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How do learning environments vary by school sector and socioeconomic composition? Evidence from Australian students

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Abstract

We examine how students' perspectives of their learning environments vary between private and public schools in Australia. Previous research has shown that educational outcomes do not vary by school sector in most countries after controlling for student social background. Little is known, however, about the ways in which different students' educational experiences vary across sectors. Australia is a good case study for examining this question, because it has one of the largest private school sectors in the world. We used a large and nationally representative dataset to compare sector differences across five measures of learning environments while accounting for the average socioeconomic composition of the school. Very few differences large enough to be considered educationally substantive were found between sectors. On two measures, however, student perspectives varied substantially within sectors and across school socioeconomic contexts. Overall, classroom disciplinary climate varied the most across school sectors and socioeconomic contexts, and teacher scaffolding and structuring strategies varied the least.

Introduction

Australia has one of the largest private school sectors in the world.

Approximately 35% of all students attend a private school, and this number rises to 42% among students in Year 12, the final year of secondary school (ABS, 2012). The proportion of students that attend a private school has been increasing over the last 40 years (Watson & Ryan, 2010); in 1970, only 20% of students attended a private school in Australia (Williams & Carpenter, 1990). Unlike other countries with large private school sectors such as the Netherlands and Belgium, private schools in Australia charge fees. This may explain why attendance at private school in Australia is strongly patterned by socioeconomic status (SES). The average income and SES of students in

private schools is higher than in public schools (Dearden, Ryan, & Sibieta, 2010; Watson & Ryan, 2010). These empirical facts suggest that private schooling is considered superior by many Australian families, especially the more affluent (Anderson, 1992; Beavis, 2004; Selleck, 1990).

A large body of research has examined whether private schools are more effective academically than their public counterparts. Evidence from different datasets, countries, measures of achievement and levels of school (e.g., primary, secondary) have shown that in most instances, any private school academic advantage disappears once the socioeconomic background of students is controlled for. In other words, private schools often have superior outcomes than public schools, but these outcomes are explained by the characteristics of the students that they enrol, not the schools themselves (Lubienski & Lubienski, 2014; Nghiem, Nguyen, Khanam, & Connelly, 2015; OECD, 2011).

While numerous studies have compared the achievement outcomes between school sectors, very few studies have examined how student experiences vary between public and private schools (Benveniste, Carnoy & Rothstein, 2003; Chandler, 1999). Certainly test scores and graduation rates are important, but many families are also concerned about the quality of their child's daily experiences in school. For example, they want their child to experience positive relationships with peers and teachers, to have effective and inspirational teachers, to experience orderly classrooms and to have peers who value education. For many parents in Australia, there is an assumption that private schools are more likely to provide those positive experiences than their public school counterparts (Beavis, 2004).

Understanding how student experiences vary by sector is important not just for parents or others engaged in school choice, but for educational researchers and

policymakers. If meaningful differences in students' educational experiences are found between sectors, for example, it would be useful to examine the unique features of schools and sectors that explain them. It would also be useful to consider the implications of these cross-sector differences for policymaking that aims to reduce inequalities in opportunities to enjoy positive school experiences while also maximizing effectiveness.

While ethnographic studies have been conducted of students' experiences at elite private schools (see, for example, the work of Kenway and colleagues in Australasia and Cookson & Persell in the US), sectoral comparisons using large scale survey data are rare. To the best of our knowledge, this study provides one of the first large-scale sectoral comparisons of students' school experiences from anywhere in the world. With one of the largest private school sectors in the world, it makes sense to examine Australia as one of the first case studies for this line of enquiry. We use a large and nationally representative dataset comprising more than 14,000 students and 350 schools to assess the degree to which students' school experiences vary by sector. We also compare schools by socioeconomic composition within and between the public and private sectors since it is well known that school socioeconomic composition is highly correlated with many aspects of schooling. Specifically, we pose the following research questions:

- 1) To what degree do students' perceptions of their teachers' instructional and engagement strategies vary by school sector and socioeconomic composition?
- 2) To what degree do students' attitudes toward schooling and their perceptions of their relationships with teachers and classroom disciplinary climate vary by school sector and socioeconomic composition?

Background

The degree to which private schools add value to student academic performance or other achievement measures has been extensively argued and studied. Most studies have found insignificant differences between public and private school achievement once student characteristics are controlled for. This finding has been shown in Australia for primary students (Nghiem et al., 2015) and secondary students (Benito, Alegre, & González-Balletbò, 2014; Cardak & Vecci, 2013; Thomson, De Bortoli, Nicholas, Hillman, & Buckley, 2011). Studies from other countries have, in the main, found little evidence for a private school advantage. These include studies from the US (Alexander & Aaron, 1985; Gamoran, 1996; Levin, 1998; C. Lubienski & Lubienski, 2014; S. T. Lubienski & Lubienski, 2006; Witte, 1992, 1998), the UK (Gorard, 2006), as well as cross-national studies (Benito et al., 2014; Jehangir, Glas, & van den Berg, 2015; Mostafa, 2010).

