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How do school learning environments differ across Australia's rural, regional and metropolitan communities?

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Abstract This study uses data from the Programme for International Student Assessment, a large and nationally representative dataset, to examine how learning environments vary across metropolitan, rural and regional schools in Australia. Research has shown that school climate and learning environments are related to student academic performance, but little is known about the degree to which they differ across school communities in Australia. We examined principals' perceptions of teacher and student behaviour related to school climate and students' perceptions of teacher support, classroom disciplinary climate, and the relevance of education. The findings show that regardless of where they live, most students believe that schooling is worthwhile, and report positive relationships with their teachers. Perceptions of classroom disciplinary climate vary more across school communities, however, with students reporting less positive disciplinary climate in rural communities than in very large cities. Principals' perceptions of teacher and student behavior related to school climate varied; with urban schools having much more positive results than schools in towns and rural communities. Finally, our findings show that students' and principals' perceptions of their school climate and learning environments are more positive in urban communities than in rural communities, but that the least positive environments are generally found in country towns rather than remote communities. Our findings suggest that attention should be paid to improving learning environments not just in the most rural/remote communities, but also in largish regional towns of up to 50,000 residents.

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Introduction

The term 'school learning environment' is a broad construct that includes a range of student and teacher relationships, behaviours, attitudes and expectations. It can include, among others, relationships between teachers and students, school climate, and classroom disciplinary climate. In the context of this paper school learning environment is not exclusive to but includes classroom and school disciplinary climate, student and staff communication, expectations and absenteeism. Research has shown that positive student perceptions of learning environments can promote positive student outcomes such as achievement and attainment (Allen and Fraser 2007; Patrick et al. 2011). At the same time, however, a positive learning environment is an outcome in itself, not just a means to another end. Whether related to academic outcomes or not, all students deserve to be treated equitably by their teachers and to learn in orderly, well-resourced classrooms that are conducive to learning.

While it is well known that students who attend rural schools in Australia have lower educational outcomes than their peers in urban communities, much less is known about how rural and metropolitan schools differ from each other. Research has shown that compared to students in urban areas, rural students have lower high school retention rates (Godden 2007; Marks and Fleming 1999), are less likely to complete Year 12 (Alston and Kent 2006; Marks et al. 2000), are less likely to attend university (James 2001), and have lower results on standardized tests of academic performance (Cresswell and Underwood 2004). Research has also shown that compared to urban schools, rural schools have difficulty recruiting and retaining teachers (Ministerial Council on Education et al. 2003; Vinson et al. 2002; Yarrow et al. 1999), have fewer instructional resources (Cresswell and Underwood 2004; Sullivan et al. 2013), and offer fewer academic and vocational courses (Human Rights and Equal Opportunity Commission 2000). Very little is known, however, about how learning environments differ between rural and urban schools in Australia.

In this study we examine how school learning environments, as perceived by students and principals, vary across rural and metropolitan communities in Australia. We use a large, nationally representative dataset—the *Programme for International Student Assessment*—to conduct secondary analyses of school learning environments. Our approach is primarily descriptive and exploratory, which is appropriate since very little is known about the degree to which learning environments vary across rural, regional and urban contexts. The findings of our study may serve as a foundation for further research about how and why differences in perceptions of school learning environments exist, based on school location. Understanding the degree to which perceptions vary by geographic location and community size can provide insight about ways to improve student educational

outcomes and experiences. It can also shed light on ways to improve the working conditions of teachers and school principals.

Our rationale for this study which sets out to examine principals' and students' perceptions about school learning environment across a range of differently sized and located Australian school communities is threefold. First, from PISA data we have learned that students in rural communities have, on average, lower educational outcomes than students in metropolitan communities (Cresswell and Underwood 2004; De Bortoli and Thomson 2010). While many rural students also have socioeconomically disadvantaged family backgrounds, it is plausible that some of the variation in student outcomes is due to differences in school learning environments (OECD 2004). Second, understanding how perceptions of learning environments vary across rural and metropolitan schools can be useful for stakeholders who are seeking to develop and promote rural schools and rural communities more generally. Third, we are committed to ensuring that all students are able to enjoy positive learning environments, regardless of where they live. If substantial differences are found across metropolitan and rural schools, our findings can highlight to educational policy makers what aspects of school learning environments need to be improved to ensure that a more equitable education learning environment exists across all Australian school communities.

Background

Perceptions of learning environments can enrich our understanding of learning outcome variance (Marton 1981; Fraser and Fisher 1982; Lizzo et al. 2002).

