

CHAPTER 15

Creating and Interpreting the PIRLS 2021 Context Questionnaire Scales

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Overview

In addition to the data on fourth grade students' reading achievement, PIRLS collects data about the home, school, and classroom contexts in which students learn to read (see [Chapter 2](#)). Many of the items in the PIRLS 2021 Context Questionnaires were combined into scales measuring a single underlying latent construct related to reading achievement.

While some of these scales have been of interest for several PIRLS assessment cycles, others were developed or modified in PIRLS 2021 to reflect current research and collect information in areas of growing importance, such as students' beliefs about their familiarity with digital devices. All scales were constructed using item response theory (IRT), specifically the Rasch partial credit model (PCM; Masters, 1982; Masters & Wright, 1997). For certain scales with many common items across PIRLS 2016 and PIRLS 2021, the PIRLS 2021 scale scores were transformed to the existing reporting metric.

To facilitate interpretation of the context scale results, students, or their parents, teachers, or principals, were classified into three regions corresponding to high, middle, and low values on the construct. The cutpoints on the scale delimiting the regions were described in terms of combinations of response categories. Each context scale is included in the [PIRLS 2021 International Database](#) as a continuous scale variable and a categorical variable.

This chapter describes the procedures for constructing, interpreting, and validating the PIRLS 2021 Context Questionnaire Scales and details the process for transforming and reporting scales.

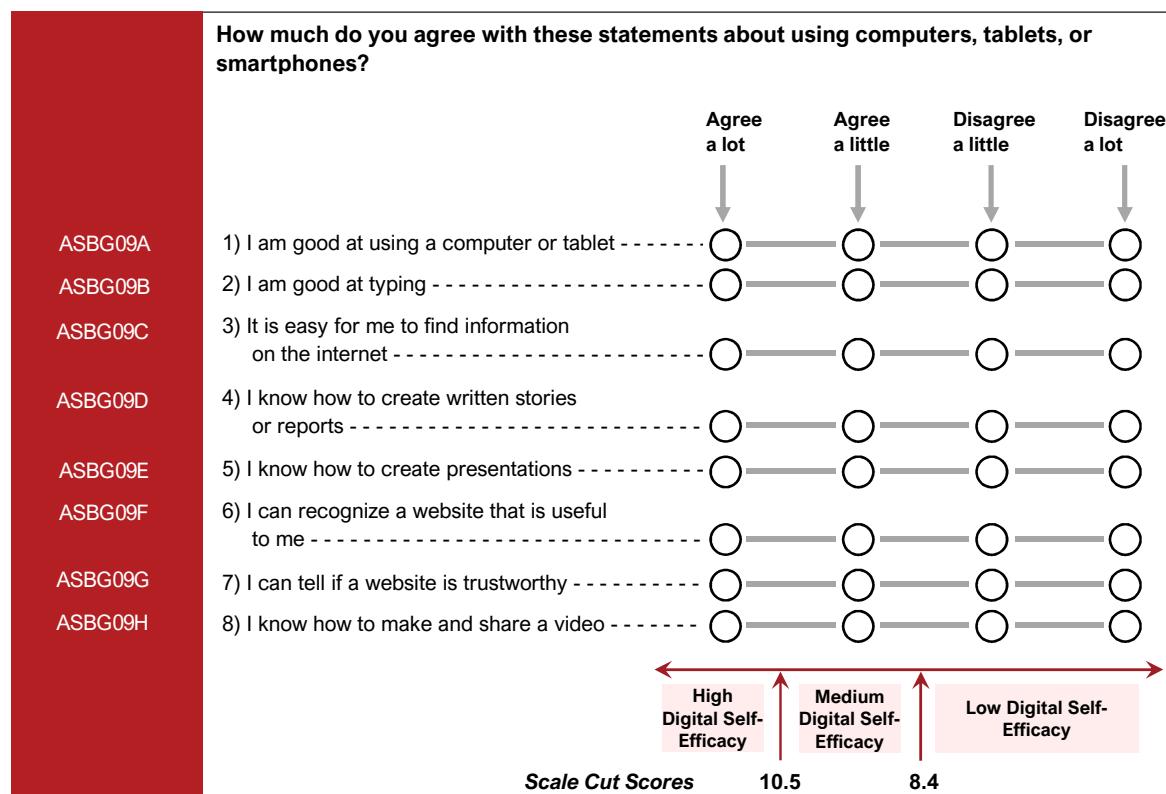
Reporting PIRLS 2021 Context Questionnaire Scales

