Australian Bureau of Statistics

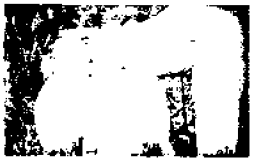
TVW TELETHON INSTITUTE FOR Child Health Research

Western Australian Child Health Survey

Education, Health & Competence












Catalogue No. 4305.5

19 February 1997

Western Australian Child Health Survey

Education, Health and Competence

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Regional Director, Western Australia
and Government Statistician for Western Australia

CITATION

The following citation should be used when reproducing or quoting any part of this publication:

Zubrick SR, Silburn SR, Gurrin L, Teoh H, Shepherd C, Carlton J, Lawrence D. *Western Australian Child Health Survey: Education, Health and Competence.* Perth, Western Australia: Australian Bureau of Statistics and the TVW Telethon Institute for Child Health Research, 1997.
(ISBN 0 642 17239 0).

ACKNOWLEDGMENTS

This publication was a collaboration between the TVW Telethon Institute for Child Health Research (ICHR) and the Australian Bureau of Statistics (ABS).

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The authors wish to thank the 1,462 Western Australian families and the principals and teachers in 413 Western Australian schools for agreeing to participate in this study.

Special thanks to Rod Brown (ABS) who managed all aspects of the field survey administration and coordination, and to the 27 ABS interviewers who conducted the interviews.

The Western Australian Child Health Survey could not have been conducted without the assistance of:

Thomas Achenbach, John Altham, David Ansell, David Axworthy, Glen Bennett, Ken Betjeman, Alison Bevan, Peter Blackwell, Jenny Broz, Joan Buckham, Iain Cameron, Judy Crooke, Meredyth Crossing, Jenny Cugley, Alan Dodson, Jeanette Dolman, Ann Doran, Don Edgar, Linda Flavell, Gabrielle Fry, Trish Fullerton, Ruth Garcia, Cherrie Goodier, Phil Green, Dale Halnan, Bill Hann, Mort Harslett, Jeanette Hasleby, Claudia Hoeltje, Melanie Honnor, Helen Howells, Irene Ionnakis, Brian Jeppeson, June Jones, Ethel-Mary Kenworthy, Dianne Kerr, Robert Kosky, Kati Kraszlan, Laraine Kroll, John Logan, Eve Lucas, Vera McKenzie, Gavin Morris, Sharon Morrison, Hoan Nguyen, David Offord, John Olsen, Kim Pervan, Greg Piggott, Karen Powell, David Reiss, Michael Resnick, Jean Rice, Gracie Rodgers, Deb Shaw, Peter Short, Jenny Silburn, Rozanne Silburn, Halina Szunejko, Therese Temby, Peter Titmanus, Bev Vickers, Janet Wallwork, Willow Warren, David Wood and Ann Zubrick.

ISBN 0 642 17239 0

FOREWORD

The role of schools in modern societies has become more complex because of the complexities of the life circumstances of their students. Some education professionals seek to respond with a retreat to narrow academic goals, highlighting the intellectual role of schooling and declaring other concerns to be others' responsibilities.

The Western Australian Child Health Survey paints a complex picture of the interactions of school, family and social conditions which suggests that such a retreat would be self-defeating. The Survey's data on home, school and the educational competence and mental health of young people are rich and powerful, providing helpful insights and provocative policy proposals.

The report develops a well-balanced view of the relationship between home and school. It takes account of the complexities of modern family life, both in the variations in family structure and in the impact of external pressures on families. The data confirm many of the discouraging findings about the inter-generational impact of dysfunction. Poverty in one generation is associated with poor education and poverty in the next, for example. The data also generate a message of hope.

The relationships are not simple and direct, as the survey makes clear. Weaving together their survey data and findings from other cross-sectional and longitudinal studies, the authors build a picture of the way in which family resources (psychological capital, human capital, time and income, as they characterise them) shape and moderate opportunities and risks. They then take the important steps beyond their correlational data to explore causal inferences and to suggest action. They have advice for parents, for schools and for a variety of professionals who interact with students and schools.

Some of their advice is provocative, such as their encouragement to teachers to develop as full an understanding as possible of their students' home circumstances (educational attainments of caregivers, caregiver employment and occupational status, and family income being their list). Some of it is very practical, such as their suggestion that teachers encourage parents needing to move home and to shift their children to another school to do so in ways that minimise the educational disruption. Behind all of their suggestions lies their evidence about the relevance and potential efficacy of the policies and practices they commend.

An important part of the report is its attention to the mental health of students. It deals with the impact of school experience on mental health, on the significance and reliability of school personnel's knowledge about students' mental health and on a role for schools in the prevention of mental illness.

The report provides no basis for delineating a comfortable and limited role for schools but it is realistic and reasonable in what it asks of them. It will be a good thing if this report is widely read by the education profession and by all others interested in the role of schools in contemporary Australian society.

BARRY McGAW
Director
Australian Council for Educational Research

CONTENTS

ABOUT THIS PUBLICATION

Views expressed

The views expressed in *Western Australian Child Health Survey: Education, Health and Competence* relating to the implications of survey findings for future directions in public health, and the commentary on survey findings, are those of the TVW Telethon Institute for Child Health Research and not necessarily those of the Australian Bureau of Statistics.

Related publications

This publication is the final in a series of three from the 1993 Western Australian Child Health Survey. The first publication, *Developing Health and Well-being in the Nineties* (Catalogue No. 4303.5) was released in April 1995. The second publication, *Family and Community Health* (Catalogue No. 4304.5), was released in May 1996.

The following terms are used consistently throughout this publication:

Children

The term 'children' refers to persons aged 4 to 16 years at the time the survey was conducted.

Students

The term 'students' refers to children aged 4 to 16 years who were attending school at the time of the survey.

Caregiver/parent

The Western Australian Child Health Survey directed a large proportion of its questions to children's principal caregivers. Given that the principal caregiver was almost always a parent of the child, the terms 'caregiver' and 'parent' are often used interchangeably throughout this publication, and include original and step parents and other permanent caregivers.

Symbols and other usages

*	relative standard error between 25 and 50 per cent
**	relative standard error of 50 per cent or more. See Appendix C – Technical Notes
..	not applicable
-	nil or rounded to zero

For more information about data contained in the following text and tables, please refer to the Glossary at the end of this publication.

Inquiries

- *for further information* contact Jeff Carlton at the National Youth Statistics Unit of the ABS on (09) 360 5374, or the Division of Psychosocial Research at the TVW Telethon Institute for Child Health Research on (09) 340 8533.
- *for information about other ABS statistics and services* please refer to the last page of this publication.

PREFACE

The 1993 Western Australian Child Health Survey, a large scale epidemiological survey of the health and well-being of Western Australian children, was undertaken by the TVW Telethon Institute for Child Health Research (ICHR). Funding for the survey was provided by Healthway (the Western Australian Health Promotion Foundation), the Australian Rotary Health Research Fund, the Health Department of Western Australia, and the State Statistics Committee.

Funding for this publication was provided by the Education Department of Western Australia, the Catholic Education Office of Western Australia, the Association of Independent Schools of Western Australia and the Australian Rotary Health Research Fund.

Design and development of survey methodology and instrumentation, and fielding of the survey was done in consultation with the Australian Bureau of Statistics (ABS).

Production of the series of publications from this survey has been a collaboration between the ICHR and the ABS. This publication is the final in the series of three; the first, *Western Australian Child Health Survey: Developing Health and Well-being in the Nineties* (ABS Catalogue No. 4303.5) provided a comprehensive picture of the mental and physical health status of Western Australian children. The second, *Family and Community Health* (ABS Catalogue No. 4304.5) described the characteristics of Western Australian families and the communities they live in, and examined how family and local community influence the health and development of children and adolescents.

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INTRODUCTION

This third volume of findings from the Western Australian Child Health Survey examines the associations between the physical and mental health and the academic competence of 4 to 16 year-old students. The first three chapters document the nature, range and diversity of schools within Western Australia. They detail the school environments and the family and community characteristics of students attending these schools, and describe student academic competence. Chapter Four then extends these findings by assessing family, health and mental health factors that influence the academic competence of all students. Chapter Five focuses upon the academic competence and health of high school students. The final chapter details how an understanding of changes in families and communities can better be acknowledged in the policy and planning of new and existing schools and in the delivery of educational services. It also discusses how these data can be used to refine and develop interventions for children at educational risk and details current barriers to the development of these interventions along with strategies for overcoming them.

THE TVW TELETHON INSTITUTE FOR CHILD HEALTH RESEARCH

The TVW Telethon Institute for Child Health Research is a centre of excellence for the conduct of research in child health. Founded in 1987, the Institute's research programs include the study of asthma and allergic disease, birth defects, child and adolescent mental health, childhood death and disability, leukaemia and other cancers, and Aboriginal health and infectious disease.

The Institute's mission is to improve the health of children through the development and application of research into:

- causes of ill health;
- the maintenance of good health;
- prevention of ill health; and
- the treatment of conditions affecting children.

SURVEY OBJECTIVES

The survey's primary objectives are: to define priority targets for existing health, education and social services and; to build an epidemiological knowledge-base from which preventive strategies can be developed to facilitate the social, emotional, academic and vocational competence of young people. A notable feature of this survey is its emphasis on identifying the developmental and environmental factors which enable and develop adolescent competence, resilience and employment readiness.

The specific aims of the study are to:

- Estimate the prevalence and distribution of mental health problems in Western Australian children aged 4 to 16 years;
- Estimate the prevalence and distribution of other chronic medical conditions and limitations and how they contribute to mental ill-health and reduced function;
- Estimate the prevalence and distribution of adverse health behaviours (e.g. smoking, alcohol and drug misuse, and unprotected sexual activity);
- Describe children's use of health care, education, juvenile justice and social services;
- Develop estimates of risk and markers identifying children at increased risk for various health, educational and vocational outcomes; and
- Identify markers resulting in protection from, and amelioration of, poor mental health and adverse health behaviour(s).

SURVEY DESIGN

The design and development of the survey methodology and instrumentation was done in consultation with the Australian Bureau of Statistics. Efforts have been made to ensure that the data collected are both scientifically relevant

and pertinent to current government information needs and policy initiatives. To do this, reference groups were convened in early 1992 with representation from the various government departments and community agencies which have a stake in the outcome of the survey findings.

This process involved senior policy input from the Western Australian State Departments of Health, Education, Community Development and Police; the Alcohol and Drug Authority; the Authority for the Intellectually Handicapped; the Catholic Education Office of Western Australia; the Association of Independent Schools of Western Australia; the Aboriginal Affairs Planning Authority; the Perth Aboriginal Medical Service; and the Australian Institute of Family Studies.

PILOT SURVEY

A pilot survey of 260 Perth metropolitan households with 4 to 16 year-old children was conducted between 24 August and 7 September 1992. This field-tested the survey methodology and established its community acceptability, with a household participation rate of 72 per cent. Consent was also obtained to contact schools to obtain information relating to individual students and the characteristics of their school environment. A total of 162 government and non-government schools participated in the pilot survey. The pilot data were used to refine the final survey process, survey instruments and data collection procedures.[1]

MAIN SURVEY

The main survey commenced on 5 July 1993 and was completed on 27 September 1993. A random sample of 1,776 households throughout metropolitan and country regions of Western Australia was approached, with 1,462 (82 per cent) consenting to participate. A total of 2,737 children aged 4 to 16 years was surveyed. Collection districts across Western Australia were sampled and 27 trained interviewers conducted the household interviews. Data were gathered from consenting families from three main sources:

- the principal caregiver (see *Principal caregiver* in the Glossary);
- adolescents aged 12 to 16 years; and
- the school principal and teacher(s) of surveyed children.

On 10 October 1993 all survey children who were in school (1,963 children) were followed up through survey instruments that collected details from the school principal and the classroom teacher. A total of 413 schools statewide was involved and 96 per cent of all school survey materials were returned. This allowed estimates of health, mental health and competencies as observed in the school context. Information about the school setting was also collected.

SURVEY CALIBRATION

The clinical calibration phase of the Child Health Survey was conducted from 17 March 1994 (see *Calibration of instruments* in Appendix A). A random sample of 280 families was drawn, stratified by the presence or absence of a mental health disorder in a randomly selected child seen during the household survey. Experienced mental health professionals then visited the home and conducted a structured psychiatric interview with the caregiver and the child aimed at generating DSM-III-R clinical diagnoses (see *DSM-III-R clinical diagnoses* in the Glossary). This allowed the calibration of the entire survey sample against another criterion of mental health disorder.

SURVEY SIGNIFICANCE

The large scope, complex sampling and sophisticated survey methodology makes this project one of considerable scientific significance. The active involvement of government departments and other agencies in the project design should also ensure that important policy questions are addressed and that critical information is obtained to assist the planning and effective delivery of services to Western Australian children, adolescents and families in the 1990s.

ENDNOTES

1 Garton AF, Zubrick SR, Silburn SR. The Western Australian Child Health Survey: Pilot study. *Australian and New Zealand Journal of Psychiatry* 1995;29(1): 48-57.

1 WESTERN AUSTRALIA'S SCHOOLS

Each year students spend about twelve hundred hours at school. After the home and family, this makes the school, its environment and social community one of the most significant influences in the lives of students. The Western Australian Child Health Survey approached the schools and teachers of surveyed children, to gather information about the school environment, and the children's development in that setting.

This Chapter details the Western Australian education system, and how surveyed schools fit in that context. It then examines the characteristics of schools surveyed, and of surveyed children in their school environments.

THE WESTERN AUSTRALIAN EDUCATION SYSTEM

In Western Australia, education at pre-primary, primary and secondary levels is provided at government schools administered and staffed by the Department of Education and at non-government schools, which operate through the Catholic Education Commission of WA or as independent schools.

KINDERGARTEN AND PRE-PRIMARY EDUCATION

Before starting primary school, a child may undergo kindergarten and/or pre-primary education at either a government or non-government school. A child may also attend a Government staffed community pre-school or an independent pre-school. Attendance is optional at all centres. Children start pre-primary education during the year in which they turn five years of age. They may also enrol in kindergarten during their fourth year, and attend two half day sessions per week.

PRIMARY AND SECONDARY EDUCATION

Children normally start primary school at the beginning of the year in which they attain the age of six years. Except in special circumstances, attendance is then compulsory to the end of the year in which the child attains the age of fifteen years. Instruction in primary school is provided over seven years. A child who makes normal progress completes the course at the age of twelve and then enters secondary school. Secondary education is provided over a period of five years – from Year 8 to Year 12.

Generally, students may leave at the end of Year 10 or continue through to Year 12 to attain a Certificate of Secondary Education or the new Western Australia Certificate of Education.

Western Australia currently has two Senior Colleges and two Senior Campuses run by the Education Department which give 'second chance' secondary education to those people who left the school system before achieving their goals. The Department of Education has a number of programs giving help to students with special needs. These programs target Aboriginal and Torres Strait Islanders, students from a non-English speaking background, students with disabilities, or from socio-economically disadvantaged areas, students who are geographically isolated, and gifted and talented students. Special programs are also available which address issues of gender equity in education.

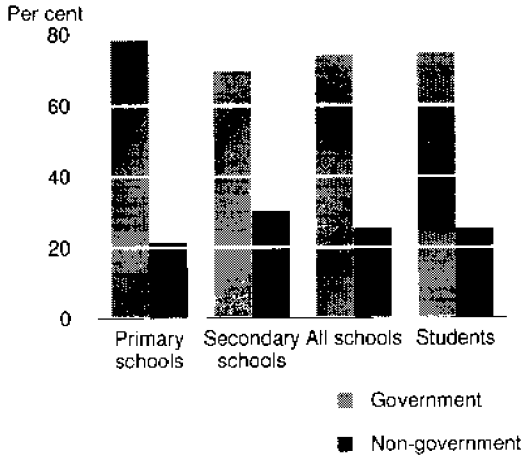
DISTANCE EDUCATION

In Western Australia distance education operates as a constituent of the general school system. The School of Isolated and Distance Education of the Education Department provides schooling to a wide variety of students who are unable to attend a conventional school for reasons of isolation. These include students living in rural and remote areas, and isolated Aboriginal communities. It also caters for students who are unable to attend conventional schools for various medical and social reasons.

CHARACTERISTICS OF WESTERN AUSTRALIAN SCHOOLS

In the second semester of 1993, 296,900 students were enrolled in 1,035 schools in Western Australia. Almost three-quarters of these students (222,500) were accommodated in government schools, and another 17 per cent (49,100) in Catholic schools. The remaining 25,300 students attended 108 other non-government schools.

FIGURE 1.1 Relative proportions of schools and students in government and non-government schools



Source: Education Department of Western Australia

Regional differences. There were pronounced differences in the characteristics of Perth metropolitan and country schools. The majority of schools (57 per cent) and students (71 per cent) were in the Perth metropolitan area. Generally, Perth schools were larger in terms of student numbers, and there was a higher representation of non-government schools. In Perth, students at Catholic schools and other non-government school comprised 18 per cent and 11 per cent respectively of all students, compared with 13 per cent and 3 per cent respectively in country areas.

School type and size. Primary schools were the most numerous, comprising nearly 69 per cent of all schools, but catering for only 54 per cent of students, reflecting their smaller size in terms of student numbers, relative to secondary schools. Another 172 schools (17 per cent) offered both primary and secondary education, to 46,200 students. Over two-thirds of these schools were in Western Australia's country areas.

The 145 secondary schools were generally larger in size, representing 14 per cent of all schools, but accommodating 31 per cent (91,100) of all students.

Most schools (63 per cent) were relatively small, with 300 or less students, and almost three-quarters of these were primary schools. There were 168 schools with more than 500

TABLE 1.1 School system and type: Region: Number of schools and students(a), Semester 2, 1993

	Perth metro		*Country*		*Western Australia*	
School system and type	*No. of schools*	*No. of students*	*No. of schools*	*No. of students*	*No. of schools*	*No. of students*
		('000)		('000)		('000)
Government—						
Primary	331	94.2	228	36.3	559	130.5
Primary/secondary	17	2.8	89	16.1	106	18.9
Secondary	65	54.4	36	18.6	101	73.0
Total Government(b)	*419*	*151.4*	*353*	*71.0*	*772*	*222.5*
Catholic—						
Primary	66	19.5	40	6.1	106	25.6
Primary/secondary	6	4.8	11	2.6	17	7.4
Secondary	22	13.8	10	2.3	32	16.1
Total Catholic	*94*	*38.2*	*61*	*11.0*	*155*	*49.1*
Other non-government—						
Primary	35	3.1	12	0.4	47	3.5
Primary/secondary	34	17.6	15	2.2	49	19.9
Secondary	11	1.9	1	-	12	2.0
Total Other non-government	*80*	*22.6*	*28*	*2.7*	*108*	*25.3*
All schools—						
Primary	**432**	**116.7**	**280**	**42.8**	**712**	**159.5**
Primary/secondary	**57**	**25.3**	**115**	**20.9**	**172**	**46.2**
Secondary	**98**	**70.2**	**47**	**21.0**	**145**	**91.1**
Total schools(b)	***593***	***212.2***	***442***	***84.7***	***1 035***	***296.9***

(a) Student numbers include only those at primary or secondary school level. (b) Includes educational support units with no enrolled students.

Source: Education Department of Western Australia

TABLE 1.2 School system and type: Size: Number of schools and students(a), Semester 2, 1993

School system and type	School size (No. of students)									
	100 or less		101-300		301-500		More than 500		Total	
	No. of schools	No. of students ('000)	No. of schools	No. of students ('000)	No. of schools	No. of students ('000)	No. of schools	No. of students ('000)	No. of schools	No. of students ('000)
Government—										
Primary	170	7.2	199	40.0	146	56.4	44	26.9	559	130.5
Primary/secondary	38	1.8	50	9.2	13	5.1	5	2.9	106	18.9
Secondary	9	0.3	10	2.2	7	2.8	75	67.8	101	73.0
Total government(b)	*223*	*9.3*	*259*	*51.3*	*166*	*64.3*	*124*	*97.6*	*772*	*222.5*
Catholic—										
Primary	21	1.3	50	9.8	33	13.4	2	1.2	106	25.6
Primary/secondary	3	0.2	5	0.7	3	1.1	6	5.4	17	7.4
Secondary	5	0.3	4	0.6	4	1.5	19	13.8	32	16.1
Total Catholic	*29*	*1.7*	*59*	*11.1*	*40*	*16.0*	*27*	*20.3*	*155*	*49.1*
Other non-government—										
Primary	35	1.4	12	2.0	-	-	-	-	47	3.5
Primary/secondary	15	0.7	13	2.2	4	1.6	17	15.3	49	19.9
Secondary	5	0.3	5	0.9	2	0.8	-	-	12	2.0
Total Other non-government	*55*	*2.4*	*30*	*5.2*	*6*	*2.3*	*17*	*15.3*	*108*	*25.3*
All schools—										
Primary	**226**	**9.9**	**261**	**51.7**	**179**	**69.8**	**46**	**28.1**	**712**	**159.5**
Primary/secondary	**56**	**2.7**	**68**	**12.1**	**20**	**7.8**	**28**	**23.6**	**172**	**46.2**
Secondary	**19**	**0.8**	**19**	**3.7**	**13**	**5.1**	**94**	**81.6**	**145**	**91.1**
Total schools(b)	***307***	***13.4***	***348***	***67.6***	***212***	***82.7***	***168***	***133.2***	***1 035***	***296.9***

(a) Student numbers include only those at primary or secondary school level. (b) Includes educational support units with no enrolled students.

Source: Education Department of Western Australia

students, and of these, 73 per cent were secondary, or combined primary and secondary, schools.

SURVEYED SCHOOLS – A PROFILE

The Western Australian Child Health Survey collected data about survey children from 397 schools (413 were approached). Almost 70 per cent of these were government (or State) schools, 21 per cent were Catholic, and 9 per cent, other non-government schools. Over 5 per cent of these schools reported having boarding students. Among all Western Australian schools, three-quarters were government schools, 15 per cent were Catholic schools, and other non-government schools made up the remaining 10 per cent.

The majority (65 per cent) of schools which participated in the survey had more than 300 students (with 31 schools having more than 1,000 students), but in the total school population, most schools (63 per cent) had 300 or less students. The higher proportions of Catholic schools and schools with large student bodies in the survey can largely be explained by the sampling methodology followed.

Because the survey initially sampled children, and then approached those children's schools, schools with large numbers of students stood a greater chance of being selected, than did smaller schools.

Also, to provide manageable workloads for survey interviewers in the country areas of Western Australia, a clustering technique was used to ensure that sampled households were geographically close.

This technique had the effect of concentrating the sample around urban areas, where larger schools (including Catholic schools) were more likely to be located.

Data from schools, as presented in this and the following section, relate to the sample of schools only and can not necessarily be generalised to the full population of schools. This should be borne in mind when interpreting these data.

School type. The majority (65 per cent) of schools involved in the survey were solely primary schools, with another 23 per cent solely secondary schools. Almost 10 per cent were combined primary/secondary schools.

TABLE 1.3 Comparison of surveyed schools with all schools (Per cent)

School characteristics	*Surveyed schools*	*All schools*
School system—		
Government	69.5	74.6
Non-government—		
Catholic	21.4	15.0
Other non-government	9.1	10.4
School type—		
Primary	65.5	68.8
Primary/secondary	9.8	16.6
Secondary	23.2	14.0
Size (no. of students)—		
100 or less	7.3	29.7
101- 300	27.7	33.6
301-500	28.5	20.5
More than 500	36.5	16.2
Size (no. of teaching staff)(a)—		
5 or less	4.7	18.3
6-10	4.3	13.7
11-20	36.2	31.0
21-30	23.2	20.7
31-50	10.1	7.3
More than 50	20.7	9.1
Total (number)	**397**	**1 035**

(a) Data refer to government schools only.

Proximity to school. Of those children who were going to school, 68 per cent attended their nearest school. This proportion ranged from 81 per cent among students attending government schools to 33 per cent and 23 per cent among Catholic and other non-government schools respectively.

TABLE 1.4 Region(a): School and student numbers

	Schools		*Students*	
Region	*No.*	*Per cent*	*No. ('000)*	*Per cent*
North metro	99	24.9	68.7	25.2
South metro	95	23.9	75.9	27.8
East metro	95	23.9	54.2	19.8
Southern WA	51	12.8	40.1	14.7
Central WA	35	8.8	25.2	9.2
Far North WA	22	5.5	9.1	3.3
Total	**397**	**100.0**	**273.3**	**100.0**

(a) For schools, region is based on the school's location; for students, it is place of residence.

STAFFING

Staff changes. The changes in numbers of teaching staff described here include both full- and part-time substantive positions.

TABLE 1.5 Schools: Proportion that new teaching staff make up of total teaching staff

	Number	*Per cent*
Less than or equal to 10%	72	18.1
Greater than 10% to 20%	137	34.5
Greater than 20% to 30%	94	23.7
More than 30%	71	17.9
No new teaching staff	20	5.0
All schools(a)	**397**	**100.0**

(a) Includes new staff levels not stated.

Only 5 per cent of schools had no new teaching staff in the previous year. Schools most commonly (58 per cent) had up to 5 new staff in the current school year, however, 18 per cent of schools in the survey had over 10 new teachers.

Alternatively, this means that almost 18 per cent of schools had over 30 per cent of their total teaching staff new to the school in the current school year.

New teaching staff, on average, made up 21 per cent of total teaching staff in survey schools. There was a greater proportion of new teaching staff in country schools (25 per cent), and especially schools in Far North WA (32 per cent), compared with schools in the Perth metropolitan area (19 per cent). Additionally, Government and Catholic schools had higher levels of new staff (21 per cent) than other non-government schools (15 per cent).

NEWLY QUALIFIED STAFF

TABLE 1.6 Schools: Proportion that newly qualified teaching staff make up of total teaching staff

	Number	*Per cent*
Less than or equal to 5%	109	27.5
Greater than 5% to 10%	70	17.6
More than 10%	39	9.8
No newly qualified teaching staff	178	44.8
All schools(a)	**397**	**100.0**

(a) Includes newly qualified staff levels not stated.

Over 55 per cent of all survey schools had at least one newly qualified teacher. That is, teachers who were in their first year out of training. Only one in every ten schools had newly qualified teachers making up more than 10 per cent of the total teaching staff.

STUDENT TO STAFF RATIOS

TABLE 1.7 Schools: Student/staff ratios by selected characteristics

School characteristics	*Ratio*	*Approximate 95% confidence interval(a)*
School system—		
Government	16.4	15.8 - 16.9
Non-government—		
Catholic	17.9	16.9 - 19.0
Other non-government	13.1	11.8 - 14.4
School type—		
Primary school	18.4	17.9 - 18.9
Primary/secondary school	13.0	11.9 - 14.1
Secondary school	12.7	12.3 - 13.1
School environment(b)—		
Disadvantaged	16.6	16.0 - 17.2
Not disadvantaged	16.0	15.2 - 16.8
Region of school—		
North metro	16.3	15.5 - 17.2
South metro	16.9	15.9 - 17.8
East metro	16.9	16.1 - 17.7
Southern WA	16.3	15.0 - 17.7
Central WA	14.2	12.5 - 15.9
Far North WA	16.0	14.0 - 18.1
All schools	**16.4**	**15.9 - 16.8**

(a) Confidence intervals were estimated assuming equal probability of selection for each school (see *Analysis of school level data* in Appendix A). (b) See the section *School environment* below.

Ratios have been calculated by dividing the total number of students (including boarders) by the total number of teaching staff (full- and part-time). The student/staff ratio, among all schools surveyed, was 16.4, with the middle 50 per cent of schools having ratios which fell between 13.1 to 20.0.

Of the three school systems, Catholic schools had the highest student/staff ratio (17.9), and other non-Government schools the lowest (13.1).

The number of students per teaching staff remained fairly constant across the six regions of the State, with the exception of the Central WA region (14.2 compared with the State average of 16.4).

SCHOOL ENVIRONMENT

School principals answered a series of questions pertaining to their school and its local community. They used a 7-point Likert scale on a 14-item school environment scale which was designed to identify aspects of schools which facilitate student educational, vocational and social competence. The first series of questions related to the adequacy of elements which affect the school environment:

- parental support of school activities;
- parental support of student's academic progress;
- teacher support arrangements;
- staff morale;
- school support to parents; and
- pastoral care for students.

The second series related to the degree to which certain school-affecting problems were present:

- absenteeism and truancy;
- graffiti and vandalism of school property;
- physical violence at school and in the community;
- student drug and alcohol abuse; and
- poverty affecting students.

The schools were grouped into two clusters according to their responses to these 14 items. The analysis was performed using the *K-means cluster analysis* procedure (see Glossary). This groups observations together where they have similar responses and attempts to find a natural

break between the groups. In this analysis two clusters were formed, and the group that showed lower responses for the first set of elements (positive supports) and higher values for the second set (school-affecting problems) has been defined as 'disadvantaged' relative to the other group. Table 1.8 shows the extent to which the two clusters differed. Of those schools considered in the analysis, 29 per cent were found to be 'disadvantaged'.

TABLE 1.8 Schools: Environment: Principals' rating of school environment factors
(Per cent)

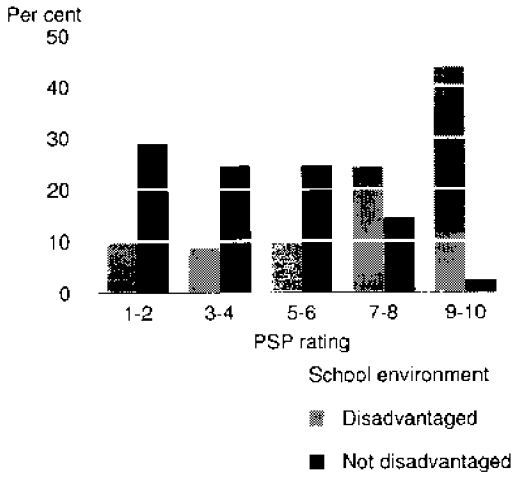
	School environment	
Proportion of schools with a high level(a) of—	*Disadvantaged*	*Not disadvantaged*
School, social and community problems—		
Poverty among students	57.0	4.4
Physical violence occurring in the community	40.4	3.3
Graffiti on school property	25.4	2.2
Overall vandalism	23.7	2.2
Overall absenteeism	15.8	1.8
Physical violence at school	17.5	0.0
Overall truancy	8.8	0.7
Student drug/alcohol abuse	8.8	0.0
School morale and pastoral care arrangements—		
Staff morale	76.3	97.1
Pastoral care for students	57.0	95.6
School support to parents	53.5	92.0
Teacher support	61.4	87.3
Parental support of children's academic progress	14.9	83.6
Parental support of school activities	17.5	78.5
Total schools(b)	**114**	**275**

(a) Defined by the top three points on the 7-point scale. For more information on the school environment scale, see *Calculation of derived variables* in Appendix A. (b) There were 8 schools for which a school environment rating could not be calculated.

