Student Wellbeing, Engagement and Learning across the Middle Years

The Centre for Adolescent Health

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Further information on the CATS study can be found at https://cats.mcri.edu.au/ or on Facebook https://www.facebook.com/CATS.Study.12

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Executive summary

Aim and outline of the report

'The middle years' were once considered a latent period of development but we now understand it is a rapid phase of physical growth, including extensive neurodevelopment and social changes as children pass through puberty. These years are commonly defined as between the ages of eight and 14. It is during this time that children make the transition from primary to secondary school, a point of disengagement from education for a substantial minority. Earlier research and policy directives have largely focused on growth and learning in early childhood or later adolescence. As a result, the cognitive, social and emotional determinants of learning during the middle years are less well understood. We know little about changes in wellbeing across the middle years and the effects on school engagement and learning; this is the focus of this report.

There is a growing consensus amongst policy makers, education professionals, researchers, and the public that a modern education system should develop a 'whole child' providing a balanced set of cognitive, social and emotional skills to face the challenges of an increasingly uncertain and volatile world [1, 2]. To that end, social and emotional development are educational goals in and of themselves [3], as well as important influences on academic learning. There is currently a gap in knowledge about social and emotional development and academic performance, particularly in the middle years. The primary to secondary school transition is a time when children, particularly those with vulnerabilities, need strong social and educational support systems. Despite this, there are currently few evidence-based, system-wide strategies to support students in the transition.

This report examines changes in student wellbeing and learning across the middle years, drawing on recent longitudinal data on Australian students from the Childhood to Adolescence Transition Study (CATS). The CATS sample comprises over 1200 students and their parents recruited in 2012 from schools in metropolitan Melbourne. The study has obtained information annually from students, parents and teachers around students' mental health and wellbeing, peer and family relationships, school engagement, and the primary to secondary school transition. This report analyses data collected between Year 3 (2012: 8-9 years of age) and Year 7 (2016; 12-13 years of age).

Guided by a conceptual model of quality education, this report uses a number of indicators of student learning, wellbeing and school engagement to examine how these intersect in the middle years. The longitudinal dataset is used to address the following questions:

1. To what degree does student wellbeing in the middle years influence school engagement and learning?
2. To what degree does student learning in the middle years influence school engagement?
3. To what degree do peer relationships in the middle years influence school engagement and learning?

The report also describes the experience of students and parents during the secondary school transition. It reports on readiness for secondary school prior to transition in Year 6 and observed adjustment to secondary school in Year 7, and investigates teachers' ability to identify students at risk of a poor transition. The report also examines the support received by students and parents from schools and how this relates to adjustment in secondary school.

Key Findings

Indicators of wellbeing and engagement are summarised in Table 1. Rates are described in terms of persistence across the three years of mid-primary school (from Year 3 to Year 5) allowing a distinction between single episodes and persistence. Table 1 also shows the number of years of learning lost between Year 3 and 7 using Year 7 NAPLAN scores for numeracy and reading.

Table 1. Summary of Key Findings.

Indicator	Proportion (%)	Loss of learning between Years 3 and 7 (Years)		Year 7 disengagement (Odds Ratio)
		Numeracy	Reading	
Emotional problems				
None	48.9	Ref	Ref	Ref
Single episode	29.2	**0.49** *	0.41	1.2
Persistent	21.9	**0.98** *	0.41	**2.0** *
Behaviour problems (teacher report)				
None	59.9	Ref	Ref	Ref
Single episode	19.5	0.32	0.05	1.0
Persistent	20.6	**0.89** *	0.40	**2.1** *
Behaviour problems (parent report)				
None	63.1	Ref	Ref	Ref
Single episode	18.5	0.41	0.20	1.2
Persistent	18.3	**0.98** *	0.45	**1.7** *
Low subjective wellbeing				
None	67.9	Ref	Ref	Ref
Single episode	22.4	**0.67** *	0.15	1.5
Persistent	9.7	**0.72** *	0.15	**2.1** *
High subjective wellbeing				
None	61.6	Ref	Ref	Ref
Single episode	24.3	-0.18	0.30	**0.5** *
Persistent	14.1	-0.18	0.20	**0.4** *
Bullying				
None	49.9	Ref	Ref	Ref
Single episode	28.2	0.14	-0.21	1.1
Persistent	21.9	**0.80** *	0.15	1.1

Indicator	Proportion (%)	Loss of learning between Years 3 and 7 (Years)		Year 7 disengagement (Odds Ratio)
		Numeracy	Reading	
Peer support				
None	13.5	Ref	Ref	Ref
Single episode	14.3	0.14	-0.05	0.9
Persistent	72.2	0.27	0.26	**0.5** *
School engagement				
None	4.7	Ref	Ref	
1 year	17.0	0.22	0.05	
2 years	78.4	-0.09	0.05	
School disengagement				
None	82.7	Ref	Ref	
I or 2 years[b]	17.3	**1.07** *	0.40	
Numeracy (NAPLAN YOP Years 3-5)				
Low	33.3			Ref
Middle	33.3			0.7
High	33.3			**0.6** *
Reading (NAPLAN YOP Years 3-5)				
Low	33.3			Ref
Middle	33.3			0.8
High	33.3			0.7

[a]Years of Progress (YOP). NAPLAN Scale Scores (NSS) at Years 3 and 5 were converted to Equivalent Years of Learning (EYL). YOP is the increase in EYL in years.
[b]The categories for disengagement for one and two years were combined due to low numbers in the two year category
*Statistical evidence for a relationship between this level of the indicator and outcome measure (numeracy or reading NSS)

A substantial proportion of Australian students in the middle years are not tracking well. Twenty percent have persistent emotional problems and a similar number have persistent behaviour problems. Around 10% self-report persistent low wellbeing. Also of concern is the prevalence of bullying; over 20% of students in Years 3 to 5 were bullied across two or all three years. It is likely that every class will have at least one student experiencing one or more of these issues.

Student *wellbeing* in the middle years matters for *learning*. Students with persistent emotional or behaviour problems fall a year behind their peers in numeracy in the four years between Years 3 and 7 with similar, although smaller trends in reading. This effect is comparable to the loss in learning observed for students from socially disadvantaged backgrounds. Given that one in five students report emotional and behaviour problems, these analyses indicate that these problems are a major determinant of learning, and that children with these problems represent a high risk group.

Student *wellbeing* in the middle years matters for *school engagement*. One in six students disengage from school during the late primary years and have lost a year's progress in numeracy compared to peers by the start of secondary school. Maintaining engagement in primary school is likely to be essential for improving learning outcomes in the secondary years.

There is a two-way relationship between *school engagement* and *learning*. Poor rates of learning in the mid primary years predict later school disengagement. Students who are making the least progress in their learning (those in the bottom third) in mid primary school are almost twice as likely to be disengaged from school compared with students making the most progress (top third) by Year 7. This is regardless of their academic level in Year 3. Conversely, students who disengage from school in primary school fall a year behind their peers in numeracy in the four years between Years 3 and 7.

***Subjective wellbeing* in primary school predicts *poor engagement* and *learning*.** Students reporting persistent low levels of wellbeing in mid primary school lose eight months of numeracy and are twice as likely to be disengaged from school by Year 7. Even those with more transient poor wellbeing show substantial losses in learning and engagement. In contrast, those with high levels of wellbeing are over two times less likely to disengage from secondary school.

Persistent *bullying* has damaging effects on *learning*. Students who are bullied for two or three years in mid primary school fall nearly 10 months behind their peers in numeracy by Year 7. Given that around a half of students report some level of bullying and over one in five report persistent bullying, it should be considered a major barrier to effective learning.

Transition to secondary school is a difficult time for a small minority of students. Difficulties with academic studies, peer relationships, teacher relationships or changes in daily routine are encountered by 13% of students in Year 7. Year 6 teachers are good at predicting difficulties and are able to identify which students are likely to encounter problems in secondary school, including losses in their learning progress.

Points for Consideration

This report is guided by a framework of quality education in which student wellbeing, school engagement and learning are all important and inter-related. The results from this report confirm the reciprocal relationships between wellbeing, engagement and learning. These findings suggest that by working on all three aspects simultaneously, schools and education systems will achieve synergies in their efforts to provide quality education. In demonstrating the relationship between wellbeing and school engagement and learning outcomes, this report provides strong motivation for education systems, schools and teachers to:

Promote the social and emotional development of students to help each and every student reach their full learning potential. There is a need to prevent the onset of these problems, as well as respond effectively to those with visible problems. Although student wellbeing is also affected by factors beyond the school gate there is much schools can be doing, especially when working closely with families. Some suggestions to achieve this are:

- Strengthening the curriculum to continue to build and develop social and emotional skills in children.
- Promoting and supporting teacher capabilities in this area (in-service and pre-service training). For example, by improving teachers' knowledge of brain development across the

middle years including developmental stages and wellbeing. Also through the implementation of pedagogical approaches that recognise adolescent needs for growing autonomy but also support.

- Prioritising policies and practice to promote wellbeing in order to create inclusive and positive social environments in which students can engage and learn prosocial skills.
- Form partnerships with families and develop strategies to maintain parental engagement about the social and emotional development of their children.
- Ensure linkage with health service systems for students identified with problems

Support positive peer relationships to enhance student wellbeing, learning and engagement. These findings highlight the importance of peer relationships on learning and engagement. Promoting positive peer relationships and investing in the prevention of bullying from the earliest years of school is important. This might be achieved through curriculum, policy, teacher training, and providing support for schools to implement whole-school health promotion programmes with a focus on supporting peer relationships.

Maximise and maintain student engagement with school and learning in the primary school years and across the school transition. It is important to identify children who are at risk of school disengagement and to provide the best possible learning environment for all students. This may be achieved through teacher training and policies aimed at: improving skills for recognising the individual learning needs of students; providing a safe, secure environment characterised by good teacher/student relationships, as well as the implementation of whole-school programmes.

Improve the primary to secondary school transition experience.

- Primary and secondary schools can work together to develop continuity of learning approaches where possible.
- Ensure optimum support is provided to Year 6 students. Encourage secondary and feeder primary schools to develop partnerships to optimise and coordinate information and support.
- Consider using Year 6 teachers to identify students potentially at risk of poor adjustment to secondary school using the 4-item screener (START scale). These students could be targeted for additional support across the transition.
- Support parents' ongoing involvement in their child's learning and overall wellbeing in the secondary school years.

Glossary

Adolescence

Adolescence is the period of physical, cognitive, and social maturation between childhood and adulthood. Although there is variation in how societies and cultures define adolescence, its beginning is marked by the onset of puberty and its end is generally considered as the uptake of stable adult roles. The World Health Organization (WHO) defines an adolescent as any person between ages 10 and 19.

Adrenarche

Adrenarche is the first hormonal process in puberty. It is sometimes described as "adrenal puberty" and is characterised by an increase in adrenal androgens from approximately six to eight years of age. The physical changes associated with adrenarche (increased skin oil production, body odour, pubic and auxiliary hair) usually occur after the initial rise of hormones.

Behaviour problems

Behaviour problems refer to displays of behaviour that deviate from social norms and are socially disapproved from those of authority. Behaviour problems can be the symptomatic expression of emotional problems or interpersonal maladjustment and include attention-deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), or conduct disorder (CD). Behaviour problems are sometimes described as externalising problems.

Bullying

Bullying is repeated verbal, physical, social or psychological aggressive behaviour by a person or group directed towards a less powerful person or group that is intended to cause harm, distress or fear. Bullying is sometimes referred to as peer victimisation.

Emotional problems

Emotional problems refer to symptoms of anxiety and depression such as sadness, loneliness, worrying, feelings of worthlessness and anxiousness. Emotional problems are sometimes described as internalising problems.

Equivalent Years of Learning (EYL)

A metric developed by the Grattan Institute. The EYL corresponds to the NAPLAN Scale Score (NSS) the median (typical) student is expected to achieve.

Gonadarche

Gonadarche is a rise in the hormones testosterone (the male hormone) and oestradiol (the female hormone) and leads to the development of secondary sexual characteristics. These secondary sexual characteristics include breast development in females and voice deepening and facial hair in males. Gonadarche is sometimes referred to as "true puberty" and results in sexual maturation and reproductive capability. It occurs between eight and 13 years in girls, and about 6-12 months later in boys but with wide variation between individuals

Learning

Student learning encompasses the knowledge, skills, and abilities that students attain as a result of their involvement in education. Academic progress is a key component of this, but this concept also

includes important life skills not directly measured by standardised tests such as resilience, self-efficacy, perseverance and social skills.

Learning progress

Improvements in knowledge, skills, and abilities that students attain over time as a result of their involvement in education.

Mental health problems

Mental health problems, sometimes referred to as mental illness or mental disorders, are a wide range of conditions that affect mood, thinking and behaviour. Many people will have symptoms of poor mental health from time to time but it becomes a problem (or disorder) when the symptoms are on-going and affect the ability to function.

Middle years

The middle years, in this report defined as 8 to 14 years of age, are a period of rapid physical, emotional and intellectual growth. This is also a period of transitions, for example the transition from childhood to adolescence, and from primary to secondary school.

NAPLAN

The National Assessment Program – Literacy and Numeracy (NAPLAN) is an annual test of all Australian students in Years 3, 5, 7 and 9. Testing covers four domains: reading, writing, language conventions (spelling, grammar and punctuation) and numeracy.

NAPLAN Scale Score (NSS)

The scale score is an estimate of student ability at a given point in time. For each NAPLAN domain, students in Years 3, 5, 7 and 9 are scored along the same scale that has a range of 0 to 1000

Odds Ratio (OR)

An odds ratio (OR) is a measure of association between an exposure (e.g. emotional problems) and an outcome (e.g. school disengagement). The OR represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure. If the outcome is the same in both groups the ratio will be 1.

Peer support

Peer support refers to the functions performed for an individual by friends and classmates. It can include emotional support (demonstrations of love and caring, esteem and value, encouragement, and sympathy), instrumental support (provision of facts or advice that may help a person solve problems) and informational support (supplying behavioural or material assistance with practical tasks or problems).

Programme for International Student Assessment (PISA)

The Programme for International Student Assessment (PISA) is a triennial international survey conducted by the Organisation for Economic Co-operation and Development (OECD) which aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. The last assessment in 2015 tested over half a million students, representing 28 million 15-year-olds in 72 countries and economies. Students were assessed in science, mathematics, reading, collaborative problem solving and financial literacy.

Puberty

Puberty is a universal experience in normal human development and marks the transition from childhood to adulthood. It is accompanied by physical growth, brain maturation and sexual maturation and results in reproductive capability. Puberty is a combination of physiological processes with the hormonal changes beginning several years before the physical changes. There are at least three hormonal events involved in puberty: adrenarche, gonadarche, and the growth spurt.

Quality education

Quality education fosters the social, emotional, mental, physical, and cognitive development of each child. It aims to develop the full potential of each and every student regardless of gender, race, ethnicity, socioeconomic status, or geographic location.

School engagement/disengagement

School engagement refers to a student's' relationship with school, school staff, other students and learning. It includes behavioural, emotional and cognitive components; a highly engaged student will participate in academic and social activities, will have a sense of belonging or connection with school, and will be motivated in their learning. Engagement is measured on a continuum with the lower part of the distribution considered to be disengaged. Disengagement is characterised by low attendance and participation, a lack of motivation for learning and low connection with teachers and school.

Socio-Economic Indexes for Areas (SEIFA)

Socio-Economic Indexes for Areas (SEIFA) is a metric developed by the Australian Bureau of Statistics (ABS) that ranks areas in Australia according to relative socio-economic advantage and disadvantage. It is based on information from the five-yearly Census. The census variables used include household income, education, employment, occupation, housing and other indicators of advantage and disadvantage.

Social and emotional skills/social and emotional learning

Social and emotional learning is the process through which children and adults acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions.

Subjective wellbeing

Subjective wellbeing is the individual's rating of their own happiness and quality of life.

Wellbeing

Wellbeing is a broad and multi-faceted concept describing an aspiration for students to live a happy and fulfilling life. Wellbeing includes a student's subjective experience and their capabilities (psychological, cognitive, social and physical functioning). It is strongly influenced by objective circumstances such as physical environments and social relationships.

Years of (learning) progress (YOP)

A metric developed by the Grattan Institute. Years of progress (YOP) is the difference in years and months between Equivalent Years of Learning (EYLs) between two points in time for a given student.

Introduction

Puberty and the Middle Years

The middle years, commonly defined between the ages of eight and 14 years, are dominated by puberty and dramatic changes in the social and emotional worlds of children [4]. Puberty [5] commences with a cascade of hormonal changes, beginning at around six to eight years of age with adrenarche, a process that brings a rise in adrenal androgen hormones. Gonadarche, commonly viewed as 'true puberty', occurs between 8 and 13 years in girls, and about 6 to 12 months later in boys but with wide variation between individuals. The pubertal process not only brings sexual maturity and a very different engagement with the peer group, but also marked physical growth and accelerated brain development. The dynamic restructuring of the brain during this time is second only to infancy in extent and significance [4]. Puberty drives development and remodelling of a subset of brain regions, particularly those controlling emotional processes, social cognition and self-awareness [6, 7].

These physical changes profoundly affect cognitive, social and emotional development and overall wellbeing. This physical development sets the stage for a new phase of life in which a young person starts to engage with their external world in a very different way [8]. Children become more self-aware and reflective, and start to develop a clearer individual identity and a sense of their place in the world. This emerging sense of agency sees children shaping their environment and making choices that affect their own development. This includes decisions to engage with school and education, as well as beliefs about their own competencies as learners and expectations of education. Psychologically, the middle years are characterised by increased peer influence, high levels of risk taking and poor self-regulation. All of these developments are associated with dramatic changes in social relationships with the peer group, families and schools, and a rise in emotional and behaviour problems that often affect overall wellbeing and educational engagement [9].

The middle years are a time when emotional and behaviour problems commonly arise with 50% of all mental health problems beginning by 14 years of age [10]. Emotional problems refer to symptoms of depression and anxiety, and are sometimes described as internalising problems. Behaviour problems, commonly referred to as externalising problems, typically include hyperactivity and inattention (or attention deficit hyperactivity disorder, ADHD), conduct problems and antisocial behaviour. These problems during childhood and early adolescence are often the forerunners for mental health problems in later adolescence and adulthood [10]. Emotional and behaviour problems are key determinants of student wellbeing in the middle years. As well as psychological aspects, wellbeing incorporates the cognitive, social and physical functioning and capabilities that students need to live a happy and fulfilling life.

By the middle years, children have developed core cognitive and motor skills and are becoming increasingly independent from their parents or caregivers [11]. This is a time when children 'renegotiate' their relationships with their parents [12]. Despite this increasing independence parents remain a very important source of influence throughout the middle years and into adolescence, as such parent support is critical for academic engagement [13], academic performance [14] and overall wellbeing [15]. Furthermore, active parental involvement in school – whether meeting with teachers, volunteering in school activities or helping children with homework – benefits students [16] and is associated with a smoother transition to secondary school [17].

The middle years are also a time of change in peer relationships as peer influence and peer support become increasingly important in children's lives. Schools are one of the major locations where peer relationships are formed. Students with positive peer relationships at school are more engaged in school whilst negative peer relationships may present risks for school engagement [13]. Peer relationships are particularly important in the transition from primary to secondary school [18, 19]. At the time of transfer from primary to secondary school, there is an intensified desire by all students to belong to and conform to the peer group making this an important time to support peer relationships. Having a group of friends has also been found to be protective against bullying and the damaging emotional effects of being bullied [20].

The Middle Years and Education

The marked physical and social changes taking place during the middle years have important implications for education and learning. Our increasing understanding of the hormonal and physical changes and their interaction with brain development now indicate that the middle years are much more than the 'latent' phase that they were previously viewed. Rather, the middle years are a critical developmental phase with shifting orientation to the external world and a period in which the brain is adaptable and particularly sensitive to social and education influences [5, 7, 21].

The middle years therefore present exciting opportunities for the education sector. The middle years are a time when opportunities for learning change markedly. Improved understanding of the physical and emotional changes and their relation to social and environmental influences will almost certainly lead to improved educational strategies that optimise learning for all children [7, 22]. A better understanding will also help identify modifiable factors in the education setting that are associated with wellbeing and maladjustment so that appropriate prevention and interventions can be implemented. Such interventions will foster academic and social competence and deter the emergence of problems in adolescence leading to improved learning [23]. Given the particular sensitivity to environmental effects at this time, investments made in the middle years have the potential to provide disadvantaged children with a ***second chance*** by improving their trajectories in learning progress, as well as improving the trajectories for all children thereby helping reach the full learning potential for all. This is an important shift in thinking since up to now a great deal of attention and resources have been devoted to early developmental influences, which sometimes create the impression that experiences in the first few years of life alone determine lifelong health, education, and social outcomes [21]. The opportunities for enhanced and targeted educational strategies and prevention and intervention programmes that arise in the middle years will allow *all* children to lay a foundation for learning, growth and social development through adolescence and beyond.

However, the middle years also present risks for students and their learning. As highlighted earlier, the rise in emotional and behaviour problems may adversely affect students' overall wellbeing, school engagement and learning. The middle years are recognised by the Australian education sector in the Melbourne Declaration as a common point of disengagement from school [2], and there is a close nexus between increasing disengagement and falling academic performance during these years [8, 23].

The primary to secondary school transition is one of the most dramatic events in a students' educational career [24]. Given it occurs at a time of major physical changes, rapidly changing relationships with family and friends, and rising mental health and behaviour problems, it can be a difficult move for some. The primary to secondary school transition is therefore a time when children, particularly those with vulnerabilities, need strong social and educational support systems before,

during and after the transitioning process [25]. Despite this, there are currently few evidence-based, system-wide strategies to support students in the transition, nor approaches that respond adequately to the educational, social and emotional needs of many children following the transition. This is reflected in the marked changes in academic achievement, falling engagement with education, and rising suspension rates that follow the move to secondary school The middle years more broadly have tended to be neglected in policy and research with the focus directed towards the early years and later adolescence [11, 25]. For younger children there have been substantial investments in preschool education, preparation of children to school entry and in the identification of younger children with particular developmental vulnerabilities.

