Cross-national trends in perceived school pressure by gender and age from 1994 to 2010

Don A. Klinger1, John G. Freeman1, Ludwig Bilz2, Krystine Liu3, Daniela Ramelow4, Stefanie S. Sebok1, Oddrun Samdal5, Wolfgang Dür4, Mette Rasmussen6

1 Faculty of Education, Queen's University, Kingston Ontario, Canada
2 Department of Social and Health Sciences, Magdeburg-Stendal University of Applied Sciences, Stendal, Germany
3 Department of Surveillance and Evaluation, National Institute for Health Development, Tallinn, Estonia
4 Ludwig Boltzmann Institute Health Promotion Research, Vienna, Austria
5 Department of Health Promotion and Development, University of Bergen, Bergen, Norway
6 National Institute of Public Health, University of Southern Denmark, Copenhagen, Denmark

Correspondence: Don A. Klinger, Faculty of Education, Queen's University, 511 Union St W, Kingston Ontario K7M 5R7, Canada, Tel: +613 533 3028, e-mail: klingerd@queensu.ca

Background: Pressure within school can be a critical component in understanding how the school experience influences young people's intellectual development, physical and mental health and future educational decisions. Methods: Data from five survey rounds (1993/1994, 1997/1998, 2001/2002, 2005/2006 and 2009/2010) were used to examine time-, age- and gender-related trends in the amounts of reported school pressure among 11-, 13- and 15-year-olds, in five different regions (North America, Great Britain, Eastern Europe, Nordic and Germanic countries). Results: Across the regions the reported perceptions of school pressure did not change between 1994 and 2010, despite a temporary increase in 2002 and 2006. With the exception of children at 11 years of age, girls reported higher levels of school pressure than boys (Cohen's d from 0.12 to 0.58) and school pressure was higher in older age groups. These findings were consistent across countries. Regionally, children in North America reported the highest levels of school pressure, and students in the Germanic countries the lowest. Conclusion: Factors associated with child development and differences in societal expectations and structures, along with the possible, albeit, differential impact of the Programme for International Student Assessment (PISA), may partially explain the differences and trends found in school pressure. School pressure increases alongside the onset of adolescence and the shift from elementary school to the higher demanding expectations of secondary education. Time-related increases in school pressure occurred in the years following the release of the PISA results, and were larger in those regions in which results were less positive.

Introduction

Children and youth spend a large portion of their waking time at school. As such, schools provide a ‘critical context in shaping children’s self-esteem, self-efficacy and sense of control over their lives’ (p. 27).1 Children’s and adolescents’ experiences at school influence their intellectual development, physical and mental health and future educational decisions.2–5 Pressure within school can be a critical component in understanding how the school experience is related to these factors in young people’s lives.

School pressure is a complicated but very real issue that affects many children in varying degrees and at different times throughout the course of their education.6–8 Perceptions of school pressure are related to the current context in which it is experienced and to historical structures and events that help create the educational system children encounter. As children move through the educational system, they are subjected to greater academic demands and expectations. These rising expectations can result in increased pressure to succeed in school, with the potential to have either positive or negative impacts on young people’s learning, health and emotional well-being.6,9–11 Excessive pressure or stress may negatively impact students’ academic performance and continued schooling, as well as their physical health, emotional well-being and health-related behaviours.12–15

From a historical perspective, economic shifts and trends have resulted in educational structures that are subjected to more competitive and pluralized post-secondary admissions processes with work opportunities for young people appearing to decline.16 The past 20 years have also witnessed an increasing focus on accountability in public education, with a desire to demonstrate that current educational policies and practices are helping children develop the knowledge, skills and abilities to be productive members of rapidly changing societies. Initiatives such as the Programme for International Student Assessment (PISA), which was first administered in 2000, attempt to provide a ‘global’ method of comparison to determine which countries and regions appear to be best supporting the education of their children.17–19 PISA results created significant debates across countries, especially those with relatively poor performance.20–22 Educational accountability, already a topic of concern,23 became a lightning rod, resulting in country shifts in educational policy and increased demands on teachers and schools to demonstrate that educators were making progress in their efforts to meet students’ needs.24,25 These internal country-wide accountability models, coupled with the international comparisons brought about by assessments such as PISA, might well result in increasing accountability demands and thus increase pressure by educators towards students in an attempt to make students perform better.

