Chapter 13

Reporting PIRLS 2006 Questionnaire Data

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13.1 Overview

Through the *PIRLS 2006 International Report* (Mullis, Martin, Kennedy, & Foy, 2007), PIRLS strove to present factors related to teaching and learning reading helpful in understanding the reading achievement results. To describe the educational context for reading achievement, data on hundreds of background variables were collected from students, teachers, schools, parents, and ministries of education. This information was summarized in a concise manner to make it as accessible and useful as possible for policymakers, researchers, and educators. This chapter describes the procedures used to analyze these background data and create the indices reported in Chapters 3 through 7 of the *PIRLS 2006 International Report*. The description includes an explanation of initial exploratory analyses, reporting methods for individual and derived variables, and the review process for exhibits.

PIRLS background data were collected through the five background questionnaires used to gather information at various levels of the education system, as described in Chapter 3. These include:

- The *Student Questionnaire*, which collected information about students' literacy-related activities and resources in and outside of school.
- The *Learning to Read Survey* (home questionnaire), which collected information from parents about literacy-related activities and resources

at home, their attitudes toward reading, and their perceptions of their child's school.

- The *Teacher Questionnaire*, which collected information from teachers about the reading instruction in the classroom and the school as a whole, as well as information about teachers' background and training.
- The *School Questionnaire*, which collected information from school principals about schools' reading curriculum and policies, in addition to the schools' demographics and resources.
- The *Curriculum Questionnaire*, which collected information from National Research Coordinators (NRCs) about the nationally (or regionally) defined reading curriculum in primary schools.

Based on responses to the questions in these questionnaires and in line with the conceptual framework for contexts for learning to read described in the PIRLS *2006 Assessment Framework and Specifications* (Mullis, Kennedy, Martin, & Sainsbury, 2006), a subset of variables was selected for analysis and reporting. Often, several variables were intended to measure a single construct. For reporting, these variables were combined to form a single index variable.

13.2 Exploratory Analyses

Planning for reporting the questionnaire data began with a review of the questionnaires administered in PIRLS 2006 and the previous cycle, PIRLS 2001. Staff at the TIMSS & PIRLS International Study Center identified variables that had been used in 2001 to determine if trends could be measured, and if improvements in construct measurement could be made to indices developed in 2001 by adding new items from the PIRLS 2006 questionnaires. Newly developed variables were reviewed in the context of the PIRLS 2006 framework to identify variables for creating new indices.

Following this preliminary step, data almanacs consisting of statistical summaries of all background variables for the student, teacher, school, and home questionnaires were reviewed. These almanacs presented descriptive statistics such as, for categorical variables, the percentage of students in each category and mean reading achievement, and for continuous variables, the minimum, maximum, mean, mode, and percentile scores. For every variable, these statistics were presented separately for each country and averaged internationally. The data review allowed the TIMSS & PIRLS International Study Center to

examine the quality of the data, as well as identify data patterns for reporting purposes. If anything unusual was noted in the data, national versions of the questionnaires and national adaptations were revisited. If further clarification was needed, the National Research Coordinator (NRC) was contacted.

Because the Southern Hemisphere countries (New Zealand, Singapore, and South Africa) administered the assessment at the end of 2005, their data were available for use in exploratory analyses before the data from the Northern Hemisphere countries became available. These analyses had three primary purposes: identifying new indices that could be created from variables added in the 2006 cycle, ensuring that indices used in 2001 still performed similarly in 2006, and exploring the impact of improving indices created in PIRLS 2001 by adding an extra component variable. The exploratory analyses included principal components analyses to examine the dimensionality of proposed indices using different combinations of variables. In determining whether to add a variable to an index, analyses were conducted to ensure that any new variable was highly correlated with the other items used in the index, the variables of the modified index formed a single factor, and inclusion of a new variable would not cause any major fluctuations in the index distribution. If a variable did not meet these criteria, the index was left unchanged. At this stage, all analyses were conducted using SPSS 14.0 for Windows (SPSS Inc., 2005).

13.3 Reporting Background Data

The most straightforward way that PIRLS background data were presented was by simply reporting the percentage of students responding to each category of a variable, often accompanied by the mean reading achievement of the students in each category. This presented readers with a descriptive summary of how the responses were distributed within and across countries in a manner that is easy to understand and interpret. In some cases, response categories were collapsed.

13.4 Computing Derived Variables

In the PIRLS questionnaires, there were often several questions asked about various aspects of a single construct. In these cases, responses to the individual items were combined to create a derived variable that provided a more comprehensive picture of the construct of interest than the individual variables could on their own. In addition, these derived variables could be expected to

be more reliable, since random errors from individual variables tend to cancel each other out (DeVellis, 1991; Spector, 1992).

Student records were included in the derived variable calculation only if there were data available for two thirds of the variables involved. For example, if a derived variable was based on six component variables, students who were missing responses to more than two of these were counted as missing on the derived variable. Supplement 3 of the *PIRLS 2006 User Guide for the International Database* (Foy & Kennedy, 2008) provides a description of all derived variables included in the international database.

In the PIRLS reports, an index is a special type of derived variable that assigns students to one of three levels—high, medium, and low—on the basis of their responses to the component variables. The high category of an index represents the responses that are expected to characterize aspects of a positive literacy environment, and the low category those responses that are least supportive of literacy. The PIRLS indices are intended to describe factors related to the fostering of reading achievement in terms of the questions that were actually asked, thereby preserving a high degree of interpretability. For example, students at the high level of the PIRLS 2006 Index of Early Home Literacy Activities (described later in this chapter) had parents who reported often engaging with the student in each of six early literacy activities (read books, tell stories, sing songs, play with alphabet toys, play word games, and read aloud signs and labels) before the student began primary schooling. In contrast, students at the low level of this index had parents reporting never or almost never engaging the student in such activities.

In constructing an index, it was important that the component variables were intercorrelated so that together they formed a reliable scale, and also that they were correlated with student reading achievement. The process of identifying the response combinations that defined the high, medium, and low levels of the index also was informed by the relationship with achievement, but often these combinations were chosen based on a judgment of which responses could be expected to most effectively capture the construct's support for literacy or good practices.

13.5 Display of Background Data

PIRLS 2006 presented the background questionnaire data in Chapters 3–7 of the *PIRLS 2006 International Report*, with the first two chapters focusing on the student and parent questionnaires and the last three chapters utilizing data primarily from the teacher, school, and curriculum questionnaires.