Priority Schools Program rating. How meaningful is this method of describing the school environment? One of the ways available to assess this question is to compare the results from this cluster analysis with the Priority Schools Program ratings for government schools participating in the Child Health Survey. In 1993 the Commonwealth's Disadvantaged Schools Program operated as the Priority Schools Program (PSP) in those Western Australian government schools in which students may experience educational disadvantage as a result of low socio-economic status background. Each government school is given a decile ranking which measures increasing levels of disadvantage. PSP ratings range from 1 (low disadvantage) to 10 (high disadvantage).

The mean PSP value for schools defined as 'disadvantaged' in the cluster analysis was 7.2, compared with an average value of 4.1 among schools which were not considered to be disadvantaged. Alternatively, 44 per cent of disadvantaged schools had a PSP rating of 9 or 10, compared with 2 per cent of schools which were not disadvantaged, as rated by the school principals. Therefore, it would appear that the ratings gathered from school principals about the school environment result in meaningful clusters of schools. Because these clusters were generated from the ratings of principals in all three education systems (i.e. government, Catholic and other non-government), they are used here to assess the effects of disadvantage on outcomes of interest.

FIGURE 1.2 School environment: Priority Schools Program (PSP) value



ABILITY TO FULFIL EDUCATIONAL MISSION

Almost 91 per cent of schools in the survey were optimistic about their capacity to fulfil their educational mission. It appeared that this level differed among schools in the various regions of the State, with fewer schools in the Far North WA region reporting positively about their capacity to fulfil their educational mission than schools in other regions.

Disadvantaged schools were more frequently reported by their principals as being unable to adequately fulfil their educational mission (15

per cent) than schools which were not regarded as disadvantaged (3 per cent).

TABLE 1.9 Schools: Region: Proportion which reported a positive capacity to fulfil their educational mission
(Per cent)

Region	
North metro	92.9
South metro	94.7
East metro	89.5
Southern WA	92.2
Central WA	85.7
Far North WA	77.3
All schools	**90.9**

SURVEYED SCHOOL STUDENTS

DEFINING THE POPULATION

The Western Australian Child Health Survey did not sample from the total population of Western Australian children aged 4 to 16 years. Two groups were excluded:

- *Aboriginal children in families living in country areas.* Their exclusion was due mainly to difficulties associated with establishing a framework from which to select a representative sample, and to the logistics of collecting data from sometimes widespread and isolated communities.

  In a recent report from the Government Taskforce on Families in Western Australia, it was recommended that the TVW Telethon Institute for Child Health Research be commissioned and funded by the Western Australian Government to provide information to the Aboriginal community about the mental health of Western Australian Aboriginal children and their families.[1]

- *Children living alone, in group homes, or non-private dwellings.* In these arrangements, either there were no caregivers present, or the caregivers were not in a position to provide independent information about these children.

TERMINOLOGY

In the Child Health Survey, the terms 'family', 'caregiver', 'children' or 'child', and 'student' have specific meanings.

Family. The term 'family' refers only to families which have children aged 4 to 16 years living with them. Family types are further classified in this report as 'one parent' and 'couple' families, based on information provided about current relationships between people living in the household, not registered marital status. Couple families may be classified as 'original' or 'step/blended' families (see *Original family* in the Glossary).

Caregiver. The *principal caregiver* (see Glossary) is the person who spends most time with the surveyed child(ren), and provided survey information about the child(ren). In most cases (95 per cent), the principal caregiver was female.

In 81 per cent of families, the principal caregiver reported having a partner or spouse present. These people were termed the *secondary caregiver* (see Glossary). In 96 per cent of cases, the secondary caregiver was male.

The terms 'caregiver' and 'parent' are used interchangeably throughout this publication.

Children, child. These survey terms refer to persons aged 4 to 16 years inclusive. For purposes of analysis and presentation of findings, they are further grouped into the following age cohorts:

- younger children – aged 4 to 11 years;
- adolescents – aged 12 to 16 years.

'Younger adolescents' and 'older adolescents' refer to 12 to 14 year-olds and 15 to 16 year-olds respectively.

Student. An estimated 302,900 Western Australian children were in scope of the survey. Not all were attending school. This publication focuses on those children who were at school, and the term 'student' is used to differentiate these children from the broader group of 4 to 16 year-olds surveyed.

SURVEYED SCHOOL STUDENTS – A PROFILE

There were an estimated 273,300 school students aged 4 to 16 years within the scope of the Western Australian Child Health Survey. Of these, 188,800 (69 per cent) were primary level

TABLE 1.10 Students: Sex, region and education level ('000)

Region	Males			Females			Persons		
	Primary student	Secondary student	All males(a)	Primary student	Secondary student	All females(a)	Primary student	Secondary student	All students
Perth metro—									
North metro	22.2	10.6	32.8	23.6	12.4	36.0	45.8	23.0	68.7
South metro	26.2	11.8	37.9	25.4	12.1	38.0	51.6	23.9	75.9
East metro	18.4	6.9	25.3	19.0	10.0	29.0	37.4	16.8	54.2
Total	*66.8*	*29.2*	*96.0*	*68.0*	*34.5*	*102.9*	*134.8*	*63.7*	*198.9*
Country—									
Southern	16.3	6.2	22.5	12.0	5.5	17.5	28.3	11.8	40.1
Central	9.1	2.6	11.9	9.4	3.7	13.3	18.5	6.3	25.2
Far North	3.1	1.0	4.1	4.1	0.8	4.9	7.2	1.8	9.1
Total	*28.5*	*9.8*	*38.6*	*25.5*	*10.1*	*35.8*	*54.0*	*19.9*	*74.3*
Western Australia	**95.3**	**39.0**	**134.6**	**93.5**	**44.6**	**138.7**	**188.8**	**83.6**	**273.3**

(a) Includes not stated.

students and 83,600 (31 per cent) were secondary level students.

TABLE 1.11 Students: Level/year of education and school system ('000)

Level/year of education	Government schools	Non-government schools	All schools(a)
Primary—			
Year 1	22.5	7.0	29.7
Year 2	24.5	6.5	31.1
Year 3	19.5	*5.8	25.6
Year 4	20.2	*5.6	26.2
Year 5	20.9	4.5	25.7
Year 6	18.5	8.2	26.7
Year 7	18.6	*5.1	23.8
Total Primary	*144.8*	*42.7*	*188.8*
Secondary—			
Year 8	14.9	*5.5	20.5
Year 9	16.0	7.3	23.3
Year 10	12.6	*6.9	19.7
Year 11	11.7	*5.1	16.9
Year 12	*1.8	**1.5	*3.3
Total Secondary	*57.0*	*26.3*	*83.6*
Western Australia(a)	**202.6**	**69.0**	**273.3**

(a) Includes not stated.

Most (74 per cent or 202,600) students attended a government school. Of non-government primary and secondary school students, the majority (74 per cent or 50,900) were going to a Catholic school and the remainder (18,100) to other non-government schools.

Non-government schools were educating a larger proportion of the secondary student population than the primary student population (31 per cent compared with 23 per cent).

ENDNOTES

1 Taskforce on Families in Western Australia. *WA Families – Our Future: Report of the Taskforce on Families in Western Australia*. Perth: Family & Children's Services, 1995.

2 SCHOOLS IN COMMUNITIES

Few institutions exert as much influence in the lives of families, their neighbourhoods and communities as schools. The annual routine of school can be seen in the pace of family life, at work, and on the streets. Attending school and participating in education is one of the major socialising forces influencing children, young people and their families. These forces are evident in the form of community reaction and debate when changes occur in educational methods, routines and curricula. Community views of schools can be reflected in reports of parental satisfaction with school, in school attendance data, provision and use of special education or special teaching. Schools also reflect many aspects of the communities from which they draw their students. Family mobility, family structure, parental education and income also impact on the nature of the school and its ability to fulfil its educational mission. This Chapter provides a description of some of the relationships between schools and their communities.

PARENT REPORTS ABOUT SCHOOL

SATISFACTION WITH STUDENT PROGRESS

The parents of 89 per cent of students in the Child Health Survey indicated that they were satisfied with their child's progress at school in terms of education and learning skills. Parents reported being less than satisfied with educational progress more often in boys (16 per cent) than girls (7 per cent); and in adolescents (14 per cent) rather than younger (4 to 11 year-old) students (9 per cent). Less than satisfactory progress was also reported more frequently for students from one parent (20 per cent) and step/blended (19 per cent) families, than for students in original families (8 per cent).

TABLE 2.1 Students: Parents' satisfaction with child's education and learning skills

	Number ('000)	*Per cent*
Very satisfied	130.7	47.8
Satisfied	111.8	40.9
Neither	16.2	5.9
Dissatisfied	12.9	4.7
Very dissatisfied	*1.2	*0.5
Total(a)	**273.3**	**100.0**

(a) Includes don't know and not stated.

Over 18 per cent of students from families in the lowest income quintile (that is, with a parental income of $20,000 or less per year) were considered by their parents to be progressing less than satisfactorily in education and learning skills, in contrast to an average of 9 per cent among students from families with higher incomes. Parent-reported levels of low satisfaction with progress in school were similar among Perth metropolitan students(12 per cent) and country students (9 per cent); the same was true at finer geographic levels.

In general, parents were also satisfied with students' physical development and coordination (for 96 per cent of students), relationships with other children (93 per cent), and general behaviour (92 per cent). There were distinctions in the levels of satisfaction reported, especially between sex and family type. Parents of male students were less than satisfied about their sons' progress in the areas of relationships with other children (9 per cent) and general behaviour (11 per cent), more frequently than the parents of female students (4 per cent and 5 per cent respectively). Similarly, in one parent families there was an increased likelihood for parents to be less than satisfied with the general behaviour of students, when compared with those in couple families.

STUDENTS WITH FUNCTIONAL LIMITATIONS

Almost 9 per cent (23,700) of school students were reported by parents to be limited in the type or amount of school work they could perform because of physical, emotional or learning problems. This limitation was experienced among a greater proportion of males (11 per cent) than females (6 per cent). Also, for the majority of these students this limitation was something that had been experienced for a period of longer than two years (72 per cent).

TABLE 2.2 Students: Whether limited in school work because of a physical, emotional or learning problem: Presence of selected health, and sensory and motor function problems

	Functional limitation in school work?			
	Yes		*No*	
Selected problems	*Number ('000)*	*Per cent*	*Number ('000)*	*Per cent*
Emotional/behavioural problem	14.2	60.1	41.9	16.9
Lower level of health	9.7	41.0	43.1	17.4
Vision problems	*4.9	20.9	34.5	13.9
Speech problems	*4.0	16.8	6.5	2.6
Hearing problems	**2.4	*10.0	7.8	3.2
All students(a)	**23.7**	..	**247.8**	..

(a)Excludes students who did not state whether they had a functional limitation.

USE OF SPECIAL EDUCATION OR SPECIAL TEACHING

Parents were asked whether their children had ever received special education or teaching services on either a full- or part-time basis (teachers were also independently asked the same set of questions - see *Learning difficulties* in Chapter 3).

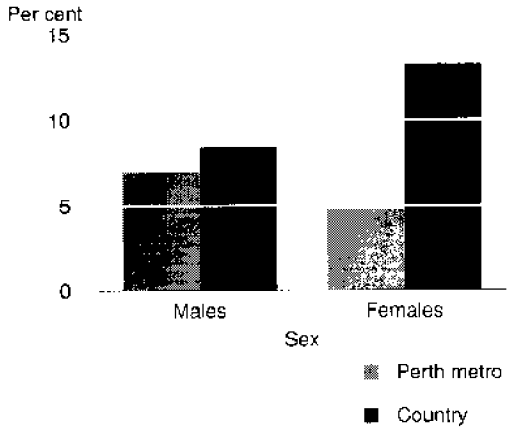
TABLE 2.3 Students: Parent reports on use of special education services

Use of special education services	*Number ('000)*	*Per cent*
Remedial education needs	29.0	10.6
Advanced or gifted students	20.7	7.6
Visual or hearing difficulties	*4.9	*1.8
Emotional/behavioural problems	3.8	1.4
Intellectual disability	*1.5	*0.5
All students	**273.3**	..

OPPORTUNITIES FOR ACTIVITIES OUTSIDE OF SCHOOL

The parents of the majority (87 per cent) of students reported that they were satisfied with the opportunities available in their community for boys and girls to participate in leisure activities outside of school. Only 7 per cent were dissatisfied, with the remainder neither satisfied or dissatisfied.

FIGURE 2.1 Students: Sex and region: Proportion whose parents were not satisfied with child's opportunities to take part in activities outside of school



There were regional differences in parents' levels of satisfaction with opportunities for out of school activities. This was especially the case for female students, where 13 per cent of country parents expressed dissatisfaction, compared with 5 per cent of their Perth metropolitan counterparts.

ABSENTEEISM AND UNEXPLAINED ABSENCES

An important aspect of the interface between the school and the community is school attendance, and the issues which arise from students not attending schools. Formal education takes place in many different settings. Students may be educated at home, by correspondence or through agencies such as hospitals or specialized care facilities. Regardless of the setting, students are expected to be present for and participate in education. Attendance at school is assumed to be necessary although not sufficient for academic progress. The data from the Child Health Survey provide an opportunity to examine student attendance at Western Australian schools.

DAYS OF ABSENCE FROM SCHOOL

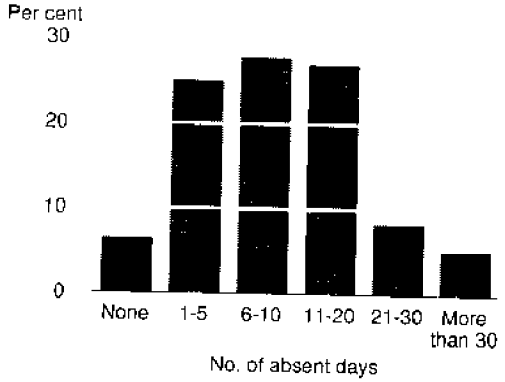
School principals were asked to report the number of days of absence that had been recorded for each survey student during the current school year. The data do not reflect absences over a full year, but the period from the start of the school year to the time of completion of the survey forms for each

particular student (between 6 September and the end of the school year, 1993).

For comparability, the number of reported days absent from school has been converted to a full year equivalent, assuming a constant rate of absences throughout the year. The proportion of days absent over the reporting period was multiplied by the number of days in the school year to estimate days absent from school on a consistent, full year basis.

For almost 9 per cent of students, their principals did not report data on absences from school. These missing data have been imputed using the technique of *Random Hot Deck Imputation* (see Glossary).

FIGURE 2.2 Students: Days of absence from school



Almost all (94 per cent) students had at least one day of absence from school. Over the full school year, the median number of days off among students was 7.7 days. Because the distribution of days absent from school is strongly skewed, medians are reported instead of means.

Number of days absent. It was estimated that all school students had a median of 7.7 days absent from school in the year. The figure was similar among secondary (8.3 days) and primary students (7.7 days).

Students from one parent and step/blended families had a higher number of absences (10.2 days and 9.8 days respectively) compared with the total population of students (7.7 days).

Generally, there was a higher level of absences when the level of parental income was lower – students in families in the highest income quintile had a median of 6.4 days off in comparison with 9.1 days for those in the lowest quintile.

While no significant difference was discernible in the level of absences between students in Perth metropolitan and country schools, differences did exist at the finer geographic level; specifically, absences appeared to be lower in the North metropolitan (median 7.0 days absent) and Southern WA regions (7.6 days), especially when compared with levels in the Central WA (9.5 days absent), East metropolitan (8.9 days) and Far North WA (8.8 days) regions.

DISRUPTED OR 'AT RISK' STUDENTS

It is generally considered that absence from school for at least one full day per week (20 per cent or more of total school days) will significantly disrupt a student's education.[1] From the survey, 3 per cent of students fell into this category, yet another 11 per cent of school students had missed at least half a day per week. The latter students missed four or more weeks each school year.

TABLE 2.4 Students: Number of school days absent

Number of days absent	*Number ('000)*	*Per cent*
None	17.7	6.5
1 to 19 days	217.7	79.7
20 to 39 days	29.6	10.8
40 days or more	8.3	3.0
All students	**273.3**	**100.0**

Reasons for absence. Principals were asked to report, for each student, the proportion of absent days which were explained (with or without a medical certificate), explained but questionable, and unexplained. To a large extent, school absences were explained and most commonly (71 per cent) were categorised as explained but without a medical certificate. Over 14 per cent of absences were unexplained.

TABLE 2.5 Student absences: Reasons for absence

Reasons for absence	*Per cent*
Explained—	
With a medical certificate	12.7
Without a medical certificate	70.8
Questionable	2.2
Total explained	*85.7*
Unexplained	14.3
Total absences	**100.0**

UNEXPLAINED ABSENCES

There appears to be little in the way of an accepted definition of what constitutes a 'truant' student. There are few existing data on truant students in the Western Australian school system, and therefore it is difficult to estimate truancy levels. In 1992, the Legislative Assembly Select Committee on Youth Affairs reported that it had received estimates of persistent 'truants' in the State based upon data from the Education and Police departments ranging from 1,042 to over 1,500 students.[2]

Data from the Child Health Survey allow us to approximate truancy levels and to identify possibly truant students. Firstly, when a student had some level of school absence, principals were each asked to report the proportion of these absences that were explained and unexplained. Secondly, parents, teachers and adolescents were asked whether truancy or unexplained absence were terms that were true in describing the student's/their own behaviour.

TABLE 2.6 Primary and secondary school students: Number of days of unexplained absence

Days of unexplained absence	*Number ('000)*	*Per cent*
PRIMARY STUDENTS		
None	145.5	77.1
2 or less	13.4	7.1
More than 2 to 5	13.7	7.2
More than 5 to 10	7.9	4.2
More than 10	*8.2	4.3
Total(a)	**188.8**	**100.0**
SECONDARY STUDENTS		
None	53.0	63.4
2 or less	11.2	13.5
More than 2 to 5	7.6	9.1
More than 5 to 10	*6.8	8.2
More than 10	4.9	*5.9
Total(a)	**83.6**	**100.0**
ALL STUDENTS		
None	199.1	72.9
2 or less	24.7	9.0
More than 2 to 5	21.3	7.8
More than 5 to 10	14.7	5.4
More than 10	13.1	4.8
Total(a)	**273.3**	**100.0**

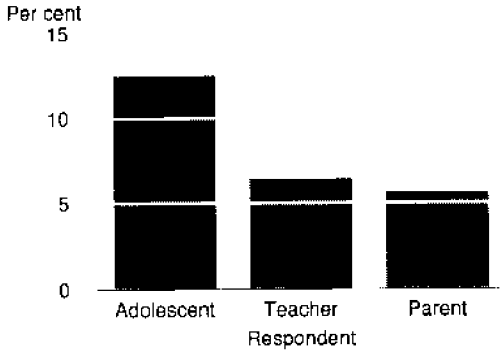
(a) Includes not stated.

School attendance records. Among all school students, approximately 73,800 (27 per cent) had some recorded absence listed as 'unexplained'. Table 2.6 identifies the frequency of varying degrees of unexplained absences, to highlight the population of students who may be considered truant. Over 10 per cent of 4 to 16 year-old school students (27,800) had more than five days of unexplained absence, and 5 per cent had over ten days.

Associations with other factors. More secondary students (37 per cent) had some unexplained absence from school, compared with primary school students (23 per cent), and students from one parent (40 per cent) and step/blended families (37 per cent) compared with students from original families (22 per cent). Unexplained absences were also more common for students from families in the lowest two income quintiles (32 per cent), compared with students from families with higher incomes (24 per cent). There was no significant difference in levels of unexplained absence for those living in the Perth metropolitan and country areas.

Parent, teacher and adolescent reports on truancy. These three groups were each asked whether, and how often, the student had been truant. Not surprisingly, the level of truancy reported by adolescents themselves was higher than that reported by school teachers, who identified a higher frequency than parents.

FIGURE 2.3 Adolescent students: Proportion considered truant either 'sometimes' or 'often' by respondent



Almost 11 per cent (10,600) of adolescent students described themselves as being truant at least sometimes. Teachers and parents identified 6 per cent (6,300) and 5 per cent (4,700) respectively of adolescent school students as truant. Additionally, when considering students of all ages, teachers and parents reported

truancy levels of 4 per cent (10,200) and 2 per cent (5,500) respectively.

SUSPENSION AND EXCLUSION FROM SCHOOL

Principals were asked if students in the survey had ever been suspended from their school or been the subject of a school exclusion procedure. About 2 per cent of students had been suspended from their current school, while only 1 per cent had ever been the subject of a school exclusion procedure. These are relatively rare events, and these data should be interpreted with caution owing to quite large standard errors. Also, the small size of these estimates has precluded any further analysis of the characteristics associated with suspended or excluded students.

FUTURE DIRECTIONS

These data provide an opportunity to describe the nature of school attendance, the frequency with which students are absent from school, and to refine estimates of unexplained absences in school populations. Several facts emerge from these analyses:

- In the course of the school year the average student is absent for about 8 days.
- About 14 per cent of students are absent for over half a day a week (e.g. 20 days per year) and would be considered to be at risk for lowered academic competence. Three per cent of students regularly miss 40 or more days of school a year.
- The vast majority of student absences are explained (86 per cent).
- About 14 per cent of all absences are not explained. Using the data in Table 2.6 on all students, there are an estimated 1,950 unexplained student absences each day.

Some discussion of definitions and limitations of these data is warranted before commenting on their importance. Firstly, knowledge about school attendance and absences rests upon adequate monitoring and reporting of this within schools. This requires a roll of students to be taken at least twice a day.

Secondly, there is no agreed upon definition of truancy. Children less than 15 years of age are required to attend school unless reasonable excuse is provided. In the absence of reasonable excuse, any non-attendance at school can be defined as truancy and regular unexplained absences may comprise habitual truancy.[3] In practice this leaves considerable scope for interpretation of truant behaviour, collection and monitoring of data to describe it, and for setting attendance policies within schools.

Thirdly, while it is said that absence from school for at least one full day a week (20 per cent or more of total school days) may disrupt a student's education, data from the Child Health Survey suggest that this must be regarded as the upper range of risk. Students with levels of absence between 20 and 39 days per year (10 to 19 per cent of the school year) are likely to be at educational risk (see Chapter 3, *Competence at School*).

Fourthly, the data on absences do not include attendance patterns of Aboriginal students in the rural regions. There are well documented and urgent difficulties in both attendance and retention of Aboriginal students in Western Australian schools and the data presented here do not portray the current attendance patterns for these students.

Finally, the data on unexplained absences describe attendance patterns for students who are enrolled in and known to their schools.

Notwithstanding these limitations, these findings are important for several reasons. They supply reasonable estimates of the patterns of attendance in a large sample of Western Australian students. In so doing, they set benchmarks from which schools can measure progress in implementing strategies to improve and maintain individual student attendance. Additionally, they describe for teachers and parents the average attendance of students in Western Australian schools.

Strategies to assist parents, communities and schools in assessing aspects of school attendance and truancy should include:

- Regular monitoring of median rates of absences and of the proportion of students who are never absent, absent for 1 to 19 days, 20 to 39 days and 40 or more days to permit annual appraisal of progress in implementing strategies to reduce risks associated with non-attendance. The monitoring and regular reporting of student absences by schools is seen to be a critical strategy in lowering absenteeism for individual schools.[4-6]

- Informing parents about the importance of school attendance and indicating what is typical and desirable attendance. This would assist in setting caregiver, student and community expectations about school attendance and permit informed discussion about school attendance. The average student only misses about 8 days of school in the entire year and a high rate of school attendance for each Western Australian student is common.
- Identifying and securing the staff and other resources for schools to develop appropriate policies and processes for collecting and reporting attendance data. This should include better tracking of students moving from one school to another.[7] While cost is frequently cited as impeding implementation of processes to monitor school attendance these costs need to be compared with the consequences of *not* collecting such information.

Monitoring school attendance is also a task most parents carry out. It is part of a wider role that parents have in setting expectations, monitoring performance and encouraging and supporting academic development. As with other studies[8-10], these data show that some families are more likely to have children with higher rates of unexplained absences. This is particularly true for step/blended families and one parent families, or where the family income is low.

Breakdowns in caregiver abilities to monitor the school attendance of their children have many causes and are part of a larger picture affecting schools:

- The economic circumstances of families increasingly require that both caregivers work. Caregivers have less available time for monitoring the activities of children and less time and energy to invest in assisting with homework and to attend school functions. This lack of time erodes the contact that parents have with the school and diminishes their participation in community life.
- Consistency, agreement and support in setting expectations for children about their school performance is an important role that caregivers play. So too is the manner in which caregivers agree to assist with school work and respond to problems arising from it. While most families are able to carry out these activities they are often more difficult for step/blended and one parent families.
- Attitudes and beliefs shaped by educational and social experiences can lead to disenfranchisement with education and the development within families of inter-generational patterns of non-participation in, and poor retention at, school.

Attendance at school is a means to an educational end and not the end itself. School attendance is an indicator of participation in education. It is a very crude indicator of exposure to educational programs and the opportunities they contain. Being at school tells us relatively little about what goes on for individual students once they are there. The quality and relevance of teaching programs, the support of these by teachers, caregivers and communities, and the individual experience and abilities of students are the core ingredients in making schools places where students want to be.

STUDENT REPORTS OF RISK BEHAVIOURS AT SCHOOL

Adolescent (12 to 16 year-old) students were asked to rate the prevalence within their school of a number of risk behaviours, including drug use, vandalism, alcohol consumption, fighting, stealing, and threatening or bullying (see Chapter 4 of *Western Australian Child Health Survey: Developing Health and Well-being in the Nineties* (ABS Catalogue No. 4303.5) for a child-specific analysis of adolescent health risk behaviours).

Many adolescent students reported frequent occurrence of these risk behaviours at their school. Almost 27 per cent said that threatening or bullying behaviour by students was taking place frequently at the school. Before and after school drug usage (17 per cent) and alcohol consumption (13 per cent) were also commonly reported by adolescents.

Generally, neither parental income nor region were seen to be associated with the reported prevalence of these risk behaviours. However, there was some evidence of associations between sex, family type and the perceived level of drug use. Girls perceived a greater level of

frequent drug use than boys (22 per cent versus 12 per cent), as did adolescents from one parent families in comparison with those in couple families (33 per cent versus 13 per cent).

TABLE 2.7 Adolescent students: Risk behaviours reported to be occurring at school frequently

Risk behaviour	*Number ('000)*	*Per cent*
Threatening/bullying	26.7	26.5
Students fighting	23.7	23.5
Stealing	20.6	20.5
Vandalism	19.9	19.8
Drug use	17.5	17.4
Alcohol consumption	13.4	13.3
All adolescent students	**100.6**	..

FAMILIES, COMMUNITIES AND THE SCHOOL ENVIRONMENT

On a day-to-day basis life at school for students is far more than acquiring skills and knowledge in key learning areas. Schools are communities, and in this way they supply care, meet social needs, and create opportunities and demands. Because schools are situated in the communities they serve, it is not surprising that they reflect many, though not all, aspects of the family, demographic and neighbourhood environment. In what way do the experiences, expectations, abilities and challenges that students bring from their family and neighbourhood settings serve to shape aspects of the school community? The Child Health Survey provides the opportunity to describe some characteristics of school communities by comparing disadvantaged schools with other schools on a range of demographic variables.

About 29 per cent (114 schools) of the schools approached in the survey were classified as disadvantaged schools. There were an estimated 78,700 students attending these schools, representing 29 per cent of all students.

Region. There were equal proportions of disadvantaged schools in both the Perth metropolitan and country regions, although in the Far North WA region a higher proportion of students were attending disadvantaged schools (54 per cent) than in other regions.

Proximity of school to home. Students in disadvantaged schools more commonly reported that school as being the closest to their home, than students at schools that were not disadvantaged (77 per cent versus 64 per cent).

FAMILY CHARACTERISTICS

Family type. A higher proportion of students in disadvantaged schools were found to come from one parent families when compared with students in schools that were not disadvantaged (23 per cent versus 15 per cent).

TABLE 2.8 Students: School environment: Selected family and community variables(a)

	School environment(b)			
	Disadvantaged		*Not disadvantaged*	
	No. ('000)	*Per cent*	*No. ('000)*	*Per cent*
Family type—				
Couple	61.0	77.5	159.8	85.1
One parent	17.7	22.5	27.9	14.9
Education level of principal caregiver—				
Less than Year 10	13.3	17.0	19.3	10.3
Years 10 to 12	53.6	68.1	111.7	59.5
Post-Year 12	*8.2	10.4	49.4	26.3
Parental income—				
$20,000 or less	19.9	25.3	31.6	16.8
$20,001-$30,000	18.2	23.1	34.7	18.5
$30,001-$40,000	*14.2	18.0	32.1	17.1
$40,001-$60,000	*17.1	21.7	46.1	24.6
More than $60,000	*7.7	9.8	29.3	15.6
Nearest school?—				
Yes	60.9	77.5	120.6	64.3
No	17.6	22.3	66.2	35.3
Proportion of days absent—				
None	*3.7	*4.7	13.8	7.4
Less than 10%	63.4	80.6	155.9	83.1
10% to less than 20%	10.5	13.4	14.8	7.9
20% or more	**1.0	*1.3	3.1	*1.7
Overall academic competence—				
Low	20.2	25.6	31.5	16.8
At age or above	56.7	72.1	153.2	81.6
All students	**78.7**	**100.0**	**187.7**	**100.0**

(a) Not stated and missing responses have been excluded, so the components may not add to 100 per cent. (b) A small number of the schools surveyed (2 per cent) did not provide sufficient information for this analysis to be undertaken.

Education level of principal caregiver. Compared with students in schools that were not

disadvantaged, students in disadvantaged schools more frequently came from families in which the principal caregiver had less than a Year 10 education (17 per cent compared with 10 per cent), but less frequently had a principal caregiver who held a tertiary qualification (10 per cent versus 26 per cent).

Parental income. Students from disadvantaged schools also more commonly came from families where parental incomes were in the lowest two income quintiles than students in schools that were not disadvantaged (48 per cent compared with 35 per cent).