To illustrate the PIRLS approach to reporting context questionnaire data, Exhibit 15.1 presents the PIRLS 2021 *Digital Self-Efficacy* scale. This scale was created for the first time for the PIRLS 2021 assessment. As the name suggests, this scale seeks to measure students' perceptions about their competence in using digital devices based on their responses to eight statements. For each of the

eight statements, students were asked to indicate their degree of agreement: “agree a lot,” “agree a little,” “disagree a little,” or “disagree a lot.” Using the PCM, the data from students’ responses were placed on a scale constructed so that the centerpoint of 10 was located at the mean score of the combined distribution of all PIRLS 2021 countries included in the item calibrations (details provided in the following section). The units of the scale were chosen so that 2 scale score points corresponded to the standard deviation of the combined distribution.

Students classified as having “high digital self-efficacy” had a scale score greater than or equal to a defined cutpoint on the scale, 10.5 for this scale, which corresponds to “agreeing a lot” with four of the eight statements and “agreeing a little” with the other four statements, on average. Students classified as having “low digital self-efficacy” had a score no higher than the cutpoint 8.4, corresponding to “disagreeing a little” with four of the statements, and “agreeing a little” with the other four. All other students (i.e., those with scale scores greater than 8.4 but less than 10.5) were classified as having “medium digital self-efficacy.”

Exhibit 15.1: Items in the PIRLS 2021 Digital Self-Efficacy Scale



Scaling Procedure for Context Questionnaire Scales

The PIRLS 2021 Context Questionnaire Scales were created using the Rasch partial credit model (PCM; Masters, 1982). Partial credit IRT scaling is based on a latent variable model that relates the probability that a person will choose a particular response to an item to that person's location on the underlying construct. The PCM was the basis for Muraki's (1992) Generalized Partial Credit Model (GPCM), described in [Chapter 10](#) for polytomous achievement items, which does not assume uniform discrimination across scale items. As such, the PCM is given by equation (10.3) where the slope parameters a_i for all items are equal to 1.

For each context scale, the procedure involved first estimating the parameters of the PCM at the international level, and then using the model with these parameters to estimate the score on the latent construct for each of the respondents. Depending on the scale, respondents may be students, parents, teachers, or school principals.

In the PIRLS 2021 *Digital Self-Efficacy* scale, the underlying construct is students' perceptions of their ability to utilize digital devices and technology, and students who generally agree with the eight statements are assumed to perceive more digital self-efficacy, and students who generally disagree with the statements are assumed to perceive less digital self-efficacy.

The PIRLS 2021 context questionnaire scaling was conducted using the ConQuest 2.0 software (Wu et al., 2007). In preparation for the context questionnaire scaling effort, the TIMSS & PIRLS International Study Center developed a system of programs that used ConQuest for each scale to calibrate the items and produce scale scores for each respondent. In PIRLS 2021, 57 countries and eight benchmarking participants administered the PIRLS assessment either in paper format (paperPIRLS) or in digital format (digitalPIRLS). In total, PIRLS 2021 collected data from approximately 400,000 students, 380,000 parents, 20,000 teachers, and 13,000 school principals.

The estimation of the item parameters, a procedure also known as item calibration, was conducted on the combined data from all countries that collected data at the end of the fourth grade school year in 2020 or 2021,¹ regardless of whether they participated in paperPIRLS or digitalPIRLS. As a result, 23 countries that participated in paperPIRLS and 17 countries that participated in digitalPIRLS contributed data to the item calibration for the context scales. Each country contributed equally to the calibration through the use of "senate weights," which sum to 500 for each country's student data. Any cases with fewer than two valid item responses on a scale were excluded from that scale's calibration, without any adjustment of the weights.

