



Characteristics of School Climate and Their Relation to Student Achievement

Introduction

The National School Climate Center (NSCC, 2007) describes school climate as the quality and character of school life. This definition is based on patterns of students', parents', and school personnel's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures.

The Ontario Ministry of Education (OME, 2012) defines school climate as:

“the learning environment and relationships found within a school and school community. A positive school climate exists when all members of the school community feel safe, included, and accepted, and actively promote positive behaviours and interactions. Principles of equity and inclusive education are embedded in the learning environment to support a positive school climate and a culture of mutual respect. A positive school climate is a crucial component of the prevention of inappropriate behaviour” (p.2).

Thus, at its most general level, the construct of school climate is clearly multidimensional, and its elements can be grouped into four categories: safety, teaching and learning, institutional environment, and interpersonal relationships (NSCC, 2007), with each of these also being multidimensional.

The goal of a positive school climate is to foster “a sense of belonging, competence and autonomy” for both students and staff (Voight, Austin, & Hanson, 2013). These three elements reflect those of self-determination theory (Ryan & Deci, 2000) and are the same as those in the Mental Fitness domain in the Mental Fitness and Resiliency Inventory or MFRI (Peterson, Morrison, Laurie, & Bolaños Gramajo, 2019), which is used in many Canadian schools. The MFRI is a strength-based objective questionnaire, which measures the extent to which practices that lead to positive school climates are embedded in a school’s environment.

Positive school climates are tied to high or improving attendance rates, test scores, promotion rates, and graduation rates (Berkowitz, Glickman, Benbenishty, Ben-Artzi, Raz, Lipshtadt, & Astor, 2015; Organisation for Economic Co-operation and Development, 2009; Safe Supportive Learning, 2019). A positive school climate has been shown to attenuate the negative impact of low student socioeconomic status (Astor, Benbenishty, & Nuñez Estrada, 2009), increase students’ motivation, pleasure, and engagement towards their studies (Debarbieux, Anton, Astor, Benbenishty, Bisson-Vaivre, Cohen, et al., 2012; Eccles, Wigfield, Midgley, Reuman, MacIver, & Feldlaufer, 1993), and serve as a protective factor that supports positive life outcomes for young people (Ortega, Sanchez, Ortega Rivera, & Viejo, 2011).

In a meta-analysis of 90 studies, Dulay and Karadag (2017) reported that school climate correlates positively with student achievement in reading, mathematics, English, science, social sciences, and cumulative Grade Point Average (GPA). A positive relationship between school climate and student achievement was also found in middle schools (Greenway, 2017) and in K–8 schools in New Brunswick (Laurie, Morrison, & Peterson, 2019).

This article reports on characteristics common to school climate and the relevant contextual questionnaire items of pan-Canadian and international large-scale assessments in which Canadian students have recently participated, namely: the 2016 Progress in International Reading Literacy Study (PIRLS), the 2016 Pan-Canadian Assessment Programme (PCAP), and the 2015 Programme for International Student Assessment (PISA).

The results from the following three studies are used in this issue:

- 1. PIRLS 2016 – PIRLS**, an international reading-literacy assessment carried out by the International Association for the Evaluation of Educational Achievement (IEA), has been administered every five years to Grade 4 students since 2001. Results from the eight provinces that participated in PIRLS 2016 were used for this article (Brochu, O’Grady, Scerbina, & Tao, 2018).
- 2. PCAP 2016 – PCAP** is a pan-Canadian assessment of the skills and knowledge of Grade 8/Secondary II (in Quebec) students in reading, mathematics, and science. PCAP, coordinated by the Council of Ministers of Education, Canada (CMEC), has been administered every three years since 2007. Results from the 10 provinces that participated in PCAP 2016 were used for this article (O’Grady, Fung, Servage, & Khan, 2018).
- 3. PISA 2015 – PISA**, an international assessment of skills and knowledge, has been administered every three years since 2000 to large samples of 15-year-old students from all provinces. Results from PISA 2015 were used for this article (O’Grady, Deussing, Scerbina, & Fung, 2016).