Parental work arrangements. A higher proportion of students (22 per cent, or 17,000) from disadvantaged schools came from families where all caregivers were not employed (i.e. unemployed or not in the labour force) than those in schools that were not disadvantaged (9 per cent). This was true for both couple and one parent families.

FIGURE 2.4 Students: School environment: Parental work arrangements

Student absences. When compared with students from schools that were not disadvantaged, students from disadvantaged schools more often had at least half a day a week of absence, on average, throughout the school year (15 per cent compared with 10 per cent).

Academic competence. Students from disadvantaged schools were more likely (odds ratio 2:1) to have low academic competence when compared with other students.

COMMENTARY

It is often claimed that schools vary in their capacity to fulfil their educational mission and the data in this section lend support to this claim. These data show that, compared with other schools, disadvantaged schools have a higher proportion of students from one parent families. Additionally, higher proportions of students from these schools come from lower socio-economic groups, have caregivers who themselves have lower levels of education, and have high levels of absences from school. Students in these schools are more likely to have low overall academic competence relative to students of other schools. Other factors contributing to various outcomes for students in these types of schools will be presented in the following chapters.

ENDNOTES

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8 Levine RS, Metzendor D, VanBoskirk KA. Runaway and throw away youth: A case for early intervention with truants. *Social Work in Education* 1986;8:93-106.

9 O'Connor P. Dropout prevention programs that work. *OSSC Bulletin* 1985;29:4.

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3 COMPETENCE AT SCHOOL

Doing well at school is one of many hopes that parents and teachers have for children and young people. Fulfilling this hope involves collaborations among parents and teachers as well as vision, planning and commitment on the part of those who lead the development and provision of education. For children and young people the results of their efforts and experiences at school should assist and allow them to develop their talents consistent with their abilities. Competence at school takes many forms and spans outcomes such as literacy and numeracy, finding and using information, working cooperatively with others, knowing about the world, and valuing oneself as a person. The Western Australian Child Health Survey asked parents, teachers, and students about some of these competencies.

OVERALL ACADEMIC PERFORMANCE

TEACHERS' RATINGS OF ACADEMIC PERFORMANCE

Schools provide curriculum in many learning areas and there are eight learning areas in which students are regularly taught. For the survey, teachers were asked to compare and rate each child in the survey with students of the same age. Of the eight learning areas, four were selected for assessment in the survey: English, science, maths and social studies. Teachers were also asked to use the same rating scale to describe each survey child's overall academic performance. In terms of their overall academic performance, and in each of these four learning areas, students could be rated by their teachers as 'far below age', 'below age', 'at age level', 'somewhat above age', and 'far above age'.

About 46 per cent of all survey students were 'at age level' for overall academic performance, 27 per cent 'somewhat above age level', and 6 per cent were 'far above age level'. Three per cent of students were 'far below age level' and another 16 per cent were 'somewhat below age level'.

TABLE 3.1 Students: Overall academic performance

Overall academic performance	*Number*	*Per cent*
Far below age level	8.0	2.9
Somewhat below age level	44.4	16.3
At age level	126.9	46.4
Somewhat above age level	72.7	26.6
Far above age level	16.2	5.9
Total(a)	**273.3**	**100.0**

(a) Includes not stated.

ACADEMIC COMPETENCE

For the purposes of this publication 'low' academic competence is defined by grouping those students who were 'far below age level' and 'somewhat below age level' (on teacher rated overall academic performance) into one group. The remaining students who were 'at', 'somewhat' and 'far above' age level on teacher rated overall academic performance defined those with academic competence. Using this definition, about four in five (79 per cent) Western Australian students were at or above their age level in academic competence.

In practical terms, what is the meaning of academic competence? Table 3.2 shows the significant relationship between academic competence and each of the four learning areas assessed in the survey. When teachers reported students to have low overall academic competence, 90 per cent were below age in English, 62 per cent were below age in science, 75 per cent were below age in maths, and 63 per cent were below age in social studies. Caution should be exercised when interpreting the data in this table. They may indicate that teachers define competence in terms of the relative importance of each subject, rather than indicating the absolute contribution each subject makes to overall academic competence.

In addition to asking teachers to supply information about the academic competence of students, the principal caregiver was also asked to rate the school performance of each child that was attending school. Caregivers were asked, 'How well has your child performed in school during the past 6 months?'. Caregivers tended to paint a more optimistic picture of student academic performance than teachers. The parents of 95 per cent of students rated them at

TABLE 3.2 Students: Overall academic competence: Academic performance in four core subjects

	Overall academic competence					
	At age level or above		*Below age level*		*Total(a)*	
Subject and performance	*No. ('000)*	*Per cent*	*No. ('000)*	*Per cent*	*No. ('000)*	*Per cent*
English—						
Far below age level	**0.7	**0.3	10.0	19.0	10.7	3.9
Somewhat below age level	14.4	6.7	37.3	71.1	52.1	19.1
At age level	111.7	51.8	4.2	*8.0	117.0	42.8
Somewhat above age level	69.1	32.0	**0.8	**1.5	70.2	25.7
Far above age level	19.0	8.8	**0.1	**0.3	19.1	7.0
Science—						
Far below age level	**0.0	**0.0	6.4	12.2	6.4	2.3
Somewhat below age level	6.3	2.9	25.5	48.6	31.8	11.6
At age level	128.6	59.6	19.1	36.4	149.0	54.5
Somewhat above age level	64.3	29.8	**0.3	**0.6	65.4	23.9
Far above age level	14.2	6.6	**0.0	**0.0	14.2	5.2
Maths—						
Far below age level	**0.0	**0.0	9.3	17.8	9.4	3.4
Somewhat below age level	13.3	6.2	30.3	57.7	44.1	16.1
At age level	119.9	55.6	10.7	20.4	131.5	48.1
Somewhat above age level	66.1	30.6	*2.1	*3.9	68.5	25.1
Far above age level	14.9	6.9	**0.0	**0.0	14.9	5.4
Social studies—						
Far below age level	**0.0	**0.0	6.4	12.2	6.4	2.3
Somewhat below age level	6.9	3.2	25.9	49.5	33.3	12.2
At age level	135.3	62.7	17.6	33.5	154.0	56.4
Somewhat above age level	58.4	27.0	**1.1	*2.1	59.9	21.9
Far above age level	13.5	6.3	**0.0	**0.0	13.5	5.0
Total(a)	**215.8**	**100.0**	**52.4**	**100.0**	**273.3**	**100.0**

(a) Includes don't know and not stated.

or above their age level in their academic performance.

TABLE 3.3 Students: Parent report of child's school performance in last 6 months

	Number ('000)	*Per cent*
Excellent	107.7	39.4
Well	90.1	33.0
Average	61.3	22.4
Below average/poor	13.6	5.0
Total(a)	**273.3**	**100.0**

(a) Includes not stated.

Students who were rated by their teachers as having below age level academic competence were more likely (odds ratio 13:1) to be rated by their parents as being 'below average' or 'poor' in their school work. Students who were rated by their teachers as having below age level overall academic competence were also more likely (odds ratio 7:1) to have their parents report being dissatisfied with their education and learning skills.

Year in school. Equal proportions of primary school (Years 1 to 7 inclusive) and high school (Years 8 to 12 inclusive) students were considered below age level in overall academic competence – about one in five students.

Sex. Boys were more likely (odds ratio 2:1) to be below age level in academic competence than girls (24 per cent compared with 14 per cent).

Region. The proportion of students who were below age level in academic competence varied across regions, but was significantly lower in the North metropolitan region (13 per cent)

TABLE 3.4 Students: Region: Overall academic competence

	Overall academic competence					
	At age level or above		*Below age level*		*All students(a)*	
Region	*No. ('000)*	*Per cent*	*No. ('000)*	*Per cent*	*No. ('000)*	*Per cent*
Perth metro—						
North metro	58.1	84.5	9.1	13.2	68.7	100.0
South metro	59.7	78.6	15.9	20.9	75.9	100.0
East metro	41.3	76.2	12.1	22.4	54.2	100.0
Total Perth metro	*159.1*	*80.0*	*37.1*	*18.6*	*198.9*	*100.0*
Country—						
Southern WA	29.3	73.1	9.1	22.8	40.1	100.0
Central WA	20.1	79.4	4.9	19.4	25.2	100.0
Far North WA	7.4	81.5	1.3	14.9	9.1	100.0
Total Country	*56.7*	*76.3*	*15.4*	*20.6*	*74.3*	*100.0*
Total	**215.8**	**79.0**	**52.4**	**19.2**	**273.3**	**100.0**

(a) Includes don't know and not stated.

compared with an average of 21 per cent across other regions.

COMMENTARY

Performance in four of the key learning areas described here is only one form of competence that students may develop through participating in education. The ratings provided by teachers are general indications of student performance and are referenced against the expected performance of other students of the same age. Since the Child Health Survey there has been a move in Government schools towards introducing student outcome statements across eight key learning areas.

These statements will more precisely define achievement in the key learning areas and enable individual student performances to be assessed in terms of these achievements.

In general the concept of academic competence as defined in the Child Health Survey would appear to have meaning for both teachers and parents. It will used in the following chapters as one of many important indicators of educational performance and to explore relationships between school performance on one hand and child, adolescent and family well being on the other.

THE NEED FOR ACADEMIC SUPPORT

The need for academic support or extension at school is an outcome of many factors. Past learning and teaching experiences, motivation, encouragement and opportunity all play important roles in determining student performance and the need for academic support or extension. Disability may also play a role, particularly when adaptive behaviour and intellect are compromised.

Teachers in the Child Health Survey were asked to administer two tasks that are used commonly to measure verbal and non-verbal performance. These tasks required students to define words and to solve matrices (see *Ability* in the Glossary). The results of these tasks were combined into a total score which was then compared with the results from other students of the same age. Students in the survey were then categorised into one of five groups reflecting their performance level (relative to their age) on these tasks. Almost 5 per cent of students had very low combined verbal and non-verbal performance.

By itself a verbal and non-verbal performance level is of little use. However, when used with other information about academic competence and/or adaptive behaviour, such a performance level can be useful in estimating the type of educational support students may need. As shown in Table 3.5, of the estimated 12,300 students with very low verbal and non-verbal performance, approximately 57 per cent had

TABLE 3.5 Students: Combined verbal and non-verbal performance levels: Overall academic competence

Verbal and non-verbal performance levels	Overall academic competence					
	At age level or above		Below age level		All students(a)	
	No. ('000)	Per cent	No. ('000)	Per cent	No. ('000)	Per cent
Very high	*15.4	94.2	**0.7	**4.2	16.3	100.0
High	20.1	96.2	**0.6	**3.1	20.9	100.0
Average	155.2	81.3	32.0	16.8	190.8	100.0
Low	13.5	55.3	10.6	43.5	24.4	100.0
Very low	**5.2	41.9	**7.0	56.6	12.3	100.0
Total	**215.8**	**79.0**	**52.4**	**19.2**	**273.3**	**100.0**

(a) Includes don't know and not stated.

academic competence below their age level. This represents 3 per cent of all school students.

TABLE 3.6 Students: Combined verbal and non-verbal performance levels

Verbal and non-verbal performance levels	Number	Per cent
Very high	16.3	6.0
High	20.9	7.6
Average	190.8	69.8
Low	24.4	8.9
Very low	12.3	4.5
Not stated	8.6	3.1
Total	**273.3**	**100.0**

Relationship to academic competence. Not all students with very low verbal and non-verbal performance have below average academic competence. About 42 per cent of students with very low verbal and non-verbal performance were considered by teachers to have an academic competence at or above their age level. Similarly about 17 per cent (32,000) of students with average verbal and non-verbal performance levels were below their age level in overall academic competence. In practical terms, however, students who had very low and low verbal and non-verbal performance levels were more likely (odds ratio 7:1 and 4:1 respectively) to have academic competence below their age level when compared with students who had average verbal and non-verbal performance.

COMMENTARY

At a practical level these data provide one method of estimating the likely numbers of children who are in direct need of academic support as well as those students who are at educational risk. At any one time about 24,400 students have low, and 12,300 have very low, verbal and non-verbal performance. About half of the students in each of these groups (10,600 and 7,000) have below age academic competence and are likely to require programs that target students at educational risk or services in the form of direct educational support.

SCHOOL ATTENDANCE AND ACADEMIC COMPETENCE

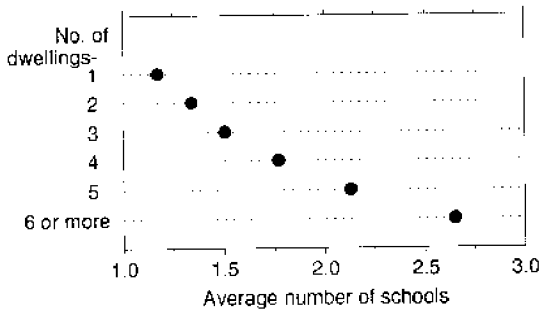
It is generally asserted that attendance at, or disruption in, schooling are critical factors in educational progress. However, it is probably more accurate to claim that the critical components of educational progress are the opportunity to learn through exposure to structured curricula, tailored learning experiences, good teaching, peer learning and instruction, and the social contexts of school communities.

What is the relationship between attendance at school or disruption in schooling and academic competence? The Child Health Survey collected information from parents, teachers and adolescents about their attendance at school and the number of schools each student had attended. These data allow an examination of some of the basic associations between being absent from school, being truant, attending

many schools, and high family mobility, and academic competence.

Family mobility and schools attended. A notable feature of family life in the 1990s is the frequency with which families with children move home. The survey found that nearly 27 per cent of families with 4 to 16 year-olds had been living in their current dwelling for a period of two years or less. Where family relocation involves a move to another neighbourhood it may entail a change of school and the disruption of local friendships and social support networks for both children and parents.

FIGURE 3.1 Primary school students: Number of dwellings lived in: Average number of primary schools attended



The number of primary schools a child had attended rose, on average, with the greater number of dwellings lived in, but at a less than directly proportional rate. Primary school children who had lived in only one dwelling had attended on average, 1.1 schools, compared with an average of 2.6 schools for those who had lived in 6 or more dwellings.

There were no significant increases in rates of low academic competence as the number of schools a student attended increased. These data suggest that as a rule families tend to shift dwellings in ways that minimise disruption of schooling. In general, children who had lived in 6 or more dwellings more frequently had low academic competence than children who had shifted 5 times or less (28 per cent compared with 18 per cent). However, merely knowing the number of schools that a student had attended was not predictive of academic competence per se.

COMMENTARY

These data suggest that complex associations govern the relationship between the continuity of education and academic competence. They do not support the conventional wisdom that multiple changes in schools necessarily lead to lower academic competence. (Instead they suggest that the academic competence of students is relatively resilient to shifts of school, and that multiple disruptions to family life and routine are more likely to result in lower academic competence.) Stability of the home would appear to have greater impact on academic outcome than stability of the school setting.

Principals, teachers and school services staff are frequently approached by parents concerned about the effects of family mobility on the progress of their children at school. In terms of daily practice, school staff can be most helpful in responding to these parental concerns and should:

- Encourage caregivers whenever possible to plan a move of residence and school in ways that maximise a student's continuity of school program. End of term or end of year shifts may assist this process.
- Encourage caregivers to discuss the shift with all family members. Moving home is stressful for all family members and discussing the details of this can help family members anticipate change and determine particular concerns as well as establish how each person can assist and help. Discussion should include attention to when and how children and young people in the family will change schools and how they see themselves being affected.
- Seek information about the reasons for shifting at this point in time and the number of times that the affected student has shifted home and school in the past. Caregivers who have less control of the reasons for shifting, are under stress and/or social and financial pressure may benefit from more direct help in planning a move of school for their children.

Days absent. There are about 200 days of school in a calendar year. Most students were absent from school rarely, with the median number of school days absent being 8 days per year.

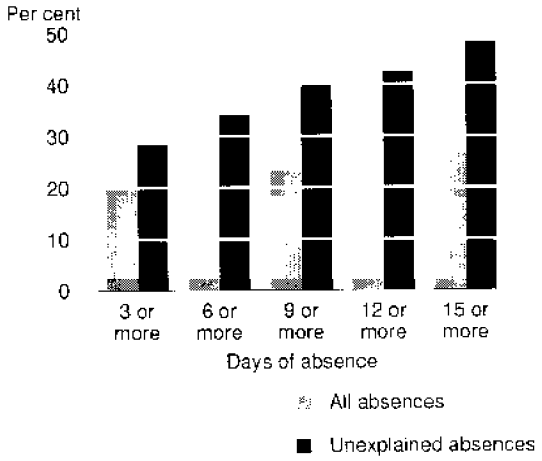
For purposes of analysis, the levels of absence data have been divided into quintiles. The top two quintiles of this distribution had a lower boundary of 10 days absence over the school year, with a median of 16 days. The lowest three quintiles had a median absence of 4 days. Students in the top two quintiles (that is, with high levels of absence) were more likely (odds ratio 2:1) to have low academic competence than students who were in the first three quintiles.

Unexplained absences. The analysis of absences above does not take into account reasons for being absent from school. Some students were absent from school for approved reasons that ranged from illness to travel. Because teachers and principals were asked to note whether student absences were explained or unexplained it is possible to examine the relationship between unexplained absences from school and student academic competence. Broadly speaking, most absences were fully explained (86 per cent) by either a note from home or discussions between school staff and caregivers.

Data from the survey showed stronger associations between absences and academic competence when the absences were unexplained. In particular, low academic competence was more common for those students in the highest quintile of unexplained absences (that is, students who had at least 9 days of unexplained absence over the course of the year) – such that 41 per cent of these students had below age level academic competence compared with 18 per cent of those who had fewer or no days of unexplained absences. In other words, students who had 9 or more days of unexplained absence from school were more likely (odds ratio 3:1) to be performing below age in overall academic competence, than those who had lower levels of, or no, unexplained absence.

Figure 3.2 illustrates an important feature of the relationship between student absence from school and levels of academic competence. It highlights that at any level of absence, low academic performance was more prevalent when the absences were unexplained, and that this difference increased markedly at higher levels of absence.

FIGURE 3.2 Students: Levels of all absences and unexplained absences: Proportion with low academic competence



MONTH OF BIRTH AND SCHOOL ENTRY

There are many considerations that govern when children should commence their first year of primary school. Physical and social development, cognitive and language development as well as cultural patterns of child care and family work influence decisions about school readiness. Economic considerations also play a role in the development and provision of schooling to large cohorts of children. In Australia there has been considerable variation in the eligibility age of children commencing Year 1, with recent changes in Western Australia aimed at adjusting the minimum entry age to education programs.[1]

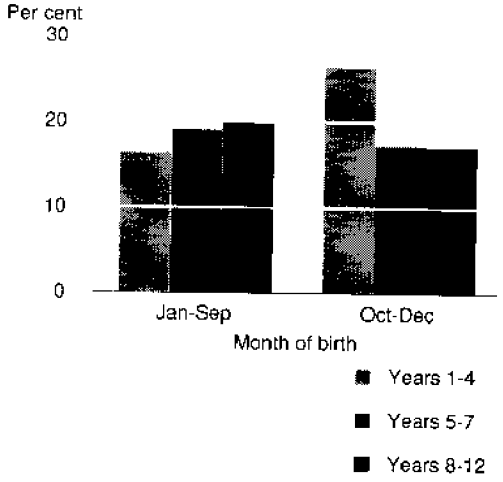
Regardless of the starting age of children it remains the case that some children will be younger than others as they start their first year of schooling. The Child Health Survey collected information about the month of birth of each student as well as teacher rated overall academic competence.

Broadly speaking, students with birth dates in the last quarter of the calendar year had lower ratings of overall academic competence. Figure 3.3 shows the proportions of students with below age level overall academic competence grouped by year of schooling and month of birth.

About 19 per cent of all students were rated as having below age academic competence by their teachers. Students with birth dates in the first three-quarters of the calendar year had a relative advantage when compared with students born in the last quarter of the year. This effect was

confined particularly to students in Years 1 to 4. In these early years of primary schooling, students born late in the year had a greater frequency of below age level academic competence than students born earlier in the year (26 per cent versus 16 per cent). Separate analysis of students born in the last quarter of the calendar year shows an increase in the proportion of them that have low academic competence relative to those born earlier, and that this effect is particularly apparent in Years 3 and 4, after which it diminishes.

FIGURE 3.3 Students: School year and month of birth: Proportion with low academic competence



COMMENTARY

Findings from the Child Health Survey showing that children born later in the year may have some academic disadvantage relative to their older peers have been obtained by other researchers.[2-4] Differences in the academic performance of younger versus older peers reflect not only the development of the students but the manner in which policy is set with regard to entry in compulsory schooling. Developmentally, children are more likely to be advantaged by policies that favour continuous entry or variations of this scheme. However, there are substantial organisational and resource implications of such an intake method.

School entry policies will be changing in Western Australia.[5] From the year 2001 the cohort of Western Australian children entering compulsory education (Year 1) will be older when they commence. For the year immediately prior to the commencement of Year 1 (i.e. Pre-school) there will be provision for five full days of educational programming. The provision of kindergarten programs will increase from two funded half-days to four funded half-days.

Data from the Child Health Survey will allow some comparisons with student outcomes resulting from the new school entry policies and will permit an assessment of the impact of this change.

LEARNING DIFFICULTIES

USE OF SPECIAL EDUCATIONAL SERVICES

Lifetime use of special educational services by students surveyed in the Child Health Survey was collected from principals. This enabled some estimate of the use of services for advanced and gifted students, students with learning disabilities, emotional or behavioural difficulties as well as specific disabilities. Table 3.7 shows the proportions of students who used these special educational services.

TABLE 3.7 Students: Teacher reports on use of special educational services

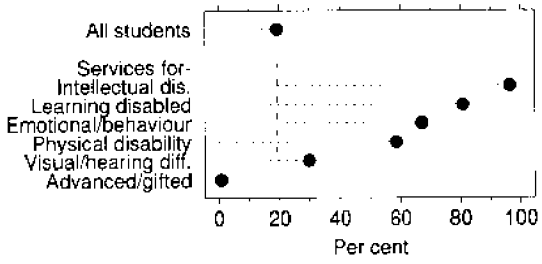
Educational services used	*Number ('000)*	*Per cent*
Services for—		
Advanced or gifted students	15.1	5.5
Learning disability	7.3	2.7
Emotional/behavioural problems	5.0	1.8
Intellectual disability	3.5	1.3
Visual or hearing difficulties	3.0	1.1
Physical disability	*1.3	*0.5
Other	14.0	5.1
All school students	**273.3**	..

Teachers reported that almost 6 per cent of school students (15,500) had received special educational services relating to an impairment or disability, on either a full- or part-time basis. Figure 3.4 illustrates the relative academic competence of these students.

Of those students in the survey identified with a mental health problem (that is, with an identified emotional or behavioural problem—see *Mental health morbidity* in the Glossary), only 7 per cent had ever received an educational

service for emotionally or behaviourally disabled children.

FIGURE 3.4 Students who received special educational services: Proportion with low academic competence



COMMENTARY

In 1993 about 4,194 students in government schools were identified as receiving educational support services owing to intellectual, visual, hearing or physical disabilities.[6] The data in Table 3.5 can be applied to those students in the government school sector to estimate those students in need of educational support. Approximately 5,754 students in government schools may require educational support. These are students who have very low verbal and non-verbal performance levels and whose teachers also report that they are below age in their overall academic competence. This would suggest a modest shortfall in meeting the needs of some of these students.

For students at educational risk however the picture is considerably different. Again data in Table 3.5 can be applied to government schools to estimate the number of students with low verbal and non-verbal performance and whose teachers also report are below age in their overall academic competence. There are about 7,563 of these students in the government school sector. Specific programs that target these students include language development centres, Chidley Education Centre, Socio-Psycho-Educational Resource (SPER) Centres, reading clinics, and programs that target students with behavioural difficulties. About 1,580 students were seen within these programs.[7]

Some caution is needed in the interpretation of these figures. Many students at risk receive mainstream provision of support through, for example, a school psychology service. Thus, the total number of students at risk who receive some support is likely to be greater. However, it is likely that the overall demand for services to students at educational risk far exceeds the supply of these educational services. Moreover, as will be seen in subsequent Chapters, the educational risk settings for children and young people frequently bring them within the scope of other key human service organisations and create opportunities for directing intersectoral responses to the funding and provision of services to these students.

STUDENTS WHO HAVE REPEATED A GRADE

Almost 5 per cent of school students who were not in their first year of schooling had, at some time, repeated a school grade. A greater proportion of boys had repeated a grade than girls (7 per cent compared with 4 per cent).

Students who had repeated a grade were more commonly assessed as having low verbal and non-verbal performance than other students (40 per cent versus 12 per cent); and also had received special education or special teaching services more often (44 per cent versus 19 per cent). Teacher ratings of current academic performance indicated that 57 per cent of repeaters had low academic competence compared with only 17 per cent of those students who had not repeated a grade.

Levels of grade repetition did not appear to differ within the various regions of the state.

ENDNOTES

1 Education Department of Western Australia. *School Starting Age – Issues and Options*. Perth: Education Department of Western Australia, 1996.

2 Bickel DP, Zigmond N, Strayhorn J. Chronological age at entrance to first grade: Effects on elementary school success. *Early Childhood Research Quarterly* 1991;6:105-117.

3 Breznitz Z, Telsch T. The effect of school entrance age on academic achievement and social-emotional adjustment of children: Follow-up study of fourth graders. *Psychology in Schools* 1989;26:62-68.

4 DeMeis JL, Stearns ES. Relationship of school entrance age to academic and social performance. *Journal of Educational Research* 1992;86(1):20-27.

5 Hansard. Ministerial Statement. Early childhood education. Parliament of Western Australia, 31 October 1996, 7644-7648.

6 Education Department of Western Australia. Information Services Branch. Personal correspondence, 1996.

7 Education Department of Western Australia. *Annual Report 1994-1995*. Perth: Education Department of Western Australia, 1995.

4 FACTORS INFLUENCING COMPETENCE AT SCHOOL

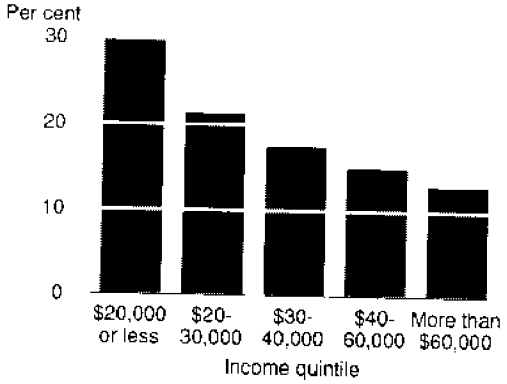
Each day during the school year over a quarter of a million Western Australian students spend several hours attending school. Most travel from home to school, while some are boarders on the school campus or in a school hostel. Whatever their living arrangements during the school term, students bring into the school a variety of experiences, expectations, abilities and challenges that arise from their life at home. The Western Australian Child Health Survey asked the caregivers of survey children about their home life, economic and employment circumstances, educational background and family composition and structure. This permits examining the relationship between many aspects of home life and their association with a variety of academic variables measured in the survey children.

FAMILY INFLUENCES

PARENTAL INCOME

Generally, as parental income (see *Income ranges* and *Parental income* in the Glossary) declined, rates of poor overall academic competence increased (see Figure 4.1). Students in the lowest income range (i.e. those with a parental income of $20,000 or less per annum) had higher rates of low overall academic competence when compared with students in families with higher incomes (30 per cent compared with 17 per cent).

FIGURE 4.1 Students: Parental income level: Proportion with low academic competence



COMMENTARY

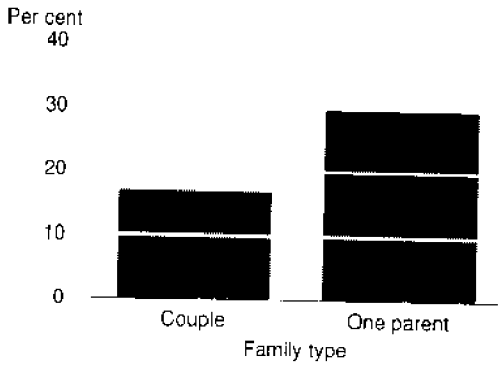
These data provide an opportunity to examine the relationship between direct measures of family income and the academic achievements of students in these families. The findings show that as family income increases so too does the academic competence of children in the family.

However, income and wealth are but one measure of the socio-economic status of families that may influence educational outcomes for children. Parental employment and occupational status and parental educational attainment also contribute to the measurement of this status.[3] Because income, occupational status and parental education can be highly interrelated, these measures are examined below for their individual and joint contributions to academic outcomes in students.

FAMILY TYPE

On average, students from one parent families performed more poorly in school than students from couple families – 30 per cent compared with 17 per cent respectively had low academic competence.

FIGURE 4.2 Students: Family type: Proportion with low academic competence



COMMENTARY

Below age academic competence is frequently reported to be more prevalent in students from one parent families when compared with those from couple families.[2,3] The Child Health Survey data show a similar pattern of results.

Caution, however, needs to be exercised in interpreting these findings. There is an obvious association between family type and income, with considerably larger proportions of economically disadvantaged students residing in one parent families (see the second volume of findings – *Western Australian Child Health Survey: Family and Community Health* (ABS Cat. No. 4304.5)). The joint contribution that both family type and income make to the academic competence of students will be examined below.

PARENTING STYLE

In the second volume of findings from the survey (Chaper 4), parental disciplinary styles were considered in terms of the degree of use of discipline and reinforcements. In terms of student academic competence, there was no appreciable variation with levels of parental reinforcements, but some association was evident when examined against the frequency of parental discipline.

FIGURE 4.3 Students: Frequency of parental discipline/punishment behaviour: Proportion with low academic competence

Low academic competence was more frequently reported among students whose parents needed to punish or discipline them for misbehaving on at least a monthly basis over the six months prior to the survey (23 per cent compared with 12 per cent among students whose parents needed to discipline them less than monthly).

PRINCIPAL CAREGIVER EDUCATION

Principal caregivers' education level was classified into one of three groups – those whose highest completed level of education was lower than Year 10 education (12 per cent), those whose education was completed at Year 10 to 12 level (62 per cent), and those with education at levels beyond Year 12 (22 per cent). About 4 per cent of caregivers did not report information about their education.

There was a higher incidence of low academic competence among students whose parents had relatively low educational achievements. In comparison with students whose principal caregiver's education went beyond year 12, students whose principal caregivers had less than Year 10 education were more likely (odds ratio 6:1) to have low academic competence (34 per cent compared with 8 per cent); those whose principal caregivers had Year 10 to 12 education were also more likely (odds ratio 3:1) to have low academic competence (21 per cent compared with 8 per cent).