¹ While most PIRLS 2021 countries managed to administer the assessment to fourth grade students at the end of the school year as planned, several countries administered the PIRLS assessment to fifth grade students at the beginning of the following school year or delayed administration to a different fourth grade cohort in 2022. These countries were not included in item calibration for the context scales, but their respondents were assigned scores for all scales.

Exhibit 15.2 shows the international item parameters for the *Digital Self-Efficacy* scale. For each item, the delta parameter δ_i shows the estimated overall location of the item on the scale, and the tau parameters τ_{ij} show the location of the steps, expressed as deviations from delta ($b_{ij} = \delta_i - \tau_i$). To remove scale indeterminacy in calibration, the “items constraint” in ConQuest was used to set the mean of the item difficulty (location) parameters to zero. As shown in Exhibit 15.2, the sum of all δ_i is 0 for the *Digital Self-Efficacy* scale.

Exhibit 15.2: Item Parameters for the PIRLS 2021 *Digital Self-Efficacy* Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBG09A	-0.57278	0.23786	-0.66058	0.42272	0.99	0.14
ASBG09B	-0.19853	-0.10194	-0.46508	0.56702	1.03	0.15
ASBG09C	-0.28508	-0.27865	-0.30566	0.58431	0.99	0.14
ASBG09D	0.32435	-0.21649	-0.31783	0.53432	1.02	0.13
ASBG09E	0.39076	-0.05623	-0.26358	0.31981	1.06	0.13
ASBG09F	-0.01991	0.06771	-0.46301	0.39530	0.97	0.11
ASBG09G	0.36085	-0.28293	-0.35827	0.64120	1.01	0.13
ASBG09H	0.00034	0.34169	-0.08605	-0.25564	1.14	0.14

The two far-right columns in Exhibit 15.2 show two item fit statistics used to evaluate how well the model fit the data for each scale: the Rasch infit statistic (Wright & Masters, 1982) and the Q-index (Rost & von Davier, 1994). The Rasch infit item statistic reported by ConQuest (Wu et al., 2007) is a residual-based measure of how well the estimated difficulty (location) parameter fits the data, with values ranging from 0 to infinity. A value of 1.0 corresponds to optimal fit to the Rasch model. The TIMSS & PIRLS International Study Center used a value of 1.4 as an upper bound to indicate potential misfit, based on Adams and Khoo (1996) and Preuschoff (2010). As can be seen in the exhibit, the infit values obtained for the scale support the appropriate fit of the model for the *Digital Self-Efficacy* scale.

The second fit statistic is the Q-index of single item fit (Rost & von Davier, 1994) for the ordinal Rasch model. The fit of an item is evaluated with regard to the conditional probability of its observed response vector and does not depend on the item parameters. The Q-index statistics were produced using SAS (SAS Institute, 2016) with special Q-index macros (Estrada et al., 2018). The Q-index is standardized and ranges from 0 to 1 with a midpoint of 0.5. A value of 0 indicates a perfect fit to a Guttman pattern (which is a more extreme, deterministic prediction than the Rasch model), while a value of 1 indicates the most extreme, or least likely, response (Rost & von Davier, 1994). The midpoint of 0.5 indicates random response behavior, such that the item is independent of the item and the latent trait. As shown in Exhibit 15.2, the Q-index statistics for all items in the scale are below 0.2, indicating good fit.

Once the calibration was completed and international item parameters were estimated, individual scores for each respondent (students, parents, teachers, or principals) were estimated using weighted maximum likelihood estimation (Warm, 1989). All cases with valid responses for at least two items on a scale were assigned scale scores.

The scale scores produced by the weighted likelihood estimation were on the logit metric with estimated values ranging from approximately -5 to +5. To convert to a more convenient reporting metric, a linear transformation was applied to the international distribution of logit scores for each scale, so that the resulting distribution across all countries included in the calibration had a mean of 10 and a standard deviation of 2. This was done for new scales introduced in 2021, including the *Digital Self-Efficacy* scale. For existing scales, the transformation to the (10,2) reporting metric was applied when they were introduced in 2011 or 2016 (see next section).