Results from national and international tests, such as NAPLAN, the Trends in International Mathematics and Science Study (TIMSS) and PISA show that the education outcomes of Australian children are declining in the middle years in contrast with the early years where small gains are observed [26, 27]. Analyses by the Grattan Institute (2016) further show that the spread of student achievement more than doubles as students move through school in Australia [28] and importantly, much of this learning gap develops in the middle years between Years 3 and 9. Current responses in education policy typically emphasise academic achievement but it is increasingly recognised that a broader response may be required [29]. Indeed, there is some concern that the sole emphasis on test scores as a marker of quality education may be having counter-productive effects on the mental health, behaviour and achievement of many students.

The 21st Century offers new opportunities, as well as challenges, for students and educators. At the same time, the world of work is changing so that many of today's jobs may not exist when a child starting school today finishes Year 12. Some suggest education should be increasingly less about content (which is now readily accessible at the touch of a button) and more about helping students to develop positive character traits and attitudes to lifelong learning such as problem solving, critical thinking and team work [1, 30]. Social and emotional competence is the ability to understand, manage, and express social and emotional aspects of one's life in ways that enable the successful management of life tasks such as learning, forming relationships, solving everyday problems, and adapting to the complex demands of growth and development. It includes self-awareness, control of impulsivity, working cooperatively, and caring about oneself and others. Social and emotional learning is the process through which children develop skills, attitudes, and values necessary to acquire social and emotional competence [31]. It has been suggested that social and emotional skills, sometimes referred to as non-cognitive or 'soft' skills, are educational goals in themselves [3], as well as important in the development of academic achievement.

Focus of the Report

This report aims to fill some of the gaps in our understanding about the complex interrelationships between student wellbeing, school engagement and learning in the middle years. It draws on recent longitudinal data on Australian students from the Childhood to Adolescence Transition Study (CATS), which has followed over 1200 children since they were in Year 3. The CATS study collects information on mental health and wellbeing, peer and family relationships, school engagement, and the primary to secondary school transition. This data is collected from parents and teachers, as well as the students themselves. It has also linked with the NAPLAN dataset to obtain robust data on student learning progress. Further information about the CATS study can be found in Appendix 1.

There are no other detailed studies of the social determinants of health, mental health problems and educational engagement and achievement through these years. The dominant research focus has remained on children under the age of five or later adolescence. CATS offers an outstanding

opportunity to study the trajectories of learning, engagement and wellbeing across this important and dynamic phase of life.

The report uses a number of CATS indicators of student wellbeing, engagement and peer relationships. It describes their occurrence in the middle years and presents analyses that investigate their relationship to student learning and engagement. A chapter on the primary to secondary school transition provides an in-depth look at changes in wellbeing and engagement across this period, including the experiences and concerns of students and parents. This project will ultimately lay a foundation for both health and educational policy and practice across the middle years.

Conceptual Overview

Overview

The conceptual model underpinning this report provides a framework for considering holistic and quality education, taking into account learning, healthy growth and student wellbeing. At the core of this concept of quality education are students who are engaged, learning and positive about themselves. The model considers both education and health focused actions that promote optimal social and learning environments. A positive social environment provides opportunities for engagement for all students in valued relationships and activities. This is an essential precondition for a positive learning environment where students acquire the cognitive, social and emotional skills for success in later life.

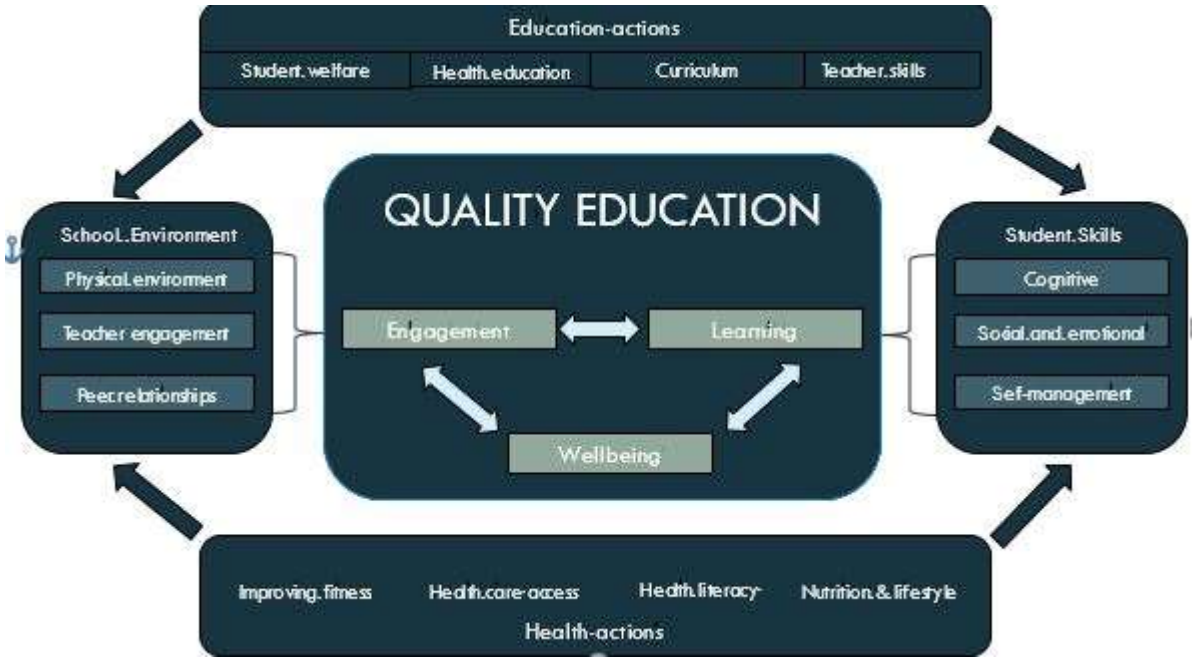


Figure 1. A conceptual framework for quality education.

A 'quality education' has been described as "one that focuses on the whole child—the social, emotional, mental, physical, and cognitive development of each student regardless of gender, race, ethnicity, socioeconomic status, or geographic location" [32]. It is therefore holistic in its scope and comprehensive in its reach. Its aim is "to prepare the child for life, not just for testing" [32]. Goal 4 of the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015 is an explicit call for quality education which seeks to ensure "inclusive and equitable quality education and promote lifelong learning opportunities for all" [33]. Earlier concepts of quality education as the attainment of a threshold level of numeracy and reading skills have broadened to include overall development and wellbeing, as well as helping all children reach their full potentials. For the first time in 2015 the Programme for International Student Assessment (PISA) assessed student wellbeing at age 15 and found that some countries (for example, Singapore), whilst excelling in science, mathematics and reading, rank poorly on wellbeing indicators [15].

The three pillars of quality education

The conceptual framework has at its centre the three pillars supporting quality education: school engagement, learning, and student wellbeing. These are essential outcomes of education: a student who is engaged with school and the concept of life-long learning, reaching their maximum learning potential, and is happy and well-adjusted is the ultimate aim of quality education. The three pillars are most likely interdependent and the complex relationships between them are not fully understood. In particular, how engagement, wellbeing and learning vary across time and the impact of the developmental changes in the middle years is yet to be determined.

Student wellbeing

Although most people would readily understand what is meant by the term 'wellbeing', there is no consistent, unified definition for the term or agreement on how to measure it. In general terms, wellbeing refers to the psychological, cognitive, social and physical functioning and capabilities that students need to live a happy and fulfilling life [15]. Wellbeing is a multi-faceted concept incorporating both subjective experience and objective circumstances: although wellbeing might be considered first and foremost to be how an individual 'feels', it is also contingent on social and physical circumstances. Well established theories of wellbeing subdivide the concept into multiple domains such as physical, psychological, cognitive, social, and economic e.g. [34]. Education-focused perspectives informed by these frameworks include the Victorian Department of Education and Training's 'Dimensions of wellbeing' (learning and development skills, social and emotional wellbeing, physical health, safety and material wellbeing and supportive relationships) [35] and PISA domains of functioning and capabilities (psychological, physical, cognitive and social) [15, 36].

In this report student wellbeing is mapped by three indicators, which describe the proximal or *actual* levels of wellbeing experienced by the student (rather than more distal social and physical determinants of wellbeing). Firstly, subjective wellbeing is the students' own rating of their happiness and quality of life. Secondly, self-reports of emotional problems such as anxiety and depression are clear expressions of poor wellbeing. Lastly, behaviour problems are also important indicators of poor wellbeing that are assessed by external raters (teachers and parents).

The source of information regarding wellbeing is critical. CATS uses student self-report indicators of emotional problems and subjective wellbeing. Self-report of emotional problems is likely to be the most critical and accurate measure since others have found that students, particularly for girls, self-report emotional problems at higher levels than their parents or carers [37]. This observation was related to reports from depressed youth that their parents know little about how they were feeling. Self-report of subjective wellbeing, whilst not always correlating with more 'objective' assessments of people's circumstances (for example, people can adapt to the most adverse of circumstances and still report relatively high wellbeing), is the foundation/underpinning of all concepts of wellbeing. Used in combination with other indicators this is a key indicator of current happiness and satisfaction with life. Students tend to be less reliable informants of their behaviour problems and thus parent and teacher reports of behaviour problems were used as a wellbeing indicator in the current report [38].

Wellbeing indicator 1: Emotional problems

Wellbeing indicator 2: Behaviour problems

Wellbeing indicator 3: Subjective wellbeing

Engagement

School engagement refers to a student's relationship with school, school staff, other students and learning. It includes behavioural, emotional and cognitive components [39]; a highly engaged student participates in academic and social activities, has a sense of belonging or connection with school, and is motivated in their learning (Figure 2).

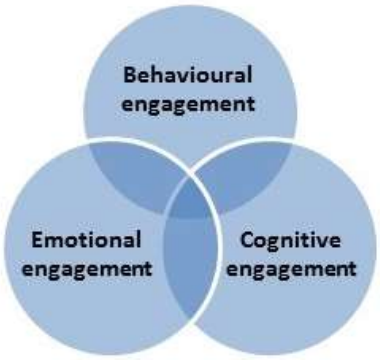


Figure 2. Facets of student engagement (Source: Victorian Department of Education and Training [35]).

Behavioural engagement refers to active participation or involvement with the classroom or schooling environment, and can be reflected in attendance or concentration in the classroom. Emotional engagement involves the affective response to other students, teachers, or whole school community and is characterised by feelings of school belonging and/or familiarity with teachers. Cognitive engagement refers to beliefs about the importance of school and commitment and critical thought with the processes of enquiry, for example, learning for meaning by asking questions.

In this report, engagement in the mid primary years is measured by an indicator of combined behavioural, emotional and cognitive engagement. Students with at least one of these facets of engagement are classified as 'engaged' and likewise, the absence of all facets of engagement indicates the 'disengaged' student.

This report also examines student disengagement from school in Year 7 as an outcome measure (see Appendix 3 for further details)

Engagement indicator 1: Engagement

Engagement indicator 2: Disengagement

Outcome measure: Disengagement

Learning

Student learning encompasses the knowledge, skills, and abilities that students attain as a result of their involvement in education. Academic progress is a key component of this, yet more recently the concept of learning has been expanded to include important life skills not directly measured by standardised tests such as resilience, self-efficacy, perseverance and social skills. A number of overlapping terms have been used to describe these skills including: 'skills for success', 21st century skills, social and emotional skills, non-cognitive skills and soft skills. In their 2015 report "Skills for Social Progress: The Power of Social and Emotional Skills" the OECD highlight the importance to

society of developing a "whole child" with a balanced set of cognitive, social and emotional skills so that they can better face the challenges of the 21st century [1]p13.

This report uses NAPLAN assessment data on numeracy and reading as indicators of learning. Students are classified as high, medium or low in their progress on NAPLAN numeracy and reading tests between the Year 3 and 5 assessments. Further information on NAPLAN is provided in Appendix 2.

Learning is also examined as an outcome measure. For this the gains in learning (NAPLAN scores expressed as EYLs; see Appendix 2) between the Year 3 and Year 7 assessments are compared.

Learning indicator 1: Progress in NAPLAN numeracy

Learning Indicator 2: Progress in NAPLAN reading

Outcome 1: Loss in learning, NAPLAN numeracy

Outcome 2: Loss in learning, NAPLAN reading

School environment - Peer relationships

Moving beyond the central domain in the conceptual model, this report examines peer relationships, which are considered as part of the school environment in the conceptual model. The factors in the school environment are those that schools and education systems can influence (i.e. they occur "within the school gate"). In this report, we focus on peer relationships given the importance of peers during these middle years.

Positive peer relationships, including a feeling of peer support, reinforce student wellbeing, and negative experiences such as bullying can have a damaging impact. School and class environments, which promote positive peer interactions and act to minimise negative peer relations will positively impact student wellbeing, engagement and learning.

Student-report indicators of positive and negative peer relationships were examined in this report. Positive peer relationships (peer support) were indicated by having a group of friends and bullying (verbal or physical) was used to indicate negative peer relationships.

Peer relationships indicator 1: Peer support

Peer relationships indicator 2: Bullying

Relationships between student wellbeing, school engagement and learning

The conceptual model suggests that student wellbeing, school engagement and learning are closely inter-related although direct empirical evidence for this is in a longitudinal context is limited. Some of the evidence for these inter-relationships is described here:

Learning predicts current and future wellbeing. A child's experience of education profoundly affects current health and wellbeing, as well as long-term health and social adjustment [1, 40]. In terms of current wellbeing, the achievement of meaningful learning goals has positive effects on wellbeing [41]. For future wellbeing, academic failure and school dropout are some of the clearest antecedents of later adult social, emotional and physical health problems. For example, poor academic

performance is linked with increased violence, early pregnancy, mental health problems and substance use, as well as lower income, higher rates of unemployment and even premature death [42-44].

Learning predicts engagement. Academic difficulties are a known risk factor for later disengagement; students who have frequent absences or who are not achieving well are more likely to be disengaged from school [45]. The mid-primary school years are a common point of disengagement from school and a time when academic difficulties are often first evident [8, 23, 46]. Academic difficulties during these years predict later academic failure and school dropout [47, 48].

Engagement predicts learning and future wellbeing. Engagement is a strong predictor of student retention in later years and of academic outcomes [45]. Most forms of disengagement, such as absence, disruptive behaviour, and poor school connectedness, are associated with lower achievement and, for some, dropping out of school [45]. Those who fail to complete school often remain disengaged from the workforce for life and this has enormous associated fiscal and social costs. In the Australian context, a recent econometric analysis by the Mitchell Institute found that in 2014, there were almost 38,000 early school leavers aged 19 with an associated social cost of more than $580 million annually and more than $23 billion over a lifetime [49].

Wellbeing predicts engagement and learning. Australian students with poor psychological wellbeing (emotional and behaviour problems) are much less likely to be engaged in their schooling and to report not liking school. “A higher proportion of children and adolescents with a mental disorder than those without a mental disorder *somewhat disliked* or *very much disliked* school [21.6% compared with 5.1%])” [37]p94. In general terms, it is estimated that students with mental health problems account for almost one half of all secondary school dropouts [50].

Behaviour problems have been associated with poor academic performance in childhood [51-54] and there is growing recognition that a student’s emotional style affects school engagement and academic performance [9, 55-59]. In the CATS study, we have shown that boys with emotional and behaviour problems were twelve months behind their peers in both reading and numeracy on NAPLAN assessments [9]. In girls, the associations between emotional and behaviour problems with academic performance were more modest and most clear for girls with attentional and peer problems. Poor concentration, attention and memory, as well as reduced motivation and school engagement, are possible pathways through which emotional problems may affect academic performance [60-62]. However, it is also possible that the reverse may be true with poor academic achievement leading to reduced wellbeing through emotional problems and low self-confidence.

Conceptual model in the middle years

The conceptual model described is not explicitly developmental. Rather it is a universal model that is applicable to all phases of education. However, when considering the middle years it is important to consider the high levels of change and thus heightened relevance of particular parts of the model. Wellbeing may be at particular risk in the middle years given the rise of emotional and behaviour problems in some children during this phase of life. School engagement may be subject to change particularly during the transition to secondary school where an educational ‘dip’ is commonly observed. Peer relationships change and become especially important in the middle years and throughout adolescence.

Aims of the report

Much of the information on student wellbeing, learning and engagement currently available has been based on repeat cross-sectional data. Whilst these studies provide valuable information on prevalence at a single point in time and can indicate trends in populations over time, they do not allow the effects of changes within individuals to be examined. Longitudinal data enables researchers and policy makers to examine individual change in key variables over time while controlling for baseline levels. In addition, a lack of recent Australian data makes it difficult to know what is happening currently in the Australian context.

The Childhood to Adolescence Transition Study (CATS) is one of the first studies to systematically track children through the middle years. The CATS study presents an opportunity to examine recent data on Australian students in the middle years and across the primary to secondary school transition.

The key research questions examined in this report are:

1. To what degree does student wellbeing in the middle years influence school engagement and learning?
2. To what degree does student learning in the middle years influence school engagement?
3. To what degree do peer relationships in the middle years influence school engagement and learning?

Wellbeing: Emotional problems

Definition

Emotional problems refer to self-reported symptoms of anxiety and depression such as sadness, loneliness, worrying, feelings of worthlessness and anxiousness. They are the most common mental health problems in childhood and adolescence. Emotional problems are sometimes described as internalising problems.

CATS Emotional Problems Indicator

The indicator was based on student self-report in Years 3, 4 and 5 (1 assessment per year). See Appendix 4 for a description of the items used to create the indicator and details of how the indicator was derived. Appendix 4 also contains additional information about the prevalence across Years 3 to 7 for boys and girls of the components of the indicators (e.g. anxiety and depression).

How many students have emotional problems?

The categories of emotional problems described above were classified as:

1. No emotional problems (no report in Years 3, 4 or 5)
2. Single episode of emotional problems (reported on one year only)
3. Persistent emotional problems (reported on two or three years)

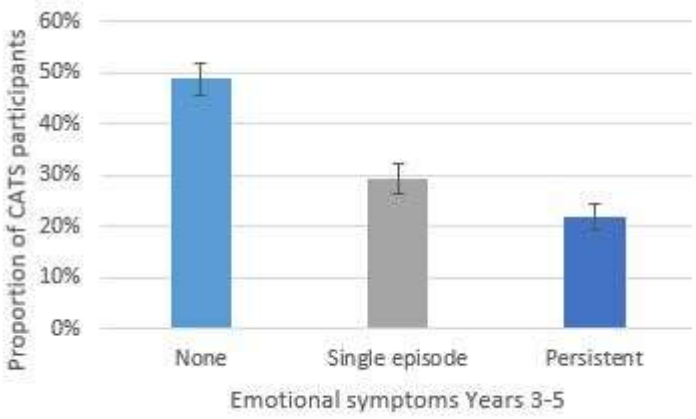


Figure 3. Proportions of CATS sample reporting emotional symptoms in Years 3, 4 and 5 on no occasions, on one year only (single episode), or on two or three years (persistent).

Figure 3 shows that about half of the CATS sample reported no emotional problems in Years 3, 4 and 5. 29% experienced emotional problems on a single occasion and 22% reported persistent problems on two or all three of the annual assessments. There was no evidence of a difference between boys and girls (data not shown).

Do emotional problems in Years 3 to 5 relate to student learning?

The association between membership in these categories and NAPLAN numeracy and reading scores in Year 7 was investigated. See Appendix 2 for further information on NAPLAN data in the CATS study.

The estimated average numeracy and reading NAPLAN Scale Score (NSS) in Year 7 for each of the 3 groups was determined by linear regression modelling of NSS as a function of group, also taking each student's Year 3 numeracy or reading NSS, gender, age and SEIFA disadvantage/advantage quintile into account (Figures 4a and 4b). There was no evidence of an interaction between level of emotional problems in Year 3-5 (no emotional problems, single episode or persistent emotional problems) and gender, indicating that the relationship between emotional problems and NSS was similar for boys and girls (data not shown).

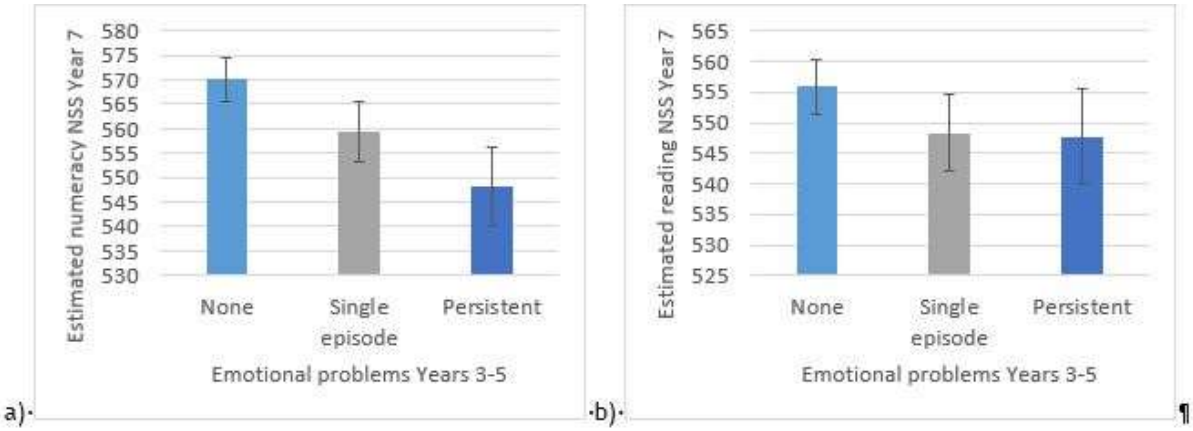


Figure 4. Estimated mean Year 7 NAPLAN a) numeracy and b) reading scores (NSS) for students with no emotional problems, single episode or persistent emotional problems in Years 3-5.