FUTURE DIRECTIONS

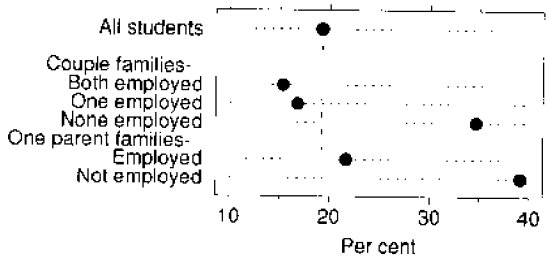
The role that the educational levels of caregivers play in fostering good academic outcomes in their children is critical. Many studies have documented this relationship.[4,5] The Child Health Survey data show that academic risks flow to children when their parents have not attained a Year 10 education. Just as importantly they show the *added* benefits that accrue to children and young people when their parents have achieved Year 10 to 12 education or have education beyond Year 12. Future generations of children stand to benefit appreciably through the setting of policies aimed at increasing school retention rates affecting current cohorts of would-be parents.

CAREGIVER EMPLOYMENT

In the second volume of results from the survey, considerable attention was paid to describing the manner in which families balance the demands of paid work with domestic life. Couple families were generally more able to balance these demands than were one parent families.

In general, low academic competence was more prevalent among families where the caregivers were not employed. In couple families where at least one caregiver was employed, 16 per cent of students had low academic competence, in comparison with 35 per cent in families where both caregivers were not employed. In one parent families a similar association between low academic competence and unemployment was evident, with 39 per cent of students whose lone parent was not employed having low academic competence compared with 22 per cent among students whose parent was employed.

FIGURE 4.4 Students: Parental work arrangements: Proportion with low academic competence



LIFE EVENTS AND ACADEMIC COMPETENCE

The survey provided an opportunity to ask caregivers if certain life events had occurred in the 12 months prior to the survey. Thirty-three specific events were probed, with 20 life events warranting inclusion (see Chapter 4 of the second volume of results, and *Life-stress events* in the Glossary).

In general, as the number of life events experienced by a family increased, the academic competence of students in these families decreased. Students from families which had experienced three or more life events were more likely (odds ratio 2:1) to have low academic competence than those from families where fewer life events had occurred.

Four of these life-stress events were more strongly associated with low academic competence in students, although the numbers of students thus affected by these life stress events were relatively small, and the estimates should be used with caution. These events were: separation or divorce of parents within the past 12 months; the family struggling to provide necessities; a close family member having a physical handicap; and crowded living.

When a student came from a family that struggled to provide necessities, they were much more likely (odds ratio 4:1) to have low academic competence. Additionally, 42 per cent (4,200) of students who were living in a house that was very crowded had low academic competence, compared with 18 per cent (46,500) of those who did not experience this life-stress.

TABLE 4.1 Students: Selected life-stress events that have occurred in the last 12 months: Number and proportion with low overall academic competence (Per cent)

Life-stress event	*No. ('000)*	*Per cent*
Parents were separated or divorced—		
Yes	**5.9	31.9
No	44.8	18.0
Struggled to provide necessities—		
Yes	**5.4	43.7
No	45.7	17.8
Close family member had a physical handicap—		
Yes	**3.0	35.8
No	47.7	18.4
House was very crowded—		
Yes	**4.2	42.3
No	46.5	18.1

COMMENTARY

As with the data on family mobility (see *Family mobility and schools attended* in Chapter 3) the data on life events and academic competency suggest that family stability sets an important context for students' performances at schools. Divorce and separation, struggling to provide necessities, crowded housing and a family member with a physical handicap are major forces that can destabilise families and disrupt continuity in the care of family members. Where these stresses take place there is a greater likelihood that disruption in educational competence will occur.

COMBINED EFFECTS OF FAMILY VARIABLES ON ACADEMIC COMPETENCE

Many of the family variables examined above are closely related in and of themselves as well as being related to academic outcomes in students. For example, employment and caregiver education are closely correlated and, typically, as educational level increases so do employment opportunities and income. The relationship between low academic competence, on one hand, and family factors on the other can be examined using *logistic regression* (see Glossary). Table 4.2 shows a significant relationship between caregiver employment, parental education, the sex of students, parental disciplinary style, and the life-stresses experienced by a family, and low academic competence (Goodness of fit χ^2 =125.36, df=13, p<.0001). When information about caregiver education, employment, disciplinary style and life-stress events was taken into account, the effect of income, and level of family discord, on the academic competence of children was negligible. There were also no differences in the overall academic competence of children in couple and one parent households. These variables were excluded from the model, which was then re-run.

TABLE 4.2 Predicted risk for low academic competence associated with key variables (Per cent)

Variable	*Significance (p level)*	*Odds ratio(a)*	*Confidence interval (95%)*
Parental work arrangements—			
Not employed	<0.0001	2.3	1.5 - 3.4
Principal caregiver education level—			
Less than Year 10	0.0098	1.7	1.1 - 2.5
Greater than Year 12	<0.0001	0.3	0.2 - 0.5
Sex—			
Males	<0.0001	1.8	1.4 - 2.3
Frequency of punishment—			
At least monthly	<0.0001	2.1	1.5 - 2.9
Life-stress events—			
More than 3	(b)	1.3	1.0 - 1.8

(a) The odds ratios are calculated relative to the first category of each family variable i.e. for 'Parental work arrangements' the odds are relative to employed caregiver; for 'Principal caregiver education level' the odds are relative to caregivers with 10 to 12 years of education; for 'Sex' the odds are relative to females; for 'Parental disciplinary style' the odds are relative to encouraging disciplinary style; and for 'Life-stress events' the odds are relative to families which had experienced fewer than three such events. (b) Not significant at the 95 per cent confidence level.

The odds ratios are adjusted for each effect in the model, thus where children were exposed to more than one of these factors their risk of low academic competence is obtained by multiplying the respective odds ratios. For example, the odds of below age academic competence in boys from families where a caregiver is not employed and the principal caregiver had less than a Year 10 education is 7.0 (i.e. 1.8 x 2.3 x 1.7), relative to girls from families with an employed caregiver, whose principal caregiver had 10 to 12 years of formal education. The population of many of the sub-groups formed by Table 4.2 is small and the calculated odds ratios for fine categories should be treated with caution.

FUTURE DIRECTIONS

The data from the Child Health Survey provide a rare opportunity to examine the relationship between factors in the home life of students that may set the scene for their school careers. Parental education, income, employment, disciplinary style and stress were assessed for both one parent and couple families. The effect that these factors have on the overall academic competence of students has important implications for public and educational policy:

- The education and employment status of the caregiver(s) is of more significance to student academic competence than the structure of the family (e.g. one versus two caregivers) or the level of family income. These findings are similar to other work showing generally weak associations between academic competence on one hand and levels of family income and family structure on the other.[6-8] This suggests that the mechanism that links caregiver education, employment and student academic competence is likely to be related to the skills and knowledge that caregivershave about caring for and raising children rather than the number of caregivers and their income per se. Future research should focus on providing a description of these skills and knowledge, their contexts and timing, and their relationship to student outcomes.
- Composite indices of family socio-economic status are likely to obscure specific mechanisms operating within the family to the academic benefit of students. Measures

or indices that combine income, parental occupation and parental education contain both economic and social information. Data from the families in the Child Health Survey show that the level of parental education is generally more predictive of student academic competence when compared with family income or occupation (see Appendix B – *Analysis of the 'H' Index*). While there may be times when a composite index of socio-economic status is convenient in order to monitor student outcomes[1], these findings show that separate measures of income, occupation and education allow greater understanding of potential causal mechanisms linking family life to student outcomes.[4,9] Whenever possible, preference should be given to collecting direct measures of family income, caregiver occupation and caregiver education to allow appropriate reporting of the contribution of these factors to student outcomes.

- There is a critical need to move away from global and non-specific statements of relationships between parental education, income, occupation and their effects on student competencies. Instead, such statements need to be replaced with specific and controlled tests of the mechanisms that link family and caregiver characteristics to student outcomes. Longitudinal research designs are essential in addressing this need. Such studies must take care to collect details about: how income is used in ways relevant to the education of all family members; how caregivers use their total time and what proportion of this time is devoted to activities relevant to the education of family members, and; the help-seeking behaviours of students and the success that they meet. These data should also describe the general expectations of caregivers and students about education and its value and uses, and family and parental involvement with the school and its community.

THE INFLUENCES OF HEALTH AND MENTAL HEALTH

Few would dispute that good health is a prerequisite for success at school. The physical and mental demands made of students require from them effort, motivation, curiosity, attention and stamina. Whether in the classroom, on the playing fields, travelling to and from school, or at home doing assignments, good health is assumed to provide a required base on which to build good learning.

The Child Health Survey asked caregivers and teachers for information about student health and mental health. This allows some estimation of the effects of poor levels of health and mental health on various student performances.

GENERAL HEALTH AND ACADEMIC COMPETENCE

Students with a lower level of general health (as rated by the parents) were more likely (odds ratio 2:1) to have below age academic competence (27 per cent versus 17 per cent) than those students with excellent or very good health.

Specific health problems. A few health conditions occurred with enough frequency in students to permit assessing their impact on academic competence. These leading health problems and their prevalences include asthma (20 per cent), migraine and severe headache (8 per cent), clumsiness (5 per cent), deformity (3 per cent), developmental delay (3 per cent), a heart problem (2 per cent), and epilepsy (1 per cent) (see Chapter 2 of the first volume of results). In general, when compared with those who did not have these health conditions, students with migraine and severe headache were more likely to have low academic competence (34 per cent versus 18 per cent). This was also true for students with clumsiness (32 per cent compared with 18 per cent), developmental delay (67 per cent versus 18 per cent) and epilepsy (46 per cent compared with 19 per cent). No evidence of an association could be found with academic competence when considering students with and without asthma, a heart problem or deformity.

COMMENTARY

Caution should be exercised in interpreting these results. Students with serious and chronic physical illnesses, for example those with renal failure or those with cystic fibrosis, were not sampled with enough frequency to permit separate analysis of their academic competence.

In general, however, the results from the Child Health Survey show that when physical health problems interfere with academic competence these problems are more likely to be associated

with problems of development (e.g. developmental delay or clumsiness) or with conditions affecting brain function (e.g. migraine or epilepsy). When these conditions do occur the likelihood of below age academic competence is substantially higher.

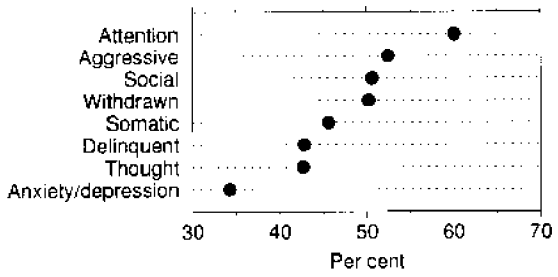
MENTAL HEALTH AND ACADEMIC COMPETENCE

The mental health of students in the Child Health Survey was assessed by combining information from caregivers and teachers (see *Mental health morbidity* in the Glossary).

Students with a mental health problem were more likely (odds ratio 5:1) to have below age academic competence when compared with students who did not have a mental health problem (42 per cent compared with 13 per cent).

Eight specific mental health problems may be examined using the Child Behaviour Checklist. Students were more likely to have low academic competence when any one of these eight problems was present. Whereas 19 per cent of the total student population had low academic competence, this frequency increased from 34 per cent among those with an anxiety/depression morbidity to 60 per cent among students who had attention problems.

FIGURE 4.5 Students: Specific mental health morbidities: Proportion with low academic competence



Because most children with a mental health problem had more than one of these specific syndromes, adjusted odds ratios were obtained using the eight mental health problems to predict overall academic competence. This analysis shows that two mental health problems were particularly associated with low academic competence: social problems (adjusted odds ratio 2.7:1) and attention problems (adjusted odds ratio 4:1). In contrast, the anxiety/depression syndrome was associated (adjusted odds ratio 2:1) with higher levels of academic competence, and shows that not all mental health problems necessarily lead to poor academic outcomes. Some levels of anxiety are undoubtedly associated with higher levels of performance. Good school performance may also mask unseen or unacknowledged levels of depression.

TABLE 4.3 Predicted risk for low academic competence associated with mental health problems (Per cent)

Syndrome	*Significance (p level)*	*Odds ratio*	*Confidence interval (95%)*
Delinquent problems	(a)	1.4	0.8 - 2.4
Thought problems	(a)	1.2	0.7 - 2.0
Attention problems	<0.0001	4.0	2.4 - 6.8
Social problems	0.005	2.7	1.6 - 4.8
Somatic complaints	(a)	1.1	0.6 - 2.0
Aggressive behaviour	(a)	1.6	0.9 - 2.8
Anxiety/depression	0.035	0.5	0.2 - 0.9
Withdrawn	(a)	0.9	0.4 - 2.0

(a) Not significant at the 95 per cent confidence level.

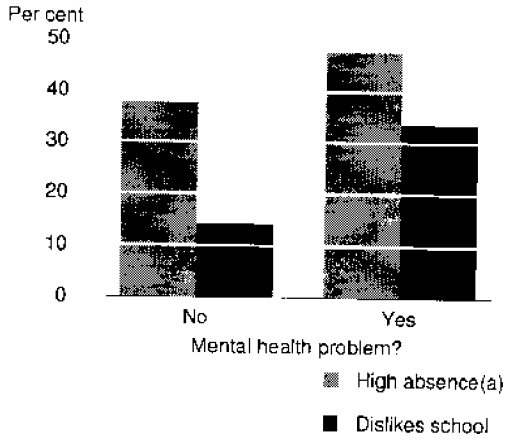
SCHOOL PROBLEMS AND ACADEMIC COMPETENCE

Other school difficulties were also examined with respect to the mental health of students, and include absences, exclusion/suspension from school, truancy levels (as determined by parent and teacher reports), and school alienation.

For students with a mental health problem, there was an increased proportion who had a high level of absence from school (that is, they were in the top two quintiles of absence) and who disliked school, relative to those without a mental health problem, as shown in Figure 4.6 below.

Almost 21 per cent of all students had a mental health problem. This compared with 79 per cent among students who had ever been suspended or excluded from school, 83 per cent among students who were reported by their parents as being truant at least sometimes, and 70 per cent among those who were reported by teachers as being truant at least sometimes.

FIGURE 4.6 Students: Mental health problem: Level of school absences and school alienation



(a) Highest two quintiles of absence from school

MENTAL HEALTH AND UNEXPLAINED ABSENCES

As rates of unexplained absences in students increased, mental health problems were more prevalent. The estimated 14,700 students in the highest quintile of unexplained absences (median of 10.4 days of unexplained absence) were more likely to have a mental health problem (36 per cent compared with 20 per cent of other students), with delinquent behaviour being prevalent among these students (24 per cent versus 10 per cent).

Compared with those with lower levels of unexplained absences, students in the highest quintile of unexplained absence were more frequently reported as having friends who got into trouble (22 per cent compared with 10 per cent), as having engaged in stealing, or to have had contact with the police in the previous 12 months.

FUTURE DIRECTIONS

In a recent comprehensive review of Australian literature on students at risk of failing to complete secondary school virtually no mention is made of the role that mental health plays in elevating risks for student academic failure.[5] However, within this review several individual student risk factors are cited as potentially influential. Among them are: disruptive behaviour, passivity, cognitive constructs leading to anger, limited social skills and disruptive behaviour. Presumably these risk factors reflect aspects of the mental health of students. Yet the review is silent on the relationship between academic outcome, student mental health and subsequent failure to complete secondary school. Undoubtedly a substantial portion of this silence reflects the dearth of studies that examine the association between mental health problems in Australian students, their academic performance and retention rates in school. The Child Health Survey provides an opportunity to assess some of these associations.

- There was a five-fold increase in the likelihood of below age academic competence in students with an identified mental health problem.
- Particular mental health problems were more likely to be associated with low academic competence. When adjusted for the presence of other multiple mental health problems (e.g. co-morbidity) students with attention problems and/or social problems were significantly more likely to have below age academic competence.
- Mental health problems in students were associated with higher rates of school absenteeism, suspension/exclusion, truancy and school alienation.

The causal direction between mental health problems in students and their academic competence is not informed by these data owing to the cross-sectional nature of the Child Health Survey. For example, presumably some students suffer poorer mental health owing to academic problems rather than vice versa. However evidence from longitudinal studies suggest that the findings from the Child Health Survey should be cause for concern and action principally for two reasons.

Firstly, conduct disorder is most likely to persist into adulthood when its early development is associated with attention problems and social problems.[10-14] High rates of these problems are documented in students participating in the Child Health Survey. Secondly, negative school experiences comprise critical paths or turning points for later adult outcomes.[15,16] Thus a substantial number of students in the Child Health Survey were found to have low academic competence, truancy and other adverse school experiences in association with these mental health problems. These are likely to form particularly potent risk exposures for poorer adolescent and adult outcomes. They

also affect sizeable numbers of Western Australian students.

In general these results show that:

- Useful identification of students at risk for mental health problems is feasible by administering a reliable and valid screening instrument to caregivers and teachers. Routine screening of students for these problems is possible and results in useful information to assist school personnel in the identification of students at educational risk.
- Benchmarks of prevalence for mental health problems in populations of students can be established with routine reporting of the prevalence of mental health and academic competence in student populations. In future this would allow measuring the progress of programs aimed at reducing these problems or modifying their impact.

ATTENTION PROBLEMS AND ACADEMIC COMPETENCE

As reported in the previous section attention problems in students is one of the major factors contributing to below age academic competence. The high proportion of children with attention problems who have academic difficulties makes this an important issue for schools. Attention difficulties routinely present first within schools and parents increasingly expect them to be managed within these agencies. Attention problems may arise from a number of reasons including hearing impairment, intellectual disability, specific learning difficulties, childhood depression, conduct disorder, brain injury, epilepsy and family dysfunction. However, in recent years there has been a marked increase in the number of children with attention problems who are diagnosed and treated for Attention Deficit Hyperactivity Disorder (ADHD).[17] This condition is characterised by three core behaviours: inattentiveness, impulsiveness and overactivity which are at a level inappropriate for the child's age.

Attention Deficit Hyperactivity Disorder. Around 5 per cent of Western Australian students aged 4 to 11 years and 8 per cent of 12 to 16 year-olds have clinically significant attention problems as defined by parent and teacher ratings on the Child Behaviour Checklist (see Chapter 5 of the first volume of results). A significant majority (75 per cent) of students with attention problems also have other, co-occurring, mental health problems. The proportion of students with attention problems who meet the diagnostic criteria for ADHD was estimated in the clinical calibration study for the Survey (see *Calibration of instruments* in Appendix A, and *Diagnostic criteria for ADHD* in the Glossary). This showed that one in five students identified as having attention problems would be expected to be diagnosed as having ADHD by a structured psychiatric interview with the child's parent.

FUTURE DIRECTIONS

Concern about the increasing number of children diagnosed and treated for ADHD and the disproportionately high rate of prescriptions of stimulant medication in Western Australia has recently been the subject of a Western Australian Cabinet Sub-Committee on ADHD.[18,19] The scientific basis of the disorder and issues in the diagnosis, medical, educational and behavioural management of children with ADHD have recently been investigated by the National Health and Medical Research Council.[20] Key issues and future directions arising from these reviews include the following:

- In the absence of a completely reliable test for ADHD, particular care is needed to prevent children being inappropriately labelled. Greater objectivity in diagnosis could be achieved by wider use of DSM-IV diagnostic criteria (see *Diagnostic criteria for ADHD* in the Glossary) and multidisciplinary assessments of the child which include information from at least two settings such as the school and the home. Differential diagnosis should also be carefully considered to ensure that co-occurring mental problems or other treatable causes of attention problems are not overlooked.[19]
- There is broad scientific consensus that multimodal approaches to treatment provide the greatest chance of alleviating the multiple symptoms and areas of dysfunction with which ADHD children present.[21] These children generally require interventions over a range of different activities and settings which call for collaborative case management involving

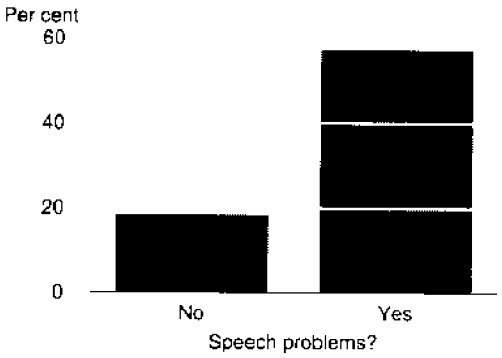
the family, the school, medical and other practitioners. The Western Australian Cabinet Sub-Committee on ADHD has therefore recommended that case management models be developed collaboratively between the Departments of Health and Education and offered to relevant professionals. Many of these professionals are also in the Ministry of Justice, Family and Children's Services, the Disability Services Commission, and rural and Aboriginal communities.

- Research on the efficacy of the range of treatments presently available for ADHD indicates good short term results for stimulant medication in increasing attention span and concentration, behavioural compliance, fine motor skills and handwriting, and for reducing impulsivity, task irrelevant activity and aggression. However, it needs to be kept in mind that a positive response to medication does not necessarily confirm the diagnosis.[22]
- Non-drug treatment approaches for which there is empirical support include parent training in child management, teacher counselling about ADHD, teacher training in classroom management strategies, special education services, parent/family interventions focusing on both problem solving and communications and parent support groups.[23]
- Pre- and in-service training for teachers should aim to develop knowledge and skills in the management of disruptive and inattentive behaviour. These include structuring the classroom environment, anticipating problems, using regular feedback which is immediate, frequent and salient to the target behaviours, using a range of reinforcers, changing reinforcers frequently, relying on action based responses more than verbal reprimands, and phrasing requests for desired behaviour in positive and affirmative ways.[23]
- The potential for amphetamine based drugs to be abused and the risks of adverse effects with large doses need to be carefully monitored.[17] At present in Western Australia, stimulant medication can only be prescribed with an authority under the Poisons Act. The Health Department of Western Australia's Stimulants Committee is responsible for monitoring the prescribing of stimulants and has recently developed a set of prescribing guidelines for medical practitioners.[24] However the Stimulants Committee has no criteria for stimulant usage that are uniformly accepted as good practice and it has little power to monitor usage. The Cabinet Sub-Committee on ADHD has recommended that criteria for stimulant usage be developed. It further recommends that the Stimulants Committee be authorised to carry out random audits with the power to review the block authorisation of prescriptions by paediatricians and psychiatrists failing to abide by the appropriate criteria.

SPEECH AND ACADEMIC COMPETENCE

Speech and language are integrally related to the development of play, acquisition of social skills, and later, reading and writing. Once developed, these are skills used for the rest of life. Speech problems were identified when caregivers reported that their child did not speak as well as other children of the same age, and that other people needed help to understand what the child was saying.

FIGURE 4.7 Students: Speech problems : Proportion with low academic competence



About 2 per cent (5,200) of students had speech problems of this magnitude. These children more frequently had low overall academic competence than students without speech problems (57 per cent versus 18 per cent).

FUTURE DIRECTIONS

Along with low or very low verbal and non-verbal ability (see *The need for academic support* in Chapter 3) mental health problems and speech and language problems are burdens directly affecting individual students and their ability to perform well at school.

School systems and education authorities can use these findings to improve knowledge about the competencies and needs of students by:

- Assessing individual levels of student risk in three core areas: mental health (with particular reference to attention and social problems); speech and language, and cognitive abilities (e.g. verbal and non-verbal skills). These areas can be efficiently and economically assessed by combinations of direct screening, self-report, and information from parents and teachers.
- Reporting regularly the prevalence of mental health, speech and language and cognitive problems in primary and secondary school students. Much of the capacity of education and other authorities to plan and respond with preventative programs and intervention services is impaired through lack of information that describes both the magnitude and nature of student needs. Schools are frequently discouraged from assessing these needs in the absence of being able to provide services. However, routine descriptions of the prevalence of these problems in students at school has the potential to widen the agenda beyond the sectoral boundaries of education. Health, training and employment, family and children services, as well as justice authorities, have interests in, and are potential beneficiaries of, endeavours to prevent these problems or identify and treat students with them. These same agencies should be potential funders and participants in these endeavours. By securing these arrangements schools retain their capacity to focus on the central tasks of education while concurrently improving outcomes for current and future students.

DISABILITY AND ACADEMIC COMPETENCE

In the Child Health Survey, *disability* (see Glossary) was considered in terms of limitation of independent function . These limitations typically affect such abilities as independently getting around, playing, walking, self-care, or they result in the need for supervision. About 5 per cent of Western Australian children were affected by one or more of these functional limitations. Almost one-third (31 per cent) of students with a functional limitation had low overall academic competence compared with 19 per cent of those without a disability.

FAMILY HEALTH AND ACADEMIC COMPETENCE

Self-efficacy. A caregiver's assessment of how well they think they manage a variety of day to day tasks is called *self-efficacy* (see the Glossary). Examples of these tasks included: working out a problem with a child; getting something done under a lot of pressure; doing something for the first time; or making an important decision. Caregivers were asked a range of questions aimed at assessing how well they were managing, and to determine how confident they were that they could manage in a number of settings and situations. Caregivers who were rated in the lowest decile of this assessment were said to have 'low' self-efficacy – implying that they were not managing well.

The rates of academic competence did not differ significantly between students from families where the principal caregiver reported difficulties in managing and those from families where caregivers reported higher levels of self-efficacy

Family functioning. The Child Health Survey asked principal caregivers about general family functioning using the *McMaster Family Assessment Device* (see Glossary). This involved caregivers assessing their ability to plan and make decisions, provide support, accept one another, express feelings, and get on well together. This assessment scale allows identification of the more serious problems that result in family discord. Using this device, it was estimated that over 12 per cent of families could be considered to have a high level of family discord.

Previously it was shown that a high level of family discord was associated with higher levels of mental health problems in children (see Chapter 4 of the second volume). However, there was no significant difference in rates of academic competence between students from families with high levels and those with low levels of discord.

Parents' mental health. The Child Health Survey sought information on the mental health of parents by asking about their well-being and their utilisation of mental health treatment services. Almost 13 per cent of principal caregivers, and 4 per cent of secondary caregivers, reported having a mental health history (that is, they had ever received treatment for an emotional or mental health problem). Of those principal caregivers reporting mental health treatment, over one-quarter (29 per cent or 6,200) had received treatment within the last 6 months and around one in six (17 per cent or 3,600) had ever been hospitalised for treatment.

Students who had a caregiver with a mental health history had more frequently been reported by their parents to have an emotional problem which interfered with normal functioning at school, than students from other families (15 per cent compared with 8 per cent). However, independent assessment of students by their teachers found similar rates of low academic competence, regardless of the mental health history of the parents.

FUTURE DIRECTIONS

While the mental health of survey children was found to respond to caregiver self-efficacy, family functioning and the parents' mental health (see the second volume of findings), these data show that such effects are not necessarily associated with below age academic competence. Research is needed to determine the mechanisms by which some aspects of caregiver and family well-being are both directly and indirectly related to student academic performance and mental health. Also needed are studies designed to investigate if (and then how) aspects of the school setting may be effective in modifying the impact of some of these family characteristics.

FUNCTIONAL SIGNIFICANCE OF EMOTIONAL AND BEHAVIOURAL PROBLEMS

School principals reported that an emotional or behavioural problem had been brought to their attention, in the last six months, in relation to 16 per cent (42,900) of students. In many of these cases, the principals considered the problem to be serious in terms of its effect on the student and others in the school environment. Additionally, 6 per cent of students were functionally impaired (that is, they were prevented from doing things usually expected of a student at that age) by an emotional or behavioural problem.

Over 8 per cent (23,200) of students were considered to need professional help for an emotional or behavioural problem. The principals of almost two-fifths (38 per cent) of these students stated that they could not satisfactorily treat the problem within the school.

TABLE 4.4 Students: Perceived emotional or behavioural problem in last six months: Severity and functional impact(a)

Severity, in terms of causing—	*Number ('000)*	*Per cent*
Distress to the student—		
Very serious	**2.4	**0.9
Somewhat serious	18.9	6.9
Not serious	21.5	7.9
No emotional/behavioural problem	225.2	82.4
Disruption or distress to others—		
Very serious	**2.8	**1.0
Somewhat serious	13.1	4.8
Not serious	26.9	9.8
No emotional/behavioural problem	225.2	82.4
Functional impairment—		
Very serious	*2.2	*0.8
Somewhat serious	13.3	4.9
Not serious	27.2	10.0
No emotional/behavioural problem	225.2	82.4
All students(b)	**273.3**	**100.0**

(a) As reported by the school principal. (b) Includes not stated.

A greater proportion of those considered to have an emotional or behavioural problem had low academic competence (37 per cent), compared with students without these problems (16 per cent). However, a closer examination revealed that only those students who were considered to need professional help had an increased risk of low academic competence. Additionally, when the emotional/behavioural problem caused a serious functional impairment for a student, they were far more likely to have low academic competence than if the emotional/behavioural problem did not cause a serious impairment to function at school (63 per cent compared with 21 per cent).

TABLE 4.5 Students: Perceived emotional or behavioural problem in last six months: Proportion with low academic competence(a) (Per cent)

Emotional/behavioural problem—	
No problem	15.9
Emotional/behavioural problem, requiring professional help?—	
No	18.7
Yes, within school	45.5
Yes, outside school	57.4

(a) As reported by the school principal.

PRINCIPALS' REPORTS OF PROBLEMS IN DISADVANTAGED SCHOOLS

In Chapter 2 – *Schools in Communities* it was noted that students in disadvantaged schools were more likely to have poor overall academic competence when compared with those students in non-disadvantaged schools. Principals were also asked if, in the six months prior to the survey, surveyed students had any emotional or behavioural problems which had been brought to the principal's attention. Principals reported 16 per cent of students as having these problems.

There was no significant difference between disadvantaged and non-disadvantaged schools in the proportion of students who had emotional and behavioural problems brought to the attention of principals. However, when the severity of these problems was considered, students from disadvantaged schools, more frequently than those from non-disadvantaged schools, were reported as having more problems than others their age (14 per cent versus 8 per cent) and to have problems that required professional help (13 per cent compared with 7 per cent).

Additionally, students at disadvantaged schools were more frequently reported by their principals as having occasional or frequent problems in getting along with their teachers (26 per cent versus 18 per cent), compared with students in non-disadvantaged schools.