Exhibit 15.3 presents the scale transformation constants applied to the international distribution of logit scores for the *Digital Self-Efficacy* scale to transform them to the (10,2) reporting metric. Each scale was transformed using a different set of transformation constants to put the estimates on the reporting scale to match the target metric of (10,2).

Exhibit 15.3: Scale Transformation Constants for the PIRLS 2021 *Digital Self-Efficacy* Scale

Scale Transformation Constants

A = 8.428655

Transformed Scale Score = $8.428655 + 1.949361 \cdot \text{Logit Scale Score}$

B = 1.949361

A property of a Rasch scale is that each raw score has a unique scale score associated with it. Exhibit 15.4 presents the equivalence table for the *Digital Self-Efficacy* scale, showing the association between the scale's raw scores and Rasch scores. From this exhibit, it can be seen that, for this particular scale, a raw score of 12 corresponds to a scale score of 8.4 (rounding up) and a raw score of 20 corresponds to a scale score of 10.5 (rounding down).² These scale scores were the cutpoints used to divide the scale into the high, medium, and low regions.

² Rounding in this fashion facilitated reporting. The highest cutpoint was rounded down to ensure that those with an unrounded scale score at the cutpoint (e.g., 10.50352 for the *Digital Self-Efficacy* scale) were included in the highest region. Similarly, the lower cutpoint was rounded up.

Exhibit 15.4: Equivalence Table of Raw and Transformed Scale Scores for the PIRLS 2021 *Digital Self-Efficacy Scale*

Raw Score	Transformed Scale Score	Cutpoint
0	2.95473	
1	4.64298	
2	5.40442	
3	5.91589	
4	6.31442	
5	6.64764	
6	6.93942	
7	7.20676	
8	7.45376	
9	7.68647	
10	7.90958	
11	8.12699	
12	8.34208	8.4
13	8.55821	
14	8.77882	
15	9.00789	
16	9.25019	
17	9.51164	
18	9.79644	
19	10.12084	
20	10.50352	10.5
21	10.97885	
22	11.61875	
23	12.60945	
24	14.77909	

To enable reporting analogous to the PIRLS International Benchmarks for the PIRLS achievement scales, the PIRLS context scales were divided into high, middle, and low regions, each of which has a content-referenced interpretation.

For the high, middle, and low regions of the context questionnaire scales, interpretation is content-referenced to the extent that the boundaries of the regions can be described in terms of identifiable combinations of response categories. The particular response combinations that

defined the regions' boundaries, or cutpoints, were based on a judgment by TIMSS & PIRLS International Study Center staff of what constituted a high or low region on each individual scale. For example, considering the items in the *Digital Self-Efficacy* scale, being in the high region of the scale and labeled as having “high digital self-efficacy” was decidedly equivalent to a student responding “agree a lot” to at least four of the eight statements and “agree a little” to the other four. Similarly, a student who responded “disagree a little” to four of the statements and “agree a little” to the other four would be labeled as having “low digital self-efficacy.”

The scale region cutpoints were quantified by assigning a numeric value to each response category such that each respondent's responses to the scale's items could be expressed as a “raw score.” Assigning 0 to “Disagree a lot,” 1 to “Disagree a little,” 2 to “Agree a little,” and 3 to “Agree a lot,” results in raw scores on the *Digital Self-Efficacy* scale ranging from 0 (“disagree a lot” with all eight statements) to 24 (“agree a lot” to all eight). A student who “agreed a lot” with four statements and “agreed a little” with the other four would have a raw score of 20 ($4 \times 3 + 4 \times 2$). Following this approach, a student with a raw score of 20 or more would be in the “high digital self-efficacy” region of the scale. Similarly, “agreeing a little” with four statements and “disagreeing a little” with four statements would result in a raw score of 12 ($4 \times 2 + 4 \times 1$) so that a student with a raw score less than or equal to 12 would be in the “low digital self-efficacy” region. Students with raw scores between 12 and 20 were assigned to the “moderate digital self-efficacy” region.