A smaller number of studies from developed countries have shown a private school advantage. Predominant among these are the studies by Hoffer and Coleman (e.g., Hoffer, 1998; Coleman, Hoffer, & Kilgore, 1982), which found that private schools do have a performance advantage even after controlling for student characteristics. Their work has been criticised for not adequately dealing with selection bias by Lieberman (1985), among others, however. Hoffer and Coleman's findings were also questioned by Alexander & Aaron (1985), who reanalysed their data and found that Catholic schools were not more effective in promoting academic achievement than public schools once students' prior ability was controlled. More recently and from Australia, Marks' (2015) study of Australian Tertiary Admission Rank (ATAR) scores, published in this journal, suggests the possibility of a private school performance advantage. This finding needs to be treated with caution, however. Studies by Lamb and

colleagues (2001) and Teese (1989) have shown that private schools in Australia are more likely than public schools to provide an academic curriculum that promotes high ATAR scores. This finding is particularly pronounced among schools with low to middle SES compositions. Among these school SES contexts, private and especially Catholic schools are more likely to offer the advanced subjects that receive a larger weighting on the ATAR than are their public schools counterparts (Perry & Southwell, 2014). Thus, private school students' superior performance on ATAR may be due more to enhanced opportunities to learn rather than to school or teacher effectiveness *per se*.

Beyond academic outcomes, however, very little is known about the degree to which student experiences vary between school sectors. One study in particular is worth noting. Dronkers & Robert's (2008) cross-national, secondary analysis of PISA found that some private schools have superior performance compared to public schools with a similar socioeconomic composition and that this performance advantage was associated with a more superior school climate, as measured by principals' perceptions of student and teacher behaviours. This study did not include Australia, however; it also did not directly compare students' experiences between the public and private school sectors.

In this study we compare students' perceptions of their teachers' instructional strategies, their relationships with teachers, their classroom disciplinary climate, and their attitudes towards schooling. Our rationale for examining these characteristics is two-fold. First and most importantly, effective teachers, orderly and safe classrooms and supportive relationships with teachers are educational "goods" that are an end unto themselves. We argue that all students should have opportunities to enjoy these positive educational experiences. Second, these educational experiences and relations are linked with educational outcomes; they are an end unto themselves, but they are also a means to an end. Research has consistently shown that the quality of instruction is strongly

related to students' education outcomes (Akiba, LeTendre, & Scribner, 2007; Hanushek, 2007; Hoguebe & Tate IV, 2010; Winheller, Hattie, & Brown, 2013). Classroom disciplinary climate is also a strong predictor of student outcomes (Schleicher, 2009). Classrooms that have fewer distractions promote more opportunities for teaching and learning (Frempong, Ma, & Mensah, 2012; Ma & Willms, 2004; OECD, 2005; Shin, Lee, & Kim, 2009). Teacher-student relations are also related to students' educational outcomes. Positive, supportive and caring relationships between teachers and students have been shown to improve students' outcomes because they increase students' engagement and motivation for learning (Frempong et al., 2012; National Research Council, 2003). Research has also shown that positive teacher-student relations are especially powerful for students from disadvantaged backgrounds (Croninger & Lee, 2001; Freeman, Frydenberg, Begg, & Care, 2010). Finally, students' attitudes toward the relevance and value of schooling are related to their educational experiences and outcomes. Data from PISA show that student attitudes about schooling are positively related to reading performance as well as relationships with teachers and classroom disciplinary climate (OECD, 2013).

To the best of our knowledge, this study is one of the first in the world to examine the degree to which students' experiences vary between private and public schools. In most OECD countries, private schools tend to enrol students from higher SES backgrounds than do public schools (OECD, 2012), even in countries where private schools do not charge fees, such as Sweden (Bunar, 2010). As evidenced by frequent commentaries in the media, there is a common perception in Australia that "one gets what one pays for", i.e. that private schooling is superior because parents pay for it. Even if private schools do not provide a performance advantage, they may provide more pleasant, effective or supportive learning environments, which many

students and parents would view as educational goods in their own rights. The findings of this study will help evaluate the accuracy of these commonly held perceptions.

Method

We conduct a secondary analysis of data from the 2009 *Programme for International Student Assessment* (PISA), which has been administered every three years since 2000 by the Organisation for Economic Cooperation and Development (OECD). Rather than testing students' knowledge of a taught curriculum, PISA measures 15 year old students' ability to solve problems in the domains of literacy, mathematics and science that individuals in economically developed countries would typically encounter in daily life. We use data from PISA 2009 rather than the latest cycle (2012) for two reasons. First, the main subject domain in the 2009 cycle was reading literacy, a foundational skill of great importance for all other subjects as well as life opportunities post-school. Second, using this cycle allows our study to build directly onto the findings of a series of papers published by Sullivan and colleagues (Sullivan, Perry, & McConney, 2013, 2014) that used PISA 2009 to examine school differences by geographic location in Australia.

The Australian dataset for PISA 2009 is nationally representative and includes 14,251 students and 353 schools. In addition to testing students' literacy in the three subject domains, PISA also collects a wide range of information from students and school principals about items that may predict student academic achievement. PISA collects information about students' socioeconomic background, which in PISA is named *economic, social and cultural status* (ESCS). It comprises parental education, parental occupational status, and a wide range of educational, cultural and material resources within the home.