Principals in each school were asked to rate the degree of student drug and alcohol abuse on a scale that ranged from none to extreme. Students from schools with high reported rates of student drug and alcohol abuse (an estimated 5,900 students) also had higher rates of low academic competence (37 per cent compared with 19 per cent), mental health problems (42 per cent versus 21 per cent) and unexplained absences (22 per cent against 5 per cent), in comparison with schools with low reported levels of student drug and alcohol abuse.

In addition to being associated with higher reported rates of student drug and alcohol abuse, unexplained absences were also higher in schools where principals reported lower levels of parental support for the academic program of the school (9 per cent compared with 3 per cent), and higher levels of poverty among students (10 per cent versus 5 per cent) and violence in the community (11 per cent compared with 5 per cent).

FUTURE DIRECTIONS

Teachers and school principals spend a considerable amount of time with students. Similar to findings from other studies of student behaviour and emotional well being, data from the Child Health Survey show that school personnel are important and reliable sources of knowledge about student mental health.[25] These data also show that different school contexts are associated with different patterns of problem behaviour in students.

The causal nature of this association is not apparent in data from the Child Health Survey and it remains to be seen if the higher rates of problems reported in some school contexts constitute a mental health risk for students attending such schools. Many claims are made about the importance of the school setting and the context it provides for the development of behaviours and skills in students. However, it should be remembered that both schools and teachers influence student outcomes. Generally where academic outcomes are studied, teacher effects are of major influence on these outcomes and the effect of the school and its context on academic outcome per se is minimal or negligible.[26] The data presented here would suggest that the effects of school contexts and teachers on both student academic and behavioural outcomes should be the subject of future research.

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5 SCHOOL, HEALTH AND YOUNG PEOPLE

Recognising and responding to the changing developmental context of adolescence is emerging as a critical challenge for schools and parents of young people in the 1990s. For the majority of students, the age between 12 and 16 years is a time of marked psychological change as they take steps towards greater autonomy and responsibility for the direction of their own lives. During adolescence, the social environment of the school plays an important role in shaping current and future health and the development of academic, vocational and social competence. Among the critical developmental tasks of this period are adjusting to sexual maturation, establishing co-operative relationships with peers, preparing for a meaningful vocation and achieving a core set of beliefs and values. Adolescents now face demands, expectations and challenges which are more numerous and carry larger risks than those experienced by young people only a generation ago.

SELF-ESTEEM AND SELF-EFFICACY

GLOBAL SELF-ESTEEM

The critical role of self-esteem as a correlate or cause of many adolescent educational, health and behaviour problems has been a major focus of recent research. Self-esteem has been variously defined but is generally understood to include an internalised self-image and feelings of self-worth. The survey utilised Marsh's Self-Description Questionnaire to generate a measure of global self-esteem. This is a 32-item instrument which asked adolescents to describe how well certain statements, relating to academic abilities, personal appearance, sports, and relationships, applied to themselves. These items were answered on a 6-point scale ranging from 'true' to 'false' (see *Global self-esteem* in the Glossary).

TABLE 5.1 Adolescent students: Global self-esteem

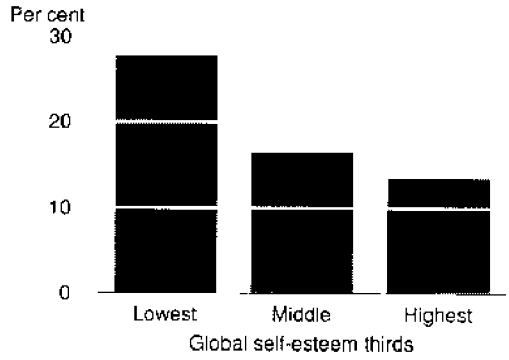
Global self-esteem	*Males*		*Females*	
	No. ('000)	*Per cent*	*No. ('000)*	*Per cent*
Lowest third	12.9	26.6	19.5	37.5
Middle third	14.8	30.3	15.3	29.5
Highest third	17.0	35.0	*15.2	29.2
All adolescent students(a)	**48.7**	**100.0**	**51.9**	**100.0**

(a) Includes not stated.

Girls tended to have lower levels of self-esteem than boys, with 38 per cent of girls falling into the lowest third of global self-esteem scores compared with 27 per cent of boys.

Figure 5.1 below illustrates the relationship between self-esteem and academic performance among adolescent students. Whereas 28 per cent of those adolescent students with self-esteem scores in the lowest third had low academic competence, this was true in only 14 per cent of students with high self-esteem. Alternatively, over 44 per cent of adolescent students who had low academic competence were in the lowest third of global self-esteem scores.

FIGURE 5.1 Adolescent students: Global self-esteem: Proportion with low academic competence



ADOLESCENT SELF-EFFICACY

Self-efficacy refers to the confidence in one's ability to cope with the basic challenges of life. The Child Health Survey used a modified version of Cowen et al's Perceived Self-Efficacy Scale to ask adolescent students about their confidence in managing common tasks and situations such as working out a problem with a teacher, making important decisions and coping

when things go wrong (see Glossary - *Adolescent Self-efficacy*).

Self-efficacy was found to be significantly associated with ratings of academic competence. Students with self-efficacy scores in the lowest third had almost twice the rate of low academic competence than those whose self-efficacy was in the middle and upper third of all adolescents (46 per cent versus 28 per cent). There was no difference in the proportion of boys and girls having higher and lower levels of self-efficacy.

COMMENTARY

While the survey findings would appear to suggest that global self-esteem and self-efficacy might both operate to protect against poor academic competence, the cross-sectional nature of the data allow no inference to be drawn about the causal direction of these associations. It is also of note that while boys had generally higher levels of self-esteem than girls, there was no difference between boys and girls in their levels of self-efficacy.

Longitudinal studies employing statistical techniques of causal modelling show little evidence that improvements in self-esteem result in better educational outcomes.[1] Instead, these studies generally support the 'achievement' model of self esteem, i.e. self-esteem is more of an outcome than a cause of academic and/or other success. They also indicate that the early years of childhood are critical in forming a base for self-esteem, e.g. children who are physically or emotionally abused are at greatest risk for developing poor self-esteem in adolescence. This suggests the need for schools, parents/caregivers and other significant adults to foster self-esteem throughout childhood and adolescence.

There is a growing body of research which indicates that adolescents with poor self-esteem have a significantly increased likelihood of developing a range of health risk behaviours including drug use, teenage pregnancy, and other adolescent problems.[2] The potential for schools to foster students' self-esteem as a means to reduce the occurrence of such problems has been widely advocated e.g. the Californian legislature has required every school district in the State to adopt this as a clearly stated goal, integrated into its total curriculum and informing all of its policies and operations.[3]

Promoting self-esteem in schools would appear to be best achieved by providing students a range of opportunities for mastering new skills and achieving success through carefully graded exposure to tasks and challenges while providing realistic feedback on their performance. It should also be recognised that strategies for promoting students' confidence in their ability to think and cope with challenges (i.e. self-efficacy) and those which promote their feelings of self-worth (i.e. general self-esteem) may be quite different and operate differently for girls and boys.

SCHOOL ALIENATION

Adolescents were asked about their feelings with regard to attending school. While most (78 per cent) adolescents liked attending school to some degree, almost one in five (19 per cent) disliked, or felt alienated from, school.

TABLE 5.2 Adolescent students: Feelings about attending school

	Number ('000)	*Per cent*
Like school—		
Very much	15.5	15.4
Quite a bit	34.5	34.3
A little	28.9	28.7
Total who liked school	*78.9*	*78.4*
Like school—		
Not very much	12.7	12.6
Hate it	6.3	6.3
Total who disliked school	*18.9*	*18.8*
Not stated	2.8	2.8
Total	**100.6**	**100.0**

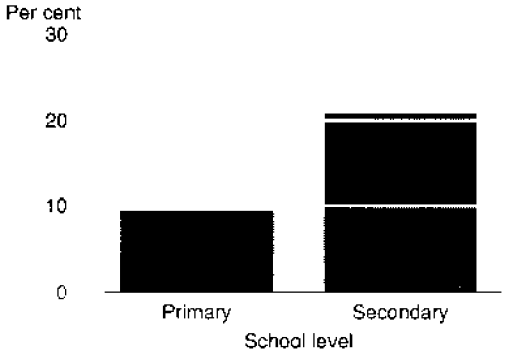
School alienation was associated with both academic competence and mental health problems. Students who were alienated from school had a higher frequency of mental health problems (43 per cent versus 20 per cent), and low academic competence (33 per cent against 16 per cent), compared with students who liked attending school.

School alienation among adolescents was also found to be associated with an increased likelihood of students using harmful substances. Compared with other students aged 12 to 16

years, those who reported negative feelings about attending school also more frequently reported that they had smoked daily for a month or longer (32 per cent versus 8 per cent), and that they had used marijuana (34 per cent compared with 11 per cent).

Adolescent students' reports of school alienation did not vary in respect of school location, family structure or parental income. However, at older ages or higher grade levels there was a greater proportion of students who disliked school. Broadly speaking, a greater proportion of secondary students disliked attending school than primary students.

FIGURE 5.2 Adolescent students: School level: Proportion who disliked school



FUTURE DIRECTIONS

The survey findings on the association between school alienation and unhealthy behaviours such as smoking, regular alcohol consumption, drug use and lowered academic achievement are consistent with a recent World Health Organisation cross national study involving 12 Western developed countries including Australia.[4] These studies indicate that students who are alienated from school are also at increased risk for more general alienation from mainstream society and more likely to commence lifelong health damaging behaviours as part of a response to this alienation during adolescence.

Recent initiatives at state, national and international levels have focused on the role of schools as health promoting environments and critical settings for the delivery of preventive education and health promotion.[5-7] These advocate the systematic development of 'health promoting schools' where a specific objective of the school's educational mission is for all members of the school community work together to provide students with integrated and positive experiences and structures which promote and protect health.

Caution needs to be exercised in the delivery of school-based health promotion programs to ensure that they reach students who are at risk, by virtue of their school absences, truancy or alienation. These students may be the group who stand to gain most from such programs.

ADOLESCENT STRESS

It is commonly assumed that stress is bad for physical and mental health. However, stress is an inevitable part of life and any consequent effect it may have appears to be more a matter of the amount of stress and the ability of the individual to manage it. Too little stress results in inactivity and boredom, moderate stress provides motivation and leads to mental and physical exertion, whilst extreme or prolonged stress may end in exhaustion, breakdown or burnout.

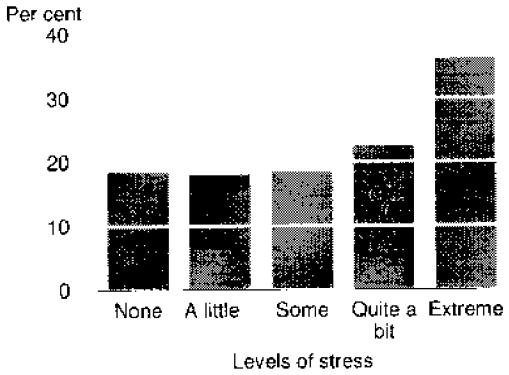
Adolescents were asked if they had felt under strain, stress or pressure during the six months prior to the Survey (see *Stress* in the Glossary for a more complete description of the categories of stress used in this section). Most commonly, 12 to 16 year-old students (32 per cent) reported feeling little stress, which they considered to be about usual. One in five felt some stress and 19 per cent felt quite a bit of stress, while 8 per cent (or 8,000) of adolescent students reported feeling extreme stress (almost more than they could take). A greater proportion of male students felt no stress at all – around one in five (21 per cent), compared with one in ten females. The proportion of girls reporting quite a bit of stress (22 per cent) was greater than that for boys (16 per cent). For all other 12 to 16 year-olds, levels of stress felt by males and females were fairly similar.

Stress and physical health. Among adolescent students whose parents rated their general physical health as excellent, just under one quarter (24 per cent) reported feeling high stress compared with 38 per cent whose general health was rated good, fair or poor. Among the group of adolescent students whose general health was

described as excellent, a greater proportion of females (31 per cent) felt high stress compared with males (17 per cent). However, as reported health status deteriorated, the difference in high stress levels between the sexes became negligible.

Stress and mental health. Of those 12 to 16 year-olds who reported feeling extreme levels of stress, almost two-fifths (39 per cent) were found to have a mental health problem as defined by parent and teacher behaviour ratings. As levels of stress reduced, the proportion of adolescent students with mental health problems dropped markedly to remain fairly constant at around 23 per cent. This compares to the level of mental health problems for the total adolescent population of 24 per cent. It was only when stress reached high levels that mental health was found to be compromised.

FIGURE 5.3 Adolescent students: Levels of stress: Proportion with mental health problems



Stress and parental expectations. It is commonly asserted that parental expectations are a source of stress for young people. Adolescents were asked to rate their parents expectations of them on a scale from none to high. Very few 12 to 16 year-old students reported low parental expectations (4 per cent or 4,200). The majority of all adolescent students (53 per cent) reported fairly high parental expectations while another 16 per cent (16,400) rated their parents expectations as high. In the main, there was little difference in between the sexes in their reporting of parental expectations.

As Table 5.3 shows, an increase in parental expectations from low to fairly high and to high was matched by the level of stress felt by 12 to 16 year-old students. One in five reported experiencing high stress when parental expectations were low to moderate, increasing to over one in three when parental expectations were reported to be high.

TABLE 5.3 Adolescent students: Parental expectations: Levels of stress (Per cent)

	Parental expectations		
Stress level	*Low to moderate*	*Fairly high*	*High*
Low	53.9	49.0	47.9
More than usual	23.5	21.1	15.5
High	20.0	28.9	36.1
All adolescent students(a) number ('000)	**100.0 23.1**	**100.0 53.1**	**100.0 16.4**

(a) Includes not stated.

Stress and the school. School alienation (adverse feelings about going to school) was associated with levels of stress. Of those adolescents who stated that they disliked school, 45 per cent (8,500) reported feeling high stress. In comparison, of those who liked school, 23 per cent reported high stress.

In Table 5.4 below it can be seen that high student stress is associated with higher levels of school problem behaviours such as students using drugs before and after school, drinking alcohol, vandalising (destroying) property, stealing, and bullying. Generally, over one in five 12 to 16 year-old students felt high stress in schools where the incidence of such behaviours were perceived to be low. In schools with high rates of school problem behaviours, the proportion of adolescents reporting high stress increased to around two in five. In schools where the incidence of alcohol drinking was high, this proportion increased to 46 per cent.

TABLE 5.4 Adolescent students: Perceived school problem behaviours and their incidence: Proportion who felt high stress (Per cent)

	School problem behaviours as perceived by the adolescent				
Incidence of these behaviours	*Drug taking*	*Drinking alcohol*	*Vandalism*	*Stealing*	*Bullying*
Low	21.7	22.4	23.4	24.8	22.2
Moderate	30.2	31.5	28.7	23.0	28.3
High	41.0	46.4	35.7	38.4	34.1

Stress and academic competence. There was little evidence of any association between the levels of stress experienced by adolescent students and their academic competence.

COMMENTARY

The survey findings on adolescent stress give perspective to recent media concerns about the extent of stress among high school students.

- The overwhelming majority of 12 to 16 year-old students (around three-quarters) said they experience levels of stress which they did not consider to be any more than usual.
- Around 8 per cent of adolescents reported levels of stress which were extreme or 'more than I can take'. Only where the level of adolescent stress were reported to be extreme was there found to be an association with poor mental health.
- High parental expectations did not appear to be generally associated with higher levels of adolescent stress. While there are obvious individual instances where inappropriate parental expectations may result in student stress, it was generally the case that high parental expectations usually operated to encourage and facilitate academic competence.
- School alienation and exposure to school environments in which there was a high incidence of student behaviour problems were associated with adolescent reported stress.

Preparing students to take their place in an increasingly complex world requires acknowledging that stress also serves an adaptive purpose. Students need to be aware of the signs and symptoms of excessive stress and to understand its cognitive, behavioural, emotional and physiological components. They also need to learn adaptive ways of dealing with stress such as understanding the importance of a balanced diet, regular routine and rest, regular exercise and avoidance of harmful substances. Parents and teachers can assist adolescents in using time management skills, relaxation techniques, behavioural strategies and social support to deal effectively with predicable stresses such as examinations.

RECREATION AND LEISURE

Recreational activities outside of school play an important role in the development of students' physical, educational and social competencies. The Child Health Survey sought information from parents regarding the types of activities in which their school aged children participated in outside of the school. In addition, adolescents (12 to 16 year-olds) were asked to provide information on the amount and type of exercise they had engaged in during the previous week and their participation over the past year in sports where they received adult coaching (see Chapter 4 of *Western Australian Child Health Survey – Developing Health and Well-being in the Nineties* (ABS Catalogue No. 4303.5)).

ACTIVITIES OUTSIDE OF SCHOOL

Leisure activities. As reported by parents, the most common leisure activities of students were visiting friends (93 per cent) and participating in informal recreational activities such as going to the movies and swimming with friends (84 per cent). Only one in five (21 per cent) school students participated in organised community groups such as cubs, guides, or church groups.

Sporting activities. Apart from their participation in physical education classes at school over half (56 per cent) of all students were reported by parents to have taken part in some form of organised sport involving adult coaching during the past year. However, over two-thirds (71 per cent) of students regularly engaged in informal sport.

...by region. Country students participated in organised and informal activities to a greater extent than Perth metropolitan students, particularly in organised groups (27 per cent compared with 18 per cent), organised sport (64 per cent compared with 53 per cent) and informal sports (80 per cent compared with 67 per cent).

PARTICIPATION IN SPORT AND EXERCISE

Organised sport. Adolescent responses showed that the level of participation in organised sport varied according to survey regions and the type of school the student attended. There was a greater proportion of adolescent students in country regions who had taken part in two or more coached sports during the previous year

than in the Perth metropolitan area (53 per cent compared with 40 per cent).

In government schools, almost two-fifths (38 per cent) of adolescent students had participated in two or more coached sports in the past year, compared with 51 per cent in Catholic schools and 61 per cent in other non-government schools.

Regular aerobic exercise. It is well known that all people, young and old, benefit from regular exercise through improving cardiovascular fitness and overall muscle strength.[8] There is also increasing evidence that regular aerobic exercise may have mental health benefits.[9] To examine what health and education benefits may derive from regular exercise, adolescents were asked about the number of days in which they had exercised aerobically during the past week. Aerobic exercise was defined as any sustained vigorous activity (such as fast bicycling) as well as sporting activities (such as basketball, tennis, jogging, or swimming) that resulted in sweating or breathing hard.

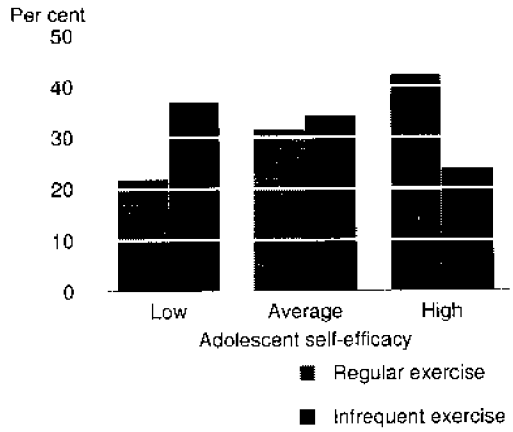
Over nine out of ten (91 per cent) adolescent students reported they had partaken in some form of aerobic exercise during the week prior to the survey. Adolescent boys engaged in regular aerobic exercise (i.e. four or more days per week) more frequently than girls (50 per cent versus 37 per cent).

Not surprisingly, adolescent students who had taken part in organised sport outside of school (as reported by their parents) reported regular aerobic activity more often than those who did not participate in organised sport (53 per cent versus 32 per cent).

Benefits of regular aerobic exercise. While the physical health of adolescents who regularly exercised aerobically was similar to those who exercised less frequently (see *Physical health* in the Glossary), they had less frequent mental health problems (17 per cent versus 30 per cent) (see *Mental health morbidity* in the Glossary).

Adolescent students who exercised regularly also had higher self-esteem and self-efficacy than those with more sedentary exercise patterns. Almost 44 per cent of regular exercisers were in the top third of adolescents' global self-esteem scores, in contrast to 24 per cent of those adolescents who exercised less regularly. Regular exercisers were more frequently in the highest third of self-efficacy ratings (42 per cent compared with 24 per cent) and more often reported having no problems getting on with their peers in the last six months (59 per cent versus 44 per cent) than adolescent students who exercised less frequently.

FIGURE 5.4 Adolescent students: Level of aerobic exercise: Self-efficacy



COMMENTARY

In 1993 the Commonwealth Government's *Goals and Targets for Australia's Health in the Year 2000 and Beyond* recommended that children aged 5 to 18 years be targeted as a priority population to increase the proportion who participate in sport or other physical activity at least three times per week.[8] This goal aims to encourage the early development of regular exercise habits and to increase the proportion of children and adolescents who continue to exercise regularly in their adult life. It also reflects recent evidence that regular, moderate activity has the potential to reduce cardiovascular disease risk factors.

This includes lower intensity physical activities such as brisk walking performed for short periods (5 to 10 minutes). The child health survey findings provide evidence that in adolescence, the benefits of regular aerobic exercise also include improved mental health, self-esteem and self-efficacy. They also point to the value of participation in organised sport at school and in the community in encouraging students to develop more active lifestyles. The reported rates of regular exercise provide a baseline for measuring progress towards achieving the health targets in this area.

SCHOOL VIOLENCE

School violence was defined in the national report *Sticks and Stones: Violence in Australian Schools* (1994) as encompassing both violent acts and bullying occurring within the school setting.[10] This definition acknowledges the detrimental effects on students of both visible acts of violence to people and property and the less visible behaviours of bullying. However, this definition does not include acts of violence which occur outside accepted school hours or outside of normal school boundaries and situations. The Child Health Survey therefore used student, parent and teacher reports of physical fighting and bullying as general indicators of school violence. This takes account of the fact that violent behaviour among students often has its influences outside of the school and solutions to it are unlikely to be found in isolation from those causes.

Physical fighting among adolescents. Physical fighting is a frequently occurring form of inter-personal violence among adolescents. The Child Health Survey asked students aged 12 to 16 years about the number of times they had been involved in a physical fight during the previous six months. Adolescents were also asked to state whether they sustained injuries in a fight during this period which required treatment by a doctor or nurse.

Almost one in three adolescent students (31 per cent, or 31,000) said that they had been involved in at least one physical fight during the previous six months. Of these students, 50 per cent said they had fought once; 33 per cent, two or three times, and 17 per cent had fought four or more times. While fighting was more frequent in males (41 per cent), more than one in five (21 per cent) females reported being in a physical fight. Students who reported fighting in the past six months had a higher incidence of mental health problems (37 per cent) than students who had not been in a fight (17 per cent).

Of those adolescent students who stated they had ever been in a physical fight (49,500), the most recent fight was more commonly with an acquaintance (family member, friend or boyfriend/girlfriend) than with a stranger (77 per cent compared with 12 per cent). About 4 per cent of students who had been in fights reported that this resulted in them receiving an injury requiring medical attention.

An incidence rate was estimated to establish a baseline for monitoring increases or decreases in the frequency of physical fighting among adolescent students aged 12 to 16 years. This showed that during the six month period prior to the survey there was an average of 70 incidents of student fighting per 100 students (see *Incidence of physical fighting* in the Glossary). Because students were not asked the location of these fights, the extent to which physical fights occurred on school premises was not determined.

COMMENTARY

While community perceptions and teacher reports suggest that problems of violence being brought into schools are increasing both in quantity and degree, there are surprisingly little data to ascertain whether and why such changes are occurring. Measuring the level of school violence is difficult. Both students and school authorities are reluctant to report violence in the school. In the absence of comprehensive and consistent measures of school violence, community views and attitudes towards the problem are likely to continue to be shaped by media reporting of isolated incidents.

Numerous factors underlie the development of violent behaviour and prevention strategies to address this complex problem are likely to require interventions which involve many aspects of society including the family, schools and communities, the media and other socio-economic and political influences. Historically, it has been the responsibility of the criminal justice, welfare and mental health systems to curb violence in the community. However, with increased awareness of the health and social costs of violence, violence prevention has emerged as an important public health priority and one which schools could well afford to embrace. The public health perspectives which have emerged over the past decade indicate that although much remains unknown about reducing the prevalence of violence, important steps can be taken now which would prevent Australian children being exposed to violence.[11] Schools, are likely to emerge as a critical settings in which such preventive interventions can be delivered.

School interventions shown to be effective in reducing student violence include:

- educational policy in which the promotion of healthy and safe school environments is acknowledged as an integral part of schools' educational mission;

- 'whole-of-school' student behaviour management systems;
- curricular activities which train students in social skills and non-violent conflict resolution; and
- teacher training and support to improve their confidence and skills in behavioural management of student violence.

These interventions have been shown to be most effective where they have the backing of the local community, where schools are properly resourced to have access to appropriately trained staff for the delivery of personal development and life skills programs, and where these are monitored to ensure that the quality of program delivery is maintained.[12-14]

BULLYING

Bullying is a distressing behaviour which occurs to some extent in all schools. It involves the intentional, unprovoked use of power by one or more students to inflict pain on or cause distress to another student on repeated occasions. It commonly includes behaviours such as pushing, hitting and name calling but may also take less overt forms, e.g. deliberate exclusion from peer groups. Bullying may extend to other abusive behaviours such as physical assault, intimidating threats, spreading of slanders, extortion and robbery. It can manifest in individual or group behaviour in which students bolster their power or group solidarity by harassing vulnerable members of an outgroup. Because bullying often involves behaviours which are largely unseen, teachers, parents and other adults frequently underestimate its prevalence and effects.[15]

The Child Health Survey sought information on school bullying from a variety of sources. For students in primary and secondary schools, information was combined from parent and teacher reports to identify students who were the victims of bullying and those who bullied other students (see *Bullying and victim behaviours* in the Glossary). For students aged 12 to 16 years information was additionally available from adolescent self-reports. This included details of students' own experience of bullying and ratings of their perception of the occurrence of bullying and related behaviours such as fighting at their school. Finally, primary and secondary school principals provided separate ratings of the general extent of bullying within their own particular school.

Parent and/or teacher reports. One in nine (11 per cent or 31,000) Western Australian school students were determined, by parent and teacher reports, to have been the victims of bullying during the previous six months. Boys were generally bullied more than girls (15 per cent versus 8 per cent). The incidence of bullying was highest among 10 to 14 year-olds.

Adolescent self-reports. Around 14 per cent (14,500) of 12 to 16 year-old students said they had experienced bullying during the previous six months. Not surprisingly, those adolescents who reported that bullying occurred at their school 'quite a lot' or 'very much', had more often been a victim of bullying themselves than adolescents who said lower levels of bullying were present at their school (23 per cent compared with 11 per cent).

Associated factors. In comparing students from Perth metropolitan and country areas, no significant difference was observed in the number of students considered to be victims of bullying, according to parent and teacher reports. A greater proportion of students from families with a high level of family discord (See *McMaster Family Assessment Device* in the Glossary) had been bullied than students from more harmonious families (20 per cent compared with 10 per cent); the same was true for students whose parents used non-encouraging styles of parenting compared with students whose parents used a predominantly encouraging style of parenting (15 per cent versus 8 per cent respectively) (See *Parental disciplinary style* in the Glossary).

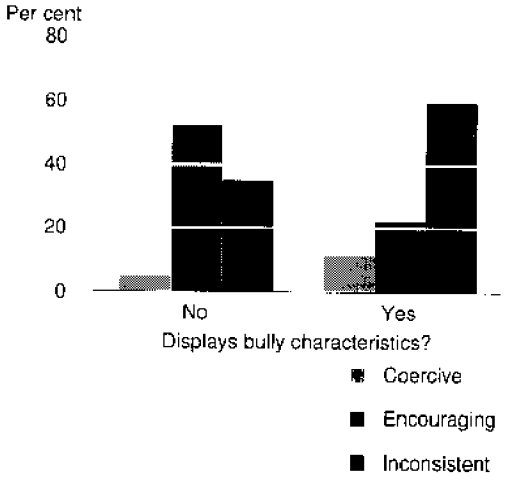
Effects of bullying on students. Exposure to bullying was associated with a generally higher incidence of adverse academic and psychological outcomes. Bullied students were more likely to have low academic competence (44 per cent compared with 15 per cent), and to have higher rates of absence from school (median of 13.1 days absence per year compared with 10.4 days) than students who were not bullied. They were also far more likely (odds ratio 13:1) to have a significant mental health problem than their non-bullied counterparts (69 per cent compared with 15 per cent).

Among adolescents, almost half (49 per cent) of students who were bullied were in the lowest third of self-esteem scores, in contrast to 31 per

cent of those adolescents who were not bully victims.

Characteristics of students who bully. Around 5 per cent (14,600) of all students were considered, via parent and teacher reports, to have shown behaviours characteristic of bullying in the past six months. These behaviours were generally more prevalent among boys (8 per cent) than girls (3 per cent), but it should be kept in mind that among girls, bullying tends to take less directly visible forms e.g. physical exclusion from peer groups.

FIGURE 5.5 Students: Bully characteristics: Selected parental disciplinary styles



Most students (78 per cent) who bullied were living in families where the parental disciplinary style was characterised as non-encouraging (that is, coercive, inconsistent or neutral), compared with fewer than half of students who didn't bully (47 per cent). Students who bullied most commonly (60 per cent) had caregivers whose parenting style was defined as 'inconsistent', while the majority (53 per cent) of other students were subject to an 'encouraging' parental style.

Bullies also had a far higher incidence of mental health problems than those who were not bullies (83 per cent compared with 18 per cent). The same was true for individual mental health problems, as shown in Table 5.5. Among students who bullied the most elevated problems were delinquent behaviour (affecting 69 per cent), thought problems (53 per cent) and aggressive behaviour (45 per cent).

TABLE 5.5 Students: Bullying characteristics and specific mental health morbidities (Per cent)

Syndrome	*Students who bullied*	*Students who did not bully*
Delinquent problems	69.0	7.3
Thought problems	52.5	7.9
Aggressive behaviour	44.9	2.4
Social problems	38.7	5.7
Attention problems	35.6	6.1
Somatic complaints	31.8	4.6
Anxiety/depression	25.3	3.4
Withdrawn	15.2	2.3

In almost half (47 per cent) of the cases, those described as bullies had low academic competence – this compares with only 17 per cent of other students.

The potential for students to develop bullying behaviour in response to being bullied themselves is suggested by the finding that almost one in four students who were victims of bullying (23 per cent) were also involved in bullying others, in contrast to only 3 per cent of students who were not victims of bullying.