Some scales include items that required reverse coding before assigning a “raw score” to each response category for scaling. Such items included those stated in a “negative” way, such that agreeing with the item would imply that the respondent has a lower level of the underlying latent construct. For example, the two items (ASBH11A and ASBH11D) in the *Parents Like Reading* scale (shown later in Exhibit 15.6) were reverse-coded before estimating the model parameters, producing scale scores, and determining cutpoints for the scale regions.

Transforming Scale Scores onto Existing Reporting Metrics

Using IRT scales to measure background constructs was first introduced in PIRLS 2011, and a conscious effort was made in PIRLS 2016 to increase the number of items contributing to each scale to enhance their reliability. As described in [Chapter 2](#), many of the scales included in the PIRLS 2021 Context Questionnaires were brought forward from 2016 because they continued to address important factors of interest across several PIRLS cycles. Such scales were either brought forward in their entirety or modified for PIRLS 2021.

For the convenience of participating countries and benchmarking entities, scales with no changes or with minor modifications were transformed to place the context questionnaire data from multiple cycles on a common metric, established either in 2011 or 2016 (Martin et al., 2012; Martin et al., 2017). However, the psychometric behavior of a scale within any given country may

not remain stable over time, especially if changes were made to national translations or adaptations between cycles.

This section describes these transformations for placing the PIRLS 2021 data for these established context questionnaire scales onto their existing reporting metrics and validating this process. PIRLS 2021 context scales brought forward from 2016 have a mix of items common to both 2016 and 2021 and items newly added for PIRLS 2021. Generally, a context questionnaire scale was considered as a candidate for transformation to its existing reporting metric in 2021 if it had a sufficient number of common items.

Exhibit 15.5 lists all the PIRLS 2021 Context Questionnaire Scales included in the [PIRLS 2021 International Database](#). Columns indicate the particular assessment year the scale was established (PIRLS 2011, 2016, or 2021), and whether the scale results are included in the [PIRLS 2021 International Results in Reading](#) report. Out of 22 context scales, four were newly created in 2021 and 18 were established in either 2011 or 2016. The PIRLS 2021 data for the 18 existing scales were transformed to be reported on existing metrics.