We use the ESCS index to divide schools into quintiles based on the average socioeconomic composition of the students who participated in PISA in their school. We use this as proxy for mean school socioeconomic status. We first calculate the mean socioeconomic composition (i.e., mean school SES) of each school by averaging the individual ESCS values for all students in the school who participated in PISA. We then divide schools into quintiles by mean SES. We also divide schools into public and private school sector. We therefore divide schools into 10 categories. The number of students and schools in each category is shown in Table 1. Quintile 1 has the lowest mean school SES and quintile 5 has the highest.

Table 1. Australia PISA 2009 sample

School SES Group	Public		Private		Total	
	N schools	N students	N schools	N students	N schools	N students
1	68	2766	2	84	70	2850
2	66	2675	5	197	71	2872
3	43	1605	28	1238	71	2843
4	27	1133	44	1703	71	2836
5	13	536	57	2314	70	2850
Total	217	8715	136	5536	353	14251

As can be seen in Table 1, private and public schools are not distributed equally between each school SES quintile. This unequal distribution is particularly pronounced in the two lowest school SES contexts, with only two and five private schools in quintiles 1 and 2 respectively. Our sample is nationally representative and therefore reflects the reality that schooling is socially stratified across sectors in Australia. As has been documented by Teese (2011), low SES private schools are very rare. Our findings about student perceptions in these private low SES (quintiles 1 and 2) schools should be treated with caution; it is likely that these schools are unique, and because of their small numbers, we should not make any generalisations. For this reason, we also do not

calculate effect sizes to measure the magnitude of differences between public and private schools in these two school SES quintiles.

For each category, we calculate means for five indexes about students' perceptions of their teachers and learning environments and their attitudes toward schooling. These indexes are included in the PISA dataset and are based on students' responses to multiple questionnaire items. All indexes are scaled with a range of -1 to 1, with the mean for all OECD member countries scaled to 0. Larger values indicate more positive responses. We used the student weights included in the PISA dataset when calculating means for each index. Information about the items included in each of the five indexes is included in the following paragraphs.

Two indexes capture students' perspectives of their teachers' instructional strategies. The first index is about teachers' ability to stimulate their students' engagement with reading and comprises seven items. Students are asked how often their English teacher does the following: asks students to explain the meaning of a text; asks questions that challenge students to get a better understanding of a text; gives students enough time to think about their answers; recommends a book or author to read; encourages students to express their opinion about a text; helps students relate the stories they read to their lives; and shows students how the information in texts builds on what they already know. The second index is about teachers' use of structuring and scaffolding strategies and comprises nine items. Students are asked to rate how often their English teacher does the following: explains beforehand what is expected of the students; checks that students are concentrating while working; discusses students' work after they have finished the assignment; tells students in advance how their work is going to be judged; asks whether every student has understood how to complete the assignment; marks students' work; gives students the chance to ask questions about the

assignment; poses questions that motivate students to participate actively; and tells students how well they did on the assignment immediately after.

We also examine three indexes based on students' responses to items about their classroom disciplinary climate, relationships with their teachers, and attitudes toward schooling. The disciplinary climate index is based on five items in which students are asked to rate how often the following happens in their native language (English) class: students don't listen to what the teacher says; there is noise and disorder; the teacher has to wait a long time for the students to quiet down; students cannot work well; and students don't start working for a long time after the class begins. For the student-teacher relationship index, students are asked to rate how much they agree or disagree with the following five statements: I get along with most of my teachers; most of my teachers are interested in my well-being; most of my teachers really listen to what I have to say; if I need extra help, I will receive it from my teachers; and most of my teachers treat me fairly. For the attitudes toward school index, students are asked to rate how much they agree or disagree with the following four statements: "school has done little to prepare me for adult life when I leave school; school has been a waste of time; school has helped give me confidence to make decisions; school has taught me things which could be useful in a job.

After calculating means for each school SES quintile on the five indexes, we assessed whether between-sector differences within each school SES quintile exist. We did this by reporting the 95% confidence interval of each mean to assess whether differences between school groups were meaningful. A 95% confidence interval means that there is a 95% chance that the confidence interval contains the true population mean (Altman, 2005). If the confidence intervals overlap for two school groups, we cannot assume that the means are different. In cases where the confidence intervals do

not overlap, on the other hand, we can be reasonably confident that the measured differences are not due to sampling error and are therefore consistent with rejecting the equal mean null-hypothesis. For these cases, we calculate the effect size to provide a measure of the size of the difference between the means, as recommended by Sullivan and Feinn (2012). Just because the difference between two means is statistically significant does not mean that the difference is meaningful or educationally substantive. We therefore use Cohen's d to express the relative size of the differences between means as an effect size since this measure reflects the pragmatic import of group differences rather than its statistical significance (Thalheimer & Cook, 2002). We calculate Cohen's d by dividing the difference between the means by the pooled standard deviation. As is the convention in reporting education treatments, we consider an effect size above .25 as educationally substantive (Slavin & Fashola, 1998), with values around .3 as being a medium effect and those in the area of .5 or higher being a large effect (Cohen, 1992). "Educationally substantive" effect sizes are large enough to warrant attention. As noted earlier, we did not calculate effect sizes for sector differences between the two lowest school SES quintiles because of the very small number of private schools in these groups.

We used the International Database (IDB) Analyzer created by the International Association for the Evaluation of Educational Achievement to calculate the descriptive statistics reported in this paper. The IDB Analyzer uses the correct procedure for handling PISA's complex sampling design, ensuring that estimates and corresponding standard errors are accurate. Calculations were also conducted using the appropriate student weights.