The estimated mean numeracy and reading NSS (Figure 4) can be expressed in terms of its Equivalent Years of Learning (EYL) as shown in Table 2 below.

Table 2. Equivalent Years of Learning (EYL) for each estimated mean numeracy and reading NSS.

Emotional problems	Estimated Mean NSS	EYL	Loss of learning between Years 3 and 7 (Years)C
Numeracy			
None	570	8.31	Ref
Single episode	559	7.82	0.49
Persistent	548	7.33	0.98
Reading			
None	556	7.47	Ref
Single episode	548	7.06	0.41
Persistent	548	7.06	0.41

Table 2 shows that for numeracy, even when taking Year 3 NAPLAN score, gender, age and Socio-economic status (SES) into account, persistent emotional problems in Years 3-5 were associated with almost a year's loss of learning by Year 7. A single episode of emotional problems (in the presence of reports of two years without emotional problems) was associated with a loss of half a year in numeracy learning.

For reading, a single episode of emotional problems and persistent emotional problems were associated with 0.41 year loss of learning.

Do emotional problems in Years 3 to 5 relate to student disengagement in Year 7?

In Year 7 13% of students were classified as disengaged. Further description of the disengagement measure in CATS is provided in Appendix 3. The association between membership in the three emotional problems categories and disengagement in Year 7 was investigated in logistic regression models.

Table 3. Likelihood of student disengagement in Year 7 associated with emotional problems in Years 3 to 5.

Emotional Problems	OR	95% CI
None	Ref	
Single episode	1.2	0.7 - 2.0
Persistent	2.0 **	1.2 - 3.4

*p<0.05; **p<0.01; ***p<0.001
Analysis controlled for gender, SES and age.
Ref – The reference group with an odds ratio of 1

Table 3 shows that, even when taking gender, age and SES into account, persistent emotional problems in Years 3 to 5 were associated with a two-fold (200%) increase in the odds of disengagement in Year 7, compared to the group with no emotional problems. A single episode of emotional problems was associated with a 20% increased odds of disengagement although there was not statistical evidence that this differed from the reference group with no emotional problems.

There was no evidence of an interaction between level of emotional problems in Year 3-5 (no emotional problems, single episode or persistent emotional problems) and gender, indicating that the relationship between emotional problems and disengagement was similar for boys and girls (data not shown).

Wellbeing: Behaviour Problems

Definition

Behaviour problems refer to displays of behaviour that deviate from social norms and are socially disapproved from those of authority. Behaviour problems can be the symptomatic expression of emotional problems or interpersonal maladjustment and include attention-deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), or conduct disorder (CD). Behaviour problems are sometimes described as externalising problems.

CATS Behaviour Problems Indicators

Two behaviour problems indicators were created, one based on parent report (in Years 3, 4 and 5; one assessment per year), the other on teacher report (in Years 3, 4 and 5; one assessment per year). See Appendix 5 for a description of the items used to create these indicators and details of how these indicators were derived. Appendix 5 also contains additional information about the prevalence across Years 3 to 7 for boys and girls of the components of the indicators.

How many students have behaviour problems?

The categories of each behaviour problems indicator were:

1. No behaviour problems (no report in Years 3, 4 or 5)
2. Single episode of behaviour problems (reported on one year only)
3. Persistent behaviour problems (reported on two or three years)

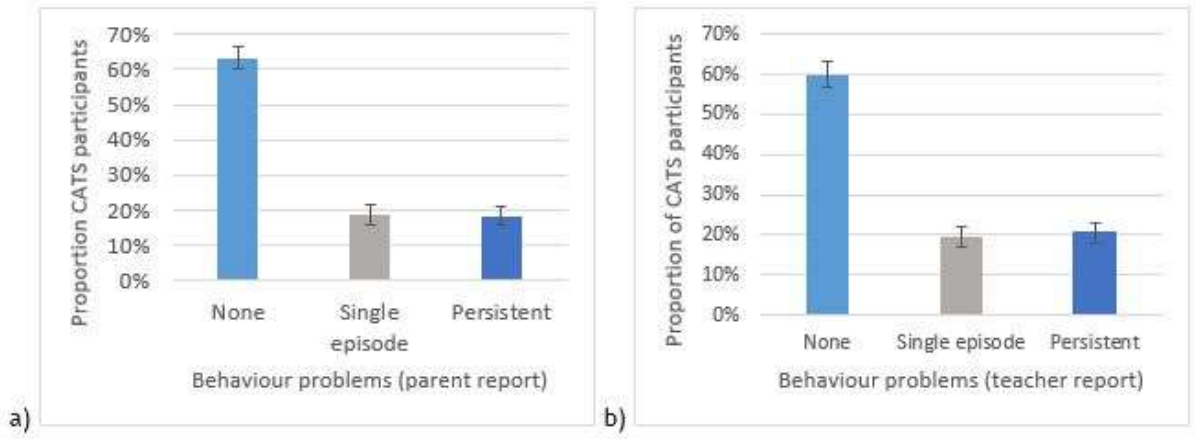


Figure 5. Proportions of CATS sample reporting behaviour problems in Years 3, 4 and 5 on no occasions, on one year only (single episode), or on two or three years (persistent); a) parent report, b) teacher report.

According to parent report nearly two-thirds of the CATS sample did not have behaviour problems in Years 3, 4 and 5 (Figure 5a). 19% experienced behaviour problems on a single occasion and 18% reported persistent problems on two or all three of the annual assessments. There was no evidence of a difference between boys and girls (data not shown) according to parent report.

According to teacher report nearly two-thirds of the CATS sample reported no behaviour problems in Years 3, 4 and 5 (Figure 5b). 20% experienced behaviour problems on a single occasion and 21%

reported problems on two or three occasions. Teachers reported that more boys had behaviour problems: boys were more likely to have persistent (34% versus 9%) and single episode (23% versus 17%) and less likely to have no behaviour problems (43% versus 75%) than girls (data not shown).

Do behaviour problems in Years 3 to 5 relate to student learning?

For each of the two behaviour problems indicators, the association between membership in these categories and NAPLAN numeracy and reading scores in Year 7 was investigated. See Appendix 2 for further information on NAPLAN data in the CATS study.

The estimated average numeracy and reading NSS in Year 7 for each of the three groups was determined by linear regression modelling of NSS as a function of group, also taking each student's Year 3 numeracy or reading NSS, gender, age and SEIFA disadvantage/advantage quintile into account. There was no evidence of an interaction between level of behaviour problems in Year 3-5 (no behaviour problems, single episode or persistent behaviour problems) and gender, indicating that the relationship between behaviour problems and NSS was similar for boys and girls (data not shown).

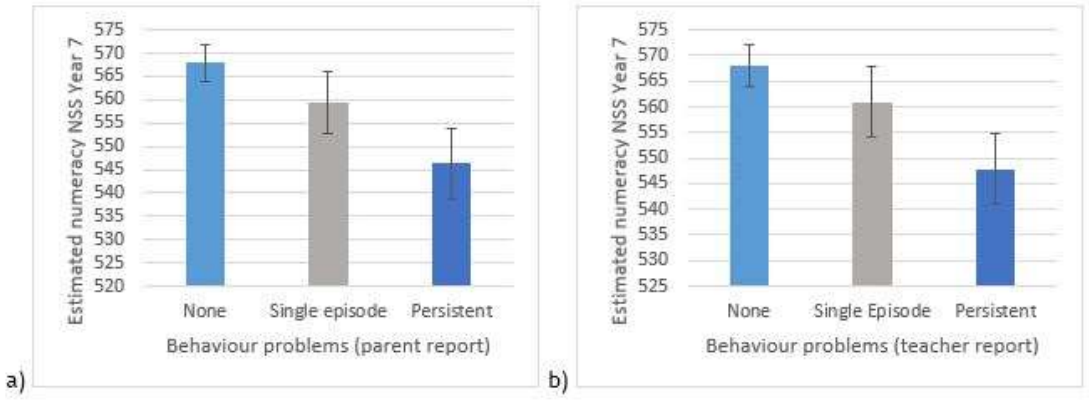


Figure 6. Estimated mean Year 7 NAPLAN numeracy (NSS) for students with no behaviour problems, single episode or persistent behaviour problems in Years 3-5; a) parent report, b) teacher report.

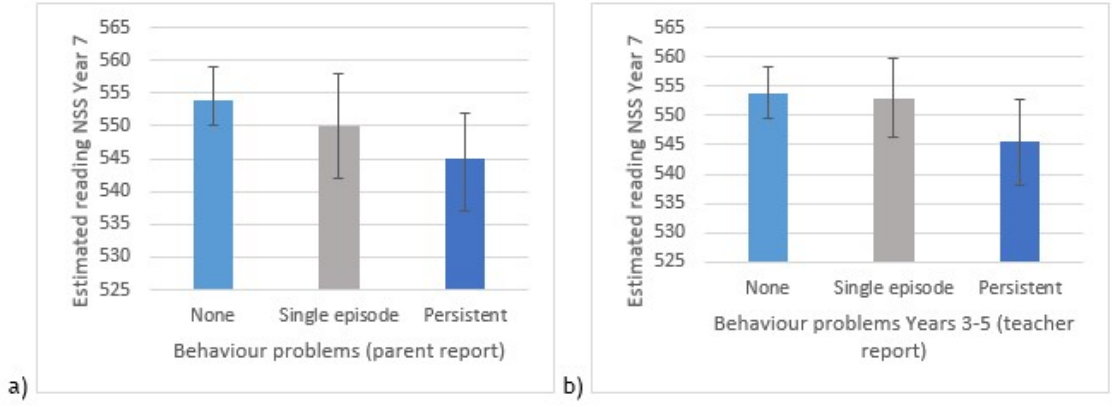


Figure 7. Estimated mean Year 7 NAPLAN reading (NSS) for students with no behaviour problems, single episode or persistent behaviour problems in Years 3-5; a) parent report, b) teacher report.

The estimated mean numeracy and reading NSS (Figures 6 and 7) can be expressed in terms of its Equivalent Years of Learning (EYL) as shown in Table 4 below.

Table 4. Equivalent Years of Learning (EYL) for each estimated mean numeracy and reading NSS; a) parent report, b) teacher report.

a)

Behaviour problems	Estimated Mean NSS	EYL	Loss of learning between Years 3 and 7 (Years)
Numeracy			
None	568	8.22	Ref
Single episode	559	7.82	0.41
Persistent	546	7.24	0.98
Reading			
None	554	7.36	Ref
Single episode	550	7.16	0.20
Persistent	545	6.91	0.45

b)

Behaviour problems	Estimated Mean NSS	EYL Commentary below table b) describes the results.	Loss of learning between Years 3 and 7 (Years)
Numeracy			
None	568	8.22	Ref
Single episode	561	7.91	0.32
Persistent	548	7.33	0.89
Reading			
None	554	7.36	Ref
Single episode	553	7.31	0.05
Persistent	546	6.96	0.40

Tables 4a and 4b show that for numeracy, even when taking Year 3 NAPLAN score, gender, age and SEIFA disadvantage/advantage quintile into account, persistent behaviour problems in Years 3-5 were associated with almost a year's loss of learning by Year 7 (according to both parent and teacher report). A single episode of behaviour problems (in the presence of reports of two years without behaviour problems) was associated with around a loss of a third of a year in numeracy learning.

For reading, according to parents, a single episode of behaviour problems and persistent behaviour problems were associated with a 0.20 and a 0.45 year loss of learning, respectively. According to

teacher report, a single episode of behaviour problems and persistent behaviour problems were associated with a 0.05 and a 0.40 year loss of reading learning, respectively

Do behaviour problems in Years 3 to 5 relate to student disengagement in Year 7?

In Year 7 13% of students were classified as disengaged. Further description of the disengagement measure in CATS is provided in Appendix 3. The association between membership in the three behaviour problems categories and disengagement in Year 7 was investigated in logistic regression models (for both parent and teacher report).

Table 5. Likelihood of student disengagement in Year 7 associated with behaviour problems in Years 3 to 5.

	Parent report		Teacher report	
	OR	95% CI	OR	95% CI
None	Ref		Ref	
Single episode	1.2	0.7 - 2.0	1.0	0.6 - 1.8
Persistent	1.7 *	1.1 - 2.8	2.1 **	1.3 - 3.4

*p<0.05; **p<0.01; ***p<0.001
Analyses controlled for gender, SEIFA disadvantage/advantage quintile and age.
Ref – The reference group with an odds ratio of 1

Table 5 shows that, even when taking gender, age and SEIFA disadvantage/advantage quintile into account, persistent behaviour problems (parent report) in Years 3 to 5 were associated with a nearly two-fold (200%) increase in the odds of disengagement in Year 7, compared to the group with no behaviour problems. A single episode of behaviour problems (according to parent report) was associated with a 20% increased odds although there was not statistical evidence that this differed from the reference group with no behaviour problems. Results are similar when considering behaviour problems according to teacher report.

There was no evidence of an interaction between level of behaviour problems in Year 3-5 (no behaviour problems, single episode or persistent behaviour problems) and gender, indicating that the relationship between behaviour problems and disengagement was similar for boys and girls (data not shown).

Wellbeing: Subjective Wellbeing

Definition

Wellbeing encompasses the psychological, cognitive, social and physical functioning and capabilities that students need to live a happy and fulfilling life. Wellbeing is a multi-faceted concept incorporating both subjective experience and objective circumstances.

CATS Subjective Wellbeing Indicators

Two wellbeing indicators were created: (1) high wellbeing, and (2) low wellbeing. Both were based on student self-report in Years 3, 4 and 5 (1 assessment per year). See Appendix 6 for a description of the items used to create these indicators and details of how these indicators were derived. Appendix 6 also contains additional information about wellbeing across Years 3 to 7 for boys and girls.

How many students have high wellbeing?

The categories of the high wellbeing indicator were:

1. No high wellbeing (no report in Years 3, 4 or 5)
2. Single episode of high wellbeing (reported on one year only)
3. Persistent high wellbeing (reported on two or three years)

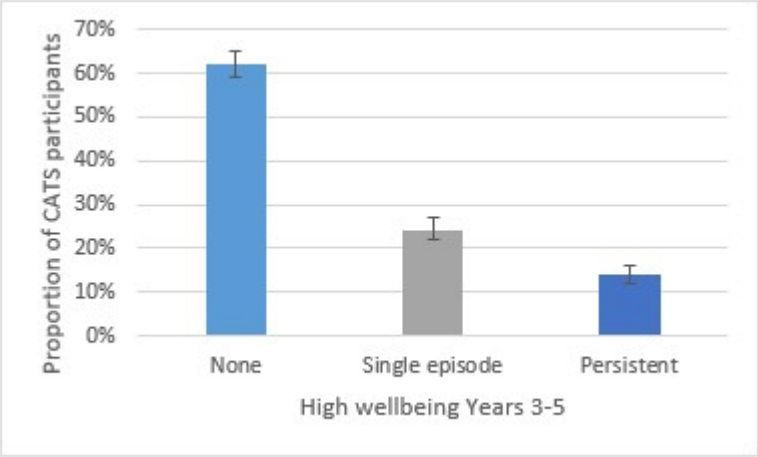


Figure 8. Proportions of CATS sample reporting high wellbeing in Years 3, 4 and 5 on no occasions, on one year only (single episode), or on two or three years (persistent).

Just over 60% of the CATS sample did not have high wellbeing in any of Years 3, 4 and 5 (Figure 8). Nearly one in four students had high wellbeing at one time point (Year 3, 4 or 5), and over one in 10 had high wellbeing on two or three occasions. There was no evidence of a difference between boys and girls (data not shown).

How many students have low wellbeing?

The categories of the low wellbeing indicator were:

1. No low wellbeing (no report in Years 3, 4 or 5)
2. Single episode of low wellbeing (reported on one year only)
3. Persistent low wellbeing (reported on two or three years)

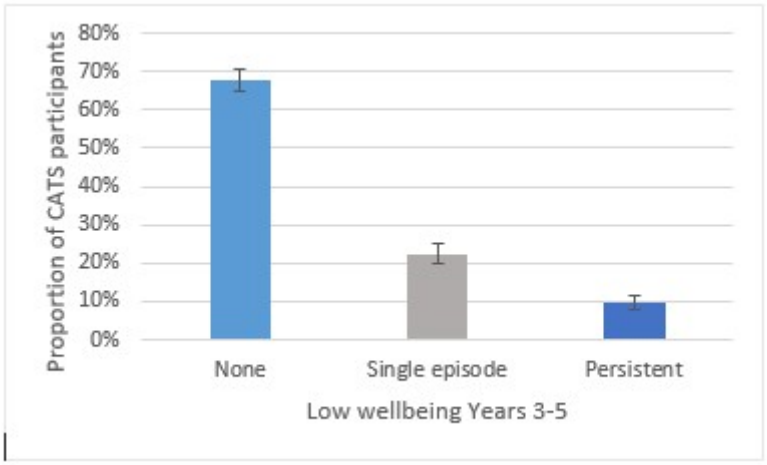


Figure 9. Proportions of CATS sample reporting low wellbeing in Years 3, 4 and 5 on no occasions, on one year only (single episode), or on two or three years (persistent).

One in 10 students persistently reported low wellbeing (Figure 9). Nearly one in four reported low wellbeing on a single occasion (i.e. in Year 3, 4 or 5). There was no evidence of a difference between boys and girls (data not shown).

Do high wellbeing and low wellbeing in Years 3 to 5 relate to student learning?

For each of the two wellbeing indicators, the association between membership in the three categories and NAPLAN numeracy and reading scores in Year 7 was investigated. See Appendix 2 for further information on NAPLAN data in the CATS study.

The estimated average numeracy and reading NSS in Year 7 for each of the 3 groups (for each of the two wellbeing indicators) was determined by linear regression modelling of NSS as a function of group, also taking each student's Year 3 numeracy or reading NSS, gender, age and SEIFA disadvantage/advantage quintile into account. There was no evidence of an interaction between high wellbeing or low wellbeing in Year 3-5 and gender, indicating that the relationship between wellbeing and NSS was similar for boys and girls (data not shown).

a) b)

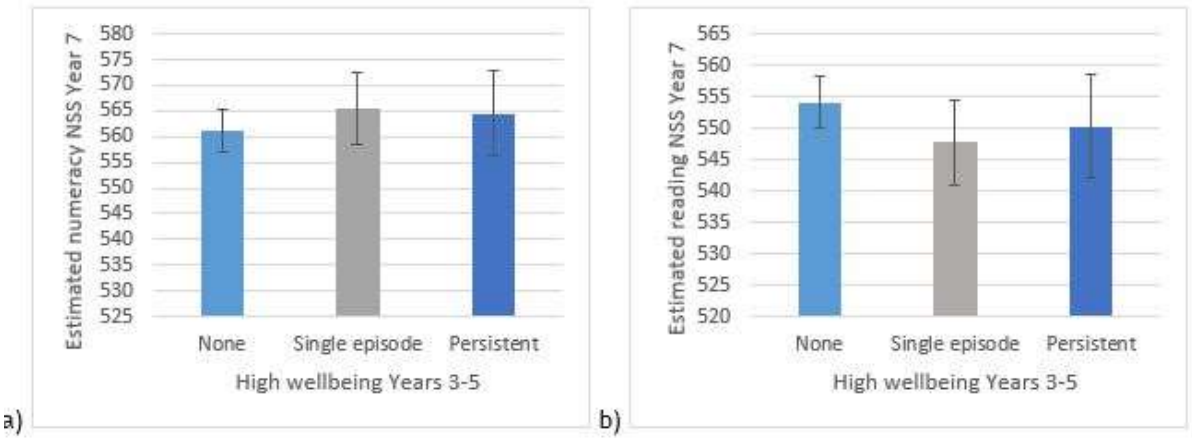


Figure 10. Estimated mean Year 7 NAPLAN a) numeracy and b) reading (NSS) for students had none, single episode or persistent high wellbeing in Years 3-5.

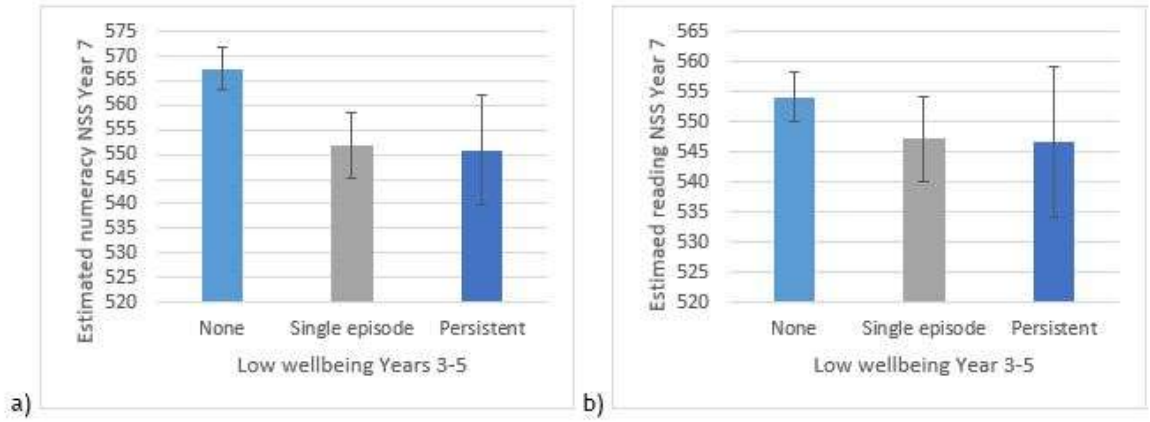


Figure 11. Estimated mean Year 7 NAPLAN a) numeracy and b) reading (NSS) for students that had none, single episode or persistent low wellbeing in Years 3-5.