This research paper uses questionnaire data, sourced from PISA 2009, to build on research that shows school learning environments can positively contribute to students' educational outcomes. School learning environments are shaped by teachers, including teacher expectations, teacher morale, and relationships between students and teachers. Research indicates that student learning is enhanced by a positive school learning environment that is cohesive and promotes high academic expectations (Diseth 2007; Hoy et al. 2006; Stewart 2008), orderly classrooms (Ma and Willms 2004; Shin et al. 2009; Willms 2010) and adequate educational resources (Orr 2003; Portes 2005). Research has also shown that in terms of teaching, student learning is promoted by supportive and caring teachers who have high expectations (Auwarter and Aruguete 2008; Hardré and Reeves 2003; National Research Council 2003; Rosenfeld et al. 2000), qualified and experienced teachers (Crofford et al. 2011; Nye et al. 2004) and inspiring teachers (Hardré and Reeves 2003).

While ethnographic studies of Australian schools (see, for example, Angus 1993; Connell et al. 1982; Smyth et al. 2003) have suggested strong interplay between school learning environment, learning resources and policies, very little is known about the degree to which the learning environments in rural schools differ from other schools in Australia. To our knowledge only a few studies have examined how school learning environments vary across geographic contexts and community size. The most comprehensive study of this topic is by Cresswell and Underwood (2004).

Using data from the 2000 cycle of PISA, Cresswell and Underwood (2004) compared principals' responses about a range of school characteristics across rural and metropolitan communities in Australia. They found that neither teacher qualifications nor teacher morale differed substantially across geographic context. They did find, however, that principals' perceptions of teacher factors related to school learning environment were less positive in remote communities than in large cities. Waldrip and Fisher (2007) found very small differences in students' perceptions of teacher-student interpersonal behaviour in remote, regional and urban schools in Western Australia and Queensland. Young (1998) found small but statistically significant differences in student perceptions of the support that they received from their teachers in Western Australia. Students in regional, rural and remote communities reported higher levels of support from their teachers than did students in Perth. None of these three studies examined students' perceptions of classroom disciplinary climate, and none of them reported their findings about school differences in much detail. Understanding how classroom disciplinary climates vary is important since studies have shown it is strongly related with positive student outcomes (see, for example, Frempong et al. 2012; Ma and Willms 2004; Schleicher 2009; Shin et al. 2009).

Studies from the USA (Reeves 2011) and Australia (Cresswell and Underwood 2004; Young 1998) have shown that inequalities in educational outcomes between metropolitan and rural schools are largely due to student characteristics such as socioeconomic status, ethnicity and poverty rather than school characteristics. It is plausible, however, that real differences between schools, based on geography, may be masked because learning environments tend to be related with social background. For example, it is well known that students from privileged social-economic backgrounds typically enjoy more positive learning environments than their less advantaged peers (OECD 2005; Thomson 2002), and in general, students in rural environments in Australia are less economically advantaged than their urban peers (Lamb 1994).

The PISA 2009 dataset includes a large number of variables that relate to learning environment. The OECD's primary report for PISA 2009 shows that schools with a better school disciplinary climate (e.g., fewer interruptions and distractions in the classroom) have higher academic performance (OECD 2010). Neither the OECD's primary report nor the Australian national report for PISA 2009 examines how disciplinary climate or other aspects of school learning environment vary across schools in different locations. Our study builds on the literature by showing in more detail than has been done so far the degree to which learning environments differ across rural and metropolitan schools in Australia.

Method

We use data from the 2009 cycle of the *Programme for International Student Assessment* (PISA) to compare learning environments in rural and metropolitan schools in Australia. This was the latest cycle when we conducted the study; the most recent cycle, PISA 2012, was released after we completed the study. PISA

measures the academic literacy of 15 year-old students in maths, science and reading and is organized by the Organisation for Economic Development and Cooperation (OECD). The OECD has administered PISA every 3 years since 2000. The dataset for PISA 2009 includes nearly 470,000 students from 65 countries. The Australian PISA 2009 sample is nationally representative of the total number of students enrolled across all school types (e.g., private or public), communities and geographic locations. It includes 14,251 students from 353 schools (Thomson et al. 2010).

PISA collects data from students and school principals. In addition to measuring students' academic performance, PISA also collects data about a wide range of possible predictor variables, including time spent on learning in the classroom and at home, the use of technology, reading habits and the skills, values, attitudes, experience, practice, and student access to resources at home and school. Of particular interest to this study is the learning environment of the school.

We sourced the PISA 2009 dataset from the Australian Council for Educational Research (ACER). ACER redefines the five categories that are reflective of population size within the original Australian PISA 2009 dataset into eight geographic categories. ACER classifies participating schools into eight geographic categories to better characterise the broad geographic variation of Australian communities; this variable is called 'School Community'. The eight categories range from communities with less than 1,000 inhabitants (the most 'rural' of the eight categories) to communities with more than 1,000,000 inhabitants (the most 'urban' category). Information about the number of schools and students in the sample is presented in Table 1.

