of the LSAC study to explore the degree of movement in and out of disadvantage over time. Families with an equivalised income in the lowest 15% of the LSAC sample were classified as being financially disadvantaged at each time point.

Table B.2 shows the degree of movement out of and into financial disadvantage over the two years between Waves 1 and 2 of the LSAC study. Forty per cent of families who had been financially disadvantaged when children were 4–5 years old were not disadvantaged when the children were 6–7 years old. Family financial disadvantage remained continuous for the remaining 60%. Nine per cent of non-disadvantaged families had moved into disadvantage over this time period.

We also examined the financial circumstances of families who had moved out of or into financial disadvantage. Table B.3 demonstrates that families who moved out of disadvantage continued to have lower levels of income compared to families who were never disadvantaged. While this group's equivalised income per week had increased considerably

(on average \$460 in Wave 2), it was not equivalent to the income of continuously non-financially disadvantaged families (an average of \$736 at Wave 2). Similarly, the average equivalised income of families who moved into financial disadvantage had previously been considerably lower than that of families who never experienced financial disadvantage (\$410 vs \$612 at Wave 1 when neither were financially disadvantaged). These analyses are a reminder that the non-financially disadvantaged group includes families experiencing a diverse range of financial circumstances, including those who may be just marginally better off than those classified as financially disadvantaged. Further, "improvement" in financial circumstances does not necessarily imply reaching the same level of financial resources as among families who never experienced financial disadvantage.

Changes in the family financial situation are likely to reflect broader changes within families, such as the number of parents resident in the home and parental employment. This is demonstrated by Table B.4, which summarises trends on these aspects. Families who were financially disadvantaged at both waves consistently had the highest rates of unemployment among fathers, fathers not being resident in the home, and mothers not being in the labour force. In contrast, continuously non-financially disadvantaged families were most likely to contain an employed father who was resident in the home at both waves, and

maternal employment, either part-time or full-time. Families who moved out of financial disadvantage had a higher proportion of employed fathers, fewer absent fathers, and a higher proportion of employed mothers at the time of movement out of financial disadvantage (Wave 2). Similarly, families entering financial disadvantage in Wave 2 contained a higher proportion of not-employed or absent fathers at the time of moving into financial disadvantage. Nevertheless, it is important to note that while these trends were powerful, a number of families in the continuously or intermittently financially disadvantaged groups did not conform to these trends, possibly reflecting differing levels of resilience.

In the analyses examining children's progress in the early primary school years (reported in Chapter 5), we investigated the impact of continuous or intermittent family financial disadvantage, along with other features of the child, family and broader environment. We did not, however, take into account other changes in family circumstances, such as those described above, due to the complexity of the analytical methods that would be required.

Table B.2 Financial disadvantage at 6–7 years as a percentage of financial disadvantage at 4–5 years

	Financial disadvantage at 6–7 years (%)	Non-financial disadvantage at 6–7 years (%)
Financial disadvantage at 4–5 years	60	40
Non-financial disadvantage at 4–5 years	9	91

Table B.3 Average equivalised parental income at 4–5 and 6–7 years, by stability or change in financial disadvantage

	Average family income at 4–5 years	Average family income at 6–7 years
Continuous financial disadvantage	\$188	\$200
Financial disadvantage at 4–5 years only	\$179	\$460
Financial disadvantage at 6–7 years only	\$410	\$201
Continuous non-financial disadvantage	\$612	\$736

Table B.4 Connections between financial disadvantage transitions and related family characteristics

	Continuous financial disadvantage		Financial disadvantage at 4–5 years only		Financial disadvantage at 6–7 years only		Continuous non-financial disadvantage	
	% at 4–5 years	% at 6–7 years	% at 4–5 years	% at 6–7 years	% at 4–5 years	% at 6–7 years	% at 4–5 years	% at 6–7 years
Father not resident in the home	57	59	28	16	30	49	6	7
Father not employed	25	22	23	5	7	17	2	1
Father employed	18	19	49	79	63	35	93	92
Mother not in the labour force	71	69	55	35	47	43	32	25
Mother unemployed	11	11	10	6	8	15	8	9
Mother in part-time employment	13	16	29	41	35	36	44	46
Mother in full-time employment	5	5	6	18	10	6	16	20

Appendix C: Measures of children's school readiness at 4–5 years

This appendix provides information of the measures used to examine children's cognitive and social/emotional school readiness at 4–5 years of age, and also provides descriptive information regarding the percentage of children experiencing different aspects of low school readiness.

C.1 Measures of school readiness

The LSAC study contains several measures that can be used to assess school readiness at 4–5 years of age (Wave 1 of the study). The following sections describe these measures in detail. Measures were generally divided into quintiles, and children whose scores were in the lowest quintile of the LSAC sample distribution were classified as showing low school readiness, while children whose scores were above this were classified as showing adequate school readiness. However, as can be seen in Tables C.1 and C.2, the distribution of the measures did not always permit an even distribution into quintiles. Thus, the proportions classified as showing low school readiness on the various indicators are as close to 20% as possible, but may be above or below this criterion on some measures.