The estimated mean numeracy and reading NSS (Figures 10 and 11) can be expressed in terms of its Equivalent Years of Learning (EYL) as shown in Table 6 on the following page.

Table 6. Equivalent Years of Learning (EYL) for each estimated mean numeracy and reading NSS; a) high wellbeing b) low wellbeing.

a)

High wellbeing	Estimated Mean NSS	EYL	Loss of learning between Years 3 and 7 (Years)
Numeracy			
None	561	7.91	Ref
Single episode	565	8.09	-0.18
Persistent	565	8.09	-0.18
Reading			
None	554	7.36	Ref
Single episode	548	7.06	0.30
Persistent	550	7.16	0.20

b)

Low wellbeing	Estimated Mean NSS	EYL	Loss of learning between Years 3 and 7 (Years)
Numeracy			
None	567	8.18	Ref
Single episode	552	7.51	0.67
Persistent	551	7.46	0.72
Reading			
None	554	7.36	Ref
Single episode	547	7.01	0.15
Persistent	547	7.01	0.15

Table 6a and Figure 11a show that for both numeracy and reading, when taking Year 3 NAPLAN score, gender, age and SEIFA disadvantage/advantage quintile into account, level of high wellbeing in Years 3-5 was not associated with level of achievement at Year 7.

Table 6b and Figure 11b show that for numeracy, when taking Year 3 NAPLAN score, gender, age and SEIFA disadvantage/advantage quintile into account, persistent low wellbeing was associated with nearly a three-quarter year loss of learning. In addition, low wellbeing reported on a single occasion (Year 3, 4 or 5) was associated with a two-thirds of a year loss of learning.

Do high wellbeing and low wellbeing in Years 3 to 5 relate to student disengagement in Year 7?

In Year 7 13% of students were classified as disengaged. Further description of the disengagement measure in CATS is provided in Appendix 3. The association between membership in the three high wellbeing categories and disengagement in Year 7 was investigated using a logistic regression model. Likewise, a logistic regression model was used to investigate the association between membership in the three low wellbeing categories and disengagement in Year 7.

Table 7. Likelihood of student disengagement in Year 7 associated with high wellbeing and low wellbeing in Years 3 to 5.

	High wellbeing		Low wellbeing	
	OR	95% CI	OR	95% CI
None	Ref		Ref	
Single episode	0.5 **	0.3 - 0.8	1.5	0.9 - 2.5
Persistent	0.4 **	0.2 - 0.8	2.1 *	1.1 - 4.2

*p<0.05; **p<0.01; ***p<0.001
Analyses controlled for gender, SEIFA disadvantage/advantage quintile and age.
Ref – The reference group with an odds ratio of 1

Table 7 shows that, even when taking gender, age and SEIFA disadvantage/advantage quintile into account, persistent low wellbeing in Years 3 to 5 was associated with a 2.1 fold increase in the odds of disengagement in Year 7. On the other hand, persistent high wellbeing was associated with a decrease in the odds of disengagement in Year 7. Additionally, having a single occasion of high wellbeing (in Years 3, 4 or 5) was associated with a two-fold decrease in the odds of disengagement in Year 7.

There was no evidence of an interaction between high wellbeing or low wellbeing and gender, indicating that the relationship between wellbeing and disengagement was similar for boys and girls (data not shown).

Peer relationships

Definitions

Peer support refers to the functions performed for an individual by friends and classmates. It can include emotional support (demonstrations of love and caring, esteem and value, encouragement, and sympathy), instrumental support (provision of facts or advice that may help a person solve problems) and informational support (supplying behavioural or material assistance with practical tasks or problems). The number of friends reported by students is used as a proxy for peer support.

Bullying is repeated verbal, physical, social or psychological aggressive behaviour by a person or group directed towards a less powerful person or group that is intended to cause harm, distress or fear.

CATS Peer Relationship Indicators

Two peer relationship indicators were created: (1) peer support, and (2) bullying. Both were based of student self-report in Years 3, 4 and 5 (1 assessment per year). See Appendix 7 for a description of the items used to create these indicators and details of how these indicators were derived. Appendix 7 also contains additional information about the prevalence across Years 3 to 7 for boys and girls of the components of the indicators.

How many students have peer support?

The categories of the peer support indicator were:

1. No peer support (no report in Years 3, 4 or 5)
2. Single episode of peer support (reported on one year only)
3. Persistent peer support (reported on two or three years)

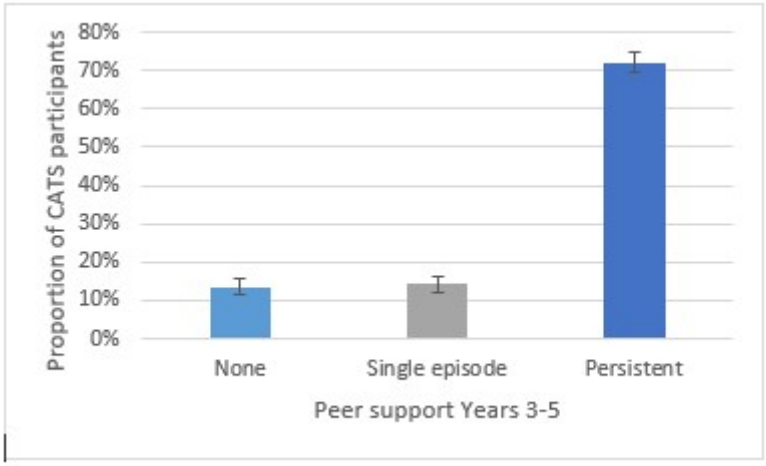


Figure 12. Proportions of CATS sample reporting peer support in Years 3, 4 and 5 on no occasions, on one year only (single episode), or on two or three years (persistent).

Just over 70% of the CATS sample had peer support in all of Years 3, 4 and 5 (Figure 12). On the other hand, just over one in 10 students did not have peer support in all of Years 3, 4 and 5. There was no evidence of a difference between boys and girls (data not shown).

How many students were bullied?

The categories of the bullying indicator were:

1. No bullying (no report in Years 3, 4 or 5)
2. Single episode of bullying (reported on one year only)
3. Persistent bullying (reported on two or three years)

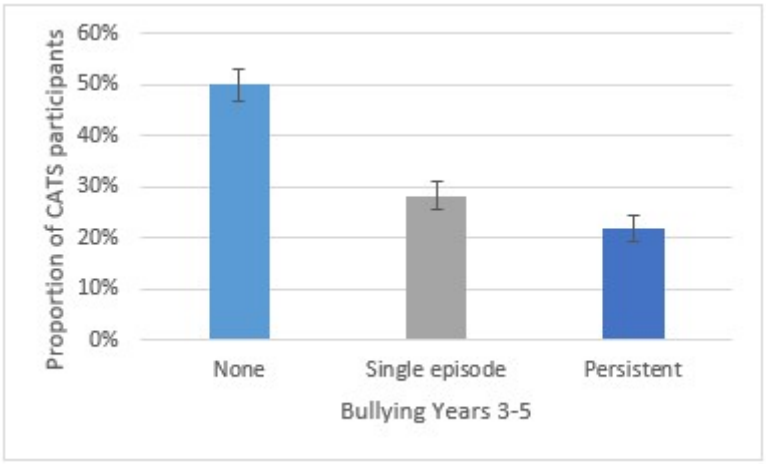


Figure 13. Proportions of CATS sample reporting bullying in Years 3, 4 and 5 on no occasions, on one year only (single episode), or on two or three years (persistent).

Nearly one in four students were persistently bullied (Figure 13). In addition, just over one in four were bullied on a single occasion (i.e. in Year 3, 4 or 5). There was some evidence that more boys (26%) than girls (19%) experienced persistent bullying (data not shown).

Do peer support and bullying in Years 3 to 5 relate to student learning?

For each of the two peer relationship indicators, the association between membership in the three categories and NAPLAN numeracy and reading scores in Year 7 was investigated. See Appendix 2 for further information on NAPLAN data in the CATS study.

The estimated average numeracy and reading NSS in Year 7 for each of the 3 groups (for each of the two indicators) was determined by linear regression modelling of NSS as a function of group, also taking each student's Year 3 numeracy or reading NSS, gender, age and SEIFA disadvantage/advantage quintile into account. There was no evidence of an interaction between peer support or bullying and gender, indicating that the relationship between peer support or bullying and NSS was similar for boys and girls (data not shown).

a) b)

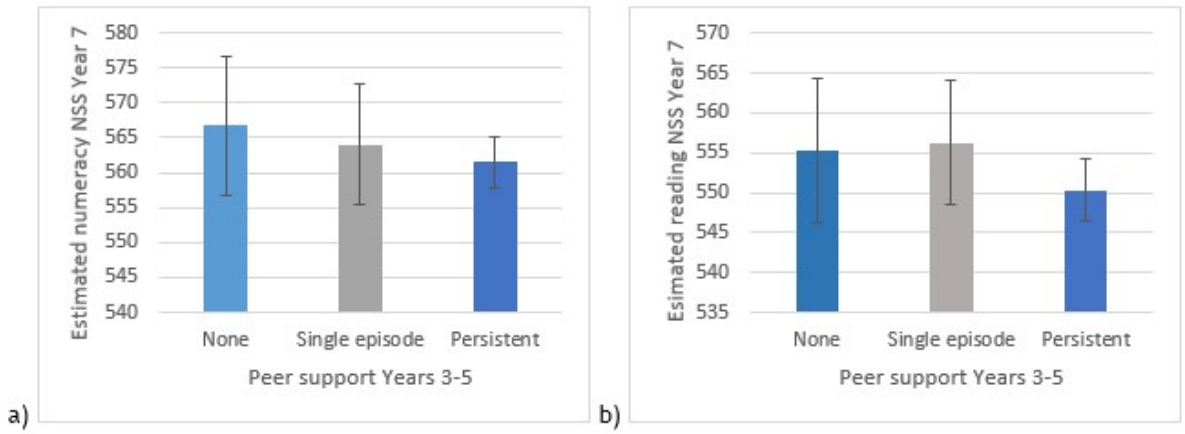


Figure 14. Estimated mean Year 7 a) numeracy and b) reading NSS for students with none, single episode or persistent peer support in Years 3-5.

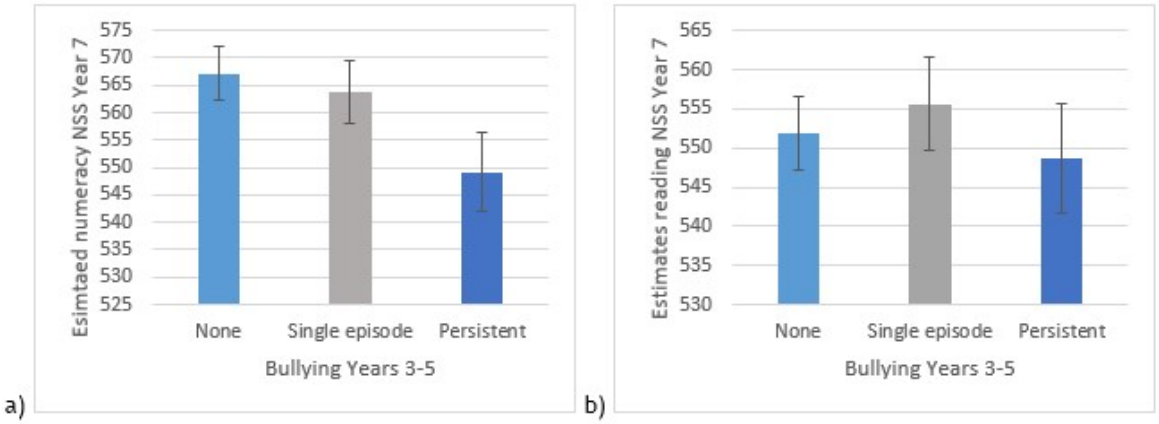


Figure 15. Estimated mean Year 7 a) numeracy and b) reading NSS for students who were not bullied, bullied on a single episode or were persistently bullied in Years 3-5.

The estimated mean numeracy and reading NSS (Figures 14 and 15) can be expressed in terms of its Equivalent Years of Learning (EYL) as shown in Table 8 on the following page.

Table 8. Equivalent Years of Learning (EYL) for each estimated mean numeracy and reading NSS; a) peer support, b) bullying.

a)

Peer support	Estimated Mean NSS	EYL	Loss of learning between Years 3 and 7 (Years)
Numeracy			
None	567	8.18	Ref
Single episode	564	8.04	0.14
Persistent	561	7.91	0.27
Reading			
None	555	7.42	Ref
Single episode	556	7.47	-0.05
Persistent	550	7.16	0.26

b)

Bullying	Estimated Mean NSS	EYL	Loss of learning between Years 3 and 7 (Years)
Numeracy			
None	567	8.18	Ref
Single episode	564	8.04	0.14
Persistent	549	7.37	0.80
Reading			
None	552	7.26	Ref
Single episode	556	7.47	-0.21
Persistent	549	7.11	0.15

Table 8a and Figure 15a show that for both reading and numeracy, when taking Year 3 NAPLAN score, gender, age and SEIFA disadvantage/advantage quintile into account, level of peer support in Years 3-5 was not associated with level of achievement at Year 7.

Table 8b and Figure 15b show that for numeracy, when taking Year 3 NAPLAN score, gender, age and SEIFA disadvantage/advantage quintile into account, persistent bullying was associated with a 0.80 year loss of learning.

Do peer support and bullying in Years 3 to 5 relate to student disengagement in Year 7?

In Year 7 13% of students were classified as disengaged. Further description of the disengagement measure in CATS is provided in Appendix 3. The association between membership in the 3 peer support categories and disengagement in Year 7 was investigated using a logistic regression model. Likewise, a logistic regression model was used to investigate the association between membership in the 3 bullying categories and disengagement in Year 7.

Table 9. Likelihood of student disengagement in Year 7 associated with peer support and bullying in Years 3 to 5.

	Peer support		Bullying	
	OR	95% CI	OR	95% CI
None	Ref		Ref	
Single episode	0.9	0.5 - 1.7	1.1	0.6 - 1.7
Persistent	0.5 **	0.3 - 0.8	1.1	0.6 - 1.9

*p<0.05; **p<0.01; ***p<0.001
Analyses controlled for gender, SEIFA disadvantage/advantage quintile and age.
Ref – The reference group with an odds ratio of 1

Table 9 shows that, even when taking gender, age and SEIFA disadvantage/advantage quintile into account, consistent peer support in Years 3 to 5 was associated with a nearly two-fold (200%) decrease in the odds of disengagement in Year 7, compared to the group with no peer support throughout Years 3 to 5. There was no evidence for an association between bullying and school disengagement in Year 7.

There was no evidence of an interaction between peer support or bullying and gender, indicating that the relationship between peer support or bullying and disengagement was similar for boys and girls (data not shown).

School Engagement

Definition

School engagement refers to a student's relationship with school, school staff, other students and learning. It includes behavioural, emotional and cognitive components; a highly engaged student will participate in academic, social and extra-curricular activities, will have a sense of belonging or connection with school, and will be motivated in their learning.

CATS School Engagement Indicators

Two school engagement indicators were created: (1) high engagement, and (2) disengagement. Both were based on student self-report in Years 4 and 5. See Appendix 8 for a description of the items used to create these indicators and details of how these indicators were derived. Appendix 8 also contains additional information about school engagement across Years 3 to 7 for boys and girls.

How many students have high engagement?

The categories of the high engagement indicator were:

1. No high engagement (no report in Years 4 or 5)
2. One year of high engagement
3. Two years of high engagement

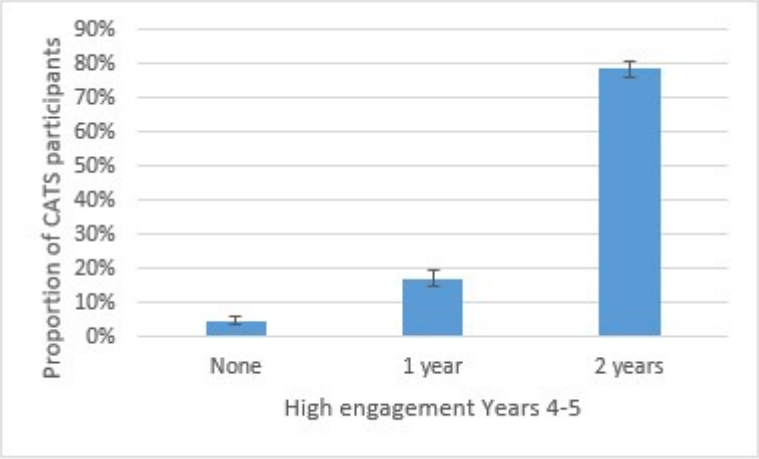


Figure 16. Proportions of CATS sample reporting high engagement in Years 4 and 5 on no occasions, on one year only, or on two years.

Nearly 80% of the CATS sample were highly engaged in school at both Years 4 and 5 (Figure 16). About one in 20 students were not highly engaged at both Years 4 and 5. There was evidence of a difference between boys and girls with less boys than girls (70% versus 85%) highly engaged in two years (data not shown).

How many students were disengaged?

The categories of the disengagement indicator were:

1. No disengagement (no report in Years 4 or 5)
2. One or two years of disengagement (reported in Year 4 and/or Year 5)

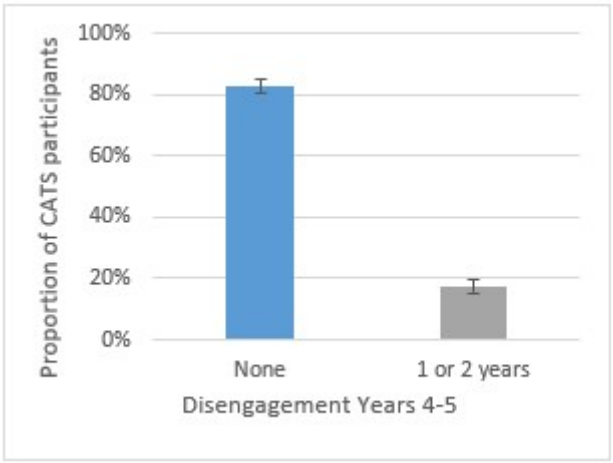


Figure 17. Proportions of CATS sample reporting school disengagement in Years 4 and 5 on no occasions, or on one or two occasions.

Just over 80% of the CATS sample were not disengaged from school at both Years 4 and 5 (Figure 17). Nearly one in five were disengaged from school at either one or both of Years 4 and 5. There was evidence of a difference between boys and girls with more boys than girls (23% versus 13%) disengaged in one or two years (data not shown).

Do high engagement and disengagement in Years 4 and 5 relate to student learning?

For each of the two school engagement indicators, the association between membership in the relevant categories and NAPLAN numeracy and reading scores in Year 7 was investigated. See Appendix 2 for further information on NAPLAN data in the CATS study.

The estimated average numeracy and reading NSS in Year 7 for each of the categories (for both of the school engagement indicators) was determined by linear regression modelling of NSS as a function of group, also taking each student's Year 3 numeracy or reading NSS, gender, age and SEIFA disadvantage/advantage quintile into account.

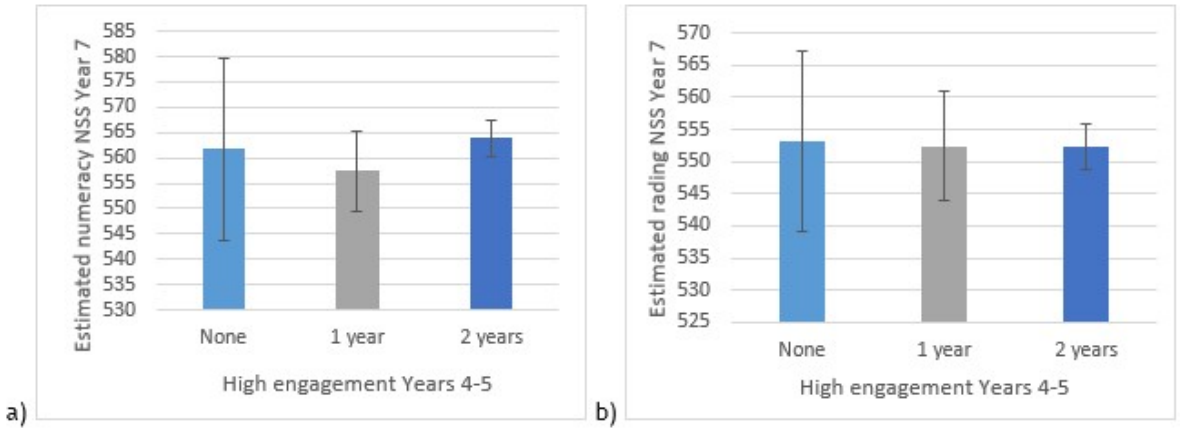


Figure 18. Estimated mean Year 7 NAPLAN numeracy and reading (NSS) for students that had none, one year or two years of high engagement in Years 4 and 5.