Table 1 shows the average student socioeconomic status for each school community group. We calculated this contextual information since research has shown that learning environments are related to socioeconomic status and ethnicity (Camburn and Han 2011; Cresswell and Underwood 2004; De Bortoli and Thomson 2010; Portes 2005). Student socioeconomic status in PISA is represented by an index comprised of multiple items related to parent education, parent occupation, and economic and cultural resources in the home. In PISA it is named the Index of Economic, Social and Cultural Status (ESCS); throughout the paper we refer to this variable as student socioeconomic status (SES). PISA calculates an ESCS value for each student; we calculated the mean SES for all students in each school community, using weighted data. In the Australian dataset, the index ranges from a minimum of −3.40 to a maximum of 2.98, with a mean of .34 and a standard deviation (SD) of .754.

As can be seen in Table 1, the social context of schools varies across the eight school communities. The average socioeconomic status of students is positively related to school community size, with the smallest school community having the lowest average student SES and inner city communities in very large capital cities having the highest average SES. The relationship is largely linear except for outlying neighbourhoods of very large cities, which have a lower average student SES than regional cities. This relationship is shown more clearly in Table 1.

PISA collects data about learning environments because research indicates that they are associated with student educational outcomes (Diseth 2007; Hoy et al.

Table 1 Classification of school communities & distribution of students

School community	Population	No. Schools	No. Students	Mean, index of student socioeconomic status
Small rural community	<1,000	6	182	−.021
A small country town	1,000 to about 3,000	15	467	.011
A medium-sized country town	3,000 to about 15,000	45	1,811	.114
A larger town	15,000 to about 50,000	39	1,571	.153
A very large town	50,000 to about 100,000	29	1,236	.234
A city	100,000 to about 1 million	108	4,538	.469
Elsewhere in a very large city	>1 million	59	2,297	.358
Close to the centre of a very large city	>1 million	52	2,148	.533
Mean or total		353	14,250	.344

2006; Schleicher 2009; Stewart 2008). There are a range of learning environment variables included in the student and principal questionnaires. Students are asked questions about their teachers (e.g., "My teachers treat me fairly" and "My teachers are interested in my well-being") and classroom discipline and environment (e.g., "There is a lot of noise and disorder in my classroom"). Principals are asked questions about teachers at their school (e.g., "Teachers at my school have low expectations of their students"). Each item comprises a string of four Likert-scale response categories.

We examined the principal and student PISA questionnaire items about school learning environments. Principal data come from Question 17, which asks principals about the degree to which learning in their school is hindered by 13 sub-items related to teacher and student behaviour. A full list of all 13 sub-items is included in Table 2. Student data are drawn from Questions 33, 34 and 36. Question 33 comprises four sub-items about students' attitudes about the relevance of schooling, Question 34 comprises five sub-items about student–teacher relationships, and Question 36 five sub-items about classroom disciplinary climate. Each provides four Likert-scale responses (e.g., strongly agree, agree, disagree and strongly disagree). A full list of all the sub-items is included in Tables 3, 4 and 5.

For each of these principal and student questions, PISA has calculated a numerical index. The indexes from the student questionnaire are named student attitudes toward schooling, student–teacher relations, and classroom disciplinary climate. Principals' responses from Question 17 are divided into two indexes, one about teacher-related behaviors and the second about student-related behaviors. Using these indexes, we have compared means across the school communities. We also compared the average SES of students in each school community since SES is related to learning environments and geographic location (Camburn and Han 2011; Cresswell and Underwood 2004).

Table 2 Principals' perceptions of teacher and student behavior related to school learning environment

To what extent is principals' perceptions of the learning of students hindered by the following													
School community	Teacher's low expectations	Student absenteeism	Student–teacher relations	Student disruption	Student's needs not met	Teacher absenteeism	Skipping classes	Students lacking respect	Staff resisting change	Student drug use	Teachers too strict	Students being bullied	Students not encouraged
Small rural community													
% 'to some extent'	33	33	17	17	67	33	17	33	33	0	17	17	17
% 'a lot'	0	0	0	0	0	0	0	0	0	0	0	0	17
A small country town													
% 'to some extent'	40	40	40	60	60	20	47	47	47	7	13	47	27
% 'a lot'	0	40	0	0	0	0	0	0	13	0	0	0	0
A medium-sized country town													
% 'to some extent'	38	51	27	42	47	9	22	42	33	11	7	24	24
% 'a lot'	0	16	2	7	7	0	4	2	4	0	0	2	2
A larger town													
% 'to some extent'	41	62	26	56	59	31	41	38	38	10	3	33	26
% 'a lot'	3	23	0	10	0	0	3	3	5	0	0	0	3
A very large town													
% 'to some extent'	34	41	21	24	28	10	24	14	41	7	7	21	21
% 'a lot'	0	10	3	7	10	0	7	7	0	3	0	3	3
A city													
% 'to some extent'	28	34	7	23	35	14	20	18	32	1	4	13	18
% 'a lot'	3	10	2	3	2	0	6	1	4	1	0	1	1
Elsewhere in a very large city													
% 'to some extent'	34	25	15	25	46	15	17	22	32	2	0	10	19
% 'a lot'	2	14	2	7	0	0	8	0	2	0	0	3	5