C.1.1 Who am I? test

The Who Am I? test (de Lemos & Doig, 1999) is an Australian measure devised to assess children's school readiness. It assesses a child's ability to perform a range of tasks, such as reading, writing, copying, and symbol recognition. The WAI was administered to the child by a trained interviewer during the home visit to the family.

The ten items are:

- copying a circle;
- copying a cross;
- copying a square;
- copying a triangle;
- copying a diamond;
- writing numbers;
- writing letters;
- writing words;
- writing a sentence; and
- drawing a picture of oneself.

Children whose scores were in the lowest quintile of the LSAC sample distribution on the WAI were classified as showing low school readiness in this area of development, while children whose scores were above this

were classified as showing adequate school readiness.

C.1.2 Peabody Picture Vocabulary Test

A short form of the Peabody Picture Vocabulary Test was used to assess children's language competency, specifically their receptive language and vocabulary acquisition. The PPVT was administered to the child by a trained interviewer as part of the home visit to the family. The interviewer orally presented a stimulus word with a set of pictures and asked the child to select the picture that was closest to the word's meaning.

Children whose scores were in the lowest quintile of the LSAC sample distribution on the PPVT were classified as showing low school readiness in terms of their language skills, and children above this criterion as showing adequate language skills.

C.1.3 Strengths and Difficulties Questionnaire

The Strengths and Difficulties Questionnaire (Goodman, 1997) is a behavioural screening questionnaire that assesses positive and negative aspects of children's behaviour. Parents rated their 4–5 year old children on 25 items that assessed 5 major areas: conduct problems (e.g., often fights with other children or bullies them; steals from home, school or elsewhere), hyperactivity/inattention problems (e.g., restless, overactive, cannot stay still for long; easily distracted, concentration wanders), emotional symptoms (e.g., often unhappy, depressed or tearful; many worries or often seems worried), peer problems (e.g., rather solitary, prefers to play alone; picked on or bullied by other children), and prosocial behaviour (e.g., considerate of other people's feelings; often volunteers to help others, such as parents, teachers, other children).

The first four scales can be summed to form a total difficulties scale. However, specific types of behaviour problems, especially hyperactivity/inattention and conduct problems, are known to pose particular risks for later academic difficulties (Hinshaw, 1992; Sanson, Prior, & Smart, 1996). Similarly, peer problems at 4–5 years might place children at particular risk of later social difficulties in the early school years. Therefore, the individual sub-scales were used rather than the total difficulties score.

Children whose scores were in the highest quintiles of the LSAC sample distributions on the behaviour problem sub-scales were classified as showing low readiness for school. For prosocial behaviour, scores in the lowest quintile were used to identify children who were not ready for school on this aspect of functioning.

C.2 Children showing low school readiness at 4–5 years

Table C.1 shows the numbers and percentage of children who were classified as being not ready for school on the various school readiness indicators. As noted earlier, for the PPVT, WAI and SDQ prosocial behaviour scale, low school readiness is denoted by low scores (i.e., children showed fewer of these skills or behaviours). For the SDQ behaviour problem scales, low school readiness is indicated by high scores (i.e., children displayed more of these problem behaviours).

Table C.1 Children with low school readiness on each of the cognitive tests, and social/emotional adjustment measures

Measure	%	N
Low cognitive readiness (WAI)	23	4,797
Low language competency (PPVT)	25	4,335
High conduct problems	16	4,887
High hyperactivity problems	19	4,887
High emotional problems	15	4,886
High peer problems	13	4,887
Low prosocial behaviour	25	4,887

Appendix D: Measures of children's school progress at 6–7 years

This appendix provides information on the measures used to examine children's cognitive and social/emotional school achievement and adjustment at 6–7 years of age, and provides descriptive information regarding the percentage of children experiencing different aspects of low school progress. These measures all made use of teacher reports. Teacher reports were not available for all children: out of a possible 4,399 children, teacher data was available for approximately 3,572 children (the exact number depends on the measure used, as they differed slightly on non-response).

D.1 Measures of school progress

At 6–7 years (Wave 2 of the study), several measures were available to assess children's academic, social and behavioural adjustment. Similar to school readiness, children who were in the lowest quintile on measures of school achievement and adjustment were classified as showing low school progress, while children whose scores were above this were classified as showing adequate school progress.

D.1.1 Academic performance

The children's teachers rated various aspects of language/literacy skills and numeracy/mathematical thinking skills using the Academic Rating Scale from the Early Childhood Longitudinal Study–Kindergarten cohort. Teachers used a 5-point rating scale of “not yet”, “beginning”, “in progress”, “intermediate” and “proficient” to rate the child's performance on the following items.