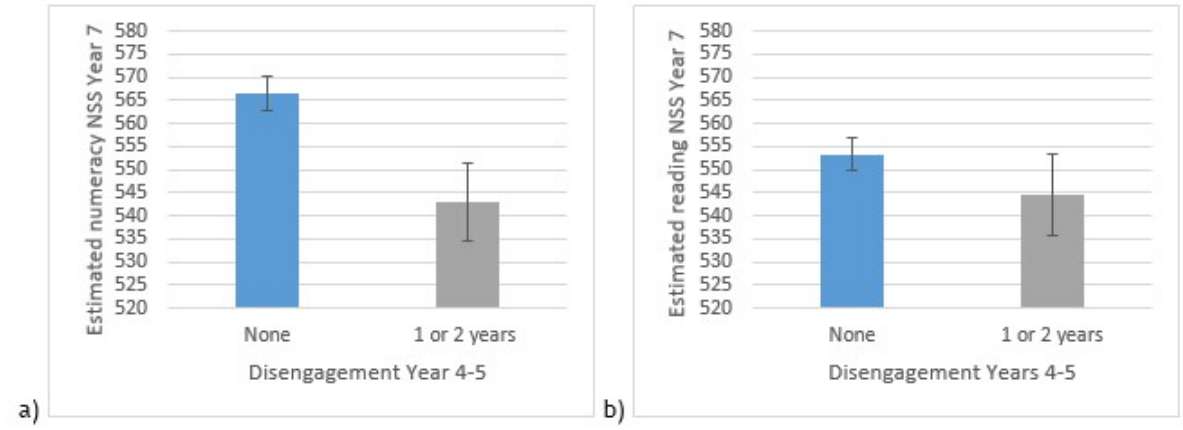


Figure 19. Estimated mean Year 7 NAPLAN numeracy and reading (NSS) for students that had none, or one or two years of disengagement in Years 4 and 5.

The estimated mean numeracy and reading NSS (Figures 18 and 19) can be expressed in terms of its Equivalent Years of Learning (EYL) as shown in Table 10 on the following page.

Table 10. Equivalent Years of Learning (EYL) for each estimated mean numeracy and reading NSS; a) high engagement b) disengagement.

a)

High engagement	Estimated Mean NSS	EYL	Loss of learning between Years 3 and 7 (Years)
Numeracy			
None	562	7.95	Ref
1 year	557	7.73	0.22
2 years	564	8.04	-0.09
Reading			
None	553	7.31	Ref
1 year	552	7.26	0.05
2 years	552	7.26	0.05

b)

Disengagement	Estimated Mean NSS	EYL	Loss of learning between Years 3 and 7 (Years)
Numeracy			
None	567	8.18	Ref
1 or 2 years	543	7.11	1.07
Reading			
None	553	7.31	Ref
1 or 2 years	545	6.91	0.40

Figure 19a shows that for both numeracy and reading, when taking Year 3 NAPLAN score, gender, age and SEIFA disadvantage/advantage quintile into account, category of high engagement in Years 4 and 5 was not associated with level of achievement at Year 7.

Figure 19b and Table 10b show that for numeracy, when taking Year 3 NAPLAN score, gender, age and SEIFA disadvantage/advantage quintile into account, disengagement at Year 4 and/or Year 5 was associated with more than a year loss of learning.

There was no evidence of an interaction between high engagement or disengagement and gender, indicating that the relationship between high engagement or disengagement and NSS was similar for boys and girls (data not shown).

Learning Progress

Definition

Improvements in knowledge, skills, and abilities that students attain over time as a result of their involvement in education.

CATS Learning Progress Indicators

Two learning progress indicators were created, based on NAPLAN Years of Progress (YOP) scores between Years 3 and 5 (see Appendix 2 for details on NAPLAN and YOP). Students were classified as making 'high', 'medium' or 'low' learning progress according to whether they were in the highest, middle or lowest third of the distribution for YOP respectively.

Does learning progress between Years 3 and 5 relate to student disengagement in Year 7?

In Year 7 13% of students were classified as disengaged. Further description of the disengagement measure in CATS is provided in Appendix 3. The association between membership in the 3 learning progress categories, for numeracy and reading, and disengagement in Year 7 was investigated in logistic regression models.

Table 11. Likelihood of student disengagement in Year 7 associated with Year 3 to 5 learning progress categories.

	Learning Progress Category	OR		95% CI
Numeracy				
	Low	Ref		
	Middle	0.7		0.4 - 1.1
	High	0.6	*	0.3 - 1.0
Reading				
	Low	Ref		
	Middle	0.8		0.5 - 1.3
	High	0.7		0.4 - 1.3

*p<0.05; **p<0.01; ***p<0.001
Analyses controlled for gender, SEIFA disadvantage/advantage quintile and age.
Ref – The reference group with an odds ratio of 1

Table 11 shows that, even when taking gender, age and SEIFA disadvantage/advantage quintile into account, high learning progress in numeracy between Years 3 and 5 was associated with a 40% decrease in the odds of disengagement in Year 7, compared to the group with low learning progress. There was no detectable relationship between reading progress and Year 7 disengagement.

There was no evidence of an interaction between learning progress category and gender, indicating that the relationship between learning progress category and disengagement was similar for boys and girls (data not shown).

Primary to Secondary School Transition

Background

This report has described how the middle years are a period of major physical, social and emotional changes. In the midst of this dynamic developmental period most Australian students transition from primary to secondary school. This move mostly occurs between Years 6 and 7 although in South Australia the transition takes place between Years 7 and 8. This move is one of the most significant transitions in the course of a child's education and represents a key life stage transition or 'rite of passage' for young people [18, 24]. It involves a move from the familiar and more personal surroundings of primary school to a usually much larger and complex secondary school system. Students have to adapt to a different school routine that has a broader range of curricula, a larger number of teachers with potentially different teaching styles, and new educational demands [17, 63]. Students face an increased workload and the responsibilities that come with having more homework and the expectation of self-directed learning [64]. Many have new travel arrangements and may need to travel further than they did in primary school. In addition to these changes in routine and culture of education (formal school systems), students are repositioned as the youngest in the school and exposed to many more (and older) pupils, and associated peer groups and pressures i.e. changes in informal social/peer systems [19].

While some students feel excited and optimistic about these changes and the opportunities that present with the transition to secondary school [65, 66], most students experience some level of anxiety. Whilst a period of apprehension is normal, these worries normally dissipate within the first year of secondary school. However, a substantial minority of children continue to struggle with the social, emotional, organisational and academic demands of the transition to secondary school [67-69]. Students who experience persistent difficulties across the first year of secondary school are therefore likely to represent a vulnerable group who may be struggling to meet the demands of secondary school. This group are at high risk of emotional and behaviour problems and poor academic performance through and beyond secondary school [19].

The Victorian Auditor-General's Office audit on Education Transitions described a "drop in achievement and engagement with school" in the years following the primary to secondary school transition for "many students" [25]p2. They cite international research suggesting that this negative impact may be cumulative – existing gaps are likely to be widened – and may signal the beginning of later disengagement from secondary school. [25].

Aims

This chapter examines the CATS longitudinal dataset to address the following questions:

- Do rates of poor adjustment predicted by parents and teachers in Year 6 reflect parent reported rates of poor adjustment following the transition to secondary school?
- Does parent and teacher anticipation of poor adjustment lead to poorer learning outcomes?
- What is the level of concern amongst students prior to the transition?
- What are the major concerns reported by students before and after the transition?
- How does the level of concern amongst students change after entry into secondary school?
- What support is available for parents and students during the transition to secondary school?
- Does support for students reduce difficulties (improve adjustment) on the transition to secondary school?

Adjustment to Secondary School

In CATS, indicators of student anticipated adjustment to secondary school included parent and teacher ratings on the Secondary Transition Adjustment Rating Tool (START) [67]. The START measures key adjustment domains such as academic performance, peer relationships, relationships with teachers and adaptability to changes in the routine. In Year 6, both parents and teachers were asked how they expected the child to settle into school. In Year 7, parents were asked how well their child had settled into school.

Table 12. Parent and teacher report of anticipated adjustment to secondary school by gender in Year 6 (START scale).

	Parent Report (%)		Teacher Report (%)	
Will not settle in well to secondary school…	Girls	Boys	Girls	Boys
...academically	7.6	6.3	7.1	12.8
...socially, with peers	3.7	4.3	2.3	5.3
...socially, with teachers	1.6	3.5	1.6	6.1
...to the new routine	3.7	7.3	2.1	9.5
Total adjustment score (range 4-20)	16.5	16.0	17.3	16.0

Table 12 shows the percentage of parents and teachers who expected students to experience difficulties in particular areas of secondary school life. Overall, both parents and teachers anticipated that boys would have more difficulties settling into secondary school than girls as shown by the higher total adjustment score for girls. Both parents and teachers identified more boys than girls as being at risk of poor adjustment to the new routine, teachers and friends. The areas of most concern for boys were academic performance and the new school routine. For girls, academic performance was the aspect of most concern.

However, parents and teachers rated academic adjustment differently: parents rated more girls (8%) to be at risk of poor academic adjustment than boys (6%); teachers rated less girls (7%) than boys (13%) to be at risk. Further, compared to teacher ratings, parents consistently expected fewer boys to face difficulties adjusting to secondary school while also expecting the same number or more girls to face difficulties.

Table 13. Parent report of student adjustment to secondary school by student gender in Year 7 (START scale).

	Parent Report (%)	
Has not settled in well to secondary school…	Girls	Boys
…academically	5.4	9.6
…socially, with peers	5.2	3.3
…socially, with teachers	3.4	3.8
…to the new routine	3.8	3.6
Total adjustment score (range 4-20)	17.3	16.9

Following the transition to secondary school, most parents of Year 7 girls indicated that their daughters had settled in well with only around 5% indicating poor transition in terms of academic performance and friendships (Table 13). Comparatively, almost 10% of parents indicated their son had not settled in academically but only around 3-4% reported problems in any other domain. The total adjustment scores were higher for girls than boys indicating parents of girls rated better adjustment of their child to secondary school than parents of boys.

The proportion of parents who reported their child was experiencing any (1 or more) of the adjustment problems was also determined. In total, 13% of parents reported adjustment problems (12% girls and 15% boys).

Compared to parent and teacher ratings from Year 6, parents reported higher levels of adjustment difficulties for girls on every domain, except academic performance. For boys, Year 7 reports of adjustment difficulties were generally lower than those anticipated by parents and teachers in Year 6.

To understand how parent and teacher adjustment ratings might relate to future academic performance, Table 14 investigates the predictive validity of Year 6 START scale ratings for academic performance in the Year 7 NAPLAN (i.e. the effectiveness of the START scale in predicting future academic performance). All analyses controlled for age, SES (Year 3) and corresponding Year 5 NAPLAN score.

Table 14. Longitudinal associations between parent and teacher START scale in Year 6 and student NAPLAN scores in Year 7.

		Parent			Teacher		
		B	SE	*p*-value	B	SE	*p*-value
Girls	Numeracy	0.8	0.9	0.37	5.6	0.8	<0.001
	Reading	1.1	0.9	0.23	2.3	0.9	0.01
Boys	Numeracy	2.2	0.9	0.02	3.6	0.7	<0.001
	Reading	1.3	0.9	0.15	2.2	0.6	0.004

Explanatory note: The beta coefficients (B) in Table 14 show the mean increase in Year 7 NAPLAN scores associated with an increase in 1 point on the teacher- or parent- rated START scale. For example, for girls, an increase in 1 point on the teacher rated START scale, is associated with a mean increase in Year 7 NAPLAN score of 5.6, after controlling for age, SES and Year 5 NAPLAN score. Results are based on the complete sample of 568 boys and 667 girls using 50 imputed datasets.

The results presented in Table 14 show that even when controlling for age, SES and earlier NAPLAN performance, primary teachers' pre-transition ratings significantly predicted academic performance in Year 7. There was little difference between boys and girls in the magnitude of these associations. Parents' pre-transition ratings were less predictive of academic performance; the only significant association was for boys' numeracy performance.

These findings suggest poor adjustment during the transition from primary to secondary school is likely to lead to poorer learning outcomes after this transition. Although this highlights that the transition to secondary school is a period of academic vulnerability for students, these findings also suggest that teachers may be in a unique position to identify students who require additional support during their transition to secondary school. This offers an opportunity for educators to strategically target programs to reduce the impacts of poor adjustment to secondary school.

Student Concerns about Transition

The School Concerns Questionnaire (SCQ) was used to assess student concerns relating to school transition [67]. The questionnaire has been shown to be a valid and reliable tool for assessing students' concerns in a school transition [67]. In Year 6 and Year 7, students were presented with a list of 20 possible concerns, for example, 'size of school' or 'making new friends'. Students rated how worried they were about each on a 10-point scale of 'not at all worried (0)' to 'extremely worried (10)'. For students who responded to all of the items a mean school concerns score was calculated (range 0 to 10).

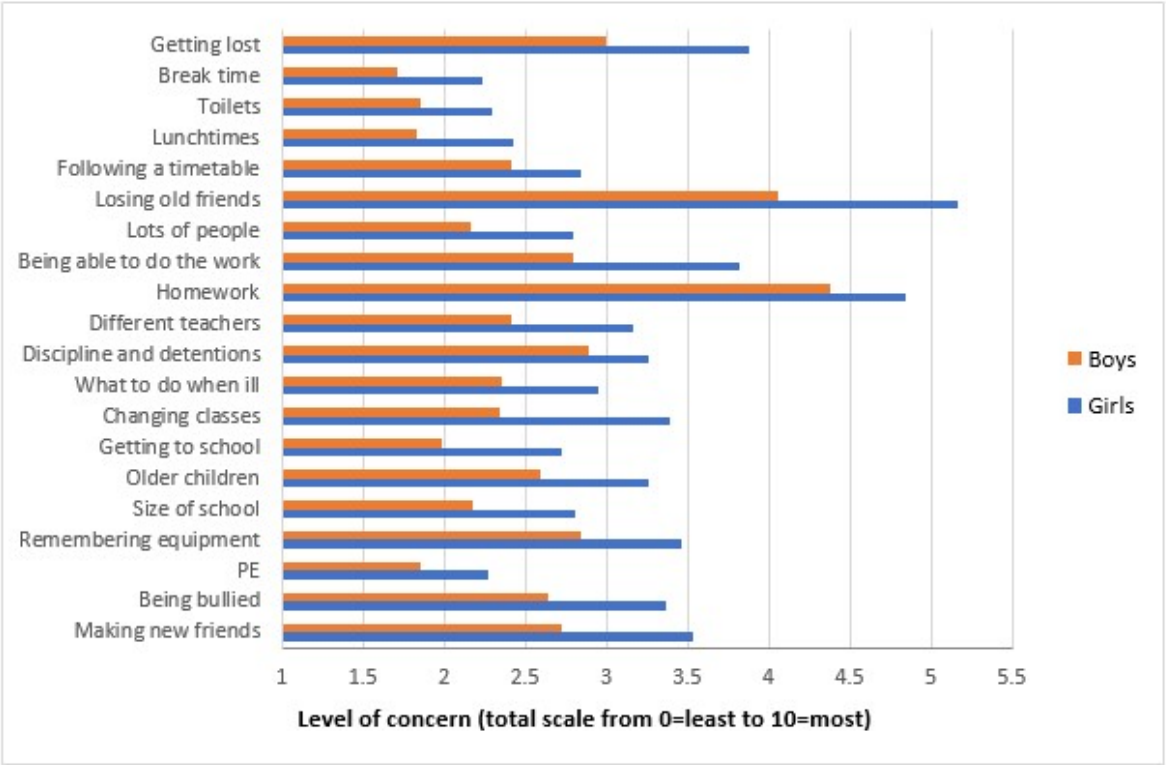


Figure 20. Student concerns about going to secondary school by gender in Year 6.

Figure 20 shows the average rating of boys and girls in Year 6 for each concern listed on a scale of 1 (not at all worried) to 10 (1 extremely worried). For all the concerns listed the mean score fell in the bottom half of the range indicating that most students were not extremely worried about any of the concerns. The mean score for girls was higher than boys for every concern and the highest scores were for: losing old friends, homework and getting lost. Boys also scored highly for these three concerns.

Table 15. Student concerns about going to secondary school pre- (Year 6) and post- (Year 7) transition by gender.

	Year 6		Year 7	
	Girls	Boys	Girls	Boys
SCQ mean score* (sd)	3.21 (1.87)	2.55 (1.52)	2.74 (1.39)	2.31 (1.28)

*range is from 'not worried at all' (1) to 'extremely worried' (10)

An average score of responses to all 20 concerns in Year 6 was calculated and compared to responses to the same items in Year 7, after the move to secondary school. Table 15 confirms that girls had higher levels of concerns overall than boys in Year 6. The difference between boys and girls was also observed in Year 7 when girls again scored more highly than boys for mean SCQ scores. The values for both boys and girls reduced in Year 7 indicating that the level of concern overall reduced after transition to secondary school.

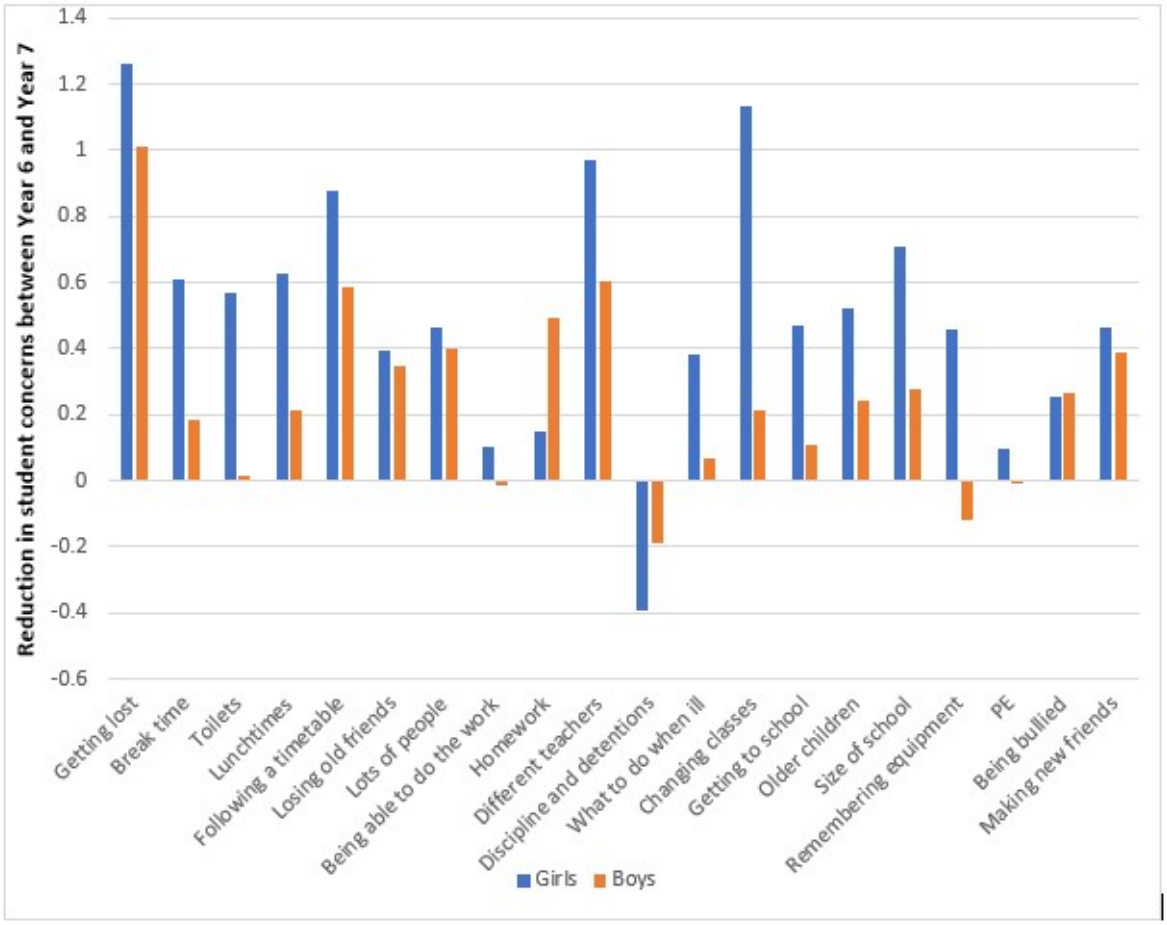


Figure 21. Change in student concerns about going to secondary school from Year 6 to Year 7.

Figure 21 shows the change in each individual concern between Years 6 and 7. On looking at the average change between Years 6 and 7 for each concern, Figure 21 shows that for all concerns that decreased between Year 6 and Year 7, there was a greater reduction for girls than for boys. Although overall levels remained higher for girls as demonstrated by the higher SCQ mean score for girls in Table 15. The single exception for this was for concerns about homework which reduced more amongst boys than girls. While most concerns decreased after the transition to secondary school, there were increases in concerns relating to discipline and detentions, perhaps as students learnt more about these things on entry to secondary school, and for remembering equipment (for boys only).

Engagement, support and satisfaction

Following the transition to Year 7, parents completed a range of items about their own and their child's experience of settling into secondary school. Items assessed the degree and type of support received prior to transition, parent involvement with the current secondary school, and satisfaction with the current school.

Parents of Year 7 students were asked about the support they had received from their child's previous and current schools. As can be seen in Table 16, parents reported receiving lower levels of support

than their children and both parents and students receive more support from the secondary than primary school.

Table 16. Summary of transition support experience reported by parents of Year 7 students.