Characteristics related to school climate

None of these assessments was designed to measure school climate in a comprehensive way. Because of this limitation, instead of focusing on individual questions from the contextual questionnaires, indices were created whenever possible, by combining questions to measure latent constructs, such as bullying, students' sense of belonging, and absenteeism. Existing indices (e.g., the bullying scale from the PISA survey) were used when available. A fourth characteristic, respect for teachers, is also used to provide additional evidence about school climate.

Bullying

The bullying construct was studied using the survey questions presented in Table 1. Similar questions across assessments are presented even though they stem from different theoretical frameworks. Generally, the questionnaires asked students to respond using comparable four-point Likert scales. This was true not only for the bullying items but also for the questions in the other characteristics presented below.

TABLE 1 Student responses to items related to bullying from PIRLS, PCAP, and PISA

PIRLS 2016	PCAP 2016	PISA 2015
<i>During this year, how often have other students from your school done any of the following things to you (including through texting or the Internet)?</i>	<i>During this year, how often have any of the following things happened to you at school?</i>	<i>During the past 12 months, how often have you had the following experiences in school?</i>
Made fun of me or called me names	I was made fun of by other students	Other students made fun of me
—	I was called names by other students	I got called names by other students
—	—	I got picked on by other students
Left me out of their games or activities	I was left out of games or activities on purpose by other students	Other students left me out of things on purpose
Spread lies about me	Lies or negative comments were spread about me or posted on the Internet by other students	Other students spread nasty rumours about me
Shared embarrassing information about me	—	—
Stole something from me	Things that belonged to me were taken away or destroyed by other students	Other students took away or destroyed things that belonged to me
Hit or hurt me (e.g., shoving, hitting, kicking)	I was hit or pushed around by other students	I got hit or pushed around by other students
Threatened me	I was threatened or made to do things that I didn't want to do by other students	I was threatened by other students
Made me do things I didn't want to do	—	—

Results from the three surveys show that about one-half to one-third of the students reported never being bullied or being bullied only a few times a year. The prevalence of bullying decreases when students transition to junior high school and diminishes slightly in high school, where about 20 percent of 15-year-olds report being bullied at least a few times a month. While this may be interpreted in a positive light, it is important to remember that Canadian 15-year-old students report a greater incidence of bullying than their international peers (CMEC, 2019).

Looking at the relationship between bullying and student achievement, we see that the correlation coefficients between bullying and assessment results ranged between $-.11$ and $-.16$. The negative sign suggests that an increase in bullying is associated with decreased student achievement, a finding that supports previous research (Organisation for Economic Co-operation and Development, 2017; United Nations Educational, Scientific and Cultural Organisation, 2019). However, given the size of the coefficients, these correlations are considered to be relatively small.¹

The decreasing percentage of bullying reported by students as they progress through the school system may be interpreted as a positive outcome of the many anti-bullying programs and initiatives that exist across the country (CMEC, 2019). However, it is possible that the actual frequency of bullying acts has not changed and that it is the students' perceptions of being bullied that change as they get older. In essence, it could be that one's threshold to identify an act or behaviour as bullying increases with age. It could also be that some types of bullying acts are not captured consistently across surveys (e.g., cyberbullying), thus making comparisons less reliable across different large-scale assessments. Nevertheless, it is clear that there are still many Canadian students who suffer from bullying and that this reality needs to be addressed if incidences of bullying are to be reduced.

Student absenteeism

The student absenteeism construct was studied using the questions presented in Table 2. Not surprisingly, PIRLS does not cover student absenteeism to the same extent as the other two surveys given its target population (Grade 4).