In all of the exhibits, except those derived from the *Curriculum Questionnaire*, the student was the unit of analysis. In other words, data always were presented as the percentage of students possessing a particular characteristic, even if the information had been supplied by parents, teachers, or principals. This approach presents the data from the perspective of students' educational experiences and is consistent with the PIRLS sampling and assessment design. In many exhibits, the average reading achievement associated with the students in each category was also presented.

Exhibits generally were organized alphabetically by country, with an additional row showing the average internationally. However, in reporting some variables, including indices, countries were organized according to the percentage of students in the high category in descending order to help readers see the variation across countries more easily.

Since one of the major benefits of PIRLS is the ability to measure trends over time, data from PIRLS 2001 background questionnaires were included whenever possible. In these exhibits, the change from 2001 in percentage of students in variable categories was displayed for countries that participated in the 2001 assessment, with an arrow indicating if the percent in 2006 was significantly higher or lower. Several exhibits also focused on the differences between boys and girls, with arrows designating significant differences between the genders.

While most countries had very high response rates for the background questionnaires, in some cases the response rates were lower than acceptable. Because all of the data were presented with the student as the unit of analysis, this also was the way that response rates were calculated. The following special notations were used to convey information about response rates in the exhibits of the international report:

- An "r" next to the data indicates that responses were available for 70–84 percent of the students;

- An "s" next to the data indicates that responses were available for 50–69 percent of the students; and
- An "x" in place of the data indicates that responses were available for less than 50 percent of the students.

There also were other situations in which data was not shown. These were denoted in the following ways:

- When the percentage of students in a particular category was less than two percent, achievement data were replaced with by a tilde (~);
- When a country did not participate in the 2001 assessment, a diamond (◊) was shown in trend data columns; and
- When comparable data were not available for a particular country, a dash (-) was shown in the affected columns.

The absence of comparable data was usually because the country did not ask a particular question in one of the questionnaires. Most notably, there were no data available from parents in the United States, because that country did not administer the *Learning to Read Survey* and no data available from the *School Questionnaire* in Luxembourg because primary schools in Luxembourg do not have principals.

13.6 Summary of Background Indices

In the following section, the PIRLS 2006 indices presented in each background chapter of the international report are described. The composition of each index is briefly described, together with information about the reliability of the underlying scale (Cronbach's alpha) and its relationship to student reading achievement (the multiple correlation between the component variables of the index and achievement and the percent of variance in achievement accounted for by the component variables). While the creation of the indices relied heavily on judgments about desirable literacy environments, these statistics provide a sense of how well the component variables are related to one another and to reading achievement. When reviewing these exhibits, it is important to keep in mind that these indices are intended to act as international indicators. While within-country relationships were considered during development, index performance may vary due to the culturally embedded nature of these variables.

Chapter 3 of the international report focused on literacy-related activities in the home, including information on parents' background and attitudes, home resources, and activities parents have done with their child.

The Index of Early Home Literacy Activities (EHLA) attempts to categorize students according to their parents' reports about engaging in early literacy activities with the students before they began primary school. The index is presented in Exhibit 3.1 of the international report and also was reported in 2001. It is based on parents' reports of the frequency with which they engage with their child in the following activities prior to entry into primary school: read books, tell stories, sing songs, play with alphabet toys (e.g., blocks with letters of the alphabet), play word games, and read aloud signs and labels. An average was computed across the six items based on a 3-point scale: *never or almost never* = 1, *sometimes* = 2, and *often* = 3. A high level indicates an average score of greater than 2.33 through 3. A medium level indicates an average score of 1.67 through 2.33. A low level indicates an average score of 1 to less than 1.67.

As shown in Exhibit 13.1, the six activities form a fairly reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.68. The median multiple correlation between the six activities and student achievement was 0.28, corresponding to an R-square of 0.08.

The Index of Home Educational Resources (HER) is intended to summarize the students' and parents' reports about aspects of the home environment and the extent to which it supports literacy. Presented in Exhibit 3.2 of the international report, this index, also reported in 2001, is based on students' responses to two questions about home educational resources: number of books in the home, and educational aids in the home (computer, study desk/table for own use, books of their own, access to a daily newspaper); and parents' responses to two questions: the number of children's books in the home and parents' education. A high level indicates more than 100 books in the home, more than 25 children's books, at least 3 of 4 educational aids, and at least one parent finished university. A low level indicates 25 or fewer books in the home, 25 or fewer children's books, no more than 2 educational aids, and parents that have not completed secondary education. A medium level includes all other combinations of responses.

Exhibit 13.2 shows that the component variables form a reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.61. The median multiple correlation between the component variables and student achievement was 0.44, corresponding to an R-square of 0.19.

Exhibit 13.1 Index of Early Home Literacy Activities (EHLA) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.64	0.35	0.12
Belgium (Flemish)	0.67	0.30	0.09
Belgium (French)	0.64	0.35	0.12
Bulgaria	0.79	0.26	0.07
Canada, Alberta	0.74	0.26	0.07
Canada, British Columbia	0.75	0.24	0.06
Canada, Nova Scotia	0.73	0.26	0.07
Canada, Ontario	0.73	0.22	0.05
Canada, Quebec	0.68	0.30	0.09
Chinese Taipei	0.74	0.35	0.12
Denmark	0.66	0.28	0.08
England	0.72	0.33	0.11
France	0.63	0.33	0.11
Georgia	0.70	0.20	0.04
Germany	0.61	0.33	0.11
Hong Kong SAR	0.73	0.20	0.04
Hungary	0.63	0.26	0.07
Iceland	0.69	0.28	0.08
Indonesia	0.73	0.20	0.04
Iran, Islamic Rep. of	0.74	0.35	0.12
Israel	0.70	0.10	0.01
Italy	0.60	0.24	0.06
Kuwait	0.66	0.20	0.04
Latvia	0.62	0.22	0.05
Lithuania	0.64	0.26	0.07
Luxembourg	0.69	0.35	0.12
Macedonia, Rep. of	0.69	0.24	0.06
Moldova, Rep. of	0.69	0.26	0.07
Morocco	0.73	0.22	0.05
Netherlands	0.66	0.28	0.08
New Zealand	0.77	0.32	0.10
Norway	0.65	0.26	0.07
Poland	0.63	0.32	0.10
Qatar	0.62	0.17	0.03
Romania	0.78	0.44	0.19
Russian Federation	0.68	0.28	0.08
Scotland	0.72	0.26	0.07
Singapore	0.79	0.32	0.10
Slovak Republic	0.61	0.36	0.13
Slovenia	0.67	0.28	0.08
South Africa	0.59	0.22	0.05
Spain	0.64	0.32	0.10
Sweden	0.69	0.26	0.07
Trinidad and Tobago	0.73	0.35	0.12
United States	-	-	-
International Median	0.68	0.28	0.08

A dash (–) indicates data are not available.