Table 2 continued

To what extent is principals' perceptions of the learning of students hindered by the following													
School community	Teacher's low expectations	Student absenteeism	Student–teacher relations	Student disruption	Student's needs not met	Teacher absenteeism	Skipping classes	Students lacking respect	Staff resisting change	Student drug use	Teachers too strict	Students being bullied	Students not encouraged
Close to the centre of a very large city													
% 'to some extent'	19	31	4	10	21	10	8	8	36	0	4	14	17
% 'a lot'	0	8	0	0	2	0	2	0	0	2	0	0	0

Principal questionnaire response category for Question 17 coded as: (1) not at all, (2) very little, (3) to some extent, and (4) a lot. Percentages have been rounded to the nearest even whole number

Table 3 Indexes of principals' perception of teacher and student behavior related to school learning environment

School community	Index of teacher behaviour $N = 353$, SD = .923		Index of student behaviour $N = 353$, SD = .986	
	Mean	SE	Mean	SE
Small rural community	−.7488	.07998	.0186	.23016
A small country town	−.4372	.05691	−.5982	.18668
A medium-sized country town	−.2967	.03855	−.4110	.11770
A larger town	−.7412	.04398	−.6695	.10642
A very large town	−.1329	.07814	−.2398	.15826
A city	.0245	.04741	.1218	.09689
Elsewhere in a very large city	−.3139	.03919	.0588	.13087
Close to the centre of a very large city	.0384	.05161	.4205	.13167
Mean	−.2268	.01931	−.0621	.05140
Gap between lowest and highest mean score, expressed in SD units	.853		1.149	

We use descriptive statistics (means, standard deviations, and frequencies) to compare learning environment response variables across the eight different geographic locations. Our aim is primarily descriptive and exploratory, with the purpose of mapping in detail how learning environments vary by rurality and across different school communities.

Findings

Before examining how learning environments differ across the eight school communities in Australia, we calculated average academic performance in mathematics, science and reading score on PISA for each community. The academic performance of students who attend school in a city centre, as illustrated in Fig. 1, is considerably higher than their peers in rural communities.

As shown in Fig. 1, academic performance is associated with community size/location, with increases in the size of the community/proximity to a very large city associated with higher student performance. However, the apparent relationship between reading performance and school community size/location is not completely linear. Average performance, across all subjects, is higher in medium-size country towns than in larger towns. Another exception is a higher average performance in smaller cities than elsewhere in a very large city; in other words, student performance is higher in large regional cities than in the outer suburbs of the large capital cities.

Next, we calculated descriptive statistics for the responses to 13 sub-items from Question 17 of the principals' questionnaire, "To what extent is learning hindered in your school by…". These results are presented in Table 2. The 13 sub-items relate to student and teacher behaviours, such as teacher and student absenteeism, teacher

Table 4 Student attitudes towards school

School community	Population	School has done little to prepare me for adult life	School has been a waste of time	School has helped give me confidence to make decisions	School has taught me things that could be useful in a job
Small rural community					
% 'agree'	<1,000	19	8	62	55
% 'strongly agree'		4	0	25	40
A small country town					
% 'agree'	1,000 to about 3,000	18	7	61	52
% 'strongly agree'		5	5	19	39
A medium-sized country town					
% 'agree'	3,000 to about 1,5000	18	8	63	55
% 'strongly agree'		4	3	17	35
A larger town					
% 'agree'	15,000 to about 50,000	16	7	64	53
% 'strongly agree'		3	2	20	40
A very large town					
% 'agree'	50,000 to about 100,000	15	7	65	52
% 'strongly agree'		4	2	18	40
A city					
% 'agree'	100,000 to about 1 million	13	6	63	49
% 'strongly agree'		4	1	22	43
Elsewhere in a very large city					
% 'agree'	>1 million	16	4	62	50
% 'strongly agree'		4	2	22	42
Close to the centre of a very large city					
% 'agree'	>1 million	12	5	62	51
% 'strongly agree'		4	1	22	41

Student questionnaire response category for Question 33 coded as: (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree

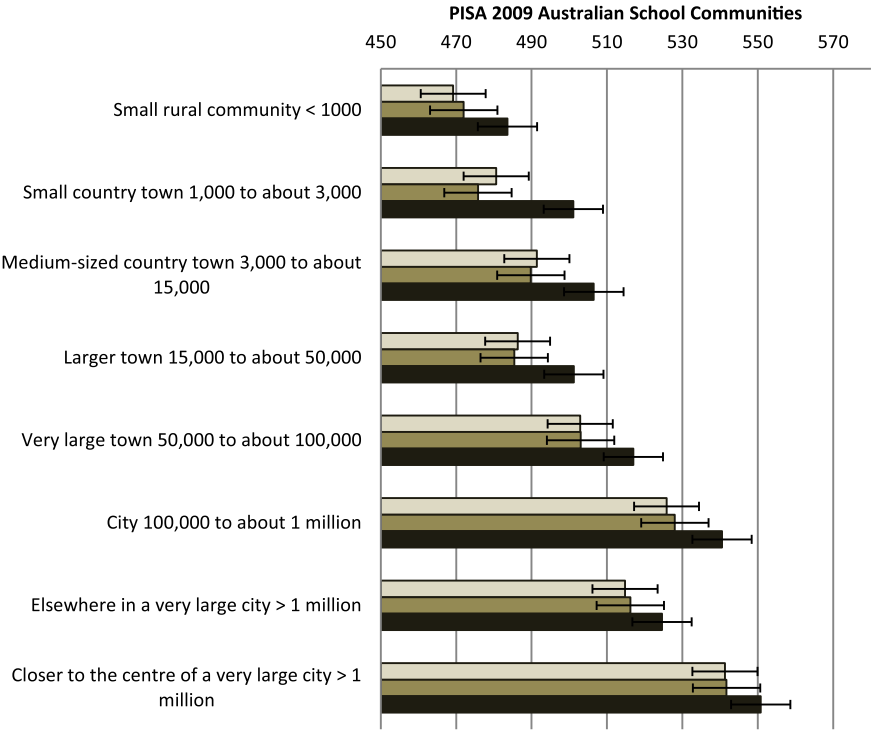
expectations, student drug use, and bullying. As the table shows, response differences exist between Australia's rural, regional and metropolitan school communities for some of these sub-items. A large number of principals responded in a less than positive manner to questions concerning student learning environments. For clarity's sake, we present the frequencies of these negative responses in Table 2 and subsequent Tables. It is these negative responses that are most instructive for

Table 5 Student perceptions of their relations with teachers

How much do you disagree or agree with each of the following statements about teachers at your school					
School community	I get along well 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	Most of my teachers treat me fairly
Small rural community					
% 'agree'	70	68	70	72	71
% 'strongly agree'	16	11	7	14	13
A small country town					
% 'agree'	58	64	54	61	62
% 'strongly agree'	21	9	10	17	14
A medium-sized country town					
% 'agree'	66	62	56	64	68
% 'strongly agree'	16	10	9	14	14
A larger town					
% 'agree'	63	63	57	68	69
% 'strongly agree'	19	10	9	14	13
A very large town					
% 'agree'	67	67	61	66	69
% 'strongly agree'	19	11	10	17	16
A city					
% 'agree'	66	66	62	67	69
% 'strongly agree'	20	14	12	18	16.5
Elsewhere in a very large city					
% 'agree'	65	64	61	66	68
% 'strongly agree'	20	14	12	20	17
Close to the centre of a very large city					
% 'agree'	66	68	64	68	70
% 'strongly agree'	26	14	12	20	17

Student questionnaire response category for Question 34 coded as: (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree

understanding where and to what degree learning environments are hindering student learning. Moreover, these less favourable responses tend to be related with community size. Based on the PISA data, principals in 'larger towns' (15,000–50,000 residents), 'medium-sized country towns' (3,000–15,000 residents), and 'small country towns' (1,000–3,000 residents) are substantially more likely to report less favourable responses for most items; principals in schools close to the centre of very large cities are the least likely to report less favourable responses.



	Closer to the centre of a very large city > 1 million	Elsewhere in a very large city > 1 million	City 100,000 to about 1 million	Very large town 50,000 to about 100,000	Larger town 15,000 to about 50,000	Medium-sized country town 3,000 to about 15,000	Small country town 1,000 to about 3,000	Small rural communit y < 1000
Mathematics	541.3	514.8	525.8	502.9	486.3	491.4	480.6	469.2
Reading	541.7	516.2	528	503	485.4	489.8	475.8	472
Science	550.8	524.6	540.5	517	501.2	506.5	501.1	483.6

Fig. 1 Distribution of academic performance in PISA 2009 by school community

Student drug use, staff resisting change, and teachers too strict are items within the questionnaire data that reflect relatively small differences in response across school communities. The remaining items vary substantially across school communities, however. For example, up to 60 % of principals in communities with fewer than 50,000 residents report that student disruptions hinder learning in their school either to some extent or a lot, compared to only 12 % of principals from schools located close to the centres of very large cities. The teacher-related behaviors that varied the most are teachers having low expectations of their students, and teachers not adequately addressing the needs of their students.

We also compared means across the eight types of school community for the two indexes representing principals' perceptions of their school's learning environment.