Results

First we show how students' perceptions of their teachers' instructional strategies (Table 2) and school climate and classroom learning environment (Table 3) vary between private and public schools. The Tables indicate the degree to which these five measures vary between sectors among schools with similar socioeconomic compositions. We also report whether differences across different school SES contexts are found within each sector.

As shown in Table 2, student perceptions of their English teachers' instructional strategies show very little variation between private and public schools within the same school SES quintile. Only two statistically significant differences were found. Teachers' stimulation of reading engagement was higher in private schools than in public schools in quintile 3 (middle SES schools). This difference was small, however, with an effect size of .18, which would not be considered educationally substantive. The second difference was found within quintile 1 in English teachers' use of structuring and scaffolding strategies. Teachers in quintile 1 private schools were perceived to use these strategies more often than their counterparts in public schools. Because of the small sample size of private schools in this quintile, however ($n=2$), we did not calculate an effect size. Data reported in Table 3 also show variations *within* the two sectors. Student perceptions of their teachers' instructional strategies are positively correlated with mean school SES in both sectors, with students in higher school SES contexts generally reporting more favourable responses than did their peers in lower SES school contexts. The size of the difference between low and high SES school contexts within each sector was moderate and educationally substantive for the reading engagement measure (.28 effect size for the public sector and .34 for the private sector) but small and not

educationally substantive for the structuring/scaffolding measure (.16 and .13 for the public and private sectors respectively).

Table 2. Student perceptions of teacher instruction, by school SES and sector

School SES quintile	Teachers' stimulation of reading engagement SD = 1.0006									Teachers' uses of structuring/scaffolding SD = 1.0452								
	Public			Private			confidence interval: public	confidence interval: private	Gap **	Public			Private			confidence interval: public	confidence interval: private	Gap **
	Mean	SE	SD	Mean	SE	SD				Mean	SE	SD	Mean	SE	SD			
1 (low)	-.04	.04	1.06	.02	.03	.93	-.11 – .04	-.04 – .08		.10	.04	1.12	.39	.05	.79	.02 – .17	.29 – .48	NA
2	.02	.03	1.03	.05	.11	.97	-.04 – .09	-.16 – .26		.19	.04	1.07	.20	.10	1.03	.12 – .26	.01 – .38	
3	.03	.04	.97	.21	.05	.93	-.04 – .11	.12 – .30	.18	.17	.05	1.04	.23	.05	.98	.07 – .26	.14 – .33	
4	.19	.06	.96	.22	.04	1.00	.07 – .31	.14 – .31		.27	.05	1.02	.28	.04	1.02	.17 – .37	.20 – .35	
5 (high)	.21	.07	.89	.36	.04	.95	.07 – .36	.29 – .44		.19	.08	1.03	.34	.03	.98	.03 – .34	.28 – .40	
Gap**	.28 *			.34 *						.16			.13					

* educationally substantive (effect size equal or greater than .25)

** Size of the difference between the lowest and highest mean, expressed as an effect size

NA = possibility of a statistically significant difference but unable to calculate effect size due to small number of private schools

Table 3 reports students' perceptions of the disciplinary climate in their English classroom, their relations with teachers in their school, and their attitudes about the value and relevance of schooling. As seen here, student perceptions of the disciplinary climate in their English class varied between private and public low SES (quintile 1) and low-medium (quintile 2) schools; in both cases, student responses were more positive in private schools. As noted earlier, we did not calculate the effect size for the quintile 1 comparison due to the small number of private schools. In the middle, middle-high and high SES school contexts (quintiles 3-5), no sector differences were found. Differences were found across school SES contexts within each sector as well, with students in higher SES school contexts reporting more favourable responses than their peers in lower SES school contexts. The magnitude of the difference is small and not educationally substantive among private schools but is moderate and educationally substantive among public schools.

Sector differences were also found on the measure of student-teacher relations, with students in private schools reporting more positive responses than their public school peers in quintiles 1 and 5. The difference in quintile 5 was not educationally substantive, and as noted earlier, we did not calculate an effect size for quintile 1 due to the small number of private schools. Differences by school SES were also found within each sector. In both sectors, students in higher SES school contexts reported more favourable relations with their teachers than did their peers in lower SES school contexts; the magnitude of the difference is moderate and educationally substantive for both sectors (.25 for private and .28 for public schools).

Finally, sector differences were found on the measure of student attitudes toward school, with students in private schools reporting more positive responses than their public school peers in quintiles 1, 2 and 5. The differences in quintiles 2 and 5 were not

educationally substantive, and as noted earlier, we did not calculate an effect size for quintile 1 due to the small number of private schools. Differences by school SES were also found within each sector. In both private and public schools, students in higher SES school contexts reported more favourable relations with their teachers than did their peers in lower SES school contexts; the magnitude of the difference is small, however, and not educationally substantive for either sector. The most favourable responses were found in quintile 5 private schools, and the least favourable responses were found in quintile 1 public schools.