TABLE 2 Questions related to student absenteeism from PIRLS, PCAP, and PISA

PIRLS 2016	PCAP 2016	PISA 2015
<i>About how often are you absent from school?</i>	<i>In the last two full weeks, how often did the following things occur?</i>	<i>In the last two full weeks, how often did the following things occur?</i>
	I skipped a whole school day	I skipped a whole school day
—	I arrived late for school	I arrived late for school
—	I skipped some classes	I skipped some classes
	<i>In this school year, how many days have you been absent from school?</i>	
—	For reasons that are not school-related (e.g., illness, appointments, travel, etc.)	—
—	For school-related activities (e.g., field trips, sports activities, music or cultural events, etc.)	—

¹ Correlation coefficients above $.1$, $.3$, and $.5$ are classified as small, medium, and strong respectively (Green & Salkind, 2005).

Almost 88 percent of Grade 4 students reported being absent from school for a day once a month or less, and almost 70 percent of students reported having never or almost having never missed any classes for any reason. However, 21 percent of Grade 8/Secondary II students reported having skipped at least one whole school day in the two weeks prior to their participation in the survey, while 42 percent reported having arrived late to school at least once. At 15 years old, the percentage of students who skipped at least a whole day of school decreased slightly to 18 percent, but the percentage who reported having arrived late at least once increased to 48 percent. Thus, while skipping a whole day of school is not a widespread issue for Grade 4 students, it becomes problematic at the junior and senior high school levels. Also, the issue of arriving late for school is quite common, especially for 15-year-old students, based on this self-reported measure.

Similar to bullying, the correlation coefficients between student absenteeism and student achievement and student tardiness and student achievement ranged from $-.11$ to $-.20$ across the assessments, suggesting that those students who are frequently absent from school tend to present lower student achievement. Here, too, the correlations are classified as small.

Based on previous studies, it was reasonable to expect that schools which featured an excellent school climate should have relatively low instances of absenteeism and tardiness. Although the student absenteeism and tardiness results presented here do not show a strong link with student achievement, they do suggest that students may not be fully engaged and interested in their school activities. Where this may be the case, measures should be implemented to address this issue. The rather high absenteeism and tardiness rates could also point to a general lack of rigour and low expectations in schools, two factors that have been known for a long time to affect student achievement (Chang, 2011; Cotton, 1989).

Sense of belonging

The sense of belonging construct was studied using the questions presented in Table 3. In PISA, three items were reverse-coded so that all questions contributed in the same way to the sense-of-belonging index.

TABLE 3 Sense of belonging questions from PIRLS, PCAP, and PISA

PIRLS 2016	PCAP 2016	PISA 2015
<i>What do you think about your school? Tell how much you agree with these statements.</i>	<i>To what extent do you agree with the following statements about school?</i>	<i>Thinking about your school: to what extent to you agree with the following statements?</i>
I like being in school	I like school	—
—	My teachers care about me	—
—	At school, I make friends easily	I make friends easily at school
I feel like I belong at this school	At school, I feel that I belong	I feel like I belong at school
—	—	I feel awkward and out of place in my school*
—	—	Other students seem to like me
—	—	I feel lonely at school*
—	—	I feel like an outsider (or left out of things) at school*
I am proud to go to this school	—	—

*Reverse-coded items

In Canada, 57 percent of Grade 4 students reported a high sense of belonging, a percentage slightly lower than the international average of 59 percent. Students’ sense of belonging increases by the time students reach Grade 8, where 76 percent of students agreed or strongly agreed that they like school, and 84 percent agreed or strongly agreed that they make friends easily at school. Importantly, 82 percent of students agreed or strongly agreed that they belong at school. Fifteen-year-old Canadian students had a similar sense of belonging when compared to their international peers from participating OECD countries (72 percent and 73 percent respectively).

The correlation coefficients between student sense of belonging and student achievement decreased from .13 (Grade 4) to .09 (Grade 8) to .05 (15-year-old students). These results suggest that there is a very small to negligible association between student sense of belonging and academic achievement as measured by these assessments.