	Parent (%)	Student (%)
Support from primary school		
A lot	15.5	29.4
Some	28.4	36
A little	23.4	22.2
None	32.7	12.4
Support from secondary school		
A lot	34.6	50.3
Some	35.9	35.7
A little	19.6	10.7
None	10	3.3

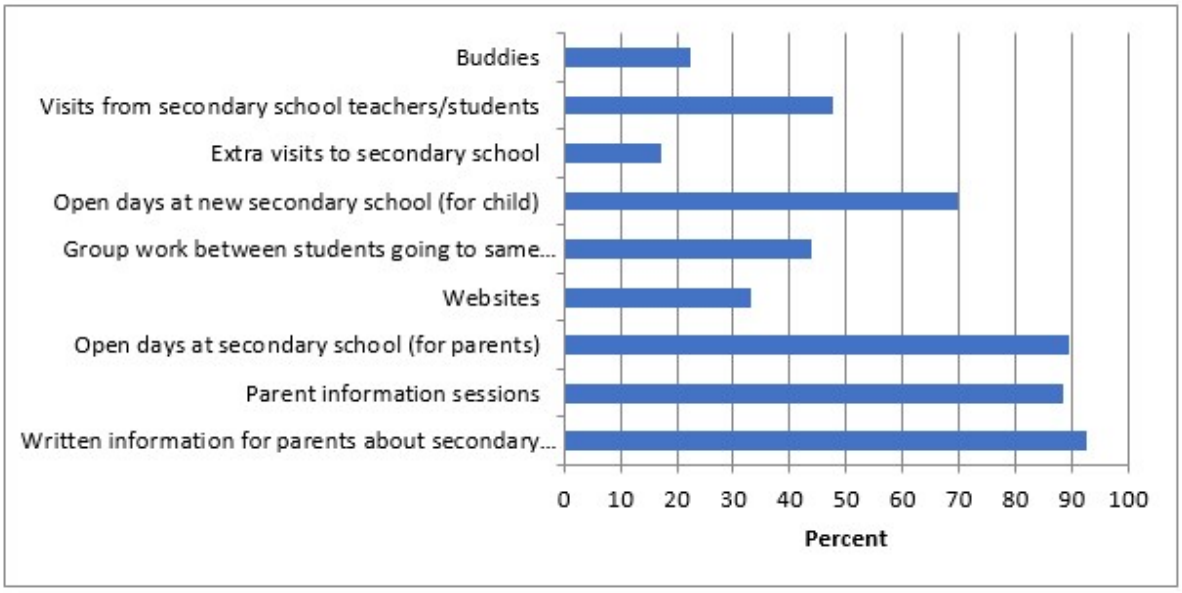


Figure 22. Frequency of types of strategies to support parents and students.

To understand the nature of support offered during the transition to secondary school, parents were asked whether they or their children had received a number of common methods of support. Figure 22 shows that the majority of parents received support in the form of written materials, information sessions and secondary school open days. Students most commonly attended open days and received visits from secondary school teachers or students.

Further, when asked if they had needed advice about their child's move to secondary school, only one in eight parents of Year 7 students (15.4%) indicated that they had. Of those needing advice

61.5% obtained this from primary school, 74.6% from secondary school, 43.9% from family, 65.4% from friends, and 40.8% from the internet. Other, less commonly used, sources of advice were church (n=1), mental health practitioner or psychologist (n=9). This suggests that where parents did actively seek support during the transition, secondary schools, primary schools and friends were their preferred points of contact.

Table 17. Summary of parent involvement in child's secondary school.

Type of involvement	%
Whether parents always or often…	
Visited class	4.2
Contacted teacher	14.4
Talked to parents of other children	26
Attended a school event	39.5
Volunteered or helped out	3
Attended school committee	10.6
Attended parent teacher meeting	68.2

To investigate how parents engaged with secondary schools following the transition from primary school, parents were asked how often they were involved in activities related to their child's school. Table 17 shows that the most common ways for parents to be involved in their child's secondary school was by parent-teacher meetings and attending school events. This suggests that parents are most likely to be involved in activities initiated by the school, highlighting the importance of schools in maintaining parent engagement following the transition to secondary school.

Table 18. Summary of transition experience reported by Year 7 students.

	Girls	Boys
Involved in school choice	78.6	77.9
Moved to new school with friends from primary school	79.1	80.9

Unlike parents, students are usually directly involved with their school on a daily basis, so instead of focusing on their involvement with school, students were asked about their involvement in decision making related to their transition to secondary school. Table 18 shows that over three quarters of students were involved in the choice of secondary school and around 80% had friends from their previous school in their new secondary school. There were no gender differences in these reports.

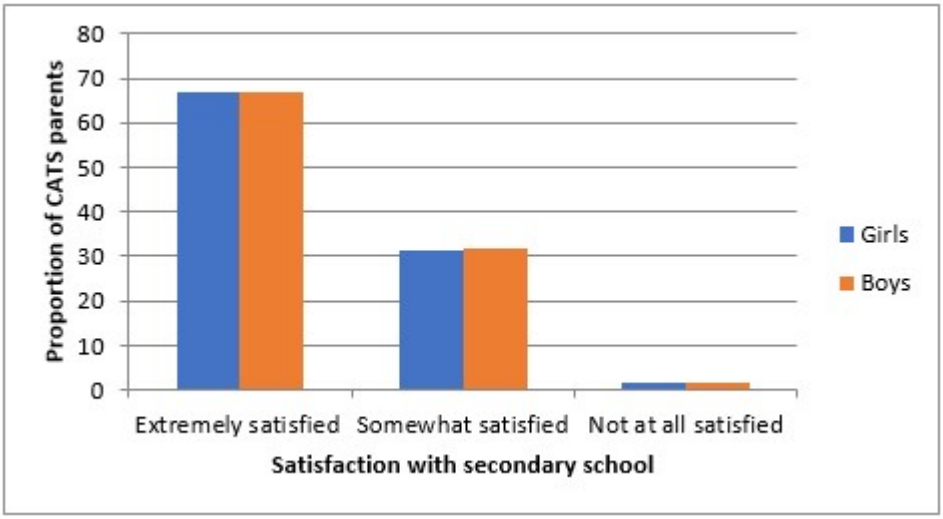


Figure 23. Parent-reported satisfaction with current secondary school by gender of Year 7 student.

As general measure of their experience with their child's transition to secondary school, parents were asked to rate their level of satisfaction with their child's secondary school. The overwhelming majority (over 98%) were extremely or somewhat satisfied (Figure 23). There was no difference between parents of boys or girls.

Given that the majority of students reported at least some level of support from their primary and secondary school, it is important to understand the effectiveness of this support during transition in terms of post-transition adjustment. We investigated associations between how much support parents felt their child had received from the primary and secondary schools and parent rating of student adjustment to secondary school in Year 7 (START). Analyses were based on the complete sample of 568 boys and 667 girls using 50 imputed datasets. All analyses controlled for age and SES (Year 3) and all comparisons are to the response 'none'. Results are presented in Table 19.

Table 19. Associations between support offered to student during the move to secondary school and parent START scale in Year 7.

		Girls			Boys		
		B	SE	*p*-value	B	SE	*p*-value
Support from Primary School	A little	-0.2	0.5	0.71	0.0	0.4	0.93
	Some	0.1	0.4	0.74	0.9	0.4	0.03
	A lot	0.8	0.4	0.07	1.9	0.4	<0.001
Support from Secondary School	A little	-0.9	0.8	0.26	-0.3	0.8	0.69
	Some	0.3	0.8	0.66	0.8	0.7	0.25
	A lot	1.4	0.8	0.06	1.7	0.7	0.02

The findings in Table 19 show a graded increase in START scores of parents' reports of their child's adjustment to secondary school according to the level of support received from both the primary and secondary school. The associations were stronger for boys and reached statistical significance when

comparing the 'a lot' response to 'none'. There were no clear differences in the levels of reported adjustment according to primary or secondary school support; both sources appear to be beneficial.

Key findings

This chapter reviewed parent and student experiences of the transitions from primary to secondary school. It investigated student adjustment, student concerns and experiences of engagement, support and satisfaction. In relation to its initial aims, this chapter highlighted the following key findings:

- Before the transition to secondary school, parents and teachers anticipated that fewer girls would face difficulties than boys, in almost every domain.
- Following the transition, parents still reported that girls experienced better overall adjustment than boys. However, the number of girls facing difficulties increased in almost every domain, while the number of boys facing difficulties generally decreased.
- The teachers' anticipated adjustment rating in Year 6 successfully predicted student Year 7 academic performance (e.g. for girls, an increase in 1 point on the teacher rated START scale related to a 5.6 point increase in Year 7 NAPLAN numeracy score; for boys, this increase was 3.6), even when accounting for age, SES and prior academic performance).
- Parent-rated adjustment scores in Year 6 were not predictive of future academic performance.
- Overall, the level of concern about the transition to secondary school decreased following the transition. Although their concerns decreased, girls reported higher levels of concerns compared with boys, both before and after transition.
- Common concerns among students were losing old friends, homework and getting lost.
- The majority of parents (70.5%) and students (86%) received some or a lot of support from secondary schools. The majority of students also received at least some support from primary schools (65.4%).
- The most common forms of support received by parents and students included open days, information sessions and written materials.
- Support for students from either primary or secondary schools predicted better adjustment in Year 7.

Appendix 1: The Childhood to Adolescence Transition Study (CATS)

Overview

CATS is conducted in metropolitan Melbourne, in the state of Victoria and is one of the first studies to systematically track children through the middle years. To date, five waves of data collection have been completed. Recruitment took place in Year 3 (eight to nine years of age), allowing the transition into early puberty to be captured. The most recent wave of data collection was in Year 7, after students had transitioned to secondary school. In total, 1239 students and a parent/guardian were recruited to participate in the study and retention rates have been high (84% students and 73% parents completed questionnaires in Year 7). The study collects data from students, parents and teachers, and has also been linked with NAPLAN data in Years 3, 5 and 7.

CATS is based at the Centre for Adolescent Health at the Murdoch Children's Research Institute (MCRI), Melbourne Australia. Ethics approval has been granted by the Royal Children's Hospital Human Research Ethics Committee (HREC #31089). Permission was granted from the Victorian Department of Education and Training and the Catholic Education Office Melbourne (now called Catholic Education Melbourne) to recruit through their schools.

Project governance

A reference group for the study has been established, consisting of representatives from each of the education sectors (Government, Catholic, Independent) as well as representatives from the pilot schools and the Melbourne Education Research Institute at the University of Melbourne, VicHealth and the Mitchell Institute. The aim of the group is to assist in the achievement of project outcomes by promoting working partnerships with the education sector and the community. It also provides an avenue for community feedback about proposed research activities, as well as the support and networking required for the promotion and implementation of the project. In more recent years, the reference group has been involved in translation and dissemination of project outcomes.

Recruitment

Participant recruitment commenced in February 2012. Recruitment took place through primary schools, which were randomly selected from a stratified (Government, Catholic, Independent strata) cluster sample of all such schools in metropolitan Melbourne educational regions with 10 or more students enrolled in Year 3. The metropolitan area was chosen in order to facilitate follow up assessments. School principals, at all schools, provided consent for their school's participation. If a school did not consent to take part then, where possible, a replacement school was randomly selected from the same stratum and offered participation. Figure 24 displays CATS participants from recruitment to Year 7.

The entire Year 3 year level of each participating school was invited to take part. Information sessions for students and teachers were held at all consenting schools. A recruitment pack was given to all eligible students at school to take home to their parents/guardians. Parent consent forms were then returned to the school and collected by the research team. Every child that returned a consent form (whether accepted or declined consent) was given a small prize. The class in each school that returned the highest proportion of parent consent forms (both accepted and declined consent) was given a small prize. A total of 101 schools were approached to take part of which 43 (43%) schools agreed to participate. In total 2289 students were enrolled at these schools of which 1239 (54%) students and their parents agreed to participate. Of the students and parents who agreed to

participate, 1194 (96%) students and 1222 (99%) parents took part in Wave 1 data collection. Figure 24 summarises recruitment through to Wave 5 data collection. During primary school, when three or more students participating in CATS moved to a new school, this school was invited to take part in CATS (with only the original CATS students continuing to take part). Between Waves 1 and 4, an additional nine schools were recruited into the study. A similar procedure was followed when participants commenced secondary school in 2016. Secondary schools with ten or more participants enrolled were invited to participate in the CATS study. School principals provided consent for their school to take part. All of the 37 secondary schools approached agreed to participate in the study. A small percentage of participants remained enrolled at their original school if the composition of the school was Prep to Year 9 or Prep to Year 12. No new participants were recruited to participate at the beginning of secondary school.

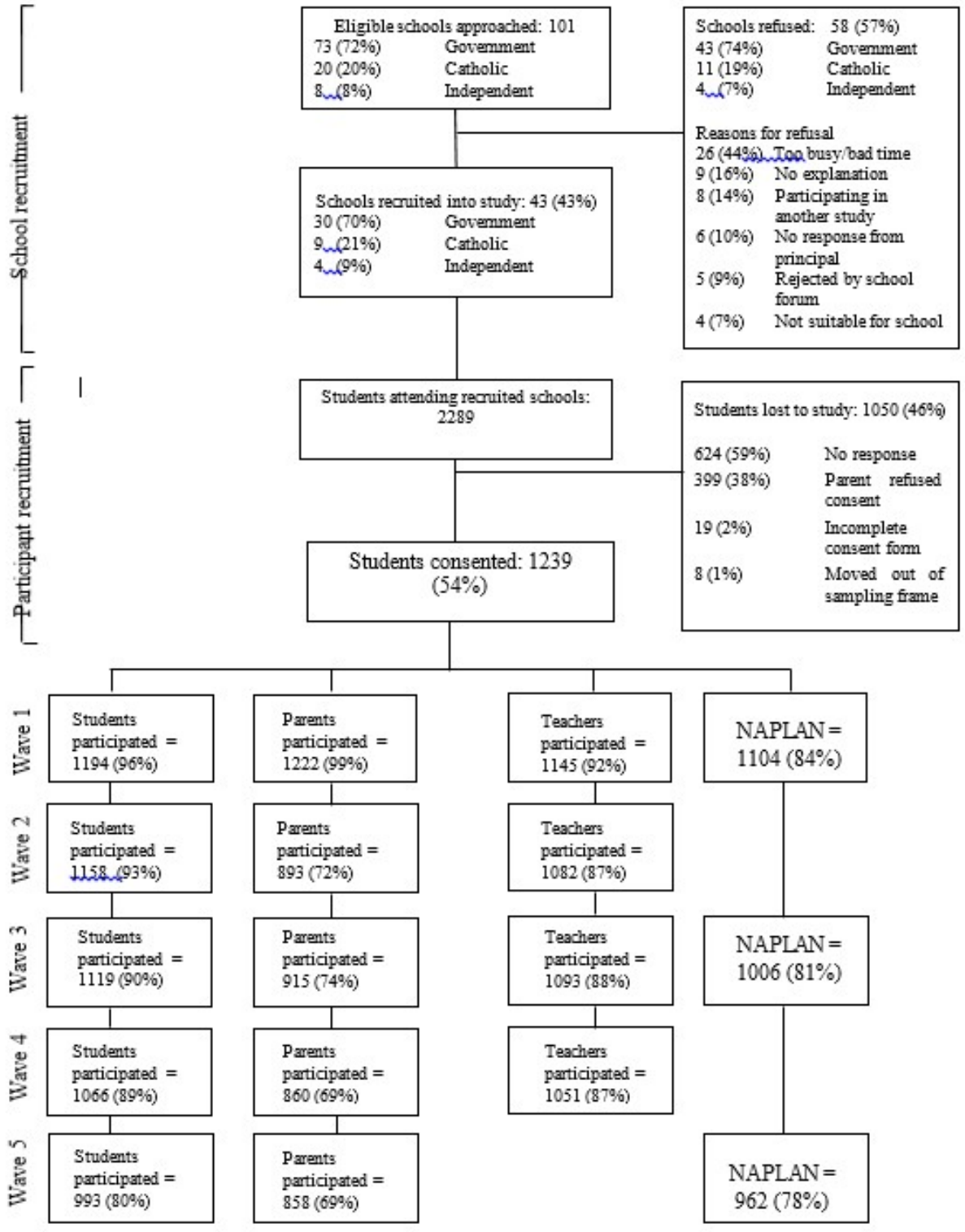


Figure 24. Flowchart of CATS participants from recruitment to Wave 4 data collection

Measures

The Student Questionnaire (SQ) assessed many domains including mental and physical health, wellbeing, school experiences, peer and family relationships, media use and lifestyle. The parent questionnaire collected information on family demographics and on the child's emotional and behaviour problems, diet, physical health and pubertal development. The teacher questionnaire gathered information on the student's academic ability, absences from school, and behavioural and emotional functioning. In Waves 4 and 5, additional questions about adjustment to secondary school were included in all three surveys. Table 20 presents an overview of all measures included in CATS. The measures for indicators presented in the current report are described in further in the results section.

Table 20. Outline of measures (Waves 1-5).

Construct	Measures	Informant	Wave (number) / Age (years)				
			1 8-9	2 9-10	3 10-11	4 11-12	5 12-13
Demographics	Demographics	Parent/Child	✓	✓	✓	✓	✓
	SEIFA	SEIFA	✓	✓	✓	✓	✓
Pubertal transition	PDS/Tanner	Parent	✓	✓			
		Child			✓	✓	✓
	Saliva hormones	Child	✓		✓	✓	
	Acne rating	Child			✓	✓	✓
	Anthropometry	Child	✓	✓	✓	✓	✓
	Childhood exposures	Parent	✓				
Emotional and behavioural development	Mental health	Parent	✓	✓	✓	✓	✓
	Depression	Child	✓	✓	✓	✓	✓
	Anxiety	Child	✓	✓	✓	✓	✓
	Self-harm	Child				✓	✓
	Body image	Child	✓	✓	✓	✓	✓
	ADHD rating	Parent	✓	✓	✓	✓	✓
	Emotional control	Child			✓	✓	✓
		Parent	✓	✓			
	Conduct problems	Parent	✓	✓	✓	✓	✓
Social development	Peer relations	Child	✓	✓	✓	✓	✓
	Family management	Child	✓	✓	✓	✓	✓

Construct	Measures	Informant	Wave (number) / Age (years)				
			1 8-9	2 9-10	3 10-11	4 11-12	5 12-13
Health and lifestyle	Wellbeing	Child	✓	✓	✓	✓	✓
	Functional somatic symptoms	Child	✓	✓	✓	✓	
		Parent		✓	✓	✓	✓
	Dietary patterns	Parent	✓	✓	✓		
		Child			✓	✓	✓
	Physical activity	Parent	✓	✓	✓		
		Child			✓	✓	✓
	Sleep	Parent	✓	✓	✓		
		Child	✓	✓	✓	✓	✓
	Substance use	Child	✓	✓	✓	✓	✓
	Media use	Child	✓	✓	✓	✓	✓
Academic outcomes	Academic performance	VCAA	✓		✓		✓
		Teacher	✓	✓	✓	✓	
	School engagement	Child		✓	✓	✓	✓
		Teacher	✓	✓	✓	✓	
	Transition difficulties	Child				✓	✓
		Parent				✓	✓
		Teacher				✓	

Demographic measures

Child age was calculated using date of birth and date of direct measurement at Wave 1. Age of parents at birth of child participant was calculated by subtracting child's date of birth from parent's date of birth.

Family socio-economic status (SES) was assigned from small area deprivation measures calculated for home postcode using the Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD; population mean (M) = 1000, standard deviation (SD) = 100) from the Australian Bureau of Statistics census-based local neighbourhood Socio-Economic Index for Areas (SEIFA) [70].

Other demographic information such as Aboriginal Torres Strait Islander (ATSI) status, parents' highest level of education and language spoken at home were collected from the respondents at Wave 1 through the parent survey.

Sample characteristics

Of the recruited sample, the mean age was nine years (SD: 5 months; range 7 years, 10 months - 10 years, 8 months). The recruited sample contained a slightly smaller proportion of boys (46%)

compared with census data for eight- to nine-year old students enrolled in Year 3 across the state of Victoria in Australia (51% boys). This sample scored slightly higher on a measure of SES compared with the entire Australian population [mean=1,012, SD=67 vs. mean=1,000, SD=100, 71]. A higher percentage identified as indigenous compared with all Year 3 students in Victoria (5% vs. 1%). Child and family characteristics were similar for boys and girls: born in Australia (87% vs. 89%); Aboriginal Torres Strait Islander (5% vs. 4%); English main language spoken at home (85% vs. 85%), and single parent household (12% vs. 12%). Table 21 outlines the characteristics of the participants at baseline.

Table 21. Overview of study participants at baseline.

	Boys Total N= 572			Girls Total N=667			Between gender difference
	N	n	Value	N	n	Value	*p*[a]
Student							
Age in years (mean (SD))	572	-	9.0 (0.4)	667	-	9.0 (0.4)	0.27
Australian born	552	481	87.1	650	574	88.3	0.54
ATSI	553	31	5.6	647	27	4.2	0.25
Biological mother							
Australian born	396	307	77.5	466	349	74.9	0.82
Highest level of education	399			478			0.72
Less than Year 12		59	14.8		77	16.1	
Year 12		60	15.0		82	17.2	
Vocational		114	28.6		134	28.0	
Tertiary		166	41.6		185	38.7	
Biological father characteristic							
Australian born	287		68.3	329		74.5	0.09
Highest level of education	335			370			0.67
Less than Year 12		56	16.7		70	18.9	
Year 12		48	14.3		43	11.6	
Vocational		113	33.7		129	34.9	
Tertiary		118	35.2		128	34.6	
Family characteristic							
SEIFA quintile	572			667			0.13
1st quintile (most disadvantaged)		70	12.2		97	14.5	
2nd quintile		41	7.2		68	10.2	
3rd quintile		99	17.3		95	14.2	
4th quintile		168	29.4		178	26.7	
5th quintile (most advantaged)		194	33.9		229	34.3	

	Boys Total N= 572			Girls Total N=667			Between gender difference
	N	n	Value	N	n	Value	*p*[a]
Language spoken at home	429			506			0.09
English only		363	84.6		428	84.6	
English and another language		10	2.3		24	4.7	
Another language only		56	13.1		54	10.7	
School characteristic							
Education sector	572			667			0.04
Government		399	69.8		494	74.1	
Catholic		152	26.6		139	20.8	
Independent		21	3.7		34	5.1	

N number of responses for item. All values are percentages unless specified. [a]Between gender differences were tested using Chi-squared tests for categorical variables and independent-samples t tests for continuous variables

Sample maintenance

To assist with follow up, parents are asked at the start of the study to provide contact details of two additional friends or relatives. These contacts are used when required to help trace participants. At the conclusion of Wave 4 participating students and parents provided information about the secondary school enrolment and provided the contact details of students.