Exhibit 15.5: List of PIRLS 2021 Context Questionnaire Scales

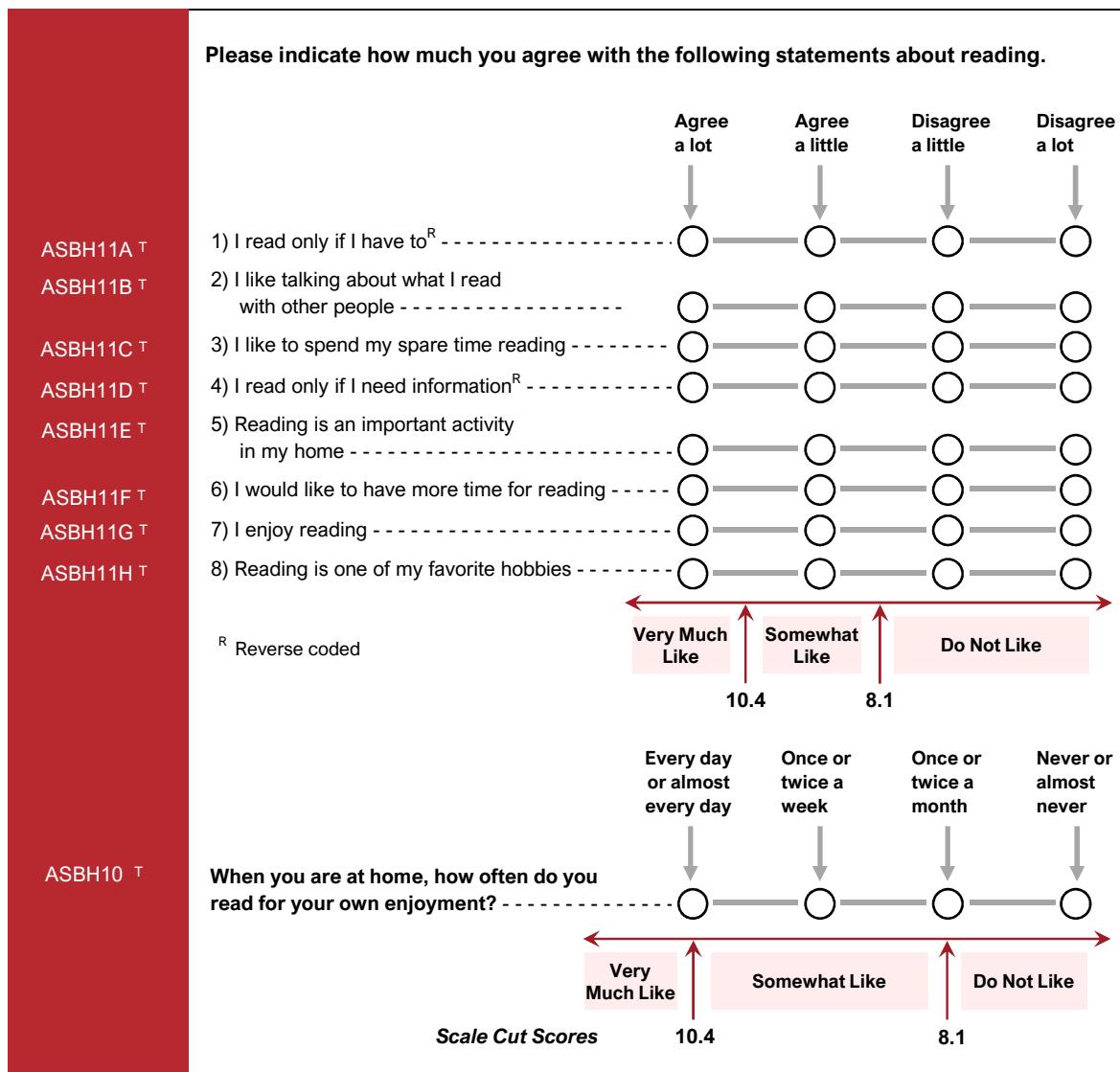
Context Scales	Year Scale Metric Established	Included in International Results Report
Digital Self-Efficacy	2021	
Disorderly Behavior During Reading Lessons	2021	
Student Bullying	2021	
Students Confident in Reading	2016	✓
Students Engaged in Reading Lessons	2016	
Students Like Reading	2016	✓
Sense of School Belonging	2016	
Early Literacy Activities	2011	✓
Early Numeracy Activities	2011	
Early Literacy and Numeracy Activities	2011	
Early Literacy Tasks	2011	✓
Home Resources for Learning	2011	
Home Socioeconomic Status	2021	✓
Parents Like Reading	2011	✓
Parents' Perceptions of Their Child's School	2016	
Classroom Teaching Limited by Student Not Ready for Instruction	2016	

Exhibit 15.5: List of PIRLS 2021 Context Questionnaire Scales (Continued)

Context Scales	Year Scale Metric Established	Included in International Results Report
Safe and Orderly School	2011	
School Emphasis on Academic Success – Teachers' Reports	2016	
Teachers' Job Satisfaction	2016	
Instruction Affected by Reading Resource Shortages	2011	✓
School Discipline	2011	✓
School Emphasis on Academic Success – Principals' Reports	2016	✓

Exhibit 15.6 shows the PIRLS 2021 *Parents Like Reading* scale, which was originally established in PIRLS 2011. This scale measures how much parents like reading in terms of their level of agreement with nine statements about reading. Statements expressing negative sentiment were reverse-coded for the scaling. All nine statements were common to the PIRLS 2016 and PIRLS 2021 versions of this scale.

Exhibit 15.6: Items in the PIRLS 2021 Parents Like Reading Scale



The IRT calibration and scoring procedures for the 18 scales established in 2011 or 2016 were the same as those used for the newly developed context scales. The data for the nine items of the *Parents Like Reading* scale were calibrated across the PIRLS 2021 data for all countries included in calibration using the Rasch partial credit model. Through this calibration, item parameters were estimated on a logit scale specific to the 2021 assessment cycle. Following calibration, weighted maximum likelihood estimation was used to derive Rasch logit scale scores based on these estimated item parameters for all countries and benchmarking participants. Although similar, the PIRLS 2021 logit metric is not identical to the PIRLS 2016 logit metric, and thus the PIRLS 2021 scores first needed to be transformed to place them on the 2016 metric.