The sense of belonging of Grade 4 Canadian students is an area of concern with slightly more than one in two students indicating they have a high sense of belonging. This is close to the international average. The sense of belonging decreases to slightly below the international average for 15-year-old students. For both groups of Canadian students, the relationship between their sense of belonging and student achievement is not strong and weakens as they progress in their education, suggesting that it may be a more important factor to address in the early years.

Students’ low levels of relatedness to their peers at school, an important element in the sense of belonging to a school, has been found by Laurie et al. (2019) in K–8 francophone schools in New Brunswick. These findings should prompt education officials at all levels to focus on ensuring that students of all ages develop a stronger sense of belonging and relatedness at school given its impact on the overall school climate.

Respect for teachers

The respect-for-teachers construct was studied using data from the School Questionnaires from each of the three large-scale assessments. These questionnaires are usually, but not necessarily, answered by principals. The questionnaires asked either about the extent to which a lack of respect towards teachers is a problem in the school or about the perceived impact on student learning that a lack of respect towards teachers has in their school (Table 4).

TABLE 4 Questions related to respect for teachers from PIRLS, PCAP, and PISA

PIRLS 2016	PCAP 2016	PISA 2015
<i>To what degree is each of the following a problem among Grade 4 students in your school?</i>	<i>In your school, to what extent is student learning hindered by the following?</i>	<i>In your school, to what extent is the learning of students hindered by the following phenomena?</i>
Intimidation or verbal abuse of teachers or staff (including texting, e-mailing, etc.)	Students lacking respect for teachers	Students lacking respect for teachers

The results from each of the three questionnaires are consistent and suggest that students’ lack of respect for teachers is not a widespread issue in Canadian schools. In Grade 8/Secondary II, for example, 92 percent of students were in schools where principals reported that student learning was hindered little or not at all because of students lacking respect for teachers. Such results are very positive and suggest that they can serve as a building block to address other problematic areas of school climate in schools.

Not surprisingly, there is a negative correlation ($r = -.13$) between the extent of teacher intimidation not being a problem in schools and reading achievement in Grade 4. There are small negative correlations between the principal’s perception that students’ lack of respect for teachers hinders learning and reading achievement in Grade 8/Secondary II ($r = -.19$) and in science for 15-year-old students ($r = -.13$). Although student respect for teachers is certainly a desired school climate characteristic, these correlations suggest that its direct impact on student achievement is small to negligible.

If indeed students' respect for teachers is high in Canadian schools, this result can certainly be interpreted as good news. However, we caution against generalizing too quickly on this point since each of the three questionnaires had only one question regarding student respect for teachers. It is important to be mindful of the fact that the PIRLS, PCAP, and PISA questionnaires did not directly measure the presence or intensity of respect/non-respect towards teachers, but rather the extent that, based on principals' perceptions, students lacking respect for teachers would negatively affect student achievement. Therefore, it is still possible that students have little respect for teachers and that this is deemed by the school principal to have minimal or no impact on student achievement. Additional questions to better understand these various possibilities would allow researchers to describe more reliably the prevalence of non-respect towards teachers and its impact on student performance.

Conclusion

This study set out to assess characteristics of school climate and their link to student achievement in Canadian schools based on data from three large-scale surveys: PIRLS, PCAP, and PISA.

Current literature indicates that it was reasonable to expect that schools with an excellent school climate should have relatively low instances of bullying, student absenteeism, and tardiness, and high levels of student sense of belonging and respect towards teachers. In turn, these factors are known to be correlated with student achievement. Although such expectations are not contradicted by any of the four characteristics studied here, it is noteworthy that the correlations between each individual construct and student achievement were generally in the small range with some being negligible. Thus, although the results did not contradict previous findings, they are not as conclusive as one would expect.

One of the reasons for this is that the questions available in the questionnaires that were used to create the indices did not sufficiently capture the range of student behaviours and feelings or principals' perceptions associated with these constructs.

Another reason is that none of the three large-scale assessments was designed to fully measure the many dimensions of school climate. An important conclusion from this study is that its results support the notion that school climate is indeed multidimensional and that studying its individual characteristics without considering the many others can only lead to an incomplete understanding of school climate. It is also plausible that the combined effect of the individual characteristics is actually greater than the sum of their individual contributions (a compounding effect).