Table 3: Student attitudes toward school and perceptions of school climate, by school SES and sector

School SES quintile	Classroom disciplinary climate SD = 1.0096							Student- teacher relations SD = .9864							Attitudes toward school SD = 1.0160								
	Public			Private				Public			Private				Public		Private			Gap **			
	X	SE / SD		X	SE / SD	CI: public	CI: private	Gap **	X	SE / SD		X	SE / SD	CI: public	CI: private	Gap **	X	SE / SD	X		SE / SD	CI: public	CI: private
1		.05 / 1.07		.03 / .85	-.41 – -.21	.24 – .36	NA		.03 / .98		.31	.87	-.13 – -.03	.26 – .36	NA		.03 / .99		.24	.09 / 1.07	-.08 – .03	.07 – .41	NA
2		.04 / 1.02		.04 / .91	-.29 – -.13	-.09 – .07	NA		.03 / .98		.07	.93	-.03 – .08	-.04 – .18			.03 / 1.01		.20	.02 / 1.08	.02 – .13	.15 – .24	NA
3		.05 / .98		.07 / .94	-.26 – -.06	-.15 – .13			.03 / .99		.15	.94	-.02 – .11	.06 – .23			.04 / .99		.22	.04 / 1.02	.01 – .15	.14 – .30	
4		.13 / 1.05		.06 / 1.01	-.22 – .28	-.07 – .17			.05 / .95		.16	1.05	.04 – .22	.07 – .25			.04 / .99		.23	.04 / 1.04	.07 – .22	.14 – .31	
5		.08 / .91		.05 / .92	-.16 – .16	.06 – .26			.05 / .93		.35	.95	.08 – .26	.29 – .41	.18		.07 / 1.01		.37	.03 / 1.01	.01 – .27	.32 – .43	.22
Gap **		.31*		.17					.25*		.28*					.17		.17					

* educationally substantive (effect size equal or greater than .25)

** Size of the difference between the lowest and highest mean, expressed as an effect size

NA = possibility of a statistically significant difference but unable to calculate effect size due to small number of private schools

Thus far we have been comparing student perceptions between sectors within the same socioeconomic school context. In Table 4, we show the magnitude of the differences between school SES quintiles and sectors, for example between low SES public schools and middle SES private schools. It is important to compare socioeconomically “like” schools when examining differences between sectors; otherwise, it is difficult to untangle sector differences that are related to schools and their organisation from the characteristics of their students. At the same time, however, parents do not necessarily restrict their choice of a school to a socioeconomically “like” school. Rather, they tend to choose a school that they believe provides more effective teachers, facilities or learning environments (Beavis, 2004). In many instances, choosing a school that is perceived to offer educational experiences superior to the local public school means a school that has a more privileged socioeconomic profile. Even within the same community or suburb, the local public school tends to have a lower socioeconomic composition than the local private school (Teese, 2011).

Further evidence of this dynamic is found within the PISA dataset itself. The number of low SES private schools is very small. In our nationally representative sample, there are only two private schools in quintile 1 and five schools in quintile 2. Similar findings have been found in other Australian studies using different data. In Perry & Southwell’s (2014) study of between-school curriculum inequalities in Perth using data from the federal government’s My School website (<http://www.myschool.edu.au/>), only one of 24 schools in the lowest SES quintile and five of 24 schools in the second lowest SES quintile were from the non-government sectors. Using data sourced from education authorities in Western Australia and Victoria, Teese (2011) also found that very few Catholic or independent schools enrol mostly low SES students.

In Table 4, we show how student perceptions vary across sectors and across socioeconomic contexts for all five measures. Specifically, we examine the degree to which public schools from each of the five quintiles differ from public and public schools with higher SES compositions. All differences are reported as effect sizes, with the exception of comparisons with private schools in quintile 2 due to the small number of low SES private schools.

Table 4: Cross quintile differences, expressed as effect sizes

	Teacher stimulation of reading engagement		Teacher use of structuring and scaffolding strategies		Classroom disciplinary climate		Student-teacher relations		Attitudes towards school	
	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private
Q1 public to Q2	.06	NA	.09	NA	.10	NA	.11	NA	.01	NA
Q1 public to Q3	.07	.25 *	.07	.13	.15	.30 *	.13	.23	.07	.24
Q1 public to Q4	.23	.26 *	.17	.18	.34 *	.36 *	.21	.25 *	.07	.25 *
Q1 public to Q5	.25 *	.40 *	.09	.23	.31 *	.47 *	.26 *	.44 *	.07	.39 *
Q2 public to Q3	.01	.19	.02	.04	.05	.20	.02	.13	.06	.15
Q2 public to Q4	.17	.20	.08	.08	.24	.26 *	.11	.14	.06	.15
Q2 public to Q5	.19	.34 *	.00	.14	.21	.37 *	.15	.34 *	.08	.29 *
Q3 public to Q4	.16	.19	.10	.11	.19	.21	.08	.12	.00	.14
Q3 public to Q5	.18	.33 *	.02	.17	.16	.32 *	.13	.31 *	.14	.28 *
Q4 public to Q5	.03	.17	.08	.07	.03	.13	.05	.23	.14	.22

* educationally substantive (effect size equal or greater than .25)

NA = possibility of a statistically significant difference but unable to calculate effect size due to small number of private schools

Of the five measures shown in Table 4, student perceptions of classroom disciplinary climate varied the most by sector and socioeconomic context, and teacher use of structuring and scaffolding strategies varied the least. Indeed, for the latter, no difference reached the educationally substantive threshold, even when comparing perceptions from low SES public schools and high SES private schools. The second measure with the largest number of cross-category differences was teacher stimulation of reading engagement. Most of the differences were found between schools with markedly different socioeconomic compositions, typically including a difference of two or more school SES categories. This means that fairly large increases in difference between school SES contexts are needed before meaningful differences in student perceptions are evident.