In an effort to maintain contact with CATS participants, thank you cards, birthday cards, newsletters and 'change of address' forms are sent at regular intervals to participants. A short video has also been created for the study with the primary aim of enhancing participant engagement: https://cats.mcri.edu.au/resources/.

Data collection

Data collection is conducted annually. Data are collected using parent, teacher and student self-report questionnaires. Additionally, students take part in anthropometric assessments (height, weight and waist circumference). During primary school, student data collection was conducted in a class setting during school hours. Students were provided with iPads on which they read the questions and completed their answers. At Waves 1 and 2, the SQ items were read aloud by a Research Assistant (RA), following a standard script. In subsequent waves students completed the survey in a class setting under the supervision of an RA who did not read out the items but was available to answer questions.

If three or more students were absent on the day of the survey a second data collection session at school was scheduled. If this was not possible, families were offered home visits or were invited to the Royal Children's Hospital or to a dedicated assessment session in local areas. If families had moved outside of metropolitan Melbourne, they were sent paper questionnaires by post along with a protocol for parent collection of the anthropometric measurements.

Wave 5 was conducted when students were in Year 7, the first year of secondary school. Now that students had moved to more than 250 secondary schools, school based data collection was not feasible for the entire cohort. To maximise efficiencies, secondary schools with large clusters of students enrolled (i.e. ten or more) were identified, recruited and enrolled into the study. The first schools recruited had ten or more students, and once these schools were recruited, additional schools with large clusters of students (not quite ten) were identified and school based data collection conducted.

Prior to the commencement of school data collection, all students were emailed (preferentially) or posted (if no known email address) the Wave 5 Student SQ. Reminder emails and postal packs, as well as SMS messages and phone call reminders were conducted for the following four months.

If a student had completed their SQ at home, prior to the school session, they only completed the anthropometric measures (height and weight, only). For all other students, they completed the SQ and anthropometric measures at the school data collection session.

In September, all parents (regardless of whether or not their child had completed the SQ) were sent the Parent Questionnaire (PQ) and those students who had not been seen at a school session were sent a 'DIY' home measurement kit. The kit included detailed instructions on how to measure height and weight, as well as a tape measure and a link to an online demonstration.

For all student and/or parent questionnaires not completed by November, participants were called and the questionnaire(s) was conducted by Computer Assisted Telephone Interview (CATI) by a trained RA. The student CATIs were conducted after school hours and on weekends. Parent CATIs took just five minutes and were conducted at a suitable time for the parent. The PQ included questions around the child's transition to school. More detailed demographic questions were administered in Wave 1, at which point parents were asked to complete it and return it along with the consent form.

The class teachers of all participating students were invited to complete a brief paper questionnaire at each wave of data collection in primary school (Waves 1 to 4). This was a very short questionnaire, taking about two minutes per student to complete and asked questions about the student's overall academic ability, absences from school, and an overview of the student's behavioural and emotional functioning. In Wave 4, teachers also responded to the same questions as parents regarding anticipated adjustment to secondary school.

Appendix 2: NAPLAN

Academic performance was assessed via linkage with the National Assessment Programme – Literacy and Numeracy (NAPLAN) in Years 3, 5 and 7. NAPLAN assesses academic performance on four domains - reading, writing, numeracy, and language conventions (spelling, grammar and punctuation). The reading and numeracy domains used in this report are the most reliable domains. NAPLAN data were provided by the Victorian Curriculum and Assessment Authority (VCAA) for students whose parents had provided additional optional consent at recruitment for data linkage (n=1146, 93%).

NAPLAN scoring is designed to be consistent over time and is reported on a single scale. The NAPLAN tests therefore measure students' achievement gain between testing years, expressed as NAPLAN gain scores. The national report released each year by the Australian Curriculum Assessment and Reporting Authority (ACARA) [26] presents figures for cohort gains in NAPLAN scores. These are the differences between average NAPLAN scores for a given population or cohort in a certain domain. These can be two, four or six years apart.

Use of this approach to compare students' academic growth has been called into question [28]. Comparison of NAPLAN gain scores assumes that the growth (rate of increase) in NAPLAN scores occurs at a steady pace throughout the school career. This is not the case – students generally show greater gains in the earlier years of schooling compared to later years, a pattern that has been observed in assessment programs around the world. It is generally understood that students achieve larger educational milestones lower on the assessment scale compared to more subtle milestones further along the assessment scale. As a result, scaled score increases do not always reflect a student's level of relative growth. The growth in NAPLAN score between assessments therefore differs according to the initial score i.e. students with lower NAPLAN scores in the first assessment show greater gains than students with a higher starting score. This has important implications for policy makers who are using NAPLAN data to allocate resources and balance priorities.

In this report, NAPLAN Scale Scores (NSS) for numeracy and reading are converted to Equivalent Years of Learning (EYL) scores using a conversion table provided by Peter Goss at the Grattan Institute. The EYL is the year level at which a typical Australian student would be expected to achieve a given NSS. The conversion table was based on 2014 Australian national data for numeracy and reading and was generated by producing a fitted curve through the median scale score at Years 3, 5, 7 and 9 (see Figure 25). Estimates below Year 3 and above Year 9 are via interpolation and have lower accuracy. Note, CATS data for Year 3 were collected in 2012 and for Year 5 in 2014 and Year 7 in 2016. Any differences in the median scores between 2012, 2014 and 2016 will slightly impact our conversions.

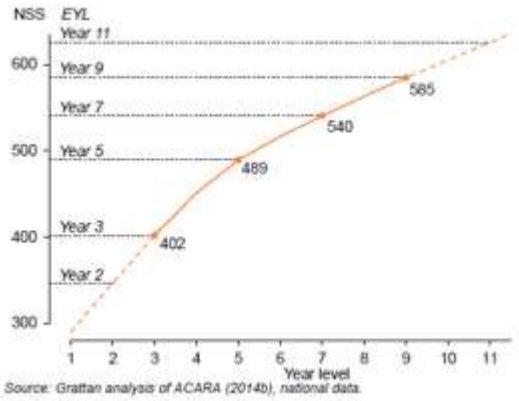


Figure 25. NAPLAN Scale Scores are converted to Equivalent Years of Learning (EYL) along the estimated student growth trajectory. Estimated median NAPLAN Scale Score by year level, numeracy, Australian student, 2014.

Raw NAPLAN scores

Academic performance in the critical domains of numeracy and reading are assessed through linkage with the NAPLAN dataset at Years 3, 5 and 7. The mean NSS for boys and girls as well as the distributions across the 10-band achievement scale are presented below.

Figure 26. Mean NAPLAN Scale Scores by gender at Years 3, 5 and 7: Numeracy.

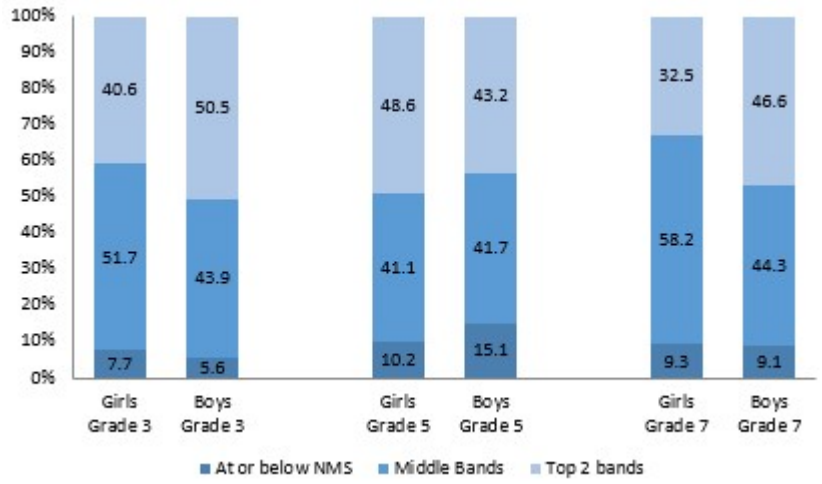


Figure 27. NAPLAN band distributions by gender at Years 3, 5 and 7: Numeracy.

In terms of numeracy, Figures 26 and 27 show that, on average, boys perform better than girls at all 3 assessment points. A higher proportion of boys than girls were in the top 2 bands of national achievement in Year 3 (50.5% versus 40.6%) and Year 7 (46.6% versus 32.5%).

Figure 28. Mean NAPLAN Scale Scores by gender at Years 3, 5 and 7: Reading.

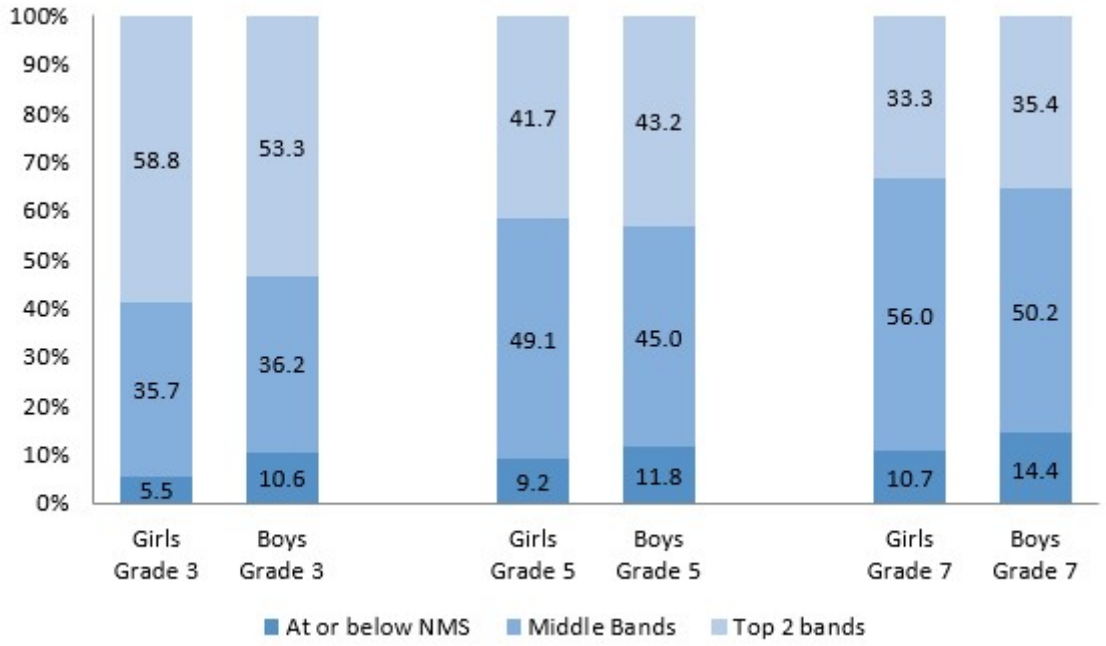


Figure 29. NAPLAN band distributions by gender at Years 3, 5 and 7: Reading.

For reading, there was no evidence for a difference on average between boys and girls (Figures 28 and 29). There was a noticeable decline in the proportion of girls and boys in the top 2 bands from Year 3 (58.8% girls and 53.3% boys) to Year 7 (33.3% girls and 35.4% boys).

Table 22. Comparison of CATS NAPLAN data with metropolitan region of Victoria.

		Year 3 (2012)		Year 5 (2014)		Year 7 (2016)	
		CATS	Metro (VIC)	CATS	Metro (VIC)	CATS	Major Cities (VIC)[a]
Reading	Mean scale score	442.1	436.2	522.0	512.7	523.5	549.0
	% at or below NMS (including exempt)	7.8	10.9	10.4	14.7	12.4	15.6
Numeracy	Mean scale score	419.7	412.8	504.6	500.3	566.2	598.3
	% at or below NMS (including exempt)	6.8	11.6	12.4	15.4	9.2	12.9

[a] In 2012 and 2014 ACARA used The MCEECDYA Schools Geographic Location Classification System to classify Geolocation whereas in 2016 The ABS Australian Statistical Geography Standard (ASGS) Remoteness Structure was used.

As seen in Table 22, the NAPLAN scores of the CATS sample are highly comparable with students in the metropolitan area of Victoria, as reported by ACARA in the 2012, 2014 and 2016 national reports [26, 72, 73]. NSS for reading and numeracy were marginally higher than the metro averages for both numeracy and reading in Years 3 and 5 but lower than metro averages in Year 7. The percentages at or below National Minimum Standards (NMS) were all marginally lower for the CATS sample than Victoria metropolitan data.

Years of Progress (YOP)

Raw NAPLAN scores were converted to Equivalent Years of Learning (EYL) scores based on the age at which an average student (median national score of students in Years 3, 5, 7 and 9 in 2014) would be expected to achieve the corresponding NAPLAN score. By definition, this hypothetical 'average student' would have an EYL of exactly 3 years in the Year 3 assessment, an EYL of 5 years in the Year 5 assessment and EYL of 7 years in the Year 7 assessment.

Figure 30. Equivalent Years of Learning (EYL) by gender at Years 3, 5 and 7: Numeracy.

Conversion of the NAPLAN Scale Scores to EYLs reveals that both boys and girls were performing above the national average for numeracy in Year 3 (Figure 30) with boys performing at a higher level than girls. This trend continued for later assessments with both boys and girls achieving at over five years and seven years in the Year 5 and Year 7 tests, respectively.

Figure 31. Equivalent Years of Learning (EYL) by gender at Years 3, 5 and 7: Reading.

The picture for reading is slightly different (Figure 31). Whilst girls and boys were on average about a year above the average level in Years 3 and 5, they were performing at approximately 7 years of

learning at the Year 7 assessment. In other words, students achieved only about one years' progress in reading between Year 5 and Year 7.

By comparing the EYL in Year 7 and Year 3 we can deduce for each student the years of progress (YOP) made during this four year time period. The average YOP in numeracy and reading across the four years from Year 3 to Year 7 is presented in Table 23.

Table 23. Average growth (Years of Progress, YOP) from Year 3 to Year 7: NAPLAN Numeracy and Reading.

	Mean YOP (sd)	Mean YOP (sd)
	Numeracy	Reading
Total	4.50 (1.87)	3.72 (1.97)
Gender		
Boys	4.60 (2.02)	3.79 (1.91)
Girls	4.42 (1.74)	3.63 (2.03)
Aboriginal status		
ATSI	4.34 (1.90)	3.97 (1.82)
Non-ATSI	4.52 (1.88)	3.70 (1.98)
SES		
SEIFA Cat. 1 (most disadvantaged)	4.84 (1.96)	3.55 (2.04)
SEIFA Cat. 2	4.44 (1.97)	3.88 (1.89)
SEIFA Cat. 3	4.05 (1.96)	3.81 (1.94)
SEIFA Cat. 4	4.62 (1.76)	3.80 (1.88)
SEIFA Cat. 5 (most advantaged)	4.51 (1.84)	3.64 (2.04)

Total n=765 for numeracy and 743 for reading

Table 23 shows that the CATS sample made higher than average progress in numeracy. This progress did not differ by gender or aboriginal status but the SEIFA categories differed from each other. The most progress was made by the most disadvantaged category (category 1) but there was no clear pattern of decreasing progress with increasing SES. In terms of reading, the CATS sample made less than average progress and this progress did not differ significantly by gender, aboriginal status or SEIFA category.

Appendix 3: School disengagement

Disengagement

In Years 6 and 7, overall student engagement with school was assessed via self-report on seven items adapted from the Beyond Blue "Your School" survey [74]. Students were asked the following items:

How much do you like school?

How often do you misbehave or cause trouble in class?

Teachers notice when I'm doing a good job and let me know about it

There's at least one teacher or other adult at this school I can talk to if I have a problem

Doing well in school is important to me

I feel like I belong at this school

In the last year, did you deliberately skip a lesson or leave school without permission?

All items were converted so their response set was on a scale of 1 (low engagement) to 4 (high engagement). An overall scale score was derived by calculating the average of the item values if 5 or more items were completed. The Cronbach's alpha (internal consistency) for the scale was acceptable (α=0.74 in Year 6). At Year 7, disengagement was defined as below the 15th percentile on the overall scale score.

Figure 32. School engagement by gender in Years 6 and 7.

Scores for school engagement were between 3 and 3.5 on a scale of 1 (lowest engagement) to 4 (highest engagement) indicating that in general students reported high levels of engagement (Figure 32). There was a significant difference between boys and girls with girls reporting higher levels of engagement in both Years 6 and Year 7. There was a significant decline in engagement for both boys and girls between Years 6 and 7.

Appendix 4: Supplementary Information - Wellbeing: Emotional Problems

Indicator development

At each of Waves 1, 2 and 3 (Years 3, 4 and 5) the students completed a survey in which they were asked about symptoms of depression and anxiety.

Depressive symptoms were measured using two items adapted from the Short Mood and Feelings Questionnaire (SMFQ; 'I felt miserable and unhappy' and 'I didn't enjoy anything at all') [75], which have been shown to have reasonable validity as markers of depressive symptoms in similar age groups [76]. These items were scored on a 5-point Likert scale, ranging from 0 (never) to 4 (almost always). Items were then recoded on to a 3-point scale, (0 (not true); 1 (sometimes true); 2 (true)), to match the original scoring of the SMFQ. The sum of the two recoded items was calculated to generate a total score (ranging from 0 to 4), which was then dichotomised to generate a binary variable using the cut-point identified by Rhew and colleagues: no depressive symptoms (≤1) versus depressive symptoms (>1).

Anxiety symptoms were assessed using two items selected from the Spence Children's Anxiety Scale (SCAS; 'I worry about things' and 'I feel afraid'). [77] These items were scored on a 5-point Likert scale, ranging from 0 (never), to 4 (almost always). Items were then recoded on to a 4-point scale, ranging from 0 (never) to 3 (always), to match the original scoring of the SCAS. The sum of the two recoded items was calculated to generate a total score (ranging from 0 to 6), which was then dichotomised to generate a binary variable: no anxiety symptoms (≤2) versus anxiety symptoms (>2).

A summary measure was generated at each of the three waves to indicate if a student had depressive and/or anxiety symptoms. For example, a student with depressive symptoms at Wave 1 (but without symptoms of anxiety symptoms at Wave 1), was classified as having emotional problems at Wave 1.

A variable was then generated to indicate if a student had emotional problems (as described above) at none of the three waves, at one wave only, or at two or three waves.

Supplementary data

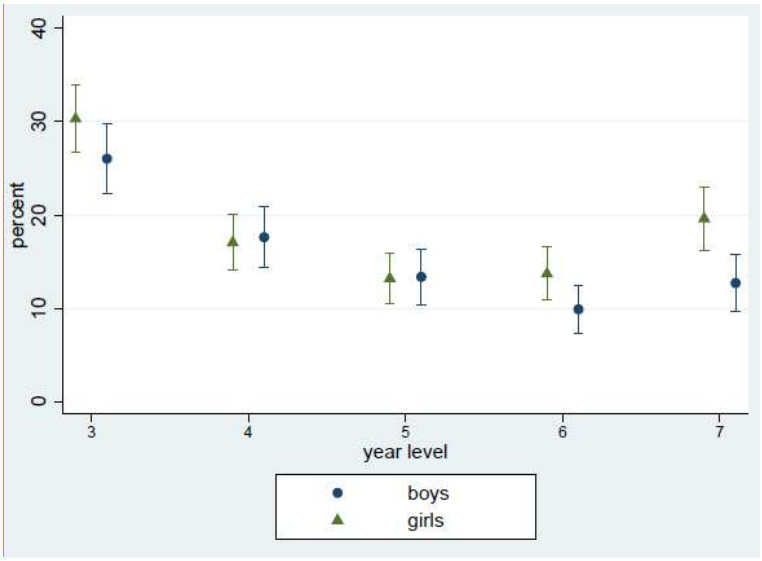


Figure 33. Proportion of students reporting elevated depressive symptoms by gender in Years 3 to 7.

Figure 33 shows the percentage of girls and boys who reported elevated depressive symptoms across Years 3 to 7. The proportion of both boys and girls with depressive symptoms reduced markedly between Years 3 and 4 and remained at less than 20% for boys. The number of girls with depressive symptoms rose in Year 7 leading to evidence of a difference between boys (13%) and girls (20%) at this year level.

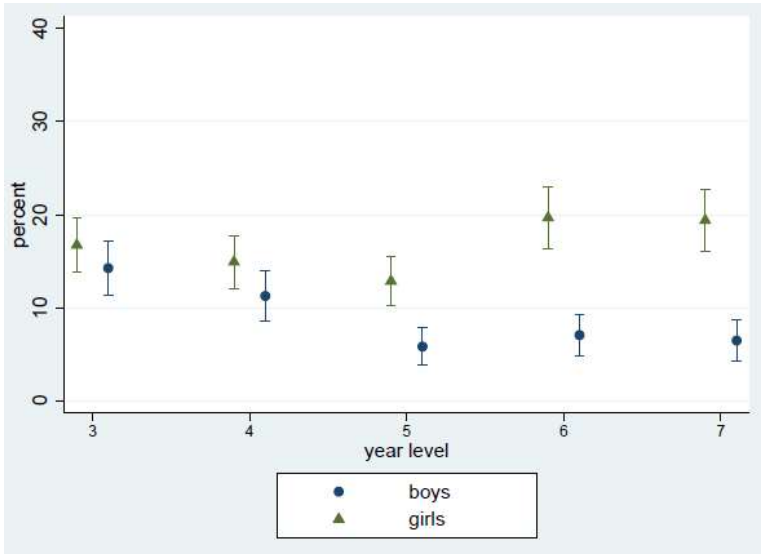


Figure 34. Proportion of students reporting elevated anxiety symptoms by gender in Years 3 to 7.

Figure 34 shows the percentage of girls and boys who reported elevated anxiety symptoms across Years 3 to 7. Consistently more girls than boys reported elevated levels of anxiety, with this difference increasing over time, particularly from Year 5 onwards. In Years 6 and 7, around one in five girls reported elevated anxiety symptoms compared to approximately one in fifteen boys.