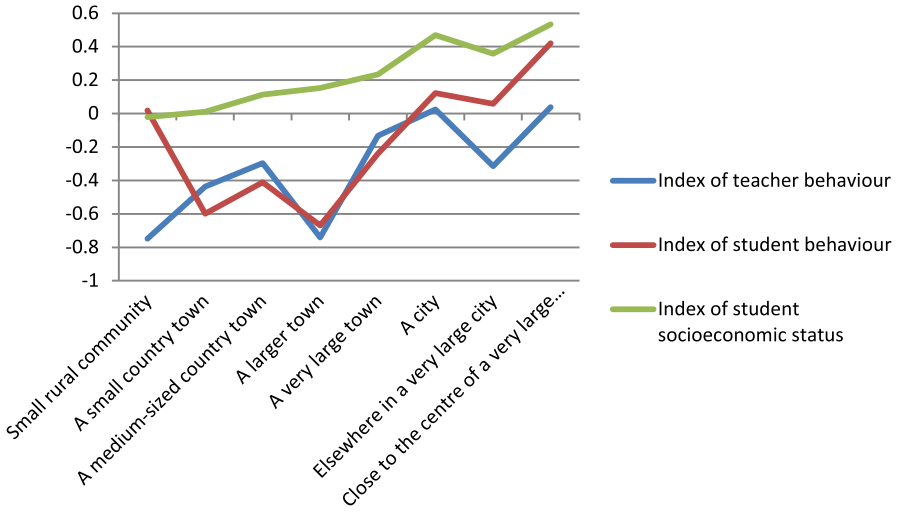


Fig. 2 School principals' perceptions of teacher and student behavior by community type, in comparison to students' socioeconomic status

The results are shown in Table 3 and Fig. 2. As noted earlier, these two indexes are created by PISA and are based on the 13 items about school learning environment shown in Table 2.

As shown in Table 3, principals' perceptions of the teacher and student related behaviour that hinders learning varies substantially across the eight school communities. On both indexes, the lowest values are found not in the smallest, most rural communities but rather in larger towns of 15,000–50,000 residents. Principals' from schools located in central areas of very large cities (more than 1 million people) have the most positive perceptions. Principals' perceptions of both teaching and student behaviour are more negative in outlying areas of very large cities than in cities with fewer than 1 million residents. The difference between the highest and lowest values is very large on both indexes: .853 and 1.149 standard deviations for the teacher and student behavior index respectively. Slavin and Fashola (1998) define differences of .25 standard deviations as educationally significant.

We then plotted the means from Table 3, along with the means for student socioeconomic status, in Fig. 3. Although a line graph has been utilized to illustrate the trends it is important to note that the values that have been recorded are categorical and not continuous data. The figure illustrates graphically the large differences that are reported in Table 3. By plotting student socioeconomic status, we can also see that differences in principals' perceptions across the school communities do not correspond perfectly to the average socioeconomic status of students. Another interesting finding is the large difference between the two scales in small rural communities. Principals' perceptions in this school community indicate that student learning is hindered much more by teacher behavior than by student behavior.