COMMENTARY

Bullying by peers at school is becoming recognised as a major social problem in and out of school and a form of abuse (peer abuse) which can have serious consequences for victims in the short and longer term. As with other forms of abuse it is an abuse of power and is often surrounded by fear, secrecy, and a misplaced loyalty to the perpetrator(s). Bullying is now also recognised as a significant educational issue which can detrimentally effect students' academic achievement, the level of violence in schools and school morale.

With increased recognition of children's rights, schools are now vulnerable to litigation for failing to take reasonable steps to protect students from peer abuse. In the UK and USA there are legal requirements for schools to have charters which ensure that all students have the right to an education in an environment free of harassment.

There is encouraging evidence from Norway, the UK and Australia that the incidence of bullying can be dramatically reduced through

the implementation of 'anti-bullying' programs in schools.[11,16,17] Traditionally, schools have either 'turned a blind eye' to the problem or adopted an uncompromisingly 'tough' approach with identified bullies. However, such approaches do not take account of the fact that other students can easily become involved in bullying through thoughtless conformity or group pressure. They also do not address the fact that many bullies are themselves victims of bullying or have developed aggression in response to adverse family circumstances or dysfunctional family relationships.

'Whole of school' approaches appear to be a more effective means of reducing the incidence bullying within schools.[18] These aim to:

- Raise student awareness of the aberrant and abusive nature of bullying and develop understanding of the potential seriousness of its effects;
- Encourage student bystanders (and staff) to act in ways which discourage the continuation of the bullying when it occurs. This includes promoting the view that it is 'OK to report bullying';
- Deal with bullies individually to help them to take responsibility for their behaviour. Where the behaviour is more resistant, strict monitoring and implementation of strong sanctions are needed for the protection of other students;
- Support group members involved in bullying by teaching them skills to counter peer pressure; and
- Teach vulnerable students assertiveness skills and 'self-protective' behaviours to reduce victimisation.

With improved understanding of the extent and effects of bullying in schools and evidence of the effectiveness of preventive strategies, there is now scope for setting educational and public health goals for reducing the exposure of students to violence and other abusive behaviours at school.

ADOLESCENT SUICIDAL BEHAVIOUR

Recent increases in suicide among Australian youth have focused community attention on the need to understand the type of problems and stresses which lead some young people to consider suicide as a solution to emotional distress. In 1993 suicide was the second most common cause of death (after motor vehicle accidents) for Australians aged 15 to 24 years.[19] During 1993 in Western Australia, there were 22 suicides of youth aged 15 to 19 years and ten of these were school-aged adolescents (i.e. aged 17 years or less).[20]

While adolescent deaths from suicide are rare, schools are increasingly faced with more prevalent suicidal behaviours among adolescents such as recurrent suicidal thoughts and deliberate self-harm. Prior to the WA Child Health Survey, no reliable community prevalence data on the extent of these behaviours were available. To address this need, and to establish the relationship between suicidal behaviours and other individual, family and school factors, information was sought on whether, during the six months prior to the survey, adolescents had thought about killing themselves or had deliberately tried to hurt or kill themselves.

During the collection of the data, care was taken to ensure that all consenting adolescents (and their parents) were aware that the survey contained sensitive questions which they were not obliged to answer. Fewer than 1 per cent of adolescents did not answer the questions about suicidal behaviour. For those who had concerns arising from their participation in the survey professional assistance was made available.

SUICIDAL THOUGHTS

Over 15 per cent (15,500) of adolescent students reported having had suicidal thoughts during the six months prior to the survey. The proportion of older adolescents who had suicidal thoughts (22 per cent) was almost twice that for younger adolescents (12 per cent). The increased prevalence of suicidal thoughts in older adolescents is largely attributable to the higher proportion of older adolescent females who reported suicidal thoughts (29 per cent) compared with younger adolescent females (13 per cent).

Suicidal thoughts were reported in similar proportions by students with academic competence at or above their age age level and those with below age level academic competence. There was little difference in the proportion of students at Government, Catholic and other non-government schools who reported suicidal thoughts. However, suicidal thoughts were more prevalent at those schools having a higher rate of student behaviour

problems (see *Student behaviour problems* in Chapter 2). At those schools within the highest third of student behaviour problems, 28 per cent of students had suicidal thoughts, in contrast with 7 per cent of students in schools in the lower third of student problems.

Approximately 30 per cent of students reporting suicidal thoughts had also tried to deliberately harm or kill themselves.

Students reporting suicidal thoughts more commonly drank alcohol regularly (22 per cent) than students who had never had suicidal thoughts (10 per cent); and used marijuana (33 per cent versus 13 per cent respectively). These students generally had lower self-esteem and held more pessimistic views of their future in contrast to students with no suicidal thoughts. Almost half (47 per cent) of those who reported thoughts of suicide were in the lowest 20 per cent of self-esteem scores (see *Global Self-esteem* in the Glossary). The proportion of students with suicidal thoughts among those who disagreed with the statement 'In thinking about the future, I feel confident that things in my life are likely to improve' was almost three times that of those agreeing with it (34 per cent versus 13 per cent). Similarly, 49 per cent of students who disagreed with the statement 'I feel that my life has purpose and meaning' had suicidal thoughts, in contrast to 10 per cent among those who endorsed it.

DELIBERATE SELF-HARM

Deliberate self-harm (i.e. attempted suicide) is a major cause of hospitalisation of 15 to 19 year-old adolescents, resulting in approximately 450 admissions in Western Australia each year.[22] Eight per cent (8,300) of adolescent students aged 12 to 16 years reported deliberate self-harm in the previous six months. As shown in Table 5.6 this proportion is much the same between the sexes and older and younger adolescent students. This rate is comparable to the 1993 prevalence rate (8.6 per cent) reported for adolescents by the Centre for Diseases Control from a nation-wide survey of over 11,000 high school students in the United States.[23]

Almost 77 per cent of adolescents reporting deliberate self-harm had a mental health problem as determined from their self-report. When parent and teacher reports were used, 29 per cent were determined to have a mental health problem.

Of those adolescent students reporting deliberate self-harm, one in four regularly drank alcohol, twice the proportion who had never deliberately harmed themselves (11 per cent). Where 12 to 16 year-olds reported using marijuana, 41 per cent of those who had deliberately harmed themselves used the substance compared with 17 per cent who had not tried to harm themselves.

TABLE 5.6 Adolescents students : Deliberate self-harm
(Per cent)

	Never	*Sometimes/often*
Males	92.2	6.6
Females	91.3	8.4
12 to 14 years	92.4	6.8
15 to 16 years	90.7	8.6
All adolescent students	**91.7**	**7.5**

COMMENTARY

Australian society has been slow to confront the tragedy of youth suicide. This is in part due to the fact that suicide is such a perplexing and troubling problem that our society generally avoids discussing it. Many adults find it hard to accept that young people emerging from childhood can feel the degree of sadness, hopelessness and despair that can lead to suicide. The need for Western Australian schools to address the issue of youth suicide emerged in the late 1980's after a series of suicide 'clusters' involving high school students. The resulting community concern led Western Australia to declare suicide prevention as a leading health priority and to commission a strategic plan for tackling the issue in a systematic manner. This plan aims to improve the inter-sectoral and inter-agency coordination of health, education, family and children's services, police and justice services dealing with 'at-risk' young people and identifies schools as an important setting for preventive intervention.[23]

The approach to suicide prevention developed within Western Australian schools takes account of recent critical reviews of the efficacy of school-based suicide prevention approaches in the USA.[24] These indicate that some curriculum-based programs which target students directly and have a specific focus on

suicide may have a negative effect on the very group they are attempting to help. In contrast, approaches which aim to develop the skills and competencies of the people to whom troubled young people turn in seeking help appear to offer greater potential for early detection of emotional crises, for more appropriate intervention, and in the long run, for the prevention of suicide, and other forms of emotional disturbance.[25] The preventive strategies implemented in most Western Australian schools over the past six years include:

- Professional education and training for key student services/pastoral care staff to improve their awareness and skills for dealing with suicidal behaviour and concerns arising within the school situation.
- Development of practice guidelines, procedures and policy for the early identification, referral and support of students at risk.
- Crisis management protocols to assist schools in the management of critical incidents, including student suicide, to reduce the likelihood of 'copy-cat' suicidal behaviour and suicide clusters.

The development of effective strategies of primary prevention within schools is now being investigated by the WA Ministerial Youth Suicide Advisory Committee.[26] Such strategies aim to prevent students from becoming at risk for suicidal behaviour in the first place. Schools currently provide a range of programs and services at a system wide and whole-of-school level which aim to enhance student well-being and mental health. They also provide classroom and group based activities in personal and social skills development and prevention education through the health and physical education curricula. Successful implementation of school-based personal development programs requires systematic targeting, care in schools' selection of curricular materials, availability of suitably trained staff and the active support of parents and general teaching staff.[26]

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6 EDUCATION, HEALTH AND COMPETENCE

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The survey data affirm the critical role that schools and teachers play in educating children and young people and show a generally high level of satisfaction by caregivers with their children's education and learning. However, changes in the work and care arrangements of families and in patterns of educational risk in students are exerting new burdens upon teachers and schools. Schools are not alone in their task of educating children and young people nor in meeting the educational requirements of students with special needs. Instead they are embedded within family and community contexts which are creating new opportunities for intervention and prevention. This chapter discusses the implications of the survey findings for supporting teachers and strengthening schools to facilitate student academic competence along with their health and well-being.

FAMILY LIFE AND SCHOOL

The demands of school on family resources are significant and range from the financial costs associated with schooling to commitments of parental time to support student and school activities. Many claims are made about the relationship between family life and student performance at school and about the capacities of families to engage in supporting the educational efforts of their children. The Child Health Survey permits examination of some critical influences in family life that are relevant to schools.

Families, work and school. Caregivers are working more than ever before. Not only is the modal Western Australian family a dual-earner family but data from the Child Health Survey and other sources show that more Western Australian families are working and they are working longer hours than in previous times.[1] Thus, while the traditional two-caregiver family, in which one caregiver works for wages and another stays at home to care for children, is still a choice made by some families, this choice is being made less often. Of course, for one parent families the choice to work or to stay at home may not exist at all. The Child Health Survey data also show that for the majority of lone caregivers the choice to be employed still results in lower income levels relative to other family types. In practical terms then, family caregivers are faced more frequently with choosing between having less time or having less money. In either case, schools are affected by the outcome of these family decisions.

Income, employment and industrial requirements are resulting in a commitment to more work by all caregivers. This means less time is available for the care of family members. In response, parents more than ever are seeking care arrangements for pre-school and school children that extend beyond the start and finishing times of the school day. Parents may look outside of the school sector for the provision of this care, but changes in industrial and work practices are likely to mean that schools are under increasing pressure to respond to this need. Increased commitments to work also mean that parents may have less available time and energy to assist with homework, invest in school activities, and participate in, or contribute to, the school community. For some families the purchase of services (e.g. domestic help and tutoring) may free-up time for caregivers to invest in activities of relevance to children at school. However, for the majority of families, work conditions and industrial agreements may be the only avenues for securing the time required to better meet the needs of families. The point here is that there is an economy of family care involving time and income that directly impacts upon schools.

Where family time is not spent in employment for wages, the risk of poverty increases substantially. Certainly poverty is associated with educational failure, and since lack of education reduces opportunities for employment, it in turn contributes to the inter-generational perpetuation of poverty.[2] However, *how* poverty produces educational failure is still poorly described and incomplete. There is important evidence to show that the context and timing of the exposure to poverty plays a critical role in the academic outcome of children. For example, exposure to early poverty primarily during the toddler and pre-school

years appears to be of more importance to academic adjustment than later exposure to poverty primarily during the primary school years.[3] The data from the Child Health Survey show substantial associations between academic competence and low incomes, both within families and schools. But they also indicate that parental education is a powerful mediator of the effects of poverty on academic competence (see below).

Care, education and school. Parents are children's first teachers and the education and care of children are intertwined.[4,5] The early learning experiences parents provide for children are part of the context of parental care. In this context the day-to-day acts of caring for infants and young children form the background of opportunities that caregivers and children use for early teaching and learning. The activities of caring for children are not activities that usually happen in isolation from those deemed to be 'educational'. The operation of this general principle can be seen in the better psychosocial and educational outcomes of children receiving educational infant day care when compared with those receiving standard day care.[6]

Schools are the recipients of the graduates of day care and are key stakeholders in the debate about the availability and quality of infant and early childhood day care. Interviews with the survey families revealed a steady increase in their use of day care and other forms of child care over the past decade. Seventy-three per cent of survey children who had regularly attended day care, had done so by the age of three years.[1]

High quality day care must meet both the physical needs of children and their need for meaningful attachments in meaningful contexts. The setting of staffing levels and the standards of training are critical to this. Current market forces now operate to meet the demand for child care services. The regulation of these services and their quality is critical in ensuring that the nature of the care that is provided is part of a more general care context that meets the learning and teaching opportunities of very young infants and children. Findings from randomised controlled trials of early educational infant and child day care clearly demonstrate the accrued academic and psychosocial benefits of good quality day care to the children who received it.[7-11]

Parents concerns about their children's schooling play an important part in the decisions they make about employment. In many instances, the return of parents (mostly women) to full- or part-time employment is timed to coincide with children commencing school. While parents may acknowledge the primary role of the school in its *education* of students, they are also aware of the role that schools play in the *care* of children. This care may extend from being the 'place where the children are during the day' to being a place that, in addition to education, supplies a major component of care for some students who may not otherwise receive it. Just as the care and education of children are intertwined at home, so too are they intertwined at school.

Family resources and academic competence. Students are likely to have access to four broad categories of resources in families: income, time, human capital (e.g. parental education and employment) and psychological capital (e.g. parental behaviours, beliefs and love).[12] Each of these resources shapes individual student experiences and outcomes as well as shaping the nature of the school community. The results from this survey also show that these family resources work together but in different ways. For example, both parental education and employment exert important positive effects on the academic competence of students. How is it that this happens?

There is now good evidence from longitudinal studies to show that the educational achievement of caregivers is a major determinant of their job conditions – particularly the complexity of the work that they do and its ability to allow them to be self-directing. Such job conditions have been shown to change caregiver values, orientations and ways of thinking about the world and to change their control and self-direction of it.[13,14] These changes in parental values, orientations and ways of thinking about the world influence their behaviour in ways that are beneficial to the care of their children. Thus, better levels of parental education lead to jobs with greater work complexity and cause a change in adult behaviour which lead to improved school outcomes for their children. These benefits to students are above and beyond the benefits that may be derived from increases in family income alone.

Of course family income is not irrelevant to the education of children and young people. There are costs to families regardless of where children attend schools and families vary in their abilities to meet these costs. But data from the Child Health Survey show that the 'simple' association

between student academic competence and family income has a more complex underpinning in the form of the interpersonal resources of caregivers (e.g. their education and employment). The results of the survey suggest that student academic competence is not 'just' a matter of family income.

Recent studies also reveal that mothers and fathers often contribute *different* (i.e. interpersonal and economic) resources in the education of their children.[15] This is seen when the academic performance of students from lone-mother families is compared with that of students from lone-father families. Generally, children from single-mother families do less well academically owing to lack of economic parental resources (i.e. lower income) and children of lone-father families do less well academically owing to lack of interpersonal parental resources (i.e. less contact with school and less knowledge about their child's friends). Both the economic and interpersonal resources of the parents contribute to improving the likelihood of academic competence in their children. This is not to say that a lone parent can't provide both of these resources but it may be one of the reasons why academic outcomes of children in one parent families appear at first sight to be lower than those of students in couple families. It is also why these same differences disappear when the data are adjusted for family income. Most of the one parent families in the Child Health Survey are families headed by women (90 per cent). The academic outcomes of survey students in families where the lone caregiver is employed are comparable to those of students living in employed couple families.

Finally, what goes on within families has both direct and indirect effects upon the academic competence of students. Both parental self-efficacy and family discord are associated with poorer student mental health. Poorer student mental health is, in turn, associated with higher rates of low academic competence. Additionally, the occurrence of major life-stress events within the family is related to lower academic competence. Such life-stresses can both disorganise family functioning and be a measure of disorganisation within families. In either event, family disorganisation can reflect an inability, impairment or disempowerment of caregivers to control and/or plan in the face of adversity. These observations are in keeping with the findings of longitudinal surveys showing the mental health benefits of a harmonious home and of the capacity of family individuals to exert planning when dealing with life choices.[16]

What do these findings and examples suggest about family resources and the academic competence of students?

Firstly, the family resources available to schools and schooling are far more than just a matter of what the household has by way of time and money. Caregivers also have human and psychological capital to which students may or may not have access. *All* of these resources, and the manner and contexts in which they are used, influence the capacities of students and schools.

Secondly, the family resources available to students for their schooling are dependent on influences extending well beyond the home-to-school setting. After all, students in schools are also in families which are in neighbourhoods that are in communities located in regions. An individual student's world may be bounded by their school and a home situated in a new suburban neighbourhood. At the same time the caregivers' world may be a shop floor where industrial and wage agreements determine work practices that substantially influence the nature of their employment opportunities, who they work with and the complexity and amount of their work. At home these two worlds meet and define the context in which students have access to family resources. In practical terms these family resources may involve such things as help with homework, provision of pocket money, advice in securing a part-time job, or family attendance at a parent-teacher night. Student access to these parental resources may or may not be possible. Alternatively it may be shaped to a greater or lesser extent by events and influences outside of the family. In any event, student access to family resources for school is determined by more than just parental 'will'.

Thirdly, while the focus of this section is on what families provide to their children who are at school, research shows that schools, classes and, most particularly, teachers, supply critical ingredients to the success of students. Effective schools are those that have strong educational leadership, high expectations of student achievement, an emphasis on basic skills, a safe, orderly climate and that regularly evaluate students' progress.[17] These elements act upon student learning outcomes predominantly through the influence that they have on teacher effectiveness.[18]

Finally, and most importantly, students themselves bring their individual abilities, capacities and responses to the teaching and learning enterprise. They are actors not reactors in responding to the challenges posed by schools, teachers and parents.

FUTURE DIRECTIONS

The findings from the Child Health Survey data show that the capacity of families to participate in the education of children is a product of many family resources. Academic outcomes in students are not just a matter of good parental skill and caregiving. Parental employment, education, income and time are most certainly important ingredients in improving student prospects. Many of these ingredients are not under the full control of caregivers but instead are influenced by available community resources (e.g. child and day care) and economic and employment conditions. Today's parents, working and living in these settings, produce tomorrow's students who become the next generation of parents. Schools are embedded in these processes, not separated from them.

In considering the future of students and schools the data presented here would suggest that several important considerations be made:

- The monitoring of student outcomes should routinely seek information about the educational attainment of caregivers, their employment and occupational status, and family income. The survey findings show that separate measures of caregiver income, occupation and education allow greater understanding of potential causal mechanisms linking family life to student outcomes.
- While the quality of infant and child care is of central concern to caregivers, it is also of direct relevance to schools. The setting of standards along with regulation and monitoring is critical to ensure that the nature of the care provided is part of a more general care context that meets the learning needs of very young infants and children.
- Parents are increasingly purchasing care for their children and need easily available information on how to evaluate quality. The growth of child care services needs to be accompanied by a corresponding growth in information about desirable standards that support caregivers in making choices about care arrangements.
- The provision of high quality educational infant day care to families experiencing chronic levels of poverty is a primary prevention strategy as relevant to the concerns of education as it is to health and mental health. It has been shown to improve not only student outcomes in education but to improve their health, family and justice outcomes as well.
- The business and industrial sectors have a role to play in enabling more flexible and family-friendly work practices to allow employees to better meet the demands of paid work and domestic life. Schools and education authorities have a leadership role to fulfil in promoting these developments within businesses and industries.
- There remains a critical need to conduct sound cross-sectional and longitudinal studies aimed at assessing both the risks and benefits of child care. These studies need to also assess the impact on family life and child development of not providing such care.

STUDENTS AT EDUCATIONAL RISK

Parents and schools regularly engage in making predictions about how well children will do at school. For example, decisions about school readiness involve using information about a child's development, experiences and skills to predict the likelihood of the child's success in meeting the demands of starting school. Another example is when parents and students make predictions about the choice of future subjects based upon past or current results. This may lead to decisions about the need for more help, repeating a year, changing school, or seeking enrichment programs. These activities involve assessing various risks in order to improve decision making.

The Child Health Survey allowed the estimation of some of the risk factors associated with student academic competence. The findings show that some risks are more important to academic competence than others and that some are more accessible to prevention or management than others.

Individual risks associated with academic competence. Individual students may carry particular risks that increase the likelihood of low academic competence. Data from the survey show that the risk of low academic competence in students is substantially increased when any of the following three impairments is present: low verbal and non-verbal ability, difficulties with speech and language, or poor mental health. In the case of low verbal and non-verbal ability, risks of low academic competence are increased from four- to seven-fold depending on the level of impairment or disability. Speech and language impairments increase low academic competence by a factor of about seven. A mental health impairment increased the likelihood of low academic competence by a factor of five. Impairment of these functions have many origins which range from hereditary and genetic causes, on one hand, to social and environmental causes on the other. Regardless of their cause, schools are faced with the responsibility of managing students who are challenged by these difficulties.

The finding that there are adverse academic consequences associated with poor mental health merits some comment here. The definition of mental health used in the Child Health Survey was based on combining information from parents and teachers (see *Mental health morbidity* in the Glossary). In assessing the severity of these behavioural or emotional problems, teachers and parents were more likely to agree that they caused distress to the student, and/or others and/or required professional help. Two mental health syndromes were particularly associated with low academic competence: attention problems and social problems. This finding has also been documented in other studies.[19-21] However, the Child Health Survey also showed that only 22 per cent of all children with a mental health problem have a *single* mental health syndrome. Most of the children who have a mental health problem have more than one of the eight mental health syndromes studied in the Child Health Survey. In practical terms, of the 19 per cent of Western Australian students with low academic competence about 46 per cent (24,200) have a mental health problem. It is inevitable then that teachers and school personnel will be faced with the educational management of students with mental health problems and that strategies to provide adequate educational support be developed and implemented.

School retention. Attending school and staying at school are two factors associated with positive educational, health and psychosocial outcomes. Data from the Child Health Survey permit some view of the critical role that school retention and school attendance play in lowering the risk of low academic competence.

School retention refers to strategies that promote and actively seek to keep students at school in the first instance and, to encourage them to remain at school beyond the mandatory period of enrolment. In Western Australia, students may leave school in the year that they turn 15.[22] In practical terms this means that students are required to complete 10 years of schooling and thereafter attendance at school is voluntary.

The survey data show that the proportion of students with poor academic competence is reduced by about 40 per cent where caregivers achieved 10 to 12 years of education and by about 80 per cent where caregivers have achieved education beyond Year 12. In other words, for each successive year that students are retained in school beyond Year 9, the likelihood of *their* children sustaining better academic outcomes increases. Thus, the improvement of school retention rates is a risk-reduction strategy of some significance to schools, health, family and other agencies. For example, at present the retention rates of Aboriginal students in Years 9 to 10 and Years 11 to 12 are 90 per cent and 31 per cent respectively. This compares with 99 per cent and 75 per cent respectively in the non-Aboriginal population.[23] This means that in addition to the other risks Aboriginal students bring into the educational setting, their early departure from it imparts significant risks transmitted to not only their immediate life circumstances but inter-generationally to the life circumstance of their children.

Of course there may or may not be immediate benefits that accrue through improving retention rates of today's students. For example, increases in school retention during the 1980s caused by high rates of youth unemployment and the changes in the availability of unemployment benefits to young people placed a substantial strain on existing educational resources. It also brought into focus the reduced range of relevance in educational options for students staying on to complete Years 11 and 12.

The decision to stay in school is part of a larger picture shaped by factors that include: student, family and community expectations and values; economic and employment conditions, industrial settings, and government policies; experiences students have through their

schooling; and the availability of relevant educational opportunities that match their needs and extend their abilities and skills. Individuals and agencies may express dismay at the apparent complexity of the task of increasing school retention. They may assume that factors outside of the school's reach are the predominant determinants of the decision to stay at school. It is also reasonable to assert that education authorities are not overly distressed at seeing unhappy or disenfranchised students leave the education system. However, because data from other sources show that positive school experiences can substantially modify the effects of other adversities, this assumption should not be used to replace active educational strategies aimed at improving school retention.

In general, the focus on improved school retention rates needs to be widened to include the broader inter-generational impact that this strategy has on the health and well-being of Australian families. Admittedly, secular trends in the economy and employment may obscure the immediate advantages of school retention to current cohorts of students who complete Years 11 and 12. Yet, data from the Child Health Survey and other sources suggest enduring educational benefits flow to the next generation of students when educational opportunities have been extended in their parents. This is because education, employment and job conditions are linked with improvements in other aspects of parental caregiving (see *Family resources and academic competence*, above).

School attendance. To some extent the attention that truancy has received, both in the media and in reviews of its prevalence, has masked the more serious problem of school retention. Truancy is one aspect of the wider issue of school retention and its prevalence has been the subject of a major Australian review.[24] The Child Health Survey shows that unexplained absences are associated with a three-fold increase in low academic competence. About 2,000 students are absent each day without explanation. This represents less than 1 per cent of all students attending Western Australian schools. The data also show that truancy is a problem shared between the student, family, school and community and that there is no single cause for truant behaviour. Programs to reduce truancy have been shown to be effective where such programs intervene with the student, family, school and community.[25]

FUTURE DIRECTIONS

Strategies to address the educational burden of students at academic risk involve those aimed at intervention and management and those that target prevention. The Child Health Survey shows educational support to students with major intellectual disabilities is relatively well developed in proportion to the population of students requiring such support. However, for students with other significant burdens affecting their academic competence, there is a wide gulf between the numbers of students at risk and the availability of educational and related support services to assist them and their teachers. In planning to reduce this gulf several considerations should be made.

- Critical to the rationale of the planning of support services to students at educational risk is the adoption of a population perspective. The data in the survey show that not all students at risk have resultant educational difficulties. However, support services to students at educational risk currently only reach about one in five students who would be considered eligible for such support. In narrowing this gap, services need to be targeted to those students with identifiable speech and language problems and to those with identifiable mental health problems – notably social problems and attention problems.
- The needs of students at educational risk cannot be met by schools alone. There are opportunities for directing intersectoral responses of other agencies in the funding and provision of services to these students within the education setting. For example, many of the services to children provided through Family and Children's Services or Health could be co-located to schools. However, there are important changes that would need to occur within education and other agencies in allowing this to happen. Such changes include improved boundary definition, less restrictive industrial practices and budget flexibility to allow cross-agency management. These changes will require leadership and vision with a continued emphasis on the primary importance of families and students.

◆ The reduction of truancy and increase of school retention are key education performance indicators that involve the family, school, student and community. Increasing the retention rates within education offers a long-term strategy that has the potential to reduce the overall burden of mental health problems. Governments and education authorities have critical leadership and policy roles that set the contexts that enable progress in school retention.

HEALTH AND WELL-BEING IN SCHOOLS

Schools have a primary mandate to provide for the education of children. They also have an interest in their students' health and emotional well-being in so far that these can have important implications for learning and development. Schools are also faced with dealing with a range of student behavioural and emotion problems, many of which can have a significant bearing on student learning and the general environment of the school. These problems include disruptive and inattentive behaviours, bullying and fighting, adolescent health-risk behaviours (e.g. smoking, drinking, marijuana use and eating disorders) and mental health problems such as depression and suicidal behaviour. It is commonly asserted by teachers that such problems have become more evident in schools in recent years. Without adequate baseline data, this assertion is difficult to validate. However, there is some evidence from the survey and from a number of independent sources which suggests schools are encountering such problems more frequently. [26-29] Why should this be so? Two broad outcomes of recent social and economic change stand out as possible reasons. Firstly, the context in which families are raising children has changed. Secondly, the normal processes of adolescent development have been complicated by the emergence of new stresses and challenges – many of which were unknown to adolescents only a generation ago.

Changes in the context of child rearing. The Child Health Survey shows mental health problems and health risk behaviours to be an increasing cause of suffering to children, young people and their families. It provides a population based estimate of the number of troubled Western Australian children coming to attention in settings such as schools, health services and the juvenile justice system. These data showed the discrepancy between the number of children with serious mental health problems and the small proportion who actually received assistance. The survey also detailed the relation between child and adolescent mental health problems and aspects of family life which have undergone significant change in recent years. These include changes in family structure and functioning, parental employment circumstances and arrangements for the care of children. The degree of overlap in the family risk settings associated with child mental health problems, and those associated with low academic competence, suggests that the social and economic changes affecting families are having similar effects on student behaviour and academic outcomes.

Changes in the context of adolescence. The nature of adolescent development has changed in a number of ways which are of relevance to schools. For both boys and girls the average age of onset of puberty is now around three years earlier than at the beginning of this century.[30] The duration of adolescence has also been extended by the longer periods of school attendance and post-secondary education and training required by the emergence of more complex and technologically based occupations. Along with sustained high rates of youth unemployment, these factors have combined to prolong young people's economic dependence on parents. Key developmental tasks which have always been a feature of adolescence include adjusting to sexual maturation, establishing co-operative relationships with peers, preparing for a meaningful vocation, achieving a core set of beliefs and values and developing positive skills for coping with life's difficulties. For adolescents in the 1990s these developmental tasks are complicated by earlier sexual maturation, the presence of environmental hazards such as the availability of harmful substances, adverse media influences and increased uncertainty about the future.[31] While the vast majority of adolescents cope successfully in meeting these challenges, there is evidence that in most first world countries (including Australia) there have been increases in those behavioural and mental health problems that rise in frequency or tend to peak in the teenage years (e.g. juvenile crime, depression, suicidal behaviours, eating disorders and abuse of alcohol and drugs).[32] Now, more than ever before, schools are being looked to by parents, other government agencies and the wider community as potential sites for

intervention to promote positive adolescent health and development.

Public health issues confronting schools. The report entitled *'The Health of Young Australians'*, which was recently endorsed by the Australian Health Ministers, identified youth suicide, health damaging behaviours and the alienation of young people as the 'new' public health problems confronting Australia.[33] The Child Health Survey findings document the extent of health-risk behaviours and mental health problems in the Western Australian adolescent population. They also indicate that, as a rule, such behaviours do not occur in isolation of one another but tend to co-occur. For example, students who take up smoking were more likely to drink regularly, use marijuana, engage in unprotected sex or become involved in juvenile crime. As these behavioural outcomes often have risk-settings in common, preventive initiatives targeting single issues are likely to be less effective than those which are more broadly focused. Thus, for example, the elements of a prevention program which may be effective in reducing school alienation and truancy may also be effective in reducing the risks for smoking, drug use or juvenile crime. Similarly, where risk settings are known to be shared, it may make good sense for prevention initiatives originating in one sector to be delivered and implemented in another (e.g. the police and justice departments may have a legitimate interest in funding programs delivered in schools).