Exhibit 13.2 Index of Home Educational Resources (HER) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.6	0.49	0.24
Belgium (Flemish)	0.57	0.45	0.20
Belgium (French)	0.61	0.46	0.21
Bulgaria	0.78	0.41	0.17
Canada, Alberta	0.48	0.35	0.12
Canada, British Columbia	0.51	0.33	0.11
Canada, Nova Scotia	0.5	0.40	0.16
Canada, Ontario	0.5	0.36	0.13
Canada, Quebec	0.55	0.37	0.14
Chinese Taipei	0.66	0.46	0.21
Denmark	0.55	0.33	0.11
England	-	-	-
France	0.65	0.46	0.21
Georgia	0.67	0.32	0.10
Germany	0.65	0.51	0.26
Hong Kong SAR	0.68	0.26	0.07
Hungary	0.72	0.56	0.31
Iceland	0.46	0.37	0.14
Indonesia	0.45	0.36	0.13
Iran, Islamic Rep. of	0.79	0.51	0.26
Israel	0.57	0.48	0.23
Italy	0.62	0.32	0.10
Kuwait	0.37	0.33	0.11
Latvia	0.57	0.39	0.15
Lithuania	0.67	0.42	0.18
Luxembourg	0.68	0.51	0.26
Macedonia, Rep. of	0.63	0.48	0.23
Moldova, Rep. of	0.6	0.32	0.10
Morocco	0.66	0.32	0.10
Netherlands	0.6	0.40	0.16
New Zealand	0.53	0.45	0.20
Norway	0.53	0.39	0.15
Poland	0.65	0.47	0.22
Qatar	0.38	0.28	0.08
Romania	0.74	0.51	0.26
Russian Federation	0.61	0.40	0.16
Scotland	0.6	0.44	0.19
Singapore	0.62	0.52	0.27
Slovak Republic	0.7	0.53	0.28
Slovenia	0.61	0.44	0.19
South Africa	0.57	0.57	0.33
Spain	0.62	0.41	0.17
Sweden	0.54	0.41	0.17
Trinidad and Tobago	0.53	0.42	0.18
United States	-	-	-
International Median	0.61	0.44	0.19

A dash (–) indicates data are not available.

The Index of Parents' Attitudes Toward Reading (PATR) groups students according to their parents' reports of their own preferences for reading. This index, developed originally for PIRLS 2001, is presented in Exhibit 3.10 of the international report. The index is based on parents' agreement with the following statements: I read only if I have to, I like talking about books with other people, I like to spend my spare time reading, I read only if I need information, and reading is an important activity in my home. An average was computed across the five items based on a 4-point scale: *disagree a lot* = 1, *disagree a little* = 2, *agree a little* = 3, and *agree a lot* = 4. Responses for negative statements were reverse-coded. A high level indicates an average of greater than 3 through 4. A medium level indicates an average of 2 through 3. A low level indicates an average of 1 to less than 2.

As shown in Exhibit 13.3, the five statements form a reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.78. The median multiple correlation between the five statements and student achievement was 0.24, corresponding to an R-square of 0.06.

Chapter 4 of the international report presented students' reports on reading attitudes, self-concept, and out-of-school activities.

The Index of Students' Attitudes Toward Reading (SATR) categorizes students according to their own reading preferences. The index was developed in 2001 and is presented in Exhibit 4.1 of the international report. This index is based on students' agreement with the following statements: I read only if I have to, I like talking about books with other people, I would be happy if someone gave me a book as a present, I think reading is boring, and I enjoy reading. An average was computed on a 4-point scale: *disagree a lot* = 1, *disagree a little* = 2, *agree a little* = 3, and *agree a lot* = 4. Responses for negative statements were reverse-coded. A high level indicates an average of greater than 3 through 4. A medium level indicates an average of 2 through 3. A low level indicates an average of 1 to less than 2.

As shown in Exhibit 13.4, the component variables form a reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.68. The median multiple correlation between the component variables and student achievement was 0.39, corresponding to an R-square of 0.15.

Exhibit 13.3 Index of Parents' Attitudes Toward Reading (PATR) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.86	0.30	0.09
Belgium (Flemish)	0.87	0.28	0.08
Belgium (French)	0.84	0.28	0.08
Bulgaria	0.84	0.28	0.08
Canada, Alberta	0.85	0.22	0.05
Canada, British Columbia	0.82	0.22	0.05
Canada, Nova Scotia	0.86	0.24	0.06
Canada, Ontario	0.82	0.20	0.04
Canada, Quebec	0.87	0.24	0.06
Chinese Taipei	0.72	0.17	0.03
Denmark	0.86	0.24	0.06
England	0.83	0.26	0.07
France	0.79	0.28	0.08
Georgia	0.64	0.22	0.05
Germany	0.82	0.32	0.10
Hong Kong SAR	0.65	0.10	0.01
Hungary	0.78	0.32	0.10
Iceland	0.83	0.20	0.04
Indonesia	0.58	0.17	0.03
Iran, Islamic Rep. of	0.63	0.22	0.05
Israel	0.72	0.35	0.12
Italy	0.82	0.28	0.08
Kuwait	0.71	0.14	0.02
Latvia	0.75	0.17	0.03
Lithuania	0.75	0.24	0.06
Luxembourg	0.81	0.32	0.10
Macedonia, Rep. of	0.67	0.40	0.16
Moldova, Rep. of	0.62	0.17	0.03
Morocco	0.59	0.14	0.02
Netherlands	0.84	0.30	0.09
New Zealand	0.83	0.28	0.08
Norway	0.84	0.22	0.05
Poland	0.78	0.26	0.07
Qatar	0.71	0.17	0.03
Romania	0.77	0.39	0.15
Russian Federation	0.75	0.20	0.04
Scotland	0.85	0.22	0.05
Singapore	0.72	0.22	0.05
Slovak Republic	0.80	0.36	0.13
Slovenia	0.79	0.28	0.08
South Africa	0.51	0.39	0.15
Spain	0.80	0.24	0.06
Sweden	0.84	0.24	0.06
Trinidad and Tobago	0.72	0.24	0.06
United States	-	-	-
International Median	0.78	0.24	0.06

A dash (–) indicates data are not available.