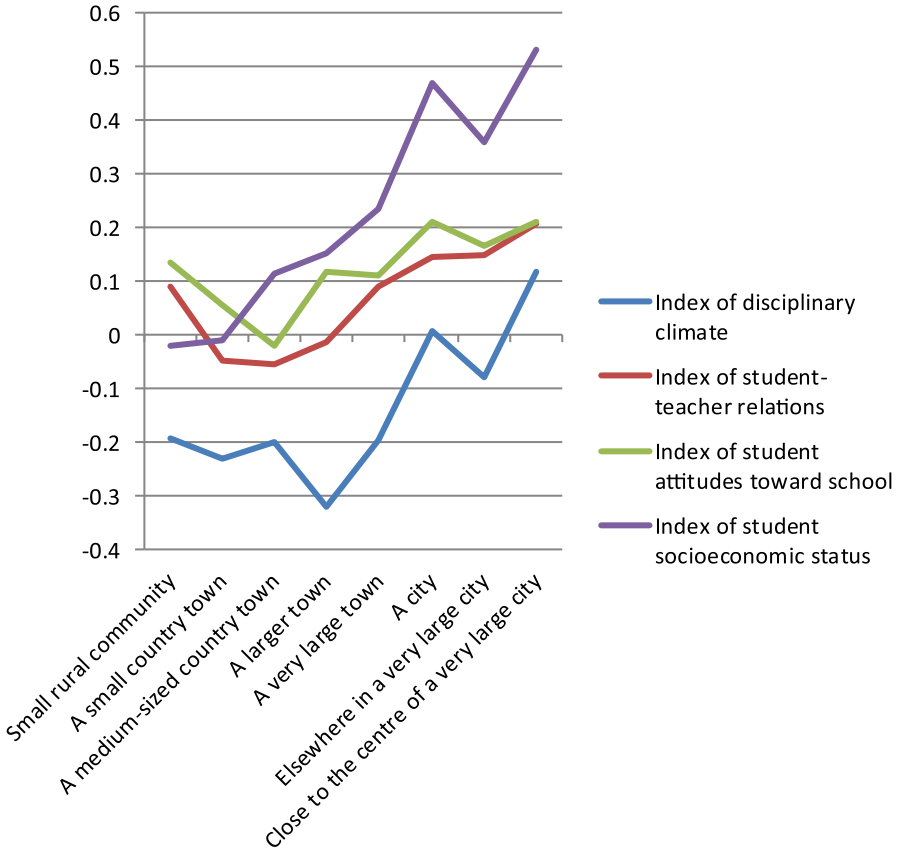


Fig. 3 Students' perceptions of school learning environments and socioeconomic status

Next we examined students' responses about their school learning environment. The data show students' perceptions across the eight school communities about the relevance of education (Table 4), student and teacher relationships (Table 5) and classroom disciplinary climate (Table 6).

Table 4 presents students' attitudes toward school. The table comprises four items about the relevance and value of schooling. The analysis shows no large differences in student attitudes across the eight school communities. Overall, students in all eight school communities report favorable attitudes towards school. This is a very positive finding that contradicts commonly held assumptions that students in rural and remote communities often perceive school to be irrelevant.

Table 5 reports student perceptions of their relationships with their teachers. As shown in the table, most students across all eight school communities report positive relationships with their teachers. Differences in perceived student–teacher relationships between school communities, as shown in Table 5, are very small. The findings suggest that most students across all school communities perceive that their teachers treat them with respect and provide them with adequate support.

Table 6 reports students' perceptions of their classroom disciplinary climate. As can be seen, students' views of classroom disciplinary climate are not ideal in most school communities. For example, 25 % of students in schools close to the centre of a very large city report that students do not listen to their teachers in most or every lesson, as do approximately 40 % students in communities that have between 3,000 and 100,000 residents. When combining the frequencies for 'most lessons' and 'every lesson', students in schools close to the centre of a very large city were the least likely to report negative responses, and students in larger towns

Table 6 Student perceptions of classroom disciplinary climate

School community	Students don't listen to what the teachers says	There is noise and disorder	The teacher has to wait a long time for the class to quiet down	Students cannot work well	Students don't start working for a long time after the lesson begins
Small rural community					
% 'most lessons'	26	37	30	19	20
% 'every lesson'	6	9	3	1	2
A small country town					
% 'most lessons'	26	32	25	17	20
% 'every lesson'	9	14	8	5	7
A medium-sized country town					
% 'most lessons'	29	34	25	16	19
% 'every lesson'	9	12	9	6	9
A larger town					
% 'most lessons'	28	34	26	18	21
% 'every lesson'	12	16	13	7	11
A very large town					
% 'most lessons'	28	32	24	14	20
% 'every lesson'	11	12	9	5	7
A city					
% 'most lessons'	22	25	19	12	15
% 'every lesson'	7	11	7	5	7
Elsewhere in a very large city					
% 'most lessons'	23	27	19	13	17
% 'every lesson'	9	12	9	5	7
Close to the centre of a very large city					
% 'most lessons'	19	23	16	10	13
% 'every lesson'	6	9	7	3	5

Student questionnaire response category for Question 36 coded as: (1) never/hardly ever, (2) some lessons, (3) most lessons, and (4) every lesson

(15,000–50,000 residents) were the most likely to report negative responses, on all five items.

Finally, we compared means for these three groups of student questionnaire items across the school communities. We used the indexes of student attitudes toward schooling, teacher-student relations, and classroom disciplinary climate. As noted earlier, these indexes comprise all of the sub-questions reported in Tables 4, 5 and 6. Table 7 shows that the means on each index vary across the school communities, with differences in classroom disciplinary climate being the strongest. The table also shows that students in large and very large cities report the most positive responses on all three indexes. The most negative responses are in medium and large sized towns, not the smallest communities. While Table 7 and Fig. 3 show that the means on these three indexes vary across the school communities, the difference between the lowest and highest means as expressed in standard deviation units is not educationally significant as defined by Slavin and Fashola (1998).

We plotted the means of these three indexes, along with the average student SES for each school community, to show visually how these indexes vary by school community and average student SES. A line graph illustrates the trends, however, it is important to note that the values recorded are categorical and not continuous data. As seen in Fig. 3, student perceptions of their school learning environments vary by school community, with the least positive experiences occurring in towns ranging from 3,000 to 50,000 people. On all three indexes, students that attend schools in larger towns (15,000–50,000 residents) report more negative responses than their peers in smaller communities, even though their average SES is higher.