Mental health problems in schools. Child and adolescent mental health problems are frequently first identified at school. The survey data showed that parents with concerns about their children's behaviour or emotional state are most likely to consult teachers and other student services as their first step in seeking help. It is also the case that, in terms of parent and teacher rated severity of disorder, the majority distressed children coming to the attention of mental health services are not always those in greatest need. Given the limited number of trained professionals available to help young people with mental health problems, it seems unlikely that specialised treatment programs will ever be able to provide effective help for the majority of young people with these problems. This suggests that to be effective in reducing mental health problems, interventions must have a greater focus on prevention, and be delivered in ways that enable them to reach the large number of children and adolescents in the community who presently have no contact with mental health services.

Mental health education in schools. There is currently an agreed national framework for States and Territories health and physical education curricula to include components on mental health and mental illness education.[34] While varying in their degree of specificity, most States and Territory curricula have little focus on mental health and mental illness. For example, the Western Australian Health Education K-10 syllabus contains a strand on 'Mental and Emotional Health' but the focus of this unit is on sexuality/relationships, personal identity and coping with change. It covers issues of change, grief and loss, domestic violence, child abuse, values and morals, pressures to be sexually active, child sexual abuse, relationships, parenting and stress – but not mental health and illness.[35]

Research commissioned as part of the National Mental Health Strategy showed that young people are generally tolerant towards people with mental illness. It also established that while they are receptive to education about these disorders, they remain one of the least informed groups on mental health issues in our society.[36] Most of the mental health education occurring in schools in Years 7 to 10 is skills based and can be broadly classified as primary prevention. These programs typically target a range of generic health skills including practical problem solving, resolving conflict, communicating effectively, assertiveness and self-esteem building. They also usually include effecting attitudinal change towards tolerance and acceptance as a general aim. While the stated intention of most programs is to promote well-being across all health areas, few school programs and teaching resources identify mental health outcomes separately from others or use specific examples of mental illness or even mental health. One notable exception is the Western Australian Aboriginal curriculum, in which 'mental well-being' is seen as underpinning all other content areas.[37]

Mental health and mental illness education is not dealt with widely in schools using existing resources and current approaches because most teachers are unfamiliar and uncomfortable with the issues. There is understandable resistance to the inclusion of new topics and issues within an already 'crowded' curriculum and many teachers regard mental illness as a personal student issue and prefer to refer individuals to support services rather than deal with general

mental health issues in the classroom. There is clearly potential for the use of non-school resources such as government and community agencies to support schools with specialist knowledge and skills in delivering mental health and illness education (e.g. the School Education Program of ARAFMI (the Association of Relatives and Friends of the Mentally Ill), which is available in all States).[38]

FUTURE DIRECTIONS

Recent prevention initiatives at state, national and international levels have advanced the concept of 'the health promoting school'.[39-43] This reflects the evolution of more sophisticated approaches to health education that complement existing school decision and planning processes and which are better organised through the school curriculum, include attention to relevant aspects of the school environment, the interface between the school and community and the development of functional links with health and other services outside the school. The Western Australian School Health Project (WASH) is an example of this approach which has achieved significant improvements in schools' involvement in health promotion, teacher knowledge and skills in the use of health education teaching methodologies, and staff support for these programs in schools.[44]

Mental health promotion and mental illness education within schools appears most likely to be developed within the framework of the 'health promoting school'. This acknowledges its place within a comprehensive approach to health promotion and the need for action at different levels within the school setting to be different levels within the school setting to be complementary. It also reflects the need for organisational change and development within schools so that a range of school activities and functions include a greater interest in the advancement of student well-being and health. This is likely to involve:

- Securing school and community support and political commitment to the importance of schools as a key venue for the promotion of mental health;
- Supporting schools to develop appropriate infrastructure and systems to overcome attitudinal and other barriers to the development and introduction of mental health promotion programs;
- Encouraging schools to develop better practice by promoting and sharing features of existing programs or policies in schools that are considered to be better practice in mental health promotion;
- Developing resources for classroom based mental health education for students which foster a range of life skills (e.g. communication skills, conflict resolution skills, problem solving and self-esteem) across relevant curricula;
- Increasing the knowledge of the school, parents and the broader community about mental health issues of importance to young people, and suggesting strategies for action that are consistent with a health promoting schools framework;
- Ensuring the availability of guidance and advice to school communities about coping with, and responding to, crisis issues (e.g. suicidal behaviour, suicide and other traumatic death). This would include strategies for early identification of students at risk, the development of community networks and crisis response plans; and
- Increasing teachers' knowledge and skills in teaching mental health education and promoting the importance of mental health and overcoming stigma and discrimination through an integrated strategy involving principals, administrators, teachers, students and the community.

IMPROVING PROSPECTS FOR HEALTH AND WELL-BEING IN SCHOOLS

Schools are frequently targeted as venues for intervening across a variety of domains. Increasingly, individuals and agencies who plan and implement health, social, cultural, and behavioural programs hope to do so within schools. After all, schools are major institutions with large 'captive' populations of great interest to those who wish to intervene for the benefit of the community and society. It is hardly surprising that education systems, and schools particularly, find themselves under considerable pressure to respond to requests for changes in the manner in which they operate and in the content of the school curriculum. This has provoked understandable concern on the part of education authorities about over-crowding the curriculum or jeopardising the core business of

the school. In approaching these concerns several considerations are necessary.

Firstly, several prerequisite conditions enable schools to consider the uptake of intervention and prevention initiatives. Leadership support in the school, participation of teaching staff in professional development activities, and the extent to which a teacher's personal goals agree with the goals of the school are among the key influences on the quality of teaching within the school.[18] Within individual schools, leadership and teaching capacities vary. An understanding of these capacities and what supports them is essential to those who see the school as an environment for intervention. Knowledge about these prerequisites and their role in increasing school effectiveness is a requirement for those seeking entry to schools as venues for interventions.

Secondly, there has been considerable development in what is both known and not known about the promotion of health in schools.[45] Interventions within schools to improve health and well-being may seek to target health curriculum, school services, support staff or the school environment to name but a few. Quality studies of school interventions demonstrate the need to move beyond common intervention rhetoric towards evidence-based research that measures outcomes not only for individual students but for teachers and schools as well. For example, in designing a school-based mental health intervention what are the particular supports, skills, and knowledge gained by teachers above and beyond those gained by students? Does this create a burden, reduce one or relocate it? Over what time?

Finally, there remain significant barriers to the development of more comprehensive and integrated educational support for students, particularly those at risk. The interests of these students are regularly set aside due to infrastructure and industrial requirements. For example, Government department boundaries are not uniform and impede the matching of resources to student populations, identification of responsibilities for management and assessment of fairness in access. Improved flexibility in industrial agreements would also enable movement of a greater range of skills and personnel in and out of the teaching sector to meet the needs of these students.

FUTURE DIRECTIONS

There are several changes that offer potential for improving educational support for at-risk students. At present, opportunities exist for a more flexible delivery of needed skills and services within schools to students at risk, and for seeking financial support for this educational enterprise through other government sectors. These steps would increase the capacity of schools and teachers to concentrate on the main tasks of education while concurrently improving the overall support available to students at risk. In developing these opportunities the following considerations should be made:

- Proposed interventions within schools must be able to demonstrate benefits to the school's mission in addition to benefits to the students.
- An increase in the uptake by schools of interventions aimed at the health and well-being of students is most likely to be effected through changes first in school leadership knowledge and skills in health promotion development and practice. This requires professional development opportunities targeting school leadership teams.
- Currently, population growth has resulted in a net loss of student support personnel in the schools sector. The setting of targets to increase educational support staff in proportion to the population is critical to the capacity of schools to intervene and promote student and teacher health and well-being. Support staff are still seen to be ancillary or optional rather than integral to teaching and curricula. This reduces their impact and relevance. Correcting this view will require leadership and direction.
- The devolution of authority to schools is a central strategy for securing better relevance and quality in teaching, promoting accountability in educational outcome and in improving school leadership. However, devolution on its own is not adequate in securing these improvements. Leadership at all levels is required to develop data systems for collaborative needs analysis and performance indicators, establish cross-agency contract and service agreements, and to create joint funding strategies that promote change.

A FINAL COMMENT

The Child Health Survey is a cross-sectional survey and it supplies a rare snapshot of students, their families, schools and communities. The value of this particular snapshot is in the multiple perspective developed through interviews with caregivers, children, and their school principals and teachers. From these perspectives emerges a picture of some aspects of Western Australian life. Caregivers, families and schools are not alone in facing the tasks of raising and developing children. Instead the survey shows that families, children and their schools and communities are increasingly interdependent through patterns of shared and non-shared physical and economic environments, expectations, benefits and risks.

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APPENDIX A - ANALYSIS OF THE SURVEY DATA

INTRODUCTION

In the previous two publications in this series the technical notes have given a description of the sample design, and of the procedures used in the enumeration phase. This appendix completes the description of the survey methodology with a discussion of the methods used to process and analyse the data.

Because of the complex nature of the survey design, there were a number of issues that had to be dealt with at the analysis stage. These included techniques to cope with correlated data, with missing data, and with unequal survey weights. These are discussed in more detail below.

DATA PROCESSING

Data entry was performed using SPSS computer software, and most of the data analysis was performed within the SPSS and SAS computer packages. Routine consistency checks were applied to validate the data entry and to check for respondent errors.

Special routines were written in both SPSS and SAS to handle the complex weighting and clustering patterns in the survey data. These were used to calculate standard errors and confidence intervals on the survey estimates.

CALCULATION OF DERIVED VARIABLES

The Child Health Survey used 22 individual questionnaires ranging in size from 1 to 19 pages. In addition to individual items, each of these questionnaires also contained several scales comprising multiple items. These multiple item scales were used to derive variables or composite indices in order to efficiently (i.e. reliably and validly) study particular beliefs, behaviours or experiences. The following were the principle scales used within the Child Health Survey:

- Child Behaviour Checklist (Parent, Teacher and Youth forms)[1-4];
- Self-Efficacy scale[5];
- Parenting questionnaire[6];
- Self-Description Questionnaire[7];
- McMaster Family Assessment Device (General Scale)[8,9];
- Bradburn Happiness Scale[10];
- Life Events Scale[11];
- COPE scale[12].

Because the principal instrument used for defining mental health morbidity was the Child Behaviour Checklist a separate clinical calibration study was undertaken (See *Clinical Calibration* section).

Most of the remaining scales were used in their entirety. However, some changes were made for the sake of economy. The COPE scale comprised 102 items from which 28 were selected for inclusion in the Child Health Survey on the basis of reported factor analytic studies. The life events scale comprised 33 items and owing to low prevalence of some events and generally poor item loadings and communalities a 12-item scale was developed and is occasionally used throughout the Child Health Survey publications. Also, general self-perception in adolescents was measured using portions of the Harter Self-Perception Inventory[13], however low item response rates resulted in discarding these data for this scale.

In order to assess aspects of school environment a purpose-built scale was constructed using the available literature.[14-17] The School Environment Scale consisted of a 7-point Likert scale to probe fourteen items that included absenteeism and truancy, vandalism, violence, poverty, and adequacy of parental and pastoral care and staff morale. An additional item rated the general capacity of the school to fulfil its educational mission. This scale was administered to the principal of each school. Principal component analysis extracted three factors accounting for 65 per cent of the common factor variance. The three factors and the Cronbach alpha co-efficients were Community-School problems (0.85), Pastoral Care (0.84) and Property Damage (0.89).

Table A.1 Selected psychometric characteristics of scales and factors used in the Child Health Survey

Scale factor/Factor	*Sample size*	*No. of items*	*KMO(a)*	*% common factor variance(b)*	*h^2 range(c)*	*Chronbach alpha*
Self-efficacy scale (Adolescent)	671	22	0.937	55.4	0.462 - 0.694	0.92
Self-efficacy scale (Adult)	1292	22	0.958	60.1	0.395 - 0.722	0.94
Parenting Questionnaire—	709		0.847		0.381 - 0.782	
Nurturing		5		26.4		0.87
Rejecting		6		15.0		0.68
Monitoring		4		8.9		0.27
Self-description questionnaire—	663		0.887		0.409 - 0.811	
General school		7		24.9		0.81
Maths		4		8.8		0.88
Appearance		4		7.5		0.80
Parent relationship		8		6.5		0.84
Physical abilities		4		5.0		0.79
Same sex relationships		3		4.8		0.65
Opposite sex relationships		2		4.1		0.59
McMaster family assessment device (General scale)	1 266	12	0.918	55.3	0.463 - 0.634	0.88
Bradburn happiness scale	1 352	10	0.805	46.1	0.318 - 0.560	0.73
Life events scale	1 388	12	0.666	60.8	0.384 - 0.730	0.58
COPE scale—	689		0.869		0.145 - 0.730	
Social-emotional support		6		20.8		0.87
Denial		9		20.8		0.87
Active planning		6		7.5		0.74
Venting		3		5.0		0.73
Acceptance		2		4.2		0.59
Active coping		2		3.7		0.49
School environment scale	372	14	0.859	64.9	0.522 - 0.856	0.89

(a) Kaiser-Meyer-Olkin co-efficient of sampling adequacy. (b) Principal components analysis with varimax rotation. (c) Range of communality estimates for scale or factor.

With the exception of the school environment scale, all scales were selected primarily on the basis of their extensive use and documented reliability and validity. In addition to the scientific track record of these instruments, each of the scales used in the Child Health Survey was the subject of specific measurement studies prior to their utilisation in these reports. A standard procedure was used to assess their internal reliability, construct validity, and where possible, predictive validity.

All scales were examined using three broad techniques: Principal component analysis with varimax rotation, calculation of individual item and scale reliabilities, and fitting congeneric measurement models via weighted least squares using LISREL 7.[18,19] These techniques allowed a full psychometric assessment of each of the above scales for their suitability as either an additive scale (i.e. in which all items were added together to form a composite or derived score/indicator) or in the selection of subsets of items (i.e. factors) for specific use as indicators of measured concepts. Table A.1 provides details for these scales on a selected range of psychometric properties.

DERIVING THE TOTAL MORBIDITY T SCORE

Table A.2 presents the prevalence of mental health morbidity as measured by the Child Behaviour Checklist. Separate checklist reports were available from the principal caregiver, the child's form teacher, and from youths aged 12 to 16 years. Data from all sources are shown. Combining parent and teacher sources results in an overall prevalence of 17.7 per cent. It is interesting to note the prevalence estimates when only single sources are used, where

combinations of sources are used, and to note particularly the large rates in combinations that involve the youth self-report. For these publications, mental health morbidity has been taken from the combination of parent and teacher reports. This is due to the fact that the youth report is only available for a subset of the population. Also it is considered that the parent and teacher reports are more reliable.

Table A.2 Prevalence of mental health morbidity, within and across informants (per cent)

	Age group (years)		
Source	*4 - 11*	*12 - 16*	*All children*
Parent report	10.0	11.3	10.4
Teacher report	11.4	16.4	13.3
Youth report	..	35.7	24.6
Parent, teacher and youth reports combined	16.1	35.3	23.1
Parent and teacher reports combined	16.1	20.3	17.7

Table A.3 shows the relationship between the overall mental health morbidity and individual syndrome morbidities. The specific behavioural syndromes include withdrawn behaviour, somatic complaints, anxiety/depression, social problems, thought problems, attention problems, delinquent behaviour and aggressive behaviour. The total morbidity is defined first by having a Total T Score greater than or equal to 60. We then examined how many of these children have one or more of the individual syndrome scores in the abnormal range (greater than or equal to 67).

TABLE A.3 Children with individual syndrome morbidities: Overall morbidity (per cent)

	Overall morbidity		
Individual syndrome morbidity	*Normal*	*Abnormal*	*Total*
None	70.7	1.8	72.4
1 or more	11.7	15.9	27.6
Total	**82.4**	**17.7**	**100.0**

Almost 12 per cent of children had an abnormal score in relation to one or more individual syndromes, without an abnormal Total T score. For the purpose of this report they are not considered to have a mental health morbidity. Nearly 2 per cent of children had an abnormal Total T score without having achieved any abnormal syndrome scores. This group had an overall elevation of the behavioural profile without a specific syndrome abnormality.

CALIBRATION OF INSTRUMENTS

In undertaking a survey of child and adolescent mental health, instruments were needed that would allow the valid and reliable identification of sample children with likely mental health morbidity. This selection needed to balance scientific rigour with the practical realities of a major field survey.

Several practical features of the survey methodology guided the choice of instruments to measure mental health morbidity. The survey was a household survey conducted by personal interview as well as self-enumeration. Each household interview was expected to take around 90 minutes and imposed a large response burden on families. While a central feature of data collection was a focus on mental health, the survey was broadly based and included extensive demographic, health, and service utilisation data. Limited time was available for training experienced interviewers. Finally, the timeline for the Child Health Survey called for pilot testing in 1992 with the main survey to be conducted in 1993. Instruments needed to be available for use to meet this time frame.

There were several scientific requirements that limited the choice of instruments by which to measure mental health. Central to these requirements was the issue of whether to measure mental health morbidity quantitatively (i.e. dimensionally) or categorically (i.e. diagnostically).[20,21]

A categorical approach was considered and rejected principally for three reasons: First, the field of categorical measurement was increasingly focused on the criteria set out in the Diagnostic and Statistical Manual of Mental Disorders Revised Third Edition (DSM-III-R)[22,23] and at the time of the survey a revision of these criteria was underway. These have subsequently been published as DSM-IV.[24] Second, the translation of these criteria into a structured psychiatric interview is still under way even at the time of the writing of this report.[25-27] The central instrument based upon the DSM-IV taxonomy is the National Institute of Mental Health Diagnostic Interview Schedule for Children (NIMH-DISC) of which Version 2.3 became available in Australia during 1992[28] and

Version 4.0 (Draft 4) became available in 1996.[29] Third, the lower age limit for administration of the DISC is 9 years of age. Selection of this instrument would have left younger children outside of the scope of the interview and thus the survey. This was deemed to be unacceptable. The other instrument developed and used for the purposes of obtaining a structured psychiatric interview was the Diagnostic Interview for Children and Adolescents – Revised (DICA-R) which is described below. In summary, both for practical and scientific reasons the decision was taken not to use a categorical method for defining mental health morbidity in children.

In the domain of quantitative identification of mental health morbidity several choices were available. Individual scales were available for measuring specific problems (e.g. attention deficit with hyperactivity, depression, anxiety) but required a select focus on specific disorders rather than a spectrum of mental health problems. Two scales were available that measured a wide range of behaviours in children aged 4 to 16 years. The ACQ Behaviour Checklist and the Child Behaviour Checklist (CBCL).[1-4,30] The ACQ contained 216 items and was considered to be too long and to lack any advantage over the CBCL. The CBCL was chosen on the basis of its extensive use in Australia and in numerous other settings and cultures.[31-34] Test-retest reliability is reported to be on the order of 0.87 over one-week and 0.75 over periods of twelve months.[2] The CBCL has been demonstrated to be acceptable, relatively quick to administer, and to supply adequate coverage of the phenomenology of child behaviour problems. The instrument provides a method of obtaining cross-informant data which is seen to be desirable for generating better estimates of mental health morbidity.[35]

Despite the above advantages the selection of the CBCL for the purposes of the survey was not without problems. Population based norms are not available for Australian children and there remains a need for a range of validity indices derived from Australian samples. Also, the CBCL is principally a screening instrument and not a diagnostic tool. Notwithstanding these difficulties the CBCL was selected as the principle instrument through which mental health morbidity would be defined.

In order to obtain some estimate of the relationship between the Child Behaviour Checklist and a categorical measure of mental health morbidity a clinical calibration study was conducted. This calibration process was done on a small scale during the 1992 pilot and the results have been reported elsewhere.[36] For the main survey in 1993, the clinical calibration phase was based on a random sub-sample of 280 families. Cost considerations prohibited selecting children in the rural regions thus only metropolitan children were eligible for the clinical calibration sample. A team of clinical psychologists was trained to carry out the structured interviews. The interviews were conducted in the home and videotaped for later access to interview details.

This clinical calibration study commenced with a random selection of survey children stratified by age and severity based on either the parent or teacher reported CBCL. Each stratification was binary. Stratification was done on the basis of an abnormal syndrome score (98 percentile or above) on the CBCL and so as to sample sufficient children with the following abnormal results: somatisation, anxiety/depression, Attention Disorder, and delinquency. Target samples for these groups were 40, 80, 40, and 40 respectively. The 98 percentile was chosen because it represented the 'clinical' range rather than the 'borderline' range for identifying caseness and was the most appropriate score to compare with a categorical method of diagnosis. A random sample of children for whom none of these scales was abnormal was also drawn. The target sample for this group was 80. The interviewers were blind to the status of the selected child. Table A.4 shows the outcome of case stratification and participation.

Table A.4 Sample size for clinical calibration study: Mental health morbidity

	Responding sample size	
Syndrome(a)—	*No.*	*Per cent*
Attention problems	33	13.4
Delinquency or aggression	34	13.8
epression/anxiety	64	26.0
Somatic	35	14.2
Normal	80	32.5
Total	**246**	**100.0**

(a) Defined at the 98 percentile.

Of the 280 families selected for interview 246 (87.8 per cent) agreed to participate. Of the 246 children 139 (56.5 per cent) were male and 107 (43.5 per cent) were female. The average age at interview was 12.4 years (standard deviation 3.0, range 5-17 years).

Table A.5 Sensitivies (upper) and specificities (lower) for CBCL scores and DICA classifications

	CBCL results				
DICA Results	*Total T >= 67*	*Attention problems*	*Delinquent*	*Anxious/ depressed*	*Somatisation*
Any diagnosis	0.83 0.67				
Attention deficit disorder with hyperactivity		0.72 0.85			
Conduct disorder			0.80 0.81		
Dysthymia				0.88 0.81	
Situation anxiety				0.75 0.69	
Depression and anxiety				0.66 0.80	
Somatisation					0.84 0.50

All interviewers collected the following information during the clinical calibration study:

- Child Behaviour Checklist (CBCL). The parent report version of this instrument was administered to obtain test-retest reliability;
- Child Behaviour Checklist (Youth Self-Report). The YSR was re-administered to obtain test-retest reliability;
- Diagnostic Interview for Children and Adolescents - Revised (DICA-R). This is a modification of the original DICA by Herjanic et al.[37,38]

The DICA underwent two revisions, one in 1981 and another in 1988. The latter revision produced the DICA-R and brought the instrument in line with DSM-III-R categories of disorders. The instrument used in the Child Health Survey was provided by courtesy of Professor David Offord and contains some modifications beyond the 1988 revision. Three forms of the DICA were used: One form was administered to the principal caregiver, and one of either the child or adolescent form was administered to the index case. The disorders specifically probed for were: conduct disorder, oppositional disorder, attention-deficit hyperactivity disorder, over-anxious disorder, separation anxiety disorder, major depressive disorder, dysthymia, avoidant disorder and somatisation disorder. Question wording was altered to focus on the present rather than evaluate lifetime prevalence. In most cases this resulted in dropping the word 'ever'. Other than verb tense, no changes were made to content or sequence.

The results of the DICA were converted to diagnostic categories following the recommended scoring procedures. The parent CBCL data collected at the time of the interview were scored in order to calculate test-retest reliability. The 1992 pilot survey found eight week test-retest reliability of the parent CBCL to be 0.87.[36] For the main survey the average test-retest interval was six months and the test-retest reliability was found to be 0.75. These reliabilities compare favourably with those reported by Achenbach for one week (0.87) and one year (0.75) test-retest reliability.[30]

Table A.5 displays the calculated sensitivity and specificity for appropriate scales of the CBCL and DICA.

TREATMENT OF MISSING DATA

Because of the number of stages involved in the survey, non-response could arise at several different levels. A summary of the responses to the various instruments is shown in Table A.6. In addition to the 325 households who were refusals or exemptions (because of illness or recent bereavement) at the outset of the survey (the household record form) there were an additional 517 households that could not be contacted. It is expected that a reasonably large

TABLE A.6 Response to survey instruments

Instrument	No. of possible records	No. of records received	Response rate %	No of records with missing item responses		Most frequently missed items
				Range	Average	
Personal interview—						
Household record form	1 785	1 460	81.8	0 - 0	0	
Family dwelling questionnaire	1 460	1 460	100.0	3 - 18	8	
Family background questionnaire—principal caregiver	1 460	1 460	100.0	3 - 54	10	Income
Family background questionnaire—secondary caregiver	1 226	1 214	99.0	1 - 84	10	Income
Child health questionnaire	2 736	2 736	100.0	0 - 127	9	MMR immunisation. age child first able to put 3 words together
Self-enumerated (Principal caregiver)—						
Family health and activity questionnaire	1 460	1 384	94.7	5 - 179	26	Relationship between spouse and partner. quarrelling, time spent together
Child behaviour checklist	1 460	1 384	95.0	4 - 58	14	Time spent on household chores; suffered from nausea
Self-enumerated (Youth)—						
Youth self report	870	788	90.6	0 - 348	35	Use of school nurse; Harter self-perception profile items
Self-enumerated (School principal/form teacher)—						
School details	413	397	96.1	0 - 13	3	Extent of physical violence in school
Student details	2 312	2 007	87.0	35 - 584	112	Days absent from school; use of special educational services

percentage of these latter households would not have been within the scope of the survey.

For each successive survey instrument there was the possibility of sample loss. For the personal interview instruments, response rates remained very high. Response rates were slightly lower for self-enumerated instruments enumerated within the family, and lower again for the schools phase of the survey.

The non-responses were analysed to find any patterns in the non-response. This was done by comparing the distribution of the survey respondents against 1991 Population Census benchmarks and the Socio-economic Indexes for Areas (ABS Catalogue No. 2725.5). These indexes are measures of the relative prosperity of each CD, based on data from the Census of Population and Housing. There are five separate indexes, based on different measures of socio-economic status. Three were used in this analysis: the Index of Economic Resources, the Index of Education and Occupation, and the Index of Relative Socio-economic Disadvantage. Also for sample loss among the later questionnaires, respondents were compared with non-respondents according to demographic data collected on the personal interview questionnaires.

Overall sample loss was found to be highest among older children and families with only one or two children. A post-stratification weighting was applied to adjust for this non-response, using Census benchmarks adjusted for population growth. A separate weighting pattern was determined for each survey instrument. It was also found that the survey under-represented children living in boarding schools. As a result, the boarding school data have not been analysed.

On each instrument there was also item non-response associated with some questions. For most questions the rate of item non-response was very small. In general, no adjustment has been made for this, and the results are presented under the category not stated in the tables and charts.

A few items on the youth self report suffered very high item non-response rates, including the Harter self-perception profile items.[13] In

hindsight this appears to have been caused by poor questionnaire design. These items were not analysed. Data on absences from school were poorly reported by school principals/form teachers, particularly in high schools. These data were imputed using the technique of *random hot deck imputation* (see Glossary), based on related items collected from the youth self report and the child health questionnaire. In a small number of other cases deductive imputation has been used, where a missing item could be imputed with certainty from other items.

Item non-response can also impact on derived variables. The school environment cluster analysis was based on 14 items asked of school principals. Originally 25 schools were deleted from the cluster analysis because of missing responses for one or more variables. In most cases only 1 of the 14 items was not reported. It was possible to impute the school environment cluster for most of these schools based on the 13 reported items, where the cluster membership would have been the same regardless of the response for the missing item. This left only 8 schools with a missing value for school environment.

For some specific analyses, respondents with missing data have been excluded. Where this has been done, it is noted in the text.

ANALYSING CLUSTERED DATA

A multi-stage sample design was employed for the Child Health Survey. In the Perth metropolitan regions, census collectors' districts (CDs) were selected first, and then the sample of families was selected within these. Outside the Perth metropolitan area, an extra stage of clustering was applied by grouping CDs into statistical local areas (SLAs). For each selected family, all in-scope children were included in the sample. The result of this selection methodology was that the data for each child in the survey could not be regarded as independent. This violates a fundamental assumption of many standard statistical tests, requiring special procedures for correct data analysis.

Standard errors and confidence intervals were calculated using the ultimate cluster variance estimation technique.[39] This involves estimating the sampling error from the variability between estimates for each of the primary sampling units (CDs or SLAs). Variances were smoothed by calculating a design effect for each variable, based on estimates at the broadest level of classification. These design effects were then used to calculate the variances for estimates at finer levels of cross-classification. More details of these calculations are contained in the standard error supplement to the first volume *Western Australian Child Health Survey: Developing Health and Well-being in the Nineties* (ABS Catalogue No. 4303.5), which may be obtained by contacting the National Youth Statistics Unit of ABS on (09) 360 5374.

Results of several logistic regression analyses are presented in these volumes. Ordinary logistic regression assumes that each observation is independent of all the others. This assumption is violated in the Child Health Survey data. To account for this a more generalised modelling procedure, known as generalised estimating equations (GEEs)[40], has been employed.

The GEE models were fitted using a two level exchangeable correlation structure within CDs and within families. That is, data for children in the same family were assumed to be correlated, with a fixed correlation across all families. Also data for children in different families but in the same CD were assumed to be correlated. These two correlations were estimated by the modelling procedure, and averaged around 0.15 within families, and 0.04 between families within CDs. The survey strata were treated as fixed effects in the models, and the survey weights were accommodated in the modelling procedure.

ANALYSIS OF SCHOOL LEVEL DATA

This publication presents some data relating to schools. Because the schools sample was a by-product of the child sample, it was not possible to weight up the results to estimate data for the entire population of schools. Data presented at the school level is based on the sample of schools only, and is not necessarily generaliseable to the full population of schools. Standard errors and confidence intervals for these data have been estimated based on assuming that each school had an equal probability of selection. In fact, larger schools were more likely to be selected, and this should be borne in mind when interpreting results at the school level.

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APPENDIX B – ANALYSIS OF THE 'H' INDEX

INCOME, OCCUPATION, EDUCATION AND ACADEMIC COMPETENCE

Many analyses were carried out in the preparation of results from the Child Health Survey. Not all analyses were selected for publication. Several considerations governed the selection of final tables for publication. Estimates were only reported where required standard errors were within acceptable ranges. Inferences were drawn from the results only where they were statistically significant. In the construction of tables, fewer variables of greater significance were selected rather than a larger number of variables with little or no significance. On occasion, however, particular analyses were carried out with results of non-significant findings that were, of themselves, important additions to knowledge. One such analysis is reported here.