Exhibit 13.4 Index of Students' Attitudes Toward Reading (SATR) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.76	0.40	0.16
Belgium (Flemish)	0.76	0.36	0.13
Belgium (French)	0.66	0.42	0.18
Bulgaria	0.70	0.35	0.12
Canada, Alberta	0.76	0.42	0.18
Canada, British Columbia	0.75	0.41	0.17
Canada, Nova Scotia	0.78	0.40	0.16
Canada, Ontario	0.76	0.36	0.13
Canada, Quebec	0.72	0.42	0.18
Chinese Taipei	0.63	0.32	0.10
Denmark	0.76	0.33	0.11
England	0.78	0.40	0.16
France	0.66	0.42	0.18
Georgia	0.41	0.32	0.10
Germany	0.76	0.40	0.16
Hong Kong SAR	0.60	0.35	0.12
Hungary	0.77	0.39	0.15
Iceland	0.64	0.40	0.16
Indonesia	0.28	0.41	0.17
Iran, Islamic Rep. of	0.66	0.36	0.13
Israel	0.61	0.40	0.16
Italy	0.69	0.32	0.10
Kuwait	0.38	0.37	0.14
Latvia	0.72	0.37	0.14
Lithuania	0.69	0.39	0.15
Luxembourg	0.79	0.36	0.13
Macedonia, Rep. of	0.47	0.51	0.26
Moldova, Rep. of	0.56	0.26	0.07
Morocco	0.40	0.35	0.12
Netherlands	0.78	0.37	0.14
New Zealand	0.67	0.49	0.24
Norway	0.71	0.40	0.16
Poland	0.72	0.41	0.17
Qatar	0.43	0.39	0.15
Romania	0.63	0.35	0.12
Russian Federation	0.63	0.39	0.15
Scotland	0.75	0.42	0.18
Singapore	0.71	0.41	0.17
Slovak Republic	0.72	0.37	0.14
Slovenia	0.73	0.42	0.18
South Africa	0.34	0.37	0.14
Spain	0.64	0.32	0.10
Sweden	0.79	0.41	0.17
Trinidad and Tobago	0.56	0.39	0.15
United States	0.73	0.39	0.15
International Median	0.68	0.39	0.15

The Index of Students' Reading Self-Concept (SRSC) groups students by their perceptions of their own reading competencies. This index, reported in Exhibit 4.2 of the international report, was a slightly modified version of the index developed in 2001. The index is based on students' responses to the following statements: reading is very easy for me, I do not read as well as other students in my class, when I am reading by myself I understand almost everything I read, and I read slower than other students in my class. An average was computed on a 4-point scale: *disagree a lot* = 1, *disagree a little* = 2, *agree a little* = 3, and *agree a lot* = 4. Responses for negative statements were reverse-coded. A high level indicates an average of greater than 3 through 4. A medium level indicates an average of 2 through 3. A low level indicates an average of 1 to less than 2. The statement "I read slower than other students in my class" is a new variable added to the index in PIRLS 2006, and was not a part of the PIRLS 2001 index calculations.

Exhibit 13.5 presents the statistics for the four component variables, which form a reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.60. The median multiple correlation between the four statements and student achievement was 0.40, corresponding to an R-square of 0.16.

Chapter 5 of the international report describes the school curriculum for reading and organization for teaching reading. This includes reports of instructional time, class size, and the availability of specialists. This chapter did not include any indices. Chapter 6 focused on teachers and reading instruction, and presented information about teachers' backgrounds and use of various instructional techniques, resources, and assessment.

The Index of Reading for Homework (RFH) is a unique index for two reasons. First, it is comprised of only two variables. Second, the categories for grouping students are sensitive to differences across countries in the role of homework in reading instruction. The index is presented in Exhibit 6.23 of the international report, and was developed in 2001. Students were categorized according to teachers' responses to two questions: How often do you assign reading as part of homework (for any subject)? In general, how much time do you expect students to spend on homework involving reading (for any subject) each time you assign it? A high level indicates students are expected to spend more than 30 minutes at least 1–2 times a week. A low level indicates students are never assigned homework or are expected to spend no more than 30 minutes less than once a week. A medium level indicates all other combinations of the frequencies.

Exhibit 13.5 Index of Students' Reading Self-Concept (SRSC) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.64	0.35	0.12
Belgium (Flemish)	0.71	0.39	0.15
Belgium (French)	0.56	0.36	0.13
Bulgaria	0.68	0.37	0.14
Canada, Alberta	0.67	0.41	0.17
Canada, British Columbia	0.67	0.42	0.18
Canada, Nova Scotia	0.67	0.45	0.20
Canada, Ontario	0.66	0.42	0.18
Canada, Quebec	0.67	0.48	0.23
Chinese Taipei	0.56	0.40	0.16
Denmark	0.74	0.55	0.30
England	0.70	0.46	0.21
France	0.60	0.40	0.16
Georgia	0.56	0.41	0.17
Germany	0.62	0.42	0.18
Hong Kong SAR	0.57	0.41	0.17
Hungary	0.65	0.44	0.19
Iceland	0.66	0.46	0.21
Indonesia	0.28	0.36	0.13
Iran, Islamic Rep. of	0.45	0.46	0.21
Israel	0.50	0.39	0.15
Italy	0.53	0.35	0.12
Kuwait	0.31	0.35	0.12
Latvia	0.59	0.42	0.18
Lithuania	0.61	0.40	0.16
Luxembourg	0.68	0.47	0.22
Macedonia, Rep. of	0.49	0.49	0.24
Moldova, Rep. of	0.43	0.28	0.08
Morocco	0.30	0.26	0.07
Netherlands	0.73	0.36	0.13
New Zealand	0.59	0.45	0.20
Norway	0.67	0.42	0.18
Poland	0.70	0.50	0.25
Qatar	0.51	0.53	0.28
Romania	0.63	0.41	0.17
Russian Federation	0.55	0.33	0.11
Scotland	0.66	0.40	0.16
Singapore	0.60	0.39	0.15
Slovak Republic	0.65	0.45	0.20
Slovenia	0.66	0.47	0.22
South Africa	0.35	0.37	0.14
Spain	0.39	0.39	0.15
Sweden	0.71	0.46	0.21
Trinidad and Tobago	0.57	0.49	0.24
United States	0.65	0.39	0.15
International Median	0.60	0.40	0.16

As shown in Exhibit 13.6, the variables comprising this index have relatively lower reliability (an international median Cronbach's alpha of 0.28) and a weaker relationship to achievement (an international median multiple R and R-square of 0.0), as compared to other indices. These statistics suggest that while homework is an important part of instruction in many countries, often students receiving the greatest amounts of homework or spending most time on it may be those who do not read as well as other students.

Chapter 7 focused on school contexts such as schools' locations and resources and measures of school climate and safety.