For language/literacy, the items were:

- contributes relevant information to classroom discussions;
- understands and interprets a story or other text read to him/her;
- reads words with regular vowel sounds;
- reads words with irregular vowel sounds;
- reads age-appropriate books independently with comprehension;
- reads age-appropriate books fluently;
- able to write sentences with more than one clause;
- composes a story with a clear beginning, middle and end; and
- demonstrates an understanding of some of the conventions of print.

For numeracy/mathematical thinking, the items were:

- uses the computer for a variety of purposes;
- can continue a pattern using three items;
- demonstrates an understanding of place value;
- models, reads, writes and compares whole numbers;
- counts change with two different types of coins;
- surveys, collects and organises data into simple graphs;
- makes reasonable estimates of quantities;
- measures to the nearest whole number using common instruments; and
- uses a variety of strategies to solve maths problems.

The two areas of academic competency were found to be highly related, with a correlation of .81 between the two scales. A total academic competency score can be calculated and the degree of overlap reported here supports this approach. Nevertheless, as there is interest in determining whether the risk of poor outcomes for children from financially disadvantaged families differs across the literacy/numeracy areas, findings for these two aspects of academic performance are presented.

Children whose scores were in the lowest quintile of the LSAC sample distribution on the Academic Rating Scale sub-scales were classified as showing low levels of language/literacy or numeracy skills. The remainder of the sample was classified as showing adequate language/literacy or numeracy skills.

D.1.2 Engagement in learning

The teacher-completed Approaches to Learning scale used in the ECLS-K study and adapted from the Gresham and Elliott Academic Competence Scale (Gresham & Elliott, 1990) provides a measure of children's engagement in learning. The six items were as follows:

- keeps belongings organised;
- shows eagerness to learn new things;
- works independently;
- easily adapts to changes in routine;
- persists in completing tasks; and
- pays attention well.

Teachers rated the child's behaviour using a 4-point scale of "never", "sometimes", "often" and "very often".

Children whose scores fell in the lowest quintile of the LSAC sample distribution on this measure were classified as showing low engagement in learning, while the remainder of the sample were classified as showing adequate engagement in learning.

D.1.3 Strengths and Difficulties Questionnaire

The SDQ was again used to assess positive and negative aspects of children's behaviour. To ascertain children's behaviour in the school contexts, teacher ratings were used. The same methods were used to classify children as displaying problematic and non-problematic behaviour as were used at 4–5 years. Teacher data was available for 82% of the sample

D.2 Children showing poor school progress at 6–7 years

Table D.2 shows the number and percentage of children classified as experiencing difficulties in their school progress in academic achievement, engagement in learning, and behavioural, emotional and social adjustment. For the Academic Rating Scale, the Approaches to Learning scale, and the SDQ prosocial behaviour scale, problematic functioning was indicated by low scores. For the behaviour problem sub-scales, children whose scores were in the highest quintiles of the LSAC sample distributions were classified as showing difficulties in these areas of functioning.

Table D.1 Children with academic, motivational or behavioural difficulties at 6–7 years

Teacher-reported measures	%	N
Low literacy skills	21	3,570
Low numeracy skills	22	3,557
Low approach to learning	22	3,572
High conduct problems	21	3,566
High hyperactivity problems	18	3,568
High emotional problems	13	3,567
High peer problems	12	3,565
Low pro-social behaviour	21	3,565

Appendix E: Summary of risk and protective factors for school readiness

Predictor variables	WAI	PPVT	Conduct problems	Hyperactivity problems	Emotional problems	Peer problems	Prosocial behaviour
Family financial disadvantage		x					
Child characteristics							
Male gender	x	x	x	x		x	x
Low persistence	x	x	x	x		x	x
Age	✓	✓					
Parent characteristics							
<i>Directly linked to low income</i>							
Father not employed							
Father absent			x			x	x
Mother unemployed		✓		✓			
Mother works part-time	✓	✓		✓	✓		
Mother works full-time	✓				✓		
<i>Not directly linked to low income</i>							
Mother < 26 years		x	x		x		
Mother completed year 12 education	x						x
Mother completed bachelor degree		✓	✓	✓			
Mother is of Indigenous background	x			x			
Mother is non-Australian born, good English	✓	x					✓
Mother is non-Australian born, poor English		x					✓
Maternal psychological distress		x	x	x	x	x	
Parenting style							
Lower warmth		✓	x			x	x
Higher hostility			x	x	x	x	x
Lower use of reasoning							x
Lower consistency		x	x	x	x	x	x
Family educational climate							
Reading to child < 3 days per week		x					x
Low other home learning activities							x
< 30 children's books in home		x				x	
High TV watching			x	x	x	x	
Neighbourhood characteristics							
High SEIFA disadvantage	x	x	x			x	
Accessible non-metropolitan		✓					
Remote non-metropolitan							
Child care							
Informal or parent-only care	x	x					✓
Child care							
School	✓						

Notes: Protective factors = ✓; Risk factors = x



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