With heightened demands and expectations to perform well in school, school pressure is expected to be rising internationally across most, if not all, countries. The Health Behaviour in School-aged Children (HBSC) study provides an important mechanism to explore shifts in school pressure that children feel as they transition through adolescence. The repeated cross-sectional data collection across different ages of children and youth can be used to determine the extent to which students’ perceptions of school pressure differ by age and gender, and if there exist systematic trends in perceived school pressure, both generally and differentiated across countries and regions. These differences can then be used to link our observations of children’s perceptions about school pressure to either their personal (e.g., gender and age regardless of country)
or environmental contexts (e.g., school accountability, school structure), differentiated between the current educational environment (variance across countries) and historical educational structures (variance across time within and across countries). Our analyses were supported through a strategic selection of HBSC countries, covering five regions of Europe and North America, to understand those patterns in school pressure that we identified.

Two main research purposes guided our analyses of trends in students’ perceptions of school pressure:

(i) To estimate the overall differences in the levels and trends of perceived school pressure experienced by boys and girls of different ages;

(ii) To describe trends in school pressure across countries and regions.

The results are interpreted through an ecological approach focusing on developmental issues at the personal level and on contextual differences across the included HBSC countries related to educational system, economic and political systems, geographical region and PISA performance. These structural national-level indicators may support our understanding of the observed differences and trends in perceived school pressure.

Methods

As a multinational survey of youth, the HBSC is used to obtain the perceptions, feelings and behaviours of adolescents at three critical ages, 11, 13 and 15. The surveys enable examination of the physical and mental health of children across adolescence. The HBSC provides a mechanism to explore relationships amongst children’s health and their social, home and school contexts. Our primary data came from 18 countries participating in the previous five survey administrations. Our analyses focused on children’s perceptions of school pressure. The 11-, 13- and 15-year-olds responded to the item: ‘How pressured do you feel by the schoolwork you have to do?’ Using one of four options (1 = not at all; 2 = a little; 3 = some; and 4 = a lot). Our analyses assumed these four options operated as an ordinal scale. We created a dichotomous scale (options 1 and 2 equalling zero; options 3 and 4 equalling one). The applied measure of student perceived school pressure is well functioning and has been qualitatively validated in several countries and included in other validated subscales measuring school pressure.24

Our analyses focused on differences and trends associated with age, gender and time. In addition to overall trends, we were interested in trends by regions characterized by countries with similarities in educational systems: North America (Canada, USA), Great Britain (England, Ireland, Scotland, Wales), Nordic countries (Denmark, Finland, Greenland, Norway, Sweden), Eastern European countries (Czech Republic, Estonia, Latvia, Poland, Russia) and Germanic countries (Germany, Austria) as well as by countries within regions. Countries were chosen based on having at least four HBSC cycles of continuous data on perceived school pressure. Countries within each region tend to have similar education systems. Of potential value to our analyses of school pressure trends, countries and regions have demonstrated differences in PISA rankings.17–19

Due to large samples for analyses and fluctuations in sampling, standard errors for each comparison group were used to calculate 99% CIs, and determine if proportions differed significantly across age, gender and region. Effect sizes were calculated (Cohen’s $d$ using pooled standard deviations) when significant differences were found.

Results

Trends in school pressure were examined in several ways to explore changes that occurred in adolescents’ perceptions of school pressure related to their gender and age. Other than Greenland and Estonia (1998), each country had a minimum sample of 2500 students (mean yearly country sample size $= 4700$). Figure 1 uses the full sample of the HBSC data (non-weighted) to compare the trends for 11-, 13- and 15-year-old boys and girls at five time points. Since 1998, sample sizes were all above 11 000 for each of the six gender-age combinations (1998 sample was just under 10 000 per combination) with the mean sample size being 12 700. The $y$-axis represents the proportion of students who responded that they felt ‘some’ or ‘a lot’ of school pressure. There are consistent gender and age differences over time; 15-year-old girls reported greater levels of school pressure than their male peers ($p < 0.01$, Cohen’s $d$ from 0.12 to 0.18), with 15-year-old girls reporting the greatest school pressure of all groups ($p < 0.01$, Cohen’s $d$ from 0.12 to 0.58). In contrast,
11-year-old girls reported less school pressure than 11-year-old boys (P < 0.01), although effect sizes were small across years (Cohen’s d < 0.10). Although differences existed with respect to the actual level of proportions by gender and age, the overall patterns in perceived school pressure over time were the same. Further, the overall proportion of students who reported feelings of school pressure did not change; the levels of perceived school pressure reported in 1998 were similar to those reported in 2010 across all gender and age groups (see figure 1). Nevertheless, the amount of school pressure has not been constant, as there was a significant (P < 0.01), albeit small, upward shift (Cohen’s d < 0.15) in overall perceived school pressure in 2002 and 2006 for both genders across age groups.