The Index of Availability of School Resources (ASR) categorized students according to their principals' reports of the extent to which their schools were impacted by a lack of resources. The index, modified from the 2001 index, is presented in Exhibit 7.5 of the international report. This index is based on principals' reports of how much the school's capacity to provide instruction is affected by a shortage or inadequacy of the following: qualified teaching staff, teachers with a specialization in reading, second language teachers, instructional materials, supplies (e.g., paper, pencils), school buildings and grounds, heating/cooling and lighting systems, instructional space (e.g., classrooms), special equipment for physically disabled students, computers for instructional purposes, computer software for instructional purposes, computer support staff, library books, and audio-visual resources. An average was computed based on a 4-point scale: *a lot* = 1, *some* = 2, *a little* = 3, and *not at all* = 4. Responses for each activity were averaged across each principal. A high level indicates an average of greater than 3 through 4. A medium level indicates an average of 2 through 3. A low level indicates an average of 1 to less than 2. "Second language teachers" was added to the PIRLS 2006 index, and is not included in the 2001 index calculations. "Teachers with a specialization in reading" was worded as "teachers qualified to teach reading" in 2001.

As shown in Exhibit 13.7, the component variables form a reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.85. The median multiple correlation between the component variables and student achievement was 0.17, corresponding to an R-square of 0.03.

Exhibit 13.6 Index of Reading for Homework (RFH) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	-0.37	0.00	0.00
Belgium (Flemish)	0.18	0.10	0.01
Belgium (French)	0.22	0.10	0.01
Bulgaria	0.35	0.14	0.02
Canada, Alberta	0.45	0.00	0.00
Canada, British Columbia	0.44	0.00	0.00
Canada, Nova Scotia	0.38	0.10	0.01
Canada, Ontario	0.47	0.00	0.00
Canada, Quebec	0.04	0.00	0.00
Chinese Taipei	-0.07	0.00	0.00
Denmark	0.18	0.00	0.00
England	0.36	0.00	0.00
France	0.12	0.00	0.00
Georgia	0.48	0.10	0.01
Germany	0.05	0.00	0.00
Hong Kong SAR	0.35	0.14	0.02
Hungary	0.28	0.00	0.00
Iceland	0.33	0.00	0.00
Indonesia	0.22	0.00	0.00
Iran, Islamic Rep. of	0.44	0.00	0.00
Israel	0.17	0.10	0.01
Italy	0.14	0.00	0.00
Kuwait	-	-	-
Latvia	0.19	0.00	0.00
Lithuania	0.11	0.00	0.00
Luxembourg	0.43	0.00	0.00
Macedonia, Rep. of	0.56	0.10	0.01
Moldova, Rep. of	-0.17	0.00	0.00
Morocco	0.07	0.17	0.03
Netherlands	0.53	0.00	0.00
New Zealand	0.25	0.10	0.01
Norway	0.23	0.00	0.00
Poland	0.43	0.00	0.00
Qatar	0.34	0.10	0.01
Romania	0.41	0.00	0.00
Russian Federation	-0.16	0.00	0.00
Scotland	0.11	0.00	0.00
Singapore	0.63	0.10	0.01
Slovak Republic	0.38	0.00	0.00
Slovenia	0.32	0.00	0.00
South Africa	0.34	0.17	0.03
Spain	0.43	0.10	0.01
Sweden	0.25	0.00	0.00
Trinidad and Tobago	0.42	0.10	0.01
United States	0.54	0.10	0.01
International Median	0.28	0.00	0.00

A dash (–) indicates data are not available.

Exhibit 13.7 Index of Availability of School Resources (ASR) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.80	0.17	0.03
Belgium (Flemish)	0.88	0.14	0.02
Belgium (French)	0.80	0.14	0.02
Bulgaria	0.89	0.28	0.08
Canada, Alberta	0.87	0.14	0.02
Canada, British Columbia	0.84	0.17	0.03
Canada, Nova Scotia	0.90	0.14	0.02
Canada, Ontario	0.91	0.17	0.03
Canada, Quebec	0.87	0.17	0.03
Chinese Taipei	0.95	0.10	0.01
Denmark	0.79	0.14	0.02
England	0.85	0.14	0.02
France	0.73	0.17	0.03
Georgia	0.83	0.17	0.03
Germany	0.81	0.24	0.06
Hong Kong SAR	0.89	0.17	0.03
Hungary	-	-	-
Iceland	0.82	0.14	0.02
Indonesia	0.85	0.32	0.10
Iran, Islamic Rep. of	0.87	0.32	0.10
Israel	0.91	0.35	0.12
Italy	0.84	0.14	0.02
Kuwait	0.85	0.17	0.03
Latvia	0.92	0.20	0.04
Lithuania	0.89	0.17	0.03
Luxembourg	-	-	-
Macedonia, Rep. of	0.83	0.35	0.12
Moldova, Rep. of	0.78	0.17	0.03
Morocco	0.92	0.24	0.06
Netherlands	0.81	0.22	0.05
New Zealand	0.88	0.10	0.01
Norway	0.78	0.10	0.01
Poland	0.85	0.14	0.02
Qatar	0.92	0.22	0.05
Romania	0.89	0.28	0.08
Russian Federation	0.92	0.17	0.03
Scotland	0.82	0.10	0.01
Singapore	0.95	0.14	0.02
Slovak Republic	0.77	0.20	0.04
Slovenia	0.86	0.10	0.01
South Africa	0.82	0.46	0.21
Spain	0.92	0.20	0.04
Sweden	0.88	0.10	0.01
Trinidad and Tobago	0.80	0.22	0.05
United States	0.90	0.20	0.04
International Median	0.85	0.17	0.03

A dash (–) indicates data are not available.

The Index of Home-School Involvement (HSI) groups students according to principals' reports of the activities offered by their schools and parents' involvement in school activities. The exhibit, developed in 2001, is presented in Exhibit 7.8 of the international report. This index is based on principals' responses to questions about how often they hold parent-teacher conferences and communicate with parents about students' progress, and on parents' responses to questions about how often they attend meetings and events organized by the school. A high level indicates that four or more times a year, schools hold teacher-parent conferences and events at school that are attended by more than half of the parents, send home letters, calendars, newsletters, etc., with information about the school seven or more times a year, and send written reports (report cards) of child's performance four or more times a year. A low level indicates schools never hold teacher-parent conferences, or if they do, only between 0–25% of parents attend; schools hold events to which parents are invited once a year or less, to which 0–25% of parents attend; letters, calendars, newsletters, etc., are sent home three times a year or less; and written reports of children's performance are sent home once a year or less. A medium level indicates all other combinations.

Exhibit 13.8 presents the statistics for the component variables. The median reliability coefficient (Cronbach's alpha) across countries was 0.50. The median multiple correlation between the component variables and student achievement was 0.14, corresponding to an R-square of 0.02.