Discussion

Our results found that students' attitudes towards schooling and their perceptions of their teachers and learning environments do not vary substantively between public and private schools with similar socioeconomic compositions. We were unable to make rigorous sectoral comparisons between low SES schools due to the very small number of private schools in our nationally representative sample. Further research from countries that have a larger number of low SES private schools than Australia would be useful for extending our knowledge about the degree and nature of sectoral differences.

The second major finding that we would like to highlight is that teachers' use of structuring and scaffolding strategies, one of the main measures of effective teaching, varies very little across school contexts. It does not vary at all between private and public schools with similar socioeconomic compositions, and it varies only slightly

across school SES contexts. Whether a student attends a low SES public school or a high SES private school, student perceptions of the quality of teacher instruction are very similar. This is a very positive finding about the training and professionalism of Australian teachers.

On the other four measures, student perceptions vary somewhat across school SES contexts. Differences were typically found, however, between schools located two or more SES quintiles from each other, for example between schools in quintile 1 and quintile 3 or 4. No educationally substantive differences were found between schools in quintiles 4 and 5, regardless of sector. Overall, the largest differences were found between lower SES public schools and higher SES private schools. On some measures, in particular classroom disciplinary climate, the differences were very large. This is a matter of concern since most of these higher SES private schools charge substantial fees, putting them beyond the reach of most Australian families. Further research from national contexts that have fewer high-fee charging private schools than Australia, such as the Netherlands or Belgium, would be useful.

We note the following limitations of our study. First, our study measures student perceptions, which may reflect differing expectations for public or private schools. It is possible that a research design based on researcher generated observations, for example, would uncover different findings. Second, it is possible that schools vary by context and sector in ways that PISA is unable to uncover. PISA does not collect data about the depth or breadth of taught curriculum subjects. We are therefore unable to say, for example, that mathematics is taught in the same way, or to the same level of rigor, in different types of schools. Data about teacher assessment practices, teacher communication strategies with parents or school pastoral care strategies are also not collected by PISA. These are all dimensions which anecdotally at least have been

identified as possible differences between private and public schools. Future studies could examine these questions to extend our knowledge about the ways in which teaching and learning vary, if at all, between public and private schools. Third, we reiterate that the small number of low SES private schools in our sample prevents us from making meaningful sectoral comparisons among low SES schools. Conducting a similar study in a country where low SES private schools are not rare would deepen our understanding of the ways in which low SES public and private schools differ, if at all. Finally, our analytical approach of comparing group means, while intuitive and easy to understand for a wide audience, has limitations. As with any research design that is based on a comparison of averages, there is the possibility that some schools in different quintile groups are actually similar to each other because they sit on either side of the dividing line between groups. To overcome this issue, future analyses could employ multilevel modelling with reading literacy as a continuously scaled outcome variable and school sector and SES as additional predictors in the analysis at the school level. By way of interaction effects, it could then be examined whether the effects of student-level variables such as student-teacher, disciplinary climate and attitudes towards school on reading literacy differ between public and private schools while controlling for the SES of the school.

Conclusion

Our findings show that students' educational experiences are similar between private and public schools with similar socioeconomic compositions. This finding is aligned with the numerous studies that have shown that students' educational outcomes do not vary by sector after accounting for student socioeconomic status. Most evidence, from both Australia and overseas, does not support the notion of a private school

advantage for educational outcomes; the findings from our study are one of the first to show also that there is little evidence for a private school advantage in terms of educational experiences. School socioeconomic composition, not school sector, appears to be the main source of inequality between students' educational experiences. Whether private or public, students in higher SES schools report more positive experiences on many indicators compared to their peers in lower SES schools.

This does not mean, however, that the sectoral organisation of schooling in Australia does not impact on educational equity. Our study found that the largest differences in educational experiences were between lower SES public schools and higher SES private schools. Most of these higher SES private schools charge substantial fees that are prohibitively expensive for many families, especially those that reside in low SES communities. If we agree that all students should be able to enjoy productive, pleasant and supportive educational experiences regardless of where they live or how much money their parents earn, we should seek ways to reduce between-school inequalities, not exacerbate them. Our findings suggest that the key mechanism for reducing inequalities is to reduce school socioeconomic segregation. While most education systems in the world are socially stratified, the degree of school socioeconomic segregation is particularly high in Australia (OECD, 2010). Ryan and Watson (Ryan & Watson, 2004; Watson & Ryan, 2010) and Rothman (2003) have argued that the increase in school social segregation in Australia over the past 30 years is linked with changes to the funding of private schools. Perhaps it is time to look to Canada, New Zealand and the UK, culturally similar countries that also have a strong tradition of private and parochial schooling, for insight about funding formulas that promote rather than diminish educational equity.