Our next set of analyses focused on the five identified regions and countries within these regions (see table 1 and figure 2), combining gender and age for each region. For these analyses, the average proportion of students reporting ‘some’ or ‘a lot’ of school pressure was calculated across the countries within each region, with each country and age group contributing equally to the (non-weighted) average, preventing one country having more influence on the determination of the average proportion. With few exceptions, the differences between regions were significant (see figure 2). North American youth were consistently more likely to report higher levels of school pressure (with the highest prevalence level of 48% observed in 1998; P < 0.01 compared with all other regions, with the exception of Great Britain in 2002); effect sizes ranged from small (0.04) to moderately large (0.68). Similarly, students in Great Britain reported higher levels of school pressure compared with all the remaining regions (since 1998; P < 0.01, Cohen’s d ranging from 0.04 to 0.44). In contrast, children in Germanic countries were least likely to report feelings of school pressure (with the lowest prevalence level of 18% observed in 1998; P < 0.01 compared with all other regions).

There were interesting similarities and differences amongst the countries within each region (see table 1). For example, the proportions were similar in Canada (range = 40–46%) and the USA (range = 40–49%). Of the ‘countries’ within Great Britain, youth in England were most likely to report perceptions of school pressure (range = 38–51%). In Eastern Europe, levels of school pressure increased over time for adolescents in Russia (16% in 1994, 31% in 2010, P < 0.01), while decreasing for those in the Czech Republic (56% in 1994, 32% in 2010, P < 0.01). In the Nordic countries, school pressure decreased in Greenland (33% in 1994, 18% in 2010, P < 0.01). The highest levels of school pressure were reported in Finland (52% in 1994), although proportions steadily decreased after 1998. In contrast, the proportions of reported school pressure jumped between 1998 and 2002 in Denmark and Norway. In both countries, approximately every third child reported feeling ‘some’ or ‘a lot’ of pressure by school during the first two survey rounds, increasing to approximately every third child after 2002. Lastly, proportions of school pressure jumped for German students from 1998 (14%) to 2002 (25%) (P < 0.01).

Figure 3 (see also table 2) provides a summary of the analyses focused on levels of perceived school pressure amongst regions across 11-, 13- and 15-year-old students, combining gender and survey administration. Each country and administration was equally weighted per region, while gender was weighted based on sample proportions. Consistent with our earlier findings, older students reported the highest levels of school pressure (P < 0.01) with the differences having a moderate effect size from ages 11 to 15. However, the shifts in perceived school pressure differed across regions. These shifts appeared to be generally linear for students in North America, Eastern European countries and Germanic countries. In contrast, there was a larger increase in the amount of school pressure between the ages of 13 and 15 for youth in Great Britain and Nordic countries. There were also distinctions across the countries within each region; 11-year-old children in Canada (31%) reported slightly less pressure than their American counterparts (37%) (P < 0.01, Cohen’s d = 0.12), while 13- and 15-year-olds (53%) reported almost similar levels in both countries. Across Great Britain, adolescents in England reported the highest levels in school pressure, with a large jump between the ages of 13 (40%) and 15 (62%) (P < 0.01, Cohen’s d = 0.45). A similar pattern was found for Wales with an even larger increase between ages 13 (32%) and 15 (62%) (P < 0.01, Cohen’s d = 0.63), and Scotland (26 and 48%, respectively, P < 0.01, Cohen’s d = 0.45), although the proportions were lower in Scotland. In Eastern Europe, the proportions and increases were the smallest for 11- (20%), 13- (25%) and 15-year-old (27%) Russians (P < 0.01, Cohen’s d = 0.17). In Nordic countries, Finnish youth reported the highest levels of school pressure at each age group (31–57%). There was a sharp increase between youth ages 13 and 15 in Greenland (21–30%), Norway (25–43%) and Sweden (21–49%). In contrast, the shifts in pressure were similar between age groups in Denmark. Lastly, the youth in Germany reported the smallest shifts in reported levels of school pressure across age groups (19, 19 and 23%, respectively; P < 0.01, Cohen’s d = 0.09), compared not only with Austrian students, but also to all countries sampled.