Exhibit 13.8 Index of Home-School Involvement (HSI) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.33	0.14	0.02
Belgium (Flemish)	0.38	0.10	0.01
Belgium (French)	0.31	0.14	0.02
Bulgaria	0.48	0.17	0.03
Canada, Alberta	0.26	0.14	0.02
Canada, British Columbia	0.43	0.14	0.02
Canada, Nova Scotia	0.19	0.10	0.01
Canada, Ontario	0.08	0.10	0.01
Canada, Quebec	0.44	0.17	0.03
Chinese Taipei	0.66	0.10	0.01
Denmark	0.25	0.10	0.01
England	0.34	0.17	0.03
France	0.39	0.17	0.03
Georgia	0.58	0.17	0.03
Germany	0.51	0.20	0.04
Hong Kong SAR	0.48	0.10	0.01
Hungary	0.53	0.22	0.05
Iceland	0.40	0.00	0.00
Indonesia	0.67	0.20	0.04
Iran, Islamic Rep. of	0.68	0.28	0.08
Israel	0.63	0.53	0.28
Italy	0.41	0.14	0.02
Kuwait	0.48	0.10	0.01
Latvia	0.52	0.14	0.02
Lithuania	0.52	0.14	0.02
Luxembourg	-	-	-
Macedonia, Rep. of	0.68	0.32	0.10
Moldova, Rep. of	0.55	0.10	0.01
Morocco	0.76	0.22	0.05
Netherlands	0.33	0.10	0.01
New Zealand	0.45	0.14	0.02
Norway	0.41	0.10	0.01
Poland	0.53	0.14	0.02
Qatar	0.76	0.14	0.02
Romania	0.59	0.22	0.05
Russian Federation	0.50	0.14	0.02
Scotland	0.43	0.10	0.01
Singapore	0.55	0.10	0.01
Slovak Republic	0.61	0.26	0.07
Slovenia	0.41	0.10	0.01
South Africa	0.66	0.45	0.20
Spain	0.50	0.20	0.04
Sweden	0.37	0.10	0.01
Trinidad and Tobago	0.54	0.28	0.08
United States	0.42	0.17	0.03
International Median	0.50	0.14	0.02

A dash (–) indicates data are not available.

The Index of Principals' Perceptions of School Climate (PPSC) categorizes students according to principals' perceptions of various factors related to the social climate of the school. The exhibit was modified from that in 2001, and is presented in Exhibit 7.12 of the international report. The index is based on principals' characterization of the following: teachers' job satisfaction, teachers' expectations for student achievement, parental support for student achievement, students' regard for school property, students' desire to do well in school, and students' regard for each other's welfare. An average was computed on a 5-point scale: *very low* = 1, *low* = 2, *medium* = 3, *high* = 4, and *very high* = 5. Responses for each activity were averaged across each principal. A high level indicates an average of greater than 3.67 through 5. A medium level indicates an average of 2.33 through 3.67. A low level indicates an average of 1 to less than 2.33. "Students' regard for each other's welfare" was added to the index in PIRLS 2006 and is not included in the 2001 index calculations.

As shown in Exhibit 13.9, the six variables form a reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.79. The median multiple correlation between the six variables and student achievement was 0.20, corresponding to an R-square of 0.04.

The Index of Teacher Career Satisfaction (TCS) attempts to group students according to their teachers' reports of satisfaction with their current position and career choice as a whole. Developed in 2006, the index is presented in Exhibit 7.13 of the international report. The index is based on teachers' agreement with the following statements: I am content with my profession as a teacher, I am satisfied with being a teacher at this school, I would describe the teachers at this school as a satisfied group, I had more enthusiasm when I began teaching than I have now, and I do important work as a teacher. An average was computed across the five items based on a 4-point scale: *disagree a lot* = 1, *disagree a little* = 2, *agree a little* = 3, *agree a lot* = 4. Responses for negative statements were reverse-coded. A high level indicates an average of 3 through 4. A medium level indicates an average of 2 to less than 3. A low level indicates an average of 1 to less than 2.

As shown in Exhibit 13.10, the six statements form a fairly reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.60. The median multiple correlation between the six statements and student achievement was 0.10, corresponding to an R-square of 0.01.

Exhibit 13.9 Index of Principals' Perceptions of School Climate (PPSC) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.72	0.22	0.05
Belgium (Flemish)	0.68	0.14	0.02
Belgium (French)	0.92	0.17	0.03
Bulgaria	0.80	0.24	0.06
Canada, Alberta	0.85	0.24	0.06
Canada, British Columbia	0.85	0.22	0.05
Canada, Nova Scotia	0.86	0.14	0.02
Canada, Ontario	0.86	0.14	0.02
Canada, Quebec	0.83	0.20	0.04
Chinese Taipei	0.79	0.10	0.01
Denmark	0.80	0.14	0.02
England	0.85	0.26	0.07
France	0.80	0.22	0.05
Georgia	0.79	0.14	0.02
Germany	0.74	0.30	0.09
Hong Kong SAR	0.85	0.10	0.01
Hungary	0.81	0.28	0.08
Iceland	0.92	0.00	0.00
Indonesia	0.73	0.10	0.01
Iran, Islamic Rep. of	0.74	0.28	0.08
Israel	0.79	0.30	0.09
Italy	0.76	0.14	0.02
Kuwait	0.74	0.17	0.03
Latvia	0.76	0.14	0.02
Lithuania	0.68	0.17	0.03
Luxembourg	-	-	-
Macedonia, Rep. of	0.74	0.35	0.12
Moldova, Rep. of	0.66	0.14	0.02
Morocco	0.87	0.26	0.07
Netherlands	0.72	0.22	0.05
New Zealand	0.88	0.26	0.07
Norway	0.73	0.10	0.01
Poland	0.77	0.10	0.01
Qatar	0.81	0.22	0.05
Romania	0.82	0.32	0.10
Russian Federation	0.74	0.20	0.04
Scotland	0.85	0.17	0.03
Singapore	0.80	0.20	0.04
Slovak Republic	0.77	0.26	0.07
Slovenia	0.76	0.10	0.01
South Africa	0.84	0.22	0.05
Spain	0.85	0.24	0.06
Sweden	0.71	0.17	0.03
Trinidad and Tobago	0.80	0.36	0.13
United States	0.85	0.24	0.06
International Median	0.79	0.20	0.04

A dash (–) indicates data are not available.