This transformation was a two-step process. The first transformation—with linear constants A_1 and B_1 —placed the PIRLS 2021 logit scale scores on the PIRLS 2016 logit metric. The second transformation—with linear constants A_2 and B_2 —transformed the PIRLS 2016 logit metric to the PIRLS scale reporting metric, which used the (10,2) metric established in 2011. To increase the efficiency of this transformation process and reduce rounding errors, both transformations were combined into one calculation using the equations below to create a set of final scale transformation constants, A and B :

$$B = B_2 \cdot B_1$$

$$A = A_2 + B_2 \cdot A_1$$

The first set of transformation constants, A_1 and B_1 , were obtained by applying the mean/sigma method (Kolen & Brennan, 2004; Marco, 1977) to the two sets of common item parameters: one from the current calibration of PIRLS 2021 context data and the other from the previous calibration of PIRLS 2016 data. The mean and standard deviation of the estimates of the item threshold parameters, that is, the difference between item location and item step parameter, $b_{ij} = \delta_i - \tau_{ij}$, were first found over all common items and all categories for each calibration. The transformation constants A_1 and B_1 were calculated based on these two sets of means and standard deviations as follows:

$$B_1 = \frac{SD_{c16}}{SD_{c21}}$$

$$A_1 = MN_{c16} - \frac{SD_{c16}}{SD_{c21}} \cdot MN_{c21}$$

where MN_{c21} and SD_{c21} were the mean and standard deviation of the estimates ($b_{ij} = \delta_i - \tau_{ij}$) of all common items and categories from the current 2021 calibration; MN_{c16} and SD_{c16} were the mean and standard deviation of the estimates ($b_{ij} = \delta_i - \tau_{ij}$) of all common items and categories from the previous 2016 calibration.

The second set of transformation constants, A_2 and B_2 , were retrieved from the A and B scale transformations applied in 2016. The A and B scale transformations were produced the same way in 2016, where A_1 and B_1 were obtained by applying the mean/sigma method to the two sets of common item parameters estimated from PIRLS 2016 data and PIRLS 2011 data, respectively. In 2016, A_2 and B_2 were retrieved from the A and B constants produced in 2011, which placed the PIRLS 2011 logit metric on the (10,2) reporting metric.

Exhibit 15.7 presents the final scale transformation constants applied to the PIRLS 2021 international distribution of logit scale scores for the *Parents Like Reading* scale to transform them onto the existing (10,2) reporting metric.

Exhibit 15.7: Scale Transformation Constants for the PIRLS 2021 *Parents Like Reading* Scale

Scale Transformation Constants

A = 8.166833

Transformed Scale Score = $8.166833 + 1.363641 \cdot \text{Logit Scale Score}$

B = 1.363641

To validate the transformation of existing scales, the TIMSS & PIRLS International Study Center conducted extensive analyses to examine item behavior in both 2016 and 2021 cycles. Item parameter estimates for the common items were compared across the two cycles by examining the differences between the PIRLS 2021 item parameter estimates after transformation to the PIRLS 2016 logit metric, and the PIRLS 2016 item parameter estimates. The transformation constants used for transforming item parameters and for the purpose of this evaluation were the same as those for the first transformation, A_1 and B_1 , described above. Exhibit 15.8 presents the differences between these estimates for the *Parents Like Reading* scale. As can be seen in the exhibit, the differences were acceptable for both location and step parameters, with most deviations being less than 0.1.