### Table 1 Regional trends in the proportion of children reporting ‘some’ or ‘a lot’ of pressure over time

<table>
<thead>
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</thead>
<tbody>
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<tr>
<td>Canada</td>
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</tr>
<tr>
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</tr>
<tr>
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<td>0.47</td>
<td>0.45</td>
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<td>Average</td>
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<td>0.33</td>
<td>0.41</td>
<td>0.41</td>
<td>0.38</td>
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</tr>
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</tr>
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<td>Russia</td>
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<tr>
<td>Average</td>
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<td>0.37</td>
<td>0.38</td>
<td>0.28</td>
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<tr>
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</tr>
<tr>
<td>Denmark</td>
<td>0.18</td>
<td>0.18</td>
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<td>Finland</td>
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</tr>
<tr>
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<tr>
<td>Average</td>
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<td>0.30</td>
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<td>0.18</td>
<td>0.22</td>
<td>0.21</td>
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</table>

Note: SEs ranged from 0.003 to 0.006 across regions. SEs ranged from 0.006 to 0.01 across countries.

### Discussion

Our results should be evaluated in light of potential limitations. First, the analyses were based on a single item measuring students’ perceptions of school pressure. Despite being well-validated, we cannot rule out the risk of variations in these perceptions across countries due to cultural differences that might have implications for some of the observed country differences.

The HBSC data over the 18 countries included in this research clearly indicate country and regional differences in the level of school pressure.
The pressure experienced by school-aged children. The highest level of school pressure is observed in North America followed in order by Great Britain, Eastern Europe, Nordic countries and Germanic countries. Despite some fluctuations over time, this pattern has generally remained stable across the years. These structural national-level indicators are of relevance to the present findings. The levels of school pressure vary across country, such that students in North America and 15-year-old students in Great Britain consistently report higher school pressure than students from other regions. In contrast, students from Germanic countries report the lowest levels of school pressure. These results suggest that children in regions with more conservative free market economies and more competitive selection methods to enter post-secondary education report the highest perceptions of school pressure.

Also, of importance for the current research, social and psychological characteristics of children and adolescence appear to have consistent relationships with perceptions of school pressure. Children, both boys and girls, feel increasing pressure at school as they become older, irrespective of survey cycle or country. In addition, the level of school pressure increases more so for girls...
focus comes at a time when, according to the stage-environment
more on future academic and career options. This changed school
students get older, they are more frequently tested and tend to focus
a larger impact on girls than boys. With regard to age differences, as
students reported an increase in anxiety and loneliness after the
Nordic countries), students stay together across several years as a
These transitions occur much later in the Nordic or Eastern
European countries and much earlier in the Germanic countries. 26
Furthermore, in many of the countries in these regions (e.g., the
Nordic countries), students stay together across several years as a
class group, often with the same teacher, which may explain lower
levels of perceived stress across all ages. 27 Additionally, in countries
such as Finland, less emphasis is placed on assessment than would be
expected in North America and Great Britain. 27

Although the average amount of perceived school pressure that
children report has not changed across time when results from all
countries are combined, there was a significant upward shift in
perceived pressure in 2002 and 2006. This upward shift occurred
during the same time period that PISA results were first released. We
have hypothesized that the initial PISA results may have impacted
educational policies and practices. Consistent with this hypothesis,
the increasing levels of school pressure in 2002 and 2006 for some
countries might be connected with the release of the first PISA
survey results in 2001. Confronted with lower-than-expected
results, there were intensive public debates in Germany, Denmark
and Norway known as 'PISA shock', a shock that was not
experienced in Finland and Canada where PISA results were com-
paratively strong. Especially in Germany, the impact of the PISA
study was compared with the Sputnik shock in the USA. 22 The
results of the first PISA wave fundamentally challenged Germany's
self-perception as having one of the world's leading education
systems. 17, 22 Breakspear 22 provided evidence that the PISA findings
had an impact on national educational policy in many countries
(e.g., Austria, Hungary, Germany, Sweden, England, Denmark,
Norway). Our analyses provide preliminary evidence that
countries such as Canada and Finland did not witness the same
relative increases in the proportions of children reporting school
pressure as compared with lower performing countries such as
Germany.