Exhibit 13.10 Index of Teacher Career Satisfaction (TCS) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.59	0.10	0.01
Belgium (Flemish)	0.69	0.10	0.01
Belgium (French)	0.59	0.10	0.01
Bulgaria	0.62	0.17	0.03
Canada, Alberta	0.71	0.10	0.01
Canada, British Columbia	0.68	0.10	0.01
Canada, Nova Scotia	0.62	0.10	0.01
Canada, Ontario	0.57	0.10	0.01
Canada, Quebec	0.70	0.10	0.01
Chinese Taipei	0.64	0.00	0.00
Denmark	0.67	0.10	0.01
England	0.75	0.17	0.03
France	0.69	0.10	0.01
Georgia	0.41	0.10	0.01
Germany	0.64	0.10	0.01
Hong Kong SAR	0.62	0.14	0.02
Hungary	0.65	0.14	0.02
Iceland	0.57	0.10	0.01
Indonesia	0.36	0.14	0.02
Iran, Islamic Rep. of	0.44	0.22	0.05
Israel	0.53	0.22	0.05
Italy	0.69	0.10	0.01
Kuwait	0.40	0.00	0.00
Latvia	0.61	0.00	0.00
Lithuania	0.52	0.00	0.00
Luxembourg	0.68	0.00	0.00
Macedonia, Rep. of	0.54	0.30	0.09
Moldova, Rep. of	0.44	0.00	0.00
Morocco	0.66	0.17	0.03
Netherlands	0.66	0.10	0.01
New Zealand	0.65	0.00	0.00
Norway	0.54	0.14	0.02
Poland	0.55	0.00	0.00
Qatar	0.60	0.10	0.01
Romania	0.48	0.14	0.02
Russian Federation	0.57	0.10	0.01
Scotland	0.69	0.00	0.00
Singapore	0.64	0.00	0.00
Slovak Republic	0.59	0.00	0.00
Slovenia	0.59	0.00	0.00
South Africa	0.64	0.33	0.11
Spain	0.51	0.10	0.01
Sweden	0.69	0.00	0.00
Trinidad and Tobago	0.59	0.14	0.02
United States	0.59	0.00	0.00
International Median	0.60	0.10	0.01

The Index of Parents' Perceptions of School Environment (PPSE) attempts to categorize students according to their parents' perceptions of the schools' efforts to provide a supportive learning environment. Newly developed in 2006, the index is presented in Exhibit 7.14 of the international report. The index is based on parents' agreement with the following statements: my child's school includes me in my child's education, my child's school should make a greater effort to include me in my child's education, my child's school cares about my child's progress in school, and my child's school does a good job in helping my child become better in reading. An average was computed across the four items based on a 4-point scale: *disagree a lot* = 1, *disagree a little* = 2, *agree a little* = 3, *agree a lot* = 4. Responses for negative statements were reverse-coded. A high level indicates an average of greater than 3 through 4. A medium level indicates an average of 2 through 3. A low level indicates an average of 1 to less than 2.

As shown in Exhibit 13.11, the reliability of this index, although quite high in many countries (Cronbach's alpha is above 0.75 in 12 countries), is low in some countries also. This suggests that some component variables may have different connotations in different contexts. For instance, parents may expect to be involved in their child's school to varying degrees in different countries. Therefore, their responses to that item may not coincide with other responses in the index, decreasing the overall reliability in some countries. The median multiple correlation between the component variables and student achievement was 0.17, corresponding to an R-square of 0.03.

The Index of Student Safety in School (SSS) groups students according to their perception of safety at school and their reports of incidents affecting safety. The index was developed for PIRLS 2006 and is presented in Exhibit 7.15 of the international report. This index is based on students' agreement with the statement "I feel safe when I am at school" and reports of stealing, bullying and injury happening to the students themselves or someone in their class in the last month. A high level indicates students agree a little or a lot with feeling safe at school, had one or fewer incidents happen to them, and had one or fewer incidents happen to someone in their class in the last month. A low level indicates that students disagree a little or a lot with feeling safe at school, had two or more incidents happen to them, and had two or more incidents happen to someone in their class in the last month. A medium level includes all other combinations of responses.

As shown in Exhibit 13.12, the component variables form a reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.68. The median multiple correlation between the component variables and student achievement was 0.20, corresponding to an R-square of 0.04.

Exhibit 13.11 Index of Parents' Perceptions of School Environment (PPSE) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.71	0.22	0.05
Belgium (Flemish)	0.71	0.22	0.05
Belgium (French)	0.64	0.20	0.04
Bulgaria	0.27	0.14	0.02
Canada, Alberta	0.68	0.14	0.02
Canada, British Columbia	0.66	0.17	0.03
Canada, Nova Scotia	0.70	0.10	0.01
Canada, Ontario	0.66	0.10	0.01
Canada, Quebec	0.67	0.17	0.03
Chinese Taipei	0.21	0.10	0.01
Denmark	0.75	0.14	0.02
England	0.71	0.17	0.03
France	0.67	0.17	0.03
Georgia	0.35	0.14	0.02
Germany	0.73	0.20	0.04
Hong Kong SAR	0.36	0.10	0.01
Hungary	0.69	0.22	0.05
Iceland	0.72	0.10	0.01
Indonesia	-0.22	0.10	0.01
Iran, Islamic Rep. of	0.15	0.10	0.01
Israel	0.59	0.22	0.05
Italy	0.55	0.17	0.03
Kuwait	0.49	0.10	0.01
Latvia	0.53	0.20	0.04
Lithuania	0.54	0.14	0.02
Luxembourg	0.62	0.20	0.04
Macedonia, Rep. of	0.31	0.24	0.06
Moldova, Rep. of	0.32	0.20	0.04
Morocco	0.39	0.10	0.01
Netherlands	0.75	0.10	0.01
New Zealand	0.70	0.20	0.04
Norway	0.70	0.10	0.01
Poland	0.53	0.17	0.03
Qatar	0.55	0.17	0.03
Romania	0.33	0.14	0.02
Russian Federation	0.36	0.22	0.05
Scotland	0.71	0.10	0.01
Singapore	0.45	0.00	0.00
Slovak Republic	0.48	0.20	0.04
Slovenia	0.61	0.20	0.04
South Africa	0.14	0.24	0.06
Spain	0.67	0.20	0.04
Sweden	0.72	0.14	0.02
Trinidad and Tobago	0.54	0.22	0.05
United States	-	-	-
International Median	0.55	0.17	0.03

A dash (–) indicates data are not available.