This analysis investigated the relationship between selected socio-economic indicators as measured in the survey families and academic competence as measured by teachers of the survey children. The variable selected largely correspond to those that comprise the Education Department of Western Australia's 'H' Index. The 'H' Index is used to determine school eligibility for priority school funding.[1,2] This index reflects parental occupation, education and income along with family structure, type of accommodation tenancy and crowding, language and Aboriginality. However, rather than using aggregated Census data as is the case in the production of the 'H' Index, variables measured at the individual family and student level were used. This provides greater precision in directly estimating the association of various socio-economic circumstances within the academic performance of students.

Table B.1 presents the results of an analysis of the relationship between academic competence of the survey students and various family factors that could be important in this relationship. The family factors of interest are: Household income in quintiles, principal and secondary caregivers' education, principal and secondary caregivers' occupation (classified by the major occupation groups defined in the Australian Standard Classification of Occupation[3]), family type, tenancy type and an index of crowding within the home.

In order to carry out this analysis a logistic regression was conducted using *generalised estimating equations* (see Glossary) to adjust for two levels of clustering - within individual families, and across families but within Collection Districts (CDs). At each level the correlation was assumed to be the same in each cluster, so that all observations within any given family are correlated to the same degree, and all observations in different families but in the same CD are also assumed to have a common correlation co-efficient.

Of the 2,007 observations, 239 were excluded from the analysis owing to missing values for one or more variables. This analysis allows for a maximum family size of 5 and a maximum CD size (number of families) of 8. The estimated correlation co-efficient between members of the same family was 0.174 and the estimated correlation co-efficient between members of different families in the same CD was 0.038.

The results show that, after adjusting for household income, educational and occupational levels of the caregivers, family type, tenancy and crowding, only the educational level of the primary caregiver significantly predicted the academic competence of students in the household. Relative to those families where primary caregivers had more than 12 years of education, students of primary caregivers with less than 10 years of education were 3.3 times more likely to have low academic competence. This risk reduced to 2.3 where caregivers had attained 10 to 12 years of education.

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Table B.1 Predicted risk for low academic competence associated with selected family variables

Variable	*Significance (p level)*	*Odds ratio*	*Confidence interval*
Parental income—			
$20,000 – $30,000	0.92	0.96	(0.53 – 1.74)
$30,001 – $40,000	0.24	0.71	(0.41 – 1.20)
$40,001 – $60,000	0.29	0.71	(0.42 – 1.21)
More than $60,001	0.60	0.86	(0.53 – 1.40)
Principal caregiver education—			
Less than year 10	0.00	0.34	(1.90 – 5.86)
Year 10 to 12	0.00	2.27	(1.41 – 3.64)
Secondary caregiver education—			
Less than year 10	0.07	2.07	(1.16 – 3.69)
Year 10 to 12	0.39	1.35	(0.81 – 2.25)
Principal caregiver occupation—			
Professionals	0.53	0.63	(0.17 – 2.34)
Para-professionals	0.73	1.29	(0.36 – 4.57)
Tradespersons	0.90	0.91	(0.26 – 3.20)
Clerks	0.46	1.60	(0.53 – 4.82)
Salespersons and personal service workers	0.56	1.45	(0.47 – 4.49)
Plant and machine operators, and drivers	0.50	1.70	(0.42 – 6.88)
Labourers and related workers	0.83	0.87	(0.27 – 2.74)
Not working	0.38	1.83	(0.59 – 5.10)
Secondary caregiver occupation—			
Professionals	0.97	1.02	(0.47 – 2.21)
Para-professionals	0.14	2.03	(0.96 – 4.31)
Tradespersons	0.42	1.30	(0.68 – 2.49)
Clerks	0.16	0.47	(0.18 – 1.24)
Salespersons and personal service workers	0.60	1.26	(0.56 – 2.86)
Plant and machine operators, and drivers	0.22	1.52	(0.76 – 3.02)
Labourers and related workers	0.09	1.82	(0.90 – 3.67)
Family type—			
Step/blended	0.22	1.34	(0.89 – 2.01)
Single parent	0.14	1.88	(0.97 – 3.62)
Tenancy type—			
Housing authority	0.33	1.28	(0.83 – 1.96)
Private tenant	0.79	1.06	(0.74 – 1.51)
Crowding—			
Crowded	0.28	1.22	(0.90 – 1.66)

(a) The odds are calculated relative to an index category of each variable. For 'Parental income' the odds are relative to the highest income quintile; for caregiver education the odds are relative to beyond year 12; for caregiver occupation the odds are relative to 'Managers and administrators'; for 'Family type' the odds are relative to original families; for 'Tenancy type' the odds are relative to own or buying own home; and for 'Crowding' the odds are relative to 'not crowded'. (b) Households were defined as 'crowded' if there were more children than bedrooms, after allowing for one bedroom for the principal (and secondary) caregiver.

APPENDIX C – TECHNICAL NOTES

RELIABILITY OF ESTIMATES

As estimates from the Child Health Survey are based on information obtained from the occupants of a sample of dwellings, they are subject to sampling variability; that is, they may differ from the figures that would have been produced if all in-scope dwellings had been included in the enumeration. This variability, known as the *sampling error*, can be estimated from the sample data. One measure of this sampling error is given by the *standard error*, which indicates the degree to which an estimate may vary from the value that would have been obtained from a full enumeration (the 'true' population figure). There are about two chances in three that a sample estimate differs from the true population value by less than one standard error, and about nineteen chances in twenty that the difference will be less than two standard errors.

Alternatively, sampling variability can be presented by the *relative standard error*, which is obtained by expressing the standard error as a percentage of the estimate to which it refers.

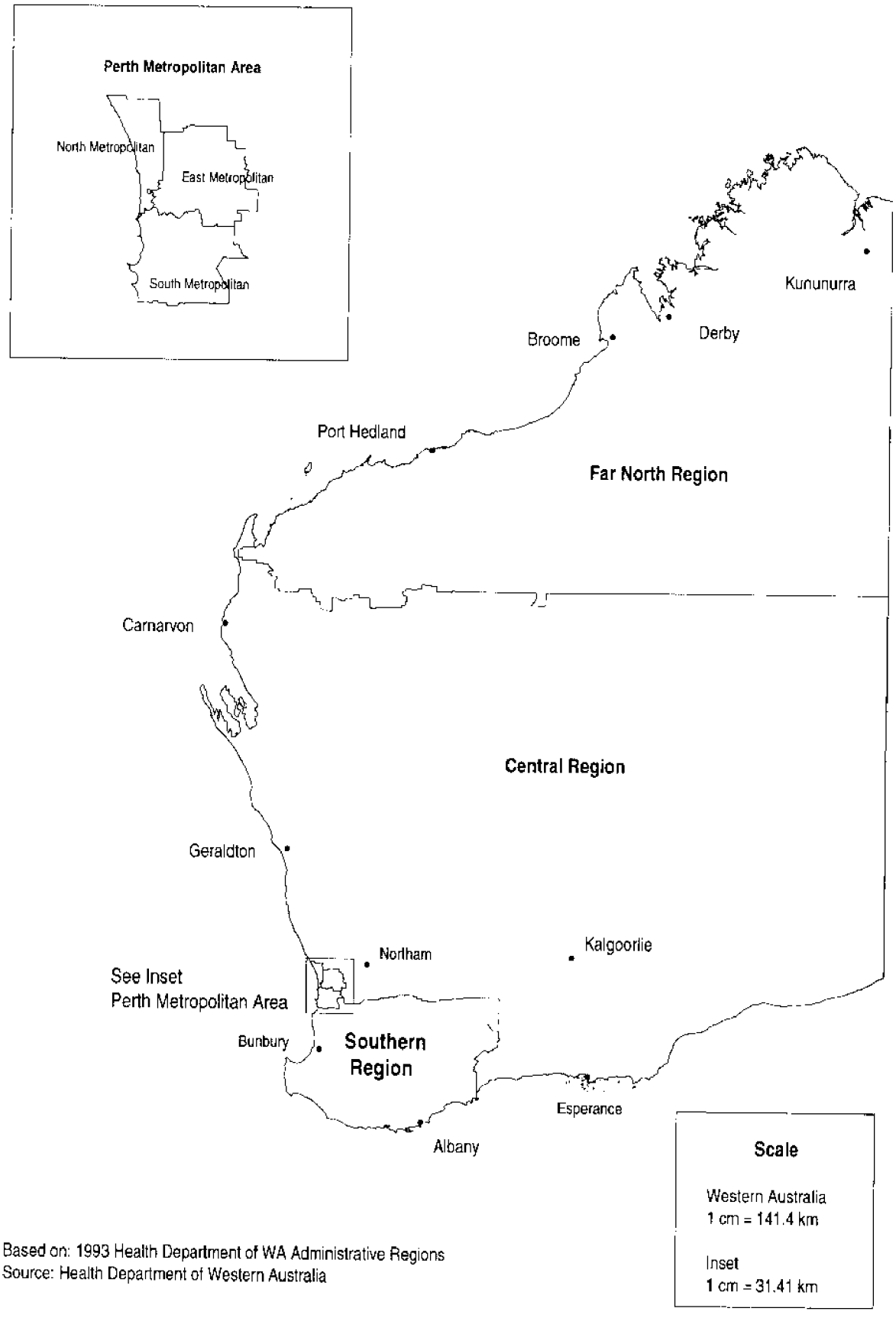
Some of the standard errors associated with the estimates in this publication are relatively high. In general, the smaller the estimate and the smaller the sub-population on which it is based, the higher the relative standard error. In this publication those estimates with associated relative standard errors higher than 25 per cent but less than 50 per cent are marked with a single asterisk (*). Where the relative standard error is 50 per cent or more, the corresponding estimate is marked with a double asterisk (**). The usefulness of estimates with such high relative standard errors is limited. It is left to the user to exercise the necessary caution in using the estimates in this publication.

Standard errors for all estimates in this publication were derived using the ultimate cluster variance estimation technique, where the sampling error is estimated from the variability between estimates for each of the primary sampling units (which were census collection districts). Because of the large number of estimates in this publication, standard errors for each estimate are not shown. The ABS will, on request, provide details of the standard errors for each of the estimates published.

OTHER SOURCES OF ERROR

The imprecision due to sampling variability, which is measured by the standard error, is not the only type of inaccuracy to which the estimates are subject. Other sources of inaccuracies, known collectively as *non-sampling error*, may occur because of form design limitations, imperfections in reporting by respondents due to difficulties recalling certain data or lack of appropriate records for certain data, errors made in collection such as in recording and coding data by the interviewers, and errors in the processing of the data. Non-sampling error may occur in any enumeration, whether it be a full count or a sample. Every effort is made to reduce non-sampling error to a minimum by careful design and testing of questionnaires, thorough training for interviewers, efficient operating procedures including quality control procedures, and use of appropriate methodologies.

APPENDIX D – WESTERN AUSTRALIA: SURVEY REGIONS



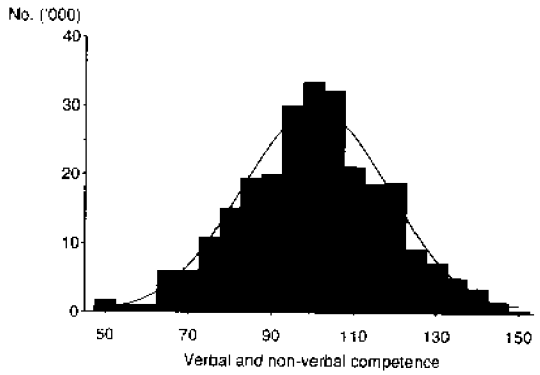
Based on: 1993 Health Department of WA Administrative Regions
Source: Health Department of Western Australia

GLOSSARY

ABILITY

Permission was obtained from NFER-Nelson to have teachers administer two sub-scales from the British Abilities Scales to survey children who were attending schools. The sub-scales selected were chosen to permit calculation of an overall estimate of each student's combined verbal and non-verbal ability. Thus, Matrices were chosen as an estimate of non-verbal visuospatial ability and Word Definitions were chosen as an estimate of verbal ability. These sub-scales were administered by school staff to each of the survey children individually. Test materials were returned to the survey centre and scored by professionals using the published scoring criteria. Raw scores were first converted to age referenced centiles and then converted to normalised T Scores (see *T Score* below).[1] These T Scores were then averaged across both sub-scales and converted to pro-rated intelligence quotients.

The distribution of overall verbal and non-verbal ability in the survey sample appears below. Scores of less than 70 correspond to very low verbal and non-verbal ability and scores in the range 70-80 correspond to low verbal and non-verbal ability.



ADOLESCENT SELF-EFFICACY

The Child Health Survey modified Cowen, et al's Perceived Self-Efficacy (PSE) Scale to develop a 22-item measure of the perceived self-efficacy of adolescents (see Appendix A).[2] The items asked adolescents to rate (on a 5 point scale) their confidence in managing common tasks and situations which may arise in various settings. e.g. meeting new people, making important decisions, working out a problem with a teacher, coping when things go wrong. Students ratings on these items were then used to derive a composite self-efficacy score. Using data collected for the pilot for the Child Health Survey, the derived PSE ratings were found to have sound construct and content validity.[3]

BEHAVIOURAL SYNDROMES

Child Behaviour Checklists (CBCLs) completed by caregivers and teachers were used to determine whether or not a child had a mental health problem (see *Mental health morbidity* and *Child Behaviour Checklist* below). A mental health morbidity was defined where the CBCL Total T Score (see *T Score* below) was equal to or greater than 60 on either the parent or teacher checklist. Individual syndrome scales on the parent or teacher checklists were judged to be abnormal where they equalled or exceeded 67 in the presence of an abnormal Total T Score. Eight specific child mental health problems (behavioural syndromes) were thus defined: delinquent; thought; attention; and social problems; somatic complaints; aggressive behaviour; anxiety/depression; and withdrawn behaviour.

BLENDED FAMILY

A blended family is a couple family where there are two or more children, of whom at least one is the natural child of both of the parents, and at least one is the step child of one of the parents.

BULLYING AND VICTIM BEHAVIOURS

Bullying behaviour was defined by at least three of the following behavioural items being scored positively on either the parent or teacher versions of the Achenbach Child Behaviour Checklist (CBCL): 'Is mean to others'; 'Gets into many fights'; 'Threatens to hurt people'. Victim behaviours were identified by a positive response to both of the items 'Gets teased a lot' and 'Is not liked by other children' on either one of the parent or teacher versions of the CBCL: The specific items used in defining these groups were selected by means of a weighted least squares analysis (Lisrel 7)[4] which demonstrated

their closeness of association with one another. The items selected to produce a congeneric model of 'Bullying' accounted for 92.8 per cent of the explained variance for this construct (χ^2 = 267, df=9, adjusted p<.05). The selected items for 'victim behaviours' accounted for 89 per cent of the explained variance in the corresponding congeneric model (χ^2 =167, df=2, adjusted p<.05).[2]

CHILD BEHAVIOUR CHECKLIST

Administered to the principal caregiver, this 112-item instrument, when combined with the teacher report, formed the main instrument to estimate mental health morbidity among children.[5] The main categories of morbidity to be estimated were: delinquent behaviour, aggressive behaviour, withdrawn, anxious/depressed, somatic complaints, social problems, thought problems, and attention problems.

DEPENDENT CHILDREN

Dependent children are usually defined as resident children aged under 15 years or resident children aged 15 to 24 years who are studying full-time.

The Child Health Survey had insufficient information to determine whether or not 'children' aged 17 to 24 years were dependent students. Therefore, the definition used here for dependent children is all children in families aged 16 years or less.

DIAGNOSTIC CRITERIA FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

Diagnostic criteria for Attention Deficit Hyperactivity Disorder have undergone several revisions. The development of the diagnostic criteria contained in the Diagnostic and Statistical Manual (DSM) of the American Psychiatric Association versions DSM-III, DSM-III-R and DSM-IV differ on the exact core symptoms of ADHD and how they are arranged. However they remain consistent in agreeing that the core symptoms comprise an inattention domain and a hyperactivity/ impulsivity domain.[6] DSM-III arranged these domains in three separate symptom areas. The DSM-III-R grouped them in one long symptom list and the current DSM-IV lists them as two core dimensions.

The current diagnostic criteria in the DSM-IV lists nine symptoms on each dimension and requires that these symptoms show: a) evidence of early onset (i.e. before age seven years); b) duration of symptoms longer than six months, and; c) the pervasiveness of symptoms being evident by their presence in at least two settings (e. g. home and school). ADHD symptoms must also be more frequent and severe than those of children of comparable developmental level and must cause significant functional impairments. Three sub-types of ADHD are distinguished by88 DSM-IV. The first and most common type is the combined type in which the child has shown six or more of the inattention and hyperactive/ impulsivity symptoms in the previous six months. The second is the predominantly inattentive type where six or more inattention symptoms and five or fewer hyperactive/ impulsive symptoms have been present. The third is the predominantly hyperactive/ impulsive type which consists of six or more symptoms from the hyperactive/impulsive dimension and five or fewer from the inattention dimension.

The proportion of students with attention problems who meet the diagnostic criteria for ADHD was estimated in the clinical calibration study for the Survey. This showed that one in five students identified as having attention problems would be expected to be diagnosed as having ADHD by a structured psychiatric interview with the child's parent (sensitivity = 0.72, specificity = 0.85, positive predictive value = 0.2, negative predictive value = 0.98).

DISABILITY

A disability, as defined by the *Western Australian Disability Services Act*, is: attributable to an intellectual, psychiatric, cognitive, neurological, sensory or physical impairment or a combination of impairments; permanent or likely to be so; chronic or episodic in nature; and resulting in a reduced capacity of the individual for communication, social interaction, learning, mobility and a need for continuing support services.

Survey questions were structured to capture the essential elements of this definition. For the purposes of the Western Australian Child Health Survey, a disability was defined as the presence of one or more of the following functional limitations: needing any help with transport due to an illness, injury or medical condition; needing help or supervision in getting around the neighbourhood, for reasons other

than age; unable to walk without assistance from someone; needing physical help with eating, dressing, bathing or going to the toilet, for reasons other than age; and, any limitation in the kind or amount of ordinary play or activity the child could do with other children.

DSM-III-R CLINICAL DIAGNOSES

Clinical diagnoses based on The Diagnostic and Statistical Manual of Mental Disorders issued by the American Psychiatric Association.[7] This manual details criteria for psychiatric diagnoses. Since the Survey, DSM-IV has been published.

GENERALISED ESTIMATING EQUATIONS

Ordinary logistic regression assumes that all observations are independent. In the Child Health Survey this is not so, as the survey has been selected in stages. A sample of Census Collection Districts (CDs) was drawn, and within these, dwellings were selected. All in-scope children were selected in each selected dwelling. It is highly likely that there will be correlations within families and CDs. To account for this a more general modelling procedure, known as Generalised Estimating Equations (GEEs), was used.

This technique has been shown theoretically to produce consistent estimates of the regression parameters and reliable standard errors. The analysis here used GEEs to fit a logistic regression model with an 'exchangeable' correlation structure to the survey data which assumes a fixed but unknown correlation between subjects within the same family. This correlation is estimated by the modelling procedure. This technique is described in Liang and Zeger (1986).[8]

GLOBAL SELF-ESTEEM

The survey utilised Marsh's Self-Description Questionnaire to generate a 32-item instrument which asked adolescents to describe how well certain statements applied to themselves.[9] These items were answered on a 6-point Likert scale ranging from 'true' to 'false' and covered six dimensions of adolescent self-description (personal appearance; physical abilities; same sex relationships; opposite sex relationships; parental relationships; general school functioning and mathematics (see Appendix A). The scores on each of the dimensions were then summed to produce a composite index of global self-esteem which was found to be normally distributed.

INCIDENCE OF PHYSICAL FIGHTING

The incidence of physical fighting was calculated by adding the number of times each student reported being in a physical fight during the six months prior to the survey and then dividing this by the total number of students. The number of physical fighting episodes was then multiplied by 100 to determine the incidence rate per 100 students. In establishing the number of fighting episodes, students who reported they had fought two or three times were assigned a physical fighting frequency of 2.3; four or five times, 4.3; and those who said they had fought six or more times were assigned a frequency of 6.0. These frequency values were interpolated using appropriate adjustments for the skew of the distribution.

INCOME RANGES

See also *Parental Income*

To assist in the analysis and presentation of income data, parental incomes were ranked into five groups. These groups are as close to quintiles as can be obtained. The proportion of families contained within each range, of those who stated an income, is shown in the following table:

Annual income	*Proportion of families*
$20,000 or less	22.8
$20,001–$30,000	19.8
$30,001–$40,000	17.1
$40,001–$60,000	25.5
More than $60,000	14.8

K-MEANS CLUSTER ANALYSIS

This procedure performs a disjoint cluster analysis on the basis of euclidean distances calculated from a set of quantitative variables. Cluster analysis sets out to find a natural grouping of the data so that the observations within each cluster are as similar as possible, and observations in different clusters are dissimilar. The procedure uses the method of nearest centroid sorting to determine the centre of each cluster.[10]

LIFE-STRESS EVENTS

Life stress characterised by the occurrence of major life events requiring change in ongoing adjustment is a significant factor associated with the onset of many illnesses.[11] In order to ascertain the occurrence of major life events in the child's family during the previous 12 months, the Child Health Survey used Sandler and Block's modification of Coddington's Life Stress Inventory.[12]

LOGISTIC REGRESSION

Logistic regression is a modelling technique that is used to investigate the relationship between the probability of a certain outcome (for example, child mental health morbidity) and a set of explanatory variables. Logistic regression is discussed in several statistical publications – see, for example, Agresti (1984).[13]

MCMASTER FAMILY ASSESSMENT DEVICE

The General Functioning Scale of the McMaster Family Assessment Device (FAD) was used as a global measure of the health of family functioning. It consists of 12 statements about families to which respondents indicate they agree or disagree (on a four point scale). This short form of the FAD was derived from an item analysis of the full 60-item scale and includes questions concerning problem solving, communication, role delineation, affective responsiveness, affective involvement and behaviour control. The scale has been shown to have good reliability, internal consistency and validity in distinguishing between non-clinical families and families attending a psychiatric service.[14]

MENTAL HEALTH MORBIDITY

See also *Behavioural syndromes.*

Caregivers, teachers and adolescents each completed a Child Behaviour Checklist (CBCL) designed to identify child behavioural and emotional problems. Responses from both caregivers and teachers were used to determine whether or not a child had a mental health problem (morbidity). A mental health morbidity was defined where the CBCL Total T Score (see *T Score* below) was equal to or greater than 60 on either the parent or teacher checklist. Combining information from parents and teachers was done in line with recommendations by Bird et al (1990).[15]

ODDS RATIO

The odds of a given event is the ratio of the probability of its occurrence to the probability of its non-occurrence. The odds ratios used in this publication are a measure of relative risk, derived from a formula which examines the association between, in most of the Child Health Survey cases, a risk factor (exposure), and an adverse health outcome.

ORIGINAL FAMILY

An original family is a couple family containing one or more children, the child(ren) being either the natural child(ren) of both of the parents, an adopted or foster child(ren), or a combination of these child types.

PARENTAL DISCIPLINARY STYLE

The Child Health Survey asked parents about the parenting behaviours they used to deal with children's misbehaviour and the methods they used to encourage desirable behaviours. Analysis of the reported use of the various disciplinary behaviours considered in the survey indicated two main clusters - one comprising more coercive methods of discipline and the other non-coercive methods. There also appeared to be two broad patterns in the frequency of reinforcements. These two characteristics were then used to define four common parental disciplinary styles. They are in order of frequency:

- *Encouraging parenting style:* This was the most common (49 per cent) pattern of parenting, characterised by high use of rewards and encouragement and low use of coercive methods of discipline.
- *Inconsistent parenting style:* Children reared with this pattern of parenting (38 per cent) have experienced a high frequency of coercive methods of discipline while simultaneously being given high levels of reinforcement.
- *Neutral parenting style:* This pattern of parenting is characterised by infrequent use of coercive discipline and low use of reinforcements. Over 7 per cent of children fell into this category.
- *Coercive parenting style:* This pattern of parenting was characterised by high levels of coercive discipline and low use of reinforcement. The parents of 5 per cent of children were considered to have this style.

PARENTAL INCOME

Parental income was calculated by adding the individual gross incomes (incomes before deduction of tax, superannuation payments and health insurance payments) of the principal caregiver and any spouse or partner. Gross income included wages, salaries, overtime, family allowance and other benefits, child support, superannuation, interest received, dividends and business income.

Caregivers were not asked to state their exact income, only to indicate the range into which their income fell. The income categories used were:

Per year	*Per week*
Less than $3,001	Less than $58
$3,001–$5,000	$58–$96
$5,001–$8,000	$97–$154
$8,001–$12,000	$155–$230
$12,001–$16,000	$231–$308
$16,001–$20,000	$309–$385
$20,001–$25,000	$386–$481
$25,001–$30,000	$482–$577
$30,001–$35,000	$578–$673
$35,001–$40,000	$674–$769
$40,001–$50,000	$770–$961
$50,001–$60,000	$962–$1,154
$60,001–$70,000	$1,155–$1,346
More than $70,000	More than $1,346

PARENTAL SELF-EFFICACY

The Child Health Survey modified Cowen et al's Perceived Self-Efficacy (PSE) Scale to develop an adult measure of the perceived self-efficacy of parents.[2] The questionnaire asks parents to rate (on a 5-point scale) their confidence in managing 22 day-to-day tasks and situations which may arise in various settings. These include tasks such as making important decisions, dealing with new work, travelling alone to a new place, working out a problem with a child etc. The modification of PSE involved changes to seven of the original PSE items pertaining to the family and school context. These were replaced with items reflecting comparable tasks encountered by adults. Using data collected in the pilot for the Child Health Survey the adult version of the PSE was shown to have sound construct and content validity. This measure of parental self-efficacy has also been shown to have significant associations with parenting style and child adjustment.[3]

PHYSICAL HEALTH

Parents were asked to rate their children's general physical health on a 5 point scale as either 'excellent', 'very good', 'good', 'fair or 'poor. Of all children aged 4 to 16 years, 81 per cent were described to be in 'excellent' or 'very good' health while 15 per cent were described as having 'good' health. A further 4 per cent were considered to be in 'fair' or 'poor' health (see Chapter 2, *Western Australian Child Health Survey: Developing Health and Well-Being in the Nineties* (ABS Catalogue No. 4303.5)).

PRINCIPAL CAREGIVER

For each household, a principal caregiver was nominated to provide information about the selected child(ren). This was the person who was considered to spend the most time with the child(ren). In most cases, the principal caregiver was the child(ren)'s mother.

RANDOM HOT DECK IMPUTATION

This is a technique for imputing missing responses for selected items. The technique involves identifying characteristics that relate to the pattern of non-response or the item suffering the non-response. The respondents are then split up into imputation classes based on these identified characteristics. Then for each non-respondent, a respondent is chosen at random from the corresponding imputation class. The imputed value is then taken from the donor respondent. See Kalton (1963)[16] for more details.

Random hot deck imputation was used to impute data for absences from school obtained on the teacher reports. Imputation classes were formed based on age, sex, general health, and principal caregiver reports of days off school.

SECONDARY CAREGIVER

The spouse or partner of the main or principal caregiver of the child(ren) is referred to as the secondary caregiver. This person was almost always male, and was predominantly the child(ren)'s father.

SPECIFIC HEALTH PROBLEMS

For each child aged 4 to 16 years, principal caregivers were asked whether, at the time of the Survey, the child suffered from a range of specific health problems. Only a limited number

of these problems were identified with sufficient cases to allow meaningful analysis.

The full range of health problems asked about were: asthma; hay fever or some other allergy; heart problem; epilepsy or convulsions without fever; kidney disease; arthritis or rheumatism; cerebral palsy; diabetes; cancer; migraine or severe headache; mental retardation; muscular dystrophy or other muscle disease; developmental delay or lag; cystic fibrosis; missing fingers, hands, arms, toes, feet or legs; any stiffness or deformity of the foot, leg, fingers, arms or back; paralysis or muscle weakness of any kind; spina bifida; any difficulty with coordination or clumsiness; any blood disorder; a condition present since birth such as club foot or cleft palate.

STEP FAMILY

A step family is a couple family containing one or more children, none of whom is the natural child of both of the parents, and at least one is the step child of one of the parents.

STRESS

Adolescents were asked whether they had felt under any strain, stress or pressure during the six months prior to the Survey. The categories which adolescents used to report stress levels, as well as the terms used to describe those categories in this publication are:

Stress level categories used in instruments	*Stress level categories used in this publication*	
Almost more than I can take	Extreme	High
Quite a bit of pressure	Quite a bit	High
Some/more than usual	Some	More than usual
A little/about usual	A little	Low
Not at all	None	Low

SURVEY REGIONS

Survey regions are the smallest geographic areas of Western Australia for which survey results are available. The regions are based on the 1993 Health Service Management Regions used for administrative purposes by the Health Department of Western Australia.

There are six survey regions: three within the Perth metropolitan area, and three country regions (see Appendix D – Western Australia: Survey Regions).

The Perth metropolitan area coincides with the Perth Statistical Division, and comprises North metropolitan, East metropolitan and South metropolitan regions, the division being on the basis of Statistical Local Areas (SLAs) and postcodes. SLA boundaries were used in all cases except for two SLAs: Stirling Central, and Canning – where the division was on the basis of postcode boundaries.

The Western Australian country regions are: the Southern region (comprising the South-West, Lower Great Southern and Upper Great Southern Statistical Divisions); Central region (Central, Midlands and South-Eastern Statistical Divisions); and Far North region (Pilbara and Kimberley Statistical Divisions).

T SCORE

The number of Child Behaviour Checklist problems reported for each child was converted to a normalised T Score i.e. a score based on a normal distribution with a mean of 50 and a standard deviation of 10. T Scores provide a convenient metric that is similar for all scales. They also permit judgements to be made as to whether a child has relatively few or many problems in comparison with the general population of children of the same age and sex.

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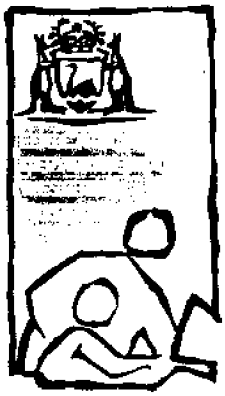

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2430550001932
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