The question becomes the extent to which the increased percep-
tions of school pressure noted in 2002 and 2006 might be explained
by the initial reactions and attention given to the PISA results. Of
further interest, the prevalence of school pressure generally
decreased from 2006 to 2010. One possible explanation for this
decline may be that the intensive public discussions about the
PISA results, there were intensive public debates in Germany, Denmark
and Norway known as 'PISA shock', a shock that was not
experienced in Finland and Canada where PISA results were com-
paratively strong. Especially in Germany, the impact of the PISA
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Norway). Our analyses provide preliminary evidence that
countries such as Canada and Finland did not witness the same
relative increases in the proportions of children reporting school
pressure as compared with lower performing countries such as
Germany.

The results also suggest relationships attributable to the inter-
actions between educational structures and the social and psycho-
logical characteristics of children. For example, a critical time for
children occurs during the transition from elementary school to high
school in North America and Great Britain (elementary schools
typically have a format where one teacher is responsible for a class
of 20–30 children). Although there may be specific-time constraints
with respect to the use of specialized school facilities (e.g., the school
gymnasium), the teacher has some control over the timing and
duration of the daily schedule to best meet the educational needs
of the children. In contrast, children in secondary school in North
America and Great Britain typically move between classrooms with
different teachers and classmates in each class. As a result, children
experience changes in their relationships with teachers and peers. 9,25

Table 2 Regional trends in the proportion of children reporting
'some' or 'a lot' of pressure across three age groups

<table>
<thead>
<tr>
<th>Region</th>
<th>11-year-olds</th>
<th>13-year olds</th>
<th>15-year olds</th>
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<td>North America</td>
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<td>0.53</td>
</tr>
<tr>
<td>Average</td>
<td>0.34</td>
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</tr>
<tr>
<td>Great Britain</td>
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<tr>
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<tr>
<td>Wales (n = 28 881)</td>
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<tr>
<td>Average</td>
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<td>0.55</td>
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<td>0.27</td>
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<tr>
<td>Average</td>
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<td>Norway (n = 29 991)</td>
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</tr>
<tr>
<td>Sweden (n = 25 998)</td>
<td>0.12</td>
<td>0.21</td>
<td>0.49</td>
</tr>
<tr>
<td>Average</td>
<td>0.20</td>
<td>0.28</td>
<td>0.42</td>
</tr>
<tr>
<td>Germanic countries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria (n = 27 012)</td>
<td>0.12</td>
<td>0.23</td>
<td>0.29</td>
</tr>
<tr>
<td>Germany (n = 25 996)</td>
<td>0.19</td>
<td>0.19</td>
<td>0.23</td>
</tr>
<tr>
<td>Average</td>
<td>0.16</td>
<td>0.21</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Note: Sample sizes are calculated across age groups, and were
generally similar across ages. Regional averages were based on
equally weighted proportions from each country.
valuable for exploring the potential associations amongst external factors and changes in students’ perceptions of school pressure. Subsequent, more focused data collection and more advanced analytical model testing may provide stronger evidence for the associations indicated by our results, and the potential causes for these shifts in children’s and adolescents’ perceived levels of school pressure.

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Conflicts of interest: None declared.

Key points

- Across all countries, perceived school pressure tends to increase with age and to be differentiated by gender, with older girls reporting the highest levels of school pressure.
- Students in North America report the highest perceptions of school pressure, followed in descending order by Great Britain, Eastern Europe, Nordic countries and Germanic countries.
- Differences in school systems across regions may partially explain regional differences.
- The overall levels of school pressure have not changed over the past 16 years; there was an increase in school pressure noted in 2002 and 2006. One possible link for this shift in pressure may be the renewed attention on schooling in countries with poor Programme for International Student Assessment results.

References