Exhibit 13.12 Index of Student Safety in School (SSS) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.73	0.22	0.05
Belgium (Flemish)	0.70	0.26	0.07
Belgium (French)	0.70	0.17	0.03
Bulgaria	0.72	0.22	0.05
Canada, Alberta	0.70	0.26	0.07
Canada, British Columbia	0.69	0.17	0.03
Canada, Nova Scotia	0.70	0.22	0.05
Canada, Ontario	0.70	0.20	0.04
Canada, Quebec	0.72	0.22	0.05
Chinese Taipei	0.76	0.22	0.05
Denmark	0.60	0.17	0.03
England	0.69	0.26	0.07
France	0.72	0.20	0.04
Georgia	0.69	0.14	0.02
Germany	0.69	0.28	0.08
Hong Kong SAR	0.73	0.20	0.04
Hungary	0.68	0.22	0.05
Iceland	0.74	0.17	0.03
Indonesia	0.65	0.17	0.03
Iran, Islamic Rep. of	0.63	0.17	0.03
Israel	0.66	0.30	0.09
Italy	0.68	0.14	0.02
Kuwait	0.67	0.10	0.01
Latvia	0.65	0.20	0.04
Lithuania	0.68	0.20	0.04
Luxembourg	0.65	0.17	0.03
Macedonia, Rep. of	0.74	0.32	0.10
Moldova, Rep. of	0.67	0.10	0.01
Morocco	0.55	0.14	0.02
Netherlands	0.69	0.24	0.06
New Zealand	0.70	0.24	0.06
Norway	0.67	0.17	0.03
Poland	0.70	0.17	0.03
Qatar	0.60	0.24	0.06
Romania	0.70	0.22	0.05
Russian Federation	0.62	0.17	0.03
Scotland	0.67	0.20	0.04
Singapore	0.67	0.17	0.03
Slovak Republic	0.70	0.17	0.03
Slovenia	0.67	0.20	0.04
South Africa	0.54	0.20	0.04
Spain	0.70	0.14	0.02
Sweden	0.70	0.22	0.05
Trinidad and Tobago	0.60	0.17	0.03
United States	0.66	0.22	0.05
International Median	0.68	0.20	0.04

The Index of Principals' Perception of School Safety (PPSS) categorizes students according to their principals' perceptions of the degree to which various problems occur in their schools. The index, developed in 2001, is presented in Exhibit 7.16 of the international report. This index is based on principals' reports about the degree to which each of the following was a problem: classroom disturbances, cheating, profanity, vandalism, theft, intimidation or verbal abuse of other students, and physical conflicts among students. An average was computed on a 4-point scale: *serious problem* = 1, *moderate problem* = 2, *minor problem* = 3, *not a problem* = 4. A high level indicates an average of greater than 3 through 4. A medium level indicates an average of 2 through 3. A low level indicates an average of 1 to less than 2.

As shown in Exhibit 13.13, the component variables form a very reliable scale, with a median reliability coefficient (Cronbach's alpha) across countries of 0.87. The median multiple correlation between the component variables and student achievement was 0.14, corresponding to an R-square of 0.02.

13.7 Reviewing Questionnaire Exhibits

Based on preliminary analyses, analysis specifications were created for all derived variables, including indices. This documentation included the variables to be used and their sources, the way variables would be recoded and combined, and how the derived variable would be presented in the international report. The analysis specifications guided the programmers and TIMSS & PIRLS International Study Center production staff who implemented these analyses and created exhibits, and were made available to NRCs to aid their reviews of the exhibits. The final exhibits were produced using custom-designed SAS programs that calculated student reading achievement averages using all five imputed scores (plausible values) for each student, including standard errors calculated using the jackknife procedure (see Chapter 12).

Exhibit 13.13 Index of Principals' Perception of School Safety (PPSS) Statistics

Country	Cronbach's Alpha Between the Component Variables	Multiple R Between Student Reading Achievement and Component Variables	Percent of Variance in Student Reading Achievement Accounted for by the Component Variables
Austria	0.86	0.10	0.01
Belgium (Flemish)	0.85	0.10	0.01
Belgium (French)	0.88	0.20	0.04
Bulgaria	0.86	0.14	0.02
Canada, Alberta	0.85	0.14	0.02
Canada, British Columbia	0.85	0.14	0.02
Canada, Nova Scotia	0.82	0.14	0.02
Canada, Ontario	0.86	0.14	0.02
Canada, Quebec	0.86	0.17	0.03
Chinese Taipei	0.87	0.00	0.00
Denmark	0.84	0.14	0.02
England	0.87	0.24	0.06
France	0.85	0.24	0.06
Georgia	0.87	0.20	0.04
Germany	0.85	0.22	0.05
Hong Kong SAR	0.90	0.10	0.01
Hungary	0.84	0.22	0.05
Iceland	0.78	0.00	0.00
Indonesia	0.93	0.14	0.02
Iran, Islamic Rep. of	0.86	0.17	0.03
Israel	0.88	0.22	0.05
Italy	0.92	0.17	0.03
Kuwait	0.93	0.24	0.06
Latvia	0.88	0.20	0.04
Lithuania	0.84	0.10	0.01
Luxembourg	-	-	-
Macedonia, Rep. of	0.90	0.17	0.03
Moldova, Rep. of	0.95	0.10	0.01
Morocco	0.93	0.14	0.02
Netherlands	0.77	0.14	0.02
New Zealand	0.88	0.24	0.06
Norway	0.83	0.10	0.01
Poland	0.80	0.00	0.00
Qatar	0.94	0.17	0.03
Romania	0.94	0.10	0.01
Russian Federation	0.74	0.10	0.01
Scotland	0.79	0.10	0.01
Singapore	0.85	0.10	0.01
Slovak Republic	0.89	0.10	0.01
Slovenia	0.84	0.10	0.01
South Africa	0.88	0.33	0.11
Spain	0.91	0.14	0.02
Sweden	0.84	0.14	0.02
Trinidad and Tobago	0.86	0.17	0.03
United States	0.87	0.20	0.04
International Median	0.87	0.14	0.02

A dash (–) indicates data are not available.

Representatives from participating countries had several opportunities to review exhibits and make suggestions for additions and modifications. The draft exhibits first were reviewed, in conjunction with the *PIRLS 2006 International Report* outline, background data almanacs, and analysis notes, at the seventh NRC meeting in Queenstown, New Zealand in November 2006. At that time, data had been received and processed by the IEA Data Processing and Research Center for all but two participating countries, allowing NRCs to view their questionnaire results as they would be displayed in the report. Based on NRCs' comments, the exhibits and data were further refined for a second review at the eighth NRC meeting in Quebec City, Canada in June 2007. At this meeting, NRCs were provided with a draft of the *PIRLS 2006 International Report* containing complete versions of the report exhibits. NRCs approved these final exhibits and text with some suggested revisions, which were implemented by the TIMSS & PIRLS International Study Center staff for the report.

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