Future studies in the area of school climate in Canadian schools should focus on the differences in subpopulations, such as gender, immigration status, language, and more importantly by province/territory. While many school policies are within the purview of provincial/territorial authorities, others are determined by the school boards/districts, and in some cases, schools. Initiatives aimed at collecting data on a regular basis on these indicators at the school-board/district and school level, combined with data available at the national and international levels, would maximize opportunities for targeted timely interventions.

The brief literature review and results presented here align with the claim by Debarbieux (2015) that investing in school climate is a necessary condition for success. The known importance of school climate on academic achievement makes it essential that all students have the opportunity to attend schools that provide a physically and psychologically safe and supportive environment where they can thrive and be fully engaged in their studies. To support educators' efforts, a number of resources are available to improve school climate such as those of the Pan-Canadian Joint Consortium for School Health, WMA Wellness (2019), the Ontario Ministry of Education (2014), and the National School Climate Center (2009).

REFERENCES

- Astor, R.A., Benbenishty, R., & Nuñez Estrada, J. (2009). School Violence and Theoretically Atypical Schools: The Principal's Centrality in Orchestrating Safe Schools. *American Educational Research Journal* 46(2), 423–461.
- Berkowitz, R., Glickman, H., Benbenishty, R., Ben-Artzi, E., Raz, T., Lipshtadt, N., & Astor, R. A. (2015). Les relations entre milieu social, climat scolaire et réussite scolaire en Israël: Les hypothèses de compensation, de médiations et de modération. In *Éducation & Formations*. 88/89, 123–144.
- Brochu, P., O'Grady, K., Scerbina, T. & Tao, Y. (2018). *PIRLS/ePIRLS 2016. Canada in context: Canadian results from the Progress in International Reading Literacy Study*. Toronto: Council of Ministers of Education, Canada.
- Chang, J. (2011). A case study of the “Pygmalion Effect”: Teacher expectations and student achievement. *International Education Studies*, 4(1), 198–201.
- Cotton, K. (1989). Expectations and student outcomes. *School Improvement Research Series: Research You Can Use*. (Close-Up #7). Retrieved July 24, 2019, from <https://educationnorthwest.org/sites/default/files/ExpectationsandStudentOutcomes.pdf>.
- Council of Ministers of Education, Canada [CMEC]. Pan-Canadian Assessment Program (PCAP). [https://cmec.ca/240/Pan-Canadian_Assessment_Program_\(PCAP\).html](https://cmec.ca/240/Pan-Canadian_Assessment_Program_(PCAP).html).
- Council of Ministers of Education Canada [CMEC]. (2019). Bullying: What's happening in our schools? *Assessment Matters!* 12, 1–9.
- Debarbieux, E. (2015). Du “climat scolaire”: définitions, effets et politiques publiques. In *Éducation & Formations*. 88/89, 11–27.
- Debarbieux E., Anton N., Astor R. A., Benbenishty R., Bisson-Vaivre C., Cohen J., Giordan A., Hugonnier B., Neulat N., Ortega Ruiz R., Saltet J., Veltcheff C., & Vrand R. (2012). *Le « climat scolaire » : définition, effets et conditions d'amélioration, rapport au Comité Scientifique de la Direction Générale de l'enseignement scolaire, MEN-DGESCO, Observatoire International de la Violence à l'École*.
- Dulay, S. & Karadağ, E. (2017). *The Effect of School Climate on Student Achievement*. Springer International Publishing. doi: 10.1007/978-3-319-56083-0_12.
- Eccles, J.S., Wigfield, A., Midgley, C., Reuman, D., MacIver, D., & Feldlaufer, H. (1993). Negative effects of traditional middle schools on students' motivation. *Elementary School Journal*, 93, 553–574.
- Green, S.B., & Salkind, N.J. (2005). Using SPSS for *Windows and Macintosh: Analyzing and understanding data*, 4th edition. Pearson-Prentice Hall, NJ.
- Greenway, G. H. (2017). *Relationship between school climate and student achievement*. (Doctoral dissertation). Retrieved from March 27, 2019, <https://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=2800&context=etd>.
- International Association for the Evaluation of Educational Achievement. (2016). *PIRLS: Progress in International Reading Literacy Study*. <https://timssandpirls.bc.edu/pirls-landing.html>.
- Laurie, R. & Morrison, W., & Peterson, P. (2019). The relationship between well-being and student achievement. Unpublished.
- National School Climate Center (2009). *National School Climate Standards: Benchmarks to promote effective teaching, learning and comprehensive school improvement*. New York: Center for Social and Emotional Education. <https://www.schoolclimate.org/>.
- National School Climate Center (2007). *What is school climate?* Retrieved from <https://www.schoolclimate.org/about/our-approach/what-is-school-climate>.