References

- ABS. (2012). Schools Australia (catalogue no. 4221.0). Canberra: Australian Bureau of Statistics.
- Akiba, M., LeTendre, G. K., & Scribner, J. P. (2007). Teacher quality, opportunity gap, and national achievement in 46 countries. *Educational Researcher*, 36(7), 369-387.
- Alexander, K. L., & Aaron, M. P. (1985). School sector and cognitive performance: When is a little a little? *Sociology of Education*, 58(2), 115-128.
- Altman, D. G., & Bland, J. M. (2005). Standard deviations and standard errors. *British Medical Journal*, 331(7521), 903. doi: 10.1136/bmj.331.7521.903
- Anderson, D. (1992). The interaction of public and private school systems. *Australian Journal of Education*, 36(3), 213-236.
- Beavis, A. (2004). Why parents choose public or private schools. *Research Developments - Articles Online* (pp. Issue 12). Canberra: Australian Council for Educational Research.
- Benito, R., Alegre, M. À., & González-Balletbò, I. (2014). School segregation and its effects on educational equality and efficiency in 16 OECD comprehensive school systems. *Comparative Education Review*, 58(1), 104-134. doi: 10.1086/672011
- Benveniste, L., Carnoy, M., & Rothstein, R. (2003). *All else equal: Are public and private schools different?* New York: RoutledgeFalmer.
- Bunar, N. (2010). Choosing for quality or inequality: Current perspectives on the implementation of school choice policy in Sweden. *Journal of Education Policy*, 25(1), 1-18. doi: DOI: 10.1080/02680930903377415
- Cardak, B. A., & Vecci, J. (2013). Catholic school effectiveness in Australia: A reassessment using selection on observed and unobserved variables. *Economics of Education Review*, 37(0), 34-45. doi: <http://dx.doi.org/10.1016/j.econedurev.2013.08.003>
- Chandler, L. (1999). *Traditional schools, progressive schools: Do parents have a choice?* Washington, DC: Thomas B. Fordham Foundation.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.
- Coleman, J. S., Hoffer, T., & Kilgore, S. (1982). *High school achievement: Public, Catholic, and private schools compared.* New York: Basic Books.
- Cookson, P. W., & Persell, C. H. (2008). *Preparing for power: America's elite boarding schools.* New York: Basic Books.
- Croninger, R., & Lee, V. E. (2001). Social capital and dropping out of high school: Benefits to at-risk students of teachers' support and guidance. *Teachers College Record*, 103(4), 548-581.
- Dearden, L., Ryan, C., & Sibieta, L. (2010). What determines private school choice? A comparison between the UK and Australia. *IFS working papers, No. 10,22.* Leibniz: Information Centre for Economics.
- Dronkers, J., & Robert, P. (2008). Differences in scholastic achievement of public, private government-dependent, and private independent schools: A cross national analysis. *Educational Policy*, July (22), 541-577.
- Freeman, E., Frydenberg, E., Begg, B., & Care, E. (2010). Teachers working in teams to enhance teacher-student relationships and learning. *Education Connect*, 16-19.
- Frempong, G., Ma, Z., & Mensah, J. (2012). Access to postsecondary education: Can schools compensate for socioeconomic disadvantage? *Higher Education*, 63, 19-32. doi: 10.1007/s10734-011-9422-2

- Gamoran, A. (1996). Student achievement in public magnet, public comprehensive, and private city high schools. *Educational Evaluation and Policy Analysis*, 18(1), 1-18.
- Gorard, S. (2006). The true impact of school diversity? In M. Hewlett, R. Pring & M. Tulloch (Eds.), *Comprehensive education: Evolution, achievement and new directions*. Northampton: University of Northampton Press.
- Hanushek, E. A. (2007). Some US evidence on how the distribution of educational outcomes can be changed. In L. Woessmann & P. E. Peterson (Eds.), *Schools and the equal opportunity problem* (pp. 159-190). Cambridge, MA: MIT Press.
- Hoffer, T. (1998). Social background and achievement in public and Catholic high schools. *Social Psychology of Education*, 2, 7-23.
- Hogrebe, M. C., & Tate IV, W. F. (2010). School composition and context factors that moderate and predict 10th-grade science proficiency. *Teachers College Record*, 112(4), 1096-1136.
- Jehangir, K., Glas, C. A. W., & van den Berg, S. (2015). Exploring the relation between socio-economic status and reading achievement in PISA 2009 through an intercepts-and-slopes-as-outcomes paradigm. *International Journal of Educational Research*, 71(0), 1-15. doi: <http://dx.doi.org/10.1016/j.ijer.2015.02.002>
- Lamb, S., Hogan, D., & Johnson, T. (2001). The stratification of learning opportunities and achievement in Tasmanian secondary schools. *Australian Journal of Education*, 45(2), 153-167.
- Levin, H. M. (1998). Educational vouchers: Effectiveness, choice, and costs. *Journal of Policy Analysis and Management*, 17(3), 373-392. doi: 10.1002/(sici)1520-6688(199822)17:3<373::aid-pam1>3.0.co;2-d
- Lieberson, S. (1985). *Making it count: The improvement of social research and theory*. Berkeley: University of California.
- Lubienski, C., & Lubienski, S. T. (2014). *The public school advantage: Why public schools outperform private schools*. University of Chicago Press.
- Lubienski, S. T., & Lubienski, C. (2006). School sector and academic achievement: A multilevel analysis of NAEP mathematics data. *American Educational Research Journal*, 43(4), 651-698. doi: 10.3102/00028312043004651
- Ma, X., & Willms, J. D. (2004). School disciplinary climate: Characteristics and effects on eighth grade achievement. *Alberta Journal of Educational Research*, 50(2), 169-188.
- Marks, G. N. (2015). Do Catholic and independent schools “add-value” to students’ tertiary entrance performance? Evidence from longitudinal population data. *Australian Journal of Education*, 59(2), 133-157. doi: 10.1177/0004944115586658
- Mostafa, T. (2010). Decomposing inequalities in performance scores: The role of student background, peer effects and school characteristics. *International Review of Education*, 56(5-6), 567-589. doi: 10.1007/s11159-010-9184-6
- National Research Council. (2003). *Engaging schools: Fostering high school students’ motivation to learn*. Washington, DC: National Academies of Science.
- Nghiem, H. S., Nguyen, H. T., Khanam, R., & Connelly, L. B. (2015). Does school type affect cognitive and non-cognitive development in children? Evidence from Australian primary schools. *Labour Economics*, 33, 55-65. doi: 10.1016/j.labeco.2015.02.009
- OECD. (2005). *School factors related to quality and equity: Results from PISA 2000*. Paris: OECD.