Table 7 Student perceptions of their school learning environments

School community	Index of attitudes towards school $N = 13{,}455$ SD = 1.016		Index of teacher-student relations $N = 13{,}966$ SD = .986		Index of classroom disciplinary climate $N = 13{,}961$ SD = 1.010	
	Mean	SE	Mean	SE	Mean	SE
Small rural community	.133	.01990	.092	.01761	−.194	.01504
A small country town	.056	.01389	−.047	.01241	−.230	.01164
A medium-sized country town	−.021	.00608	−.054	.00599	−.200	.00602
A larger town	.117	.00662	−.014	.00635	−.320	.00679
A very large town	.110	.00716	.090	.00686	−.196	.00691
A city	.211	.00419	.146	.00395	.009	.00406
Elsewhere in a very large city	.165	.00469	.150	.00456	−.081	.00458
Close to the centre of a very large city	.212	.00481	.209	.00445	.117	.00457
Mean	.151	.00213	.107	.00203	−.074	.00207
Gap between lowest and highest mean score, expressed SD units	.188		.157		.201	

Discussion

Most students in Australia, regardless of where they live, report very positive attitudes toward schooling. Similarly, most students report positive relationships with their teachers, regardless of the size of the community where they live. By contrast, students' perceptions of their classroom disciplinary climate vary more substantially across school communities and are, on average, less positive in rural communities than in very large cities. For example, 40 % of the students in towns with 15,000–50,000 residents reported that students in their classroom do not listen to their teacher, compared to 25 % of students who attend schools close to the centre of capital cities. When we examined how classroom disciplinary climate across all five questionnaire items varied, however, we found that differences between school communities are not educationally significant. In general, students' responses suggest that classroom disciplinary climate is not ideal in any of the school communities. This finding deserves further examination by educators and policy makers since an orderly classroom with minimal disruptions is one of the most significant predictors of student learning (Schleicher, 2009; Shin et al. 2009).

While students' perceptions do not vary substantially across the school communities, principals' perceptions do. Principals' perceptions of both teacher and student related behavior is considerably more negative in rural communities and country towns than in cities. The difference between the least and most positive school communities is large and educationally significant. The principals' responses suggest that particular attention should be paid to improving rural and regional teachers' expectations of their students, and their ability to manage student behavior and tailor instruction to meet their students' needs.

Students and principals from inner-city schools in very large cities report the most positive learning environments of any of the eight school communities. These students often come from advantaged backgrounds, as shown in Fig. 2. Most schools in inner city areas are either high fee/high status independent schools or public schools in communities with expensive housing. Decades of research has shown that students from privileged social backgrounds typically experience more positive learning environments than socially disadvantaged students (Akiba et al. 2007; Camburn and Han 2011). While our findings are therefore unsurprising, they are nevertheless a matter of concern.

Our findings also show that attention should be paid to improving learning environments not just in the most rural/remote communities, but also in largish towns of up to 50,000 residents. While the relationship between students' academic performance on PISA and community size and location is fairly consistent (as is shown by the range of academic performance in Fig. 1), students' and principals' perceptions of their school learning environments are not. On all of the indexes that we compared, students' and principals' perceptions are the most negative in larger regional towns than in smaller rural communities. This finding cannot be explained solely by student characteristics such as socioeconomic status, since student SES is, on average, higher in these larger towns than in smaller communities. Once the nature and extent to which school learning environments vary across rural and

metropolitan schools is understood, future research will be able to examine in more depth the factors that shape school learning environments in these communities.

This study includes some limitations. First, the number of schools in the smallest school community is only six. It is possible that our findings for this school community would be different if more schools were included. Second, our findings are based on students' and principals' self-reported perceptions. Further research that uses observational techniques could assess the accuracy of these perceptions.

Conclusion

This study has used a nationally representative dataset to show the degree to which students' and principals' perceptions of their school's learning environment vary across rural and urban communities in Australia. Our findings show that students' attitudes toward school and their perceptions of their relationships with their teachers are largely positive and do not vary much across the eight school communities. Students' perceptions of their classroom disciplinary climate were more negative, with some larger differences across the school communities. Taken as a whole, however, these differences are not educationally significant. By contrast, principals' perceptions of teacher and student behaviour varied substantially across the eight school communities.

Overall, students' and principals' perceptions are less positive in rural communities and towns than in cities. Somewhat surprisingly, however, the relationship between community size/location and perceptions of school learning environments is not linear, with the most negative responses occurring in larger towns rather than the smallest rural communities.

While our analysis is not intended to examine definitively how school learning environments mediate the relationship between geographic location and academic performance, our detailed findings may provide a foundation for future research. Understanding the extent to which school environments vary across rural–urban locations can be helpful for policymakers, school leaders and teachers who seek to improve the learning experiences and outcomes of their students. Our findings suggest that particular attention should be paid to improving teachers' expectations of students and teachers' ability to manage their classroom and meet the needs of their students.

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