- O’Grady, K., Deussing, M-A., Scerbina, T. & Fung, K. (2016). *Measuring up: Canadian Results of the OECD PISA Study. The Performance of Canada’s Youth in Science, Reading, and Mathematics: 2015 First Results for Canadians Aged 15*. Toronto: Council of Ministers of Education, Canada,
- O’Grady, K., Fung, K., Servage, L. & Khan, G. (2018). *Pan-Canadian Assessment Program. PCAP 2016: Report on the Pan-Canadian Assessment of Reading, Mathematics, and Science*. Toronto: Council of Ministers of Education, Canada.
- Ontario Ministry of Education (2012). *Safe and Accepting Schools: Promoting a Positive School Climate. Policy/Program Memorandum N°. 145, “Progressive Discipline and Promoting Positive Student Behaviour”*. Queen’s Printer: ON.
- Ontario Ministry of Education (2014). *Foundations for a healthy school*. Retrieved from <http://www.edu.gov.on.ca/eng/healthyschools/resourceF4HS.pdf>.
- Organisation for Economic Co-operation and Development (2009). *Creating effective teaching and learning environment: First results from the Teaching and Learning International Survey (TALIS)*. Paris: OECD Publishing.
- Organisation for Economic Co-operation and Development (2016). *PISA 2015 results (Volume III): Students’ well-being*. Paris: OECD Publishing
- Organisation for Economic Co-operation and Development (2017). “How much of a problem is bullying at school?”, PISA in Focus, N°. 74, OECD Publishing, Paris, Retrieved from <https://doi.org/10.1787/728d6464-en>.
- Ortega, R., Sanchez, V., Ortega Rivera, J. & Viejo, C. (2011). *La violencia sexual en las relaciones interpersonales de adolescentes in M. Lameiras & I., Iglesias. (Eds). Violencia de Género. La violencia sexual a debate*. (pp. 99–126). Valencia: Tirant Lo Blanch.
- Pan-Canadian Joint Consortium for School Health. Retrieved from <https://www.jcsh-cces.ca/>.
- Peterson, P., Morrison, W., Laurie, R., & Bolaños Gramajo, V. (2019). Assessing the Factorial Structure and Internal Consistency of the Mental Fitness and Resiliency Inventory. *International Journal of Workplace Health Management*, 13(2), 153–171.
- Ryan, R. M. & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68–78. doi.org/10.1037/0003-066X.55.1.68.
- Safe Supportive Learning. (2019). Retrieved from <https://safesupportivelearning.ed.gov/>.
- United Nations Educational, Scientific and Cultural Organisation (2019). *Behind the numbers: Ending school violence and bullying*. Paris: UNESCO.
- Voight, A., Austin, G., & Hanson, T. (2013). *A climate for academic success: How school climate distinguishes schools that are beating the achievement odds (Full Report)*. San Francisco: WestEd.
- WMA Wellness. (2019). *Positive Workplace Framework*. <http://www.wmawellness.com/>.