- OECD. (2010). *PISA 2009 results: Overcoming social background - equity in learning opportunities and outcomes (Vol. 2)*. Paris: OECD.
- OECD. (2011). *PISA in focus: Private schools: Who benefits?* Paris: OECD.
- OECD. (2012). *Public and private schools: How management and funding relate to their socio-economic profile*. Paris: OECD.
- OECD. (2013). *PISA in focus: What do students think about school?* Paris: OECD.
- Perry, L. B., & Southwell, L. (2014). Access to academic curriculum in Australian secondary schools: A case study of a highly marketised education system. *Journal of Education Policy*, 29(4), 467-485. doi: 10.1080/02680939.2013.846414
- Rothman, S. (2003). *The changing influence of socioeconomic status on student achievement: Recent evidence from Australia*. Paper presented at the American Educational Research Association, Chicago.
- Ryan, C., & Watson, L. (2004). *The drift to private schools in Australia: Understanding its features*. Canberra: Centre for Economic Policy Research, Australian National University.
- Schleicher, A. (2009). Securing quality and equity in education: Lessons from PISA. *Prospects*, 39, 251-263.
- Selleck, R. J. W. (1990). The development of Australian schools. In R. D. Linke (ed.), paper presented at the National Board of Employment, Education and Training conference, October.
- Shin, J., Lee, H., & Kim, Y. (2009). Student and school factors affecting mathematics achievement. *School Psychology International*, 30(5), 520-537. doi: 10.1177/0143034309107070
- Slavin, R. E., & Fashola, O. S. (1998). *Show me the evidence: Proven and promising programs for America's schools*. Thousand Oaks, CA: Corwin Press.
- Sullivan, G. M., & Feinn, R. (2012). Using effect size—or why the p value is not enough. *Journal of Graduate Medical Education*, 4(3), 279-282. doi: 10.4300/JGME-D-12-00156.1
- Sullivan, K., Perry, L. B., & McConney, A. (2013). How do school resources and academic performance differ across Australia's rural, regional and metropolitan communities? *Australian Educational Researcher*, 40(3), 353-372.
- Sullivan, K., Perry, L. B., & McConney, A. (2014). How do school learning environments differ across Australia's rural, regional and metropolitan communities? *Australian Educational Researcher*, 41(5), 521-540. doi: 10.1007/s13384-014-0144-1
- Teese, R. (1989). Australian private schools, specialization and curriculum conservation. *British Journal of Educational Studies*, 37(3), 235-252.
- Teese, R. (2011). *From opportunity to outcomes. The changing role of public schooling in Australia and national funding arrangements*. Melbourne: Centre for Research on Education Systems, University of Melbourne.
- Thalheimer, W., & Cook, S. (2002). How to calculate effect sizes from published research articles: A simplified methodology. Retrieved August 11, 2015, from http://work-learning.com/effect_sizes.htm
- Thomson, S., De Bortoli, L., Nicholas, M., Hillman, K., & Buckley, S. (2011). *Challenges for Australian education: Results from PISA 2009*. Camberwell, VIC: Australian Council for Educational Research.
- Watson, L., & Ryan, C. (2010). Choosers and losers: The impact of government subsidies on Australian secondary schools. *Australian Journal of Education*, 54(1), 86-107.

- Williams, T., & Carpenter, P. G. (1990). Private schooling and public achievement. *Australian Journal of Education, 34*(1), 3-24.
- Winheller, S., Hattie, J., & Brown, G. L. (2013). Factors influencing early adolescents' mathematics achievement: High-quality teaching rather than relationships. *Learning Environments Research, 16*(1), 49-69. doi: 10.1007/s10984-012-9106-6
- Witte, J. F. (1992). Private school versus public school achievement: Are there findings that should affect the educational choice debate? *Economics of Education Review, 11*(4), 371.
- Witte, J. F. (1998). The Milwaukee voucher experiment. *Educational Evaluation and Policy Analysis, 20*(4), 229-251. doi: 10.3102/01623737020004229