Appendix 5: Supplementary Information - Wellbeing: Behaviour Problems

Indicator development

Parent report:

Parents of all participating students were asked to complete a questionnaire at each of Waves 1, 2 and 3 (Years 3, 4 and 5). Items from the Strengths and Difficulties Questionnaire (SDQ) were included in the parent questionnaire. The SDQ is a well-validated brief mental health screening questionnaire and contains five items measuring conduct problems. Parents rate each of the items as "Not True", "Somewhat True" or "Certainly True". "Somewhat True" is always scored as 1 but the scoring of "Not True" and "Certainly True" varies by item as 0 or 2. The conduct problems subscale score can range from 0 to 10 and higher scores indicate higher levels of conduct problems. At each of the three waves, the conduct problems subscale score was dichotomised to generate a binary variable: ≤ 2 = normal conduct; ≥ 3 = borderline/abnormal conduct.

An ordinal variable was generated to indicate if a student had behaviour problems (as described above) at none of the three waves, at one wave only, or at two or three waves.

Teacher report:

The class teachers of all participating students were asked to complete a brief questionnaire at each of Waves 1, 2 and 3 (Years 3, 4 and 5). The following item was included in the questionnaire: 'Overall, how would you rate this child on the following: Disruptive in class'. This item was scored on a 5-point Likert scale, ranging from 1 (never) to 5 (always).

At each of the three waves, responses were dichotomised to generate binary variables: 'never' or 'rarely' = no behaviour problems; 'sometimes' or 'often' or 'always' = behaviour problems present.

This behaviour problems indicator was generated to indicate if a student had behaviour problems (as described above) at none of the three waves, at one wave only, or at two or three waves.

Supplementary data

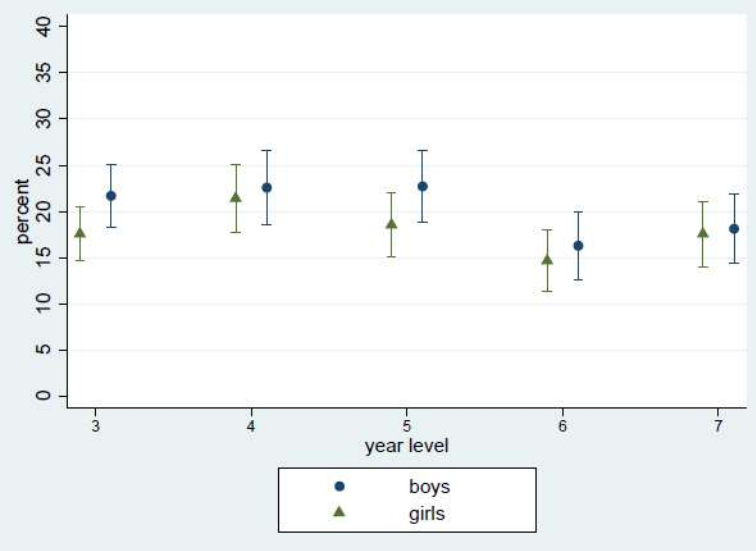


Figure 35. Proportion of students displaying conduct problems (parent report) by gender in Years 3 to 7.

Figure 35 shows that borderline or abnormal conduct problems amongst boys and girls were reported by approximately one fifth to one sixth of parents. Although the average proportions were consistently higher for boys than girls this difference was not statistically significant. There was little change in the proportion of boys and girls with conduct problems between Years 3 and 7.

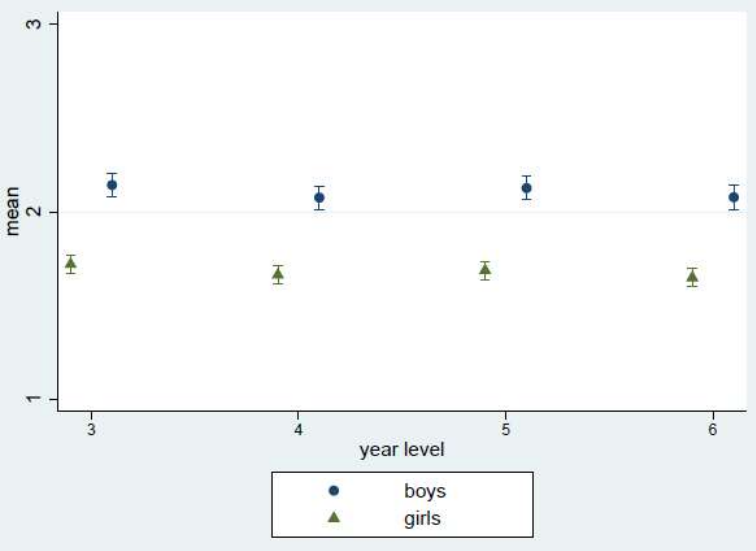


Figure 36. Proportion of students displaying poor behaviour at school (teacher report) by gender in Years 3 to 6.

As shown in Figure 36, the mean poor behaviour score reported by teachers for boys was just over 2 i.e. between 'rarely' and 'sometimes' on a scale where 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always (see description of the scale, below). Girls' scores were significantly lower at all year levels, falling within the 'never' to 'rarely' range.

NB: Student behaviour was reported by teachers in Waves 1-4 using 4 items e.g. disruptive in class and easily frustrated. Teachers were asked to consider the child overall and rate them on a scale of never (1) to always (5). An overall scale score was derived by calculating the average of the values of the 4 items. The Cronbach's alpha for the scale was acceptable and ranged from 0.74-0.78 at different waves.

Appendix 6: Supplementary Information - Wellbeing: Subjective Wellbeing

Indicator development

Wellbeing was measured via child self-report (at each of Waves 1, 2 and 3) with selected items from the Paediatric Quality of Life-General Well-being Scale (PedsQL), a widely used brief measure of health-related quality of life. These items were: 'I feel happy', 'I feel good about myself', and 'I think good things will happen to me'. Items were scored on a 5-point Likert scale, ranging from 0 (never) to 4 (almost always). They were then linearly transformed to a 0-100 scale as follows: 0 = 0, 1 = 25, 2 = 50, 3 = 75, 4 = 100. A total score was generated by calculating the mean score of the three items.

Two binary measures were generated at each of the three waves: (i) low wellbeing – defined as being below the 15th percentile of the total score distribution, and (ii) high wellbeing – defined as being above the 85th percentile of the total score distribution.

An overall variable was generated to indicate if a student had low wellbeing (as described above) at none of the three waves, at one wave only, or at two or three waves. Likewise, an overall variable was generated to indicate if a student had high wellbeing at none of the three waves, at one wave only, or at two or three waves.

Supplementary data

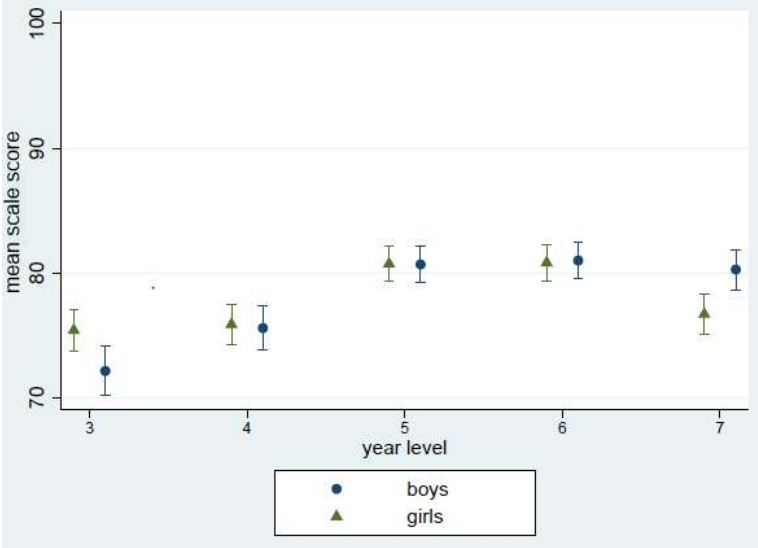


Figure 37. Average self-reported wellbeing score by gender in Years 3 to 7.

It can be seen in Figure 37 that overall, the self-reported general wellbeing of students is very good to excellent. This is based on a 0 to 100 scale with a higher score representing better quality of life, with 0 = Bad, 25 = Fair, 50 = Good, 75 = Very Good, and 100 = Excellent. The levels of general wellbeing increased for both boys and girls across Years 3 to 6 and dropped slightly in Year 7, especially for girls. There was evidence of a difference in wellbeing reported by girls and boys in Year 7.

Appendix 7: Supplementary Information - Peer relationships

Indicator development

Peer support:

At each of Waves 1, 2 and 3 (Years 3, 4 and 5) the students completed a survey in which they were asked about peer friendships. The following item was included in the questionnaire: 'How many friends do you have?' This item was scored on a 3-point scale: 1 (not many), 2 (some), and 3 (lots).

At each of the three waves, responses were dichotomised to generate binary variables: 'not many' or 'some' = no peer support; 'lots = peer support.

A variable was then generated to indicate if a student had peer support (as described above) at none of the three waves, at one wave only, or at two or three waves.

Bullying:

Bullying was measured via child self-report (at each of waves 1, 2 and 3) with selected items from the Gatehouse Bullying Scale, which is a short, reliable scale for measuring bullying in schools. These items assessed physical victimisation (have you been hurt like being hit or kicked by another students?) and verbal victimisation (has anyone teased you or called you names? In the past month. Students responding 'yes' were then asked how often they had each experience (response options 'less than once a week', 'about once a week', 'most days'). In line with previous research, children were classified as 'frequently physically bullied' if they reported facing physical victimisation 'about once a week' or on 'most days'. Children were classified as 'frequently verbally bullied' if they reported being verbally victimised about 'once a week' or on 'most days'.

A summary measure was generated at each of the three waves to indicate if a student had been frequently physically and/or verbally victimised. For example, a student who was frequently verbally bullied at Wave 1 (but not frequently physically bullied at Wave 1), was classified as having been bullied at Wave 1.

The bullying indicator was generated to indicate if a student had been bullied by their peers (as described above) at none of the three waves, at one wave only, or at two or three waves.

Supplementary data

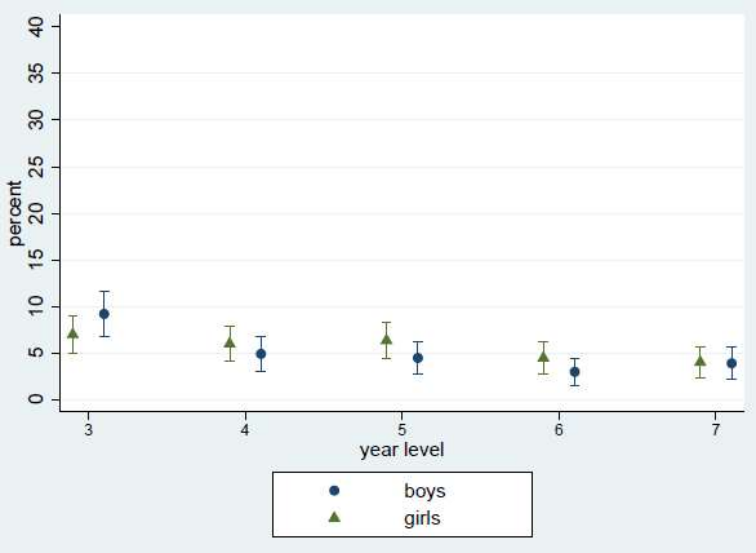


Figure 38. Proportion of students who report they do not have a group of friends by gender in Years 3 to 7.

As seen in Figure 38, less than 10% of boys and girls reported not having a group of friends and there was a small decline in this proportion between Years 3 and 7.

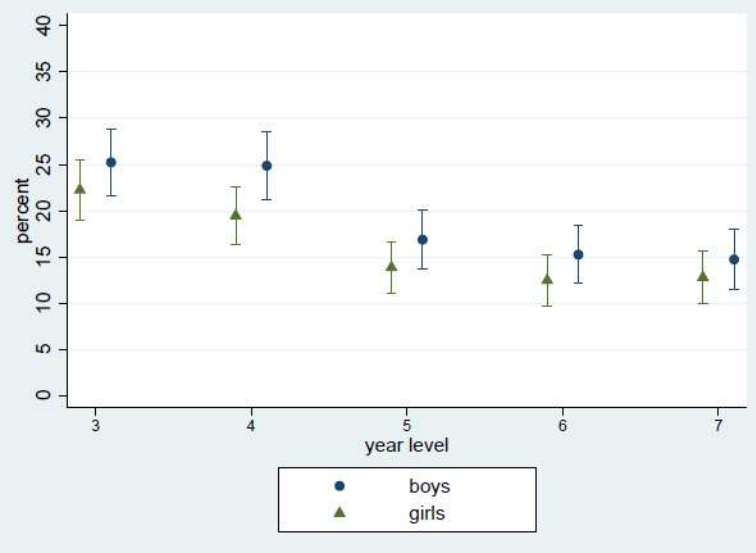


Figure 39. Proportion of students who report being frequently teased by peers (verbal bullying) by gender in Years 3 to 7.

Figure 39 shows that in Year 3, around one in four students reported verbal bullying. Although a greater proportion of boys consistently reported verbal bullying compared to girls, this difference was not statistically significant. The proportions reporting verbal bullying declined across Years 3 to 7.

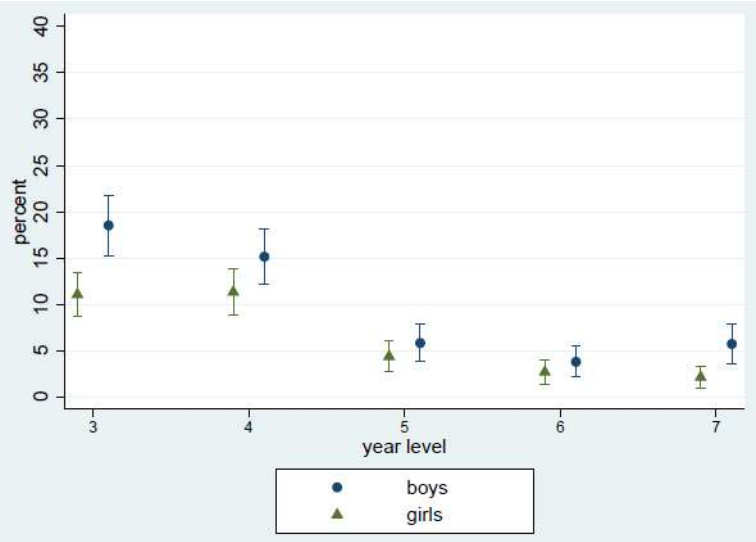


Figure 40. Proportion of students who report being frequently hurt by peers (physical bullying) by gender in Years 3 to 7.

Figure 40 shows that in Year 3 a considerable proportion of students reporting being physically bullied and that this declined in later years. More boys than girls reported being physically bullied at all year levels and this difference was statistically significant in Year 3 and Year 7.

Appendix 8: Supplementary Information - School engagement

Indicator development

At each of Waves 2 and 3 (Years 4 and 5) the students completed a survey in which they were asked about school. The following three items were included in the questionnaire:

Item 1 '*How much do you like school?*' (response options: not at all, a bit, a lot)

Item 2 '*How much do you like your school teacher?*' (response options: not at all, a bit, a lot)

Item 3 '*How often do you try your best at school*?' (response options: never, a little, most of the time, all of the time)

High engagement:

The three items (at each of Waves 2 and 3) were dichotomised as follows:

Item 1 '*How much do you like school*?' (not at all/a bit = low engagement; a lot = high engagement)

Item 2 '*How much do you like your school teacher*?' (not at all/a bit = low engagement; a lot = high engagement)

Item 3 '*How often do you try your best at school*?' (never/a little/most of the time = low engagement; all of the time = high engagement).

A summary measure was generated at each of the two waves to indicate if the student was engaged at school. For example, in order to be classified as engaged in Year 4 a student needed to select 'a lot' for item 1 and/or 'a lot' for item 2 and/or 'all of the time' for item 3.

An ordinal variable was generated to indicate if a student was highly engaged at school (as described above) at none of the two waves, at one wave only, or at both waves.

Disengagement:

The three items (at each of Waves 2 and 3) were dichotomised as follows:

Item 1 '*How much do you like school*?' (not at all = disengaged; a bit/a lot = not disengaged)

Item 2 '*How much do you like your school teacher*?' (not at all = disengaged; a bit/a lot = not disengaged)

Item 3 '*How often do you try your best at school*?' (never/a little = disengaged; most of the time/all of the time = not disengaged).

A summary measure was generated at each of the two waves to indicate if the student was disengaged at school. For example, in order to be classified as disengaged in Year 4 a student needed to select 'not at all' for item 1 and/or 'not at all' for item 2 and/or 'never/a little' for item 3.

A binary variable was generated to indicate if a student was disengaged (as described above) at none of the two waves, or at one and/or two of the waves.

Supplementary data

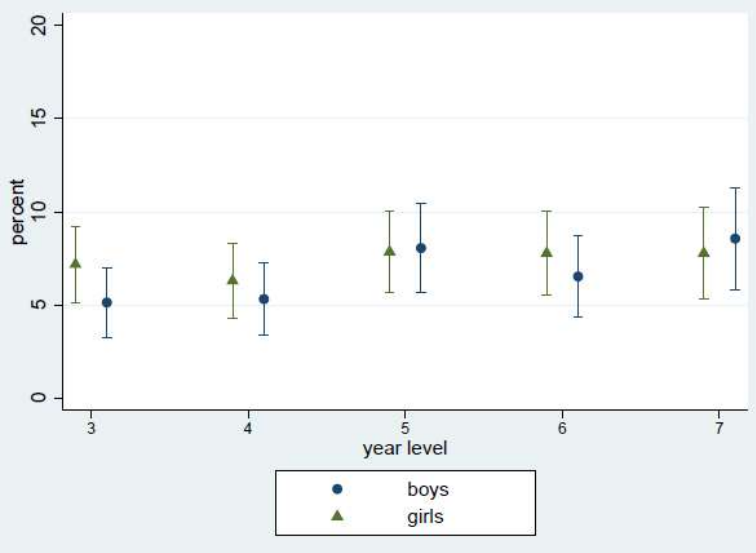


Figure 41. Teacher or parent report on frequent student absences from school by gender at Years 3 to 7.

Figure 41 shows that approximately five to eight per cent of boys and girls missed school frequently across Years 3 to 7. There was no evidence for a difference across year levels or between boys and girls at any year. The most common reason cited for missing school across Years 3 to 6 for both boys and girls was illness.

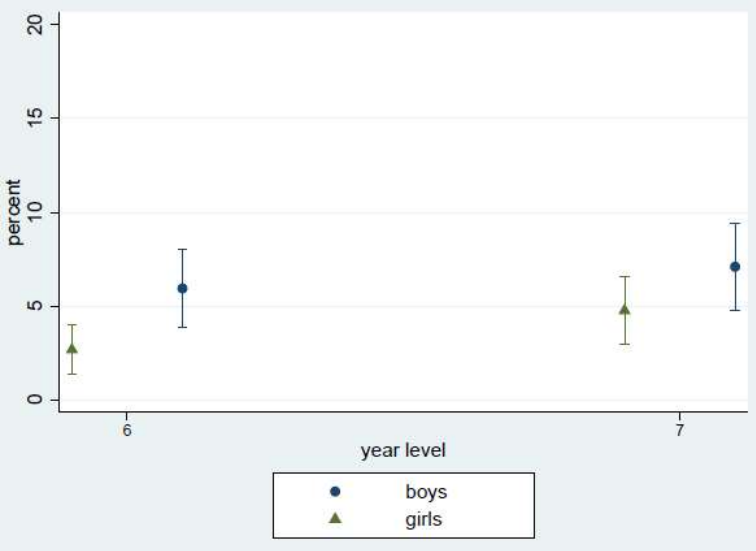
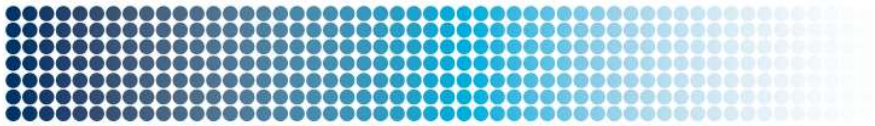


Figure 42. Student report of skipping school at least once in the past year by gender at Years 6 and 7 (truancy).

It can be seen from Figure 42 that approximately one in 20 students reported truancy at least once in the past year in Years 6 and 7. A greater number of boys than girls skipped school at both times and this difference was statistically significant in Year 6.



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Appendix 9: Acronyms and abbreviations

ACARA - Australian Curriculum Assessment and Reporting Authority

ATSI – Aboriginal and Torres Strait Islander

CATS - Childhood to Adolescence Transition Study

CI – Confidence Interval

EYL – Equivalent Years of Learning

IRSAD - Index of Relative Socio-Economic Advantage and Disadvantage

NAPLAN - National Assessment Programme – Literacy and Numeracy

NMS – National Minimum Standards

NSS – NAPLAN Scale Score

OECD – Organisation for Economic Co-operation and Development

PedsQL - Paediatric Quality of Life General Well-Being Scale

SCAS - Spence Children's Anxiety Scale

SCQ - School Concerns Questionnaire

SD – Standard Deviation

SE – Standard Error

SDQ - Strengths and Difficulties Questionnaire

SEIFA - Socio-Economic Index for Areas

SES – Socio-economic status

SMFQ - Short Mood and Feelings Questionnaire

SQ - Student Questionnaire

START – Secondary Transition Adjustment Rating Tool

TIMSS – Trends in International Mathematics and Science Study

YOP – Years of Progress

VCAA - Victorian Curriculum and Assessment Authority

WHO – World Health Organisation

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