Exhibit 15.8: Differences in Parameter Estimates for Common Items of the *Parents Like Reading* Scale

PIRLS 2021 Item	PIRLS 2016 Item	Difference in delta	Difference in tau_1	Difference in tau_2	Difference in tau_3
ASBH11A ^R	ASBH12A	0.04611	-0.05225	-0.01949	0.07174
ASBH11B	ASBH12B	-0.12406	-0.00783	0.10132	-0.09349
ASBH11C	ASBH12C	-0.06202	-0.08094	0.08460	-0.00366
ASBH11D ^R	ASBH12D	0.00558	-0.03721	0.00132	0.03589
ASBH11E	ASBH12E	-0.06597	-0.00842	0.07879	-0.07037
ASBH11F	ASBH12F	0.05093	0.00450	0.01811	-0.02261
ASBH11G	ASBH12G	0.07626	-0.10394	0.08414	0.01980
ASBH11H	ASBH12H	0.04447	-0.06998	0.05068	0.01930
ASBH10	ASBH11	0.02871	-0.07456	0.04550	0.02906

^R Reverse coded

Reliability and Validity of the PIRLS 2021 Context Questionnaire Scales

As evidence that the context questionnaire scales provide comparable measurement across countries, reliability coefficients were computed for each scale for every country and benchmarking participant. A principal component analysis (Hotelling, 1933) of the responses to the scale was conducted within each country. Exhibit 15.9 presents the results of this analysis for the *Parents Like*

Reading scale. The Cronbach's Alpha measure of internal consistency were generally acceptable (Peterson, 1994; Taber, 2017), with most above 0.8 and many above 0.9. The exhibit also shows the percentage of variance among the scale items accounted for by the first principal component in each country. This was sufficiently high in most countries, indicating that the items measuring the contextual construct could be adequately represented by a single scale. The component loadings of each item in the principal component analysis are positive and substantial, indicating a strong correlation between each item and the scale in every country.

Exhibit 15.9: Cronbach's Alpha (Internal Consistency) Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 *Parents Like Reading* Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBH1A _R	ASBH1B	ASBH1C	ASBH1D _R	ASBH1E	ASBH1F	ASBH1G	ASBH1H	ASBH1I _R
Albania	0.80	45	0.32	0.63	0.79	0.30	0.76	0.76	0.82	0.82	0.60
Australia	—	—	—	—	—	—	—	—	—	—	—
Austria	0.91	58	0.76	0.55	0.87	0.75	0.81	0.67	0.86	0.85	0.70
Azerbaijan	0.83	51	0.00	0.54	0.76	0.00	0.73	0.70	0.84	0.83	0.53
Bahrain	0.82	44	0.46	0.51	0.79	0.49	0.69	0.67	0.82	0.83	0.59
Belgium (Flemish)	0.91	60	0.76	0.56	0.88	0.76	0.75	0.70	0.88	0.86	0.73
Belgium (French)	0.90	56	0.72	0.52	0.84	0.74	0.75	0.70	0.86	0.86	0.69
Brazil	0.85	46	0.50	0.66	0.80	0.52	0.67	0.63	0.81	0.82	0.64
Bulgaria	0.92	62	0.64	0.73	0.89	0.57	0.82	0.84	0.91	0.88	0.72
Chinese Taipei	0.86	50	0.58	0.46	0.78	0.55	0.79	0.79	0.86	0.87	0.55
Croatia	0.90	56	0.77	0.57	0.86	0.75	0.75	0.68	0.86	0.85	0.61
Cyprus	0.86	49	0.62	0.44	0.83	0.69	0.73	0.66	0.83	0.85	0.55
Czech Republic	0.91	58	0.77	0.63	0.86	0.76	0.71	0.69	0.87	0.90	0.63
Denmark	0.90	57	0.75	0.58	0.88	0.77	0.74	0.64	0.86	0.82	0.69
Egypt	0.79	48	-0.07	0.73	0.80	-0.18	0.82	0.82	0.88	0.86	0.53
England	—	—	—	—	—	—	—	—	—	—	—
Finland	0.91	60	0.75	0.60	0.88	0.78	0.83	0.66	0.87	0.87	0.68
France	0.88	52	0.72	0.53	0.83	0.71	0.65	0.60	0.83	0.85	0.67
Georgia	0.81	44	0.50	0.56	0.79	0.47	0.64	0.67	0.81	0.81	0.58
Germany	0.90	57	0.79	0.58	0.88	0.68	0.72	0.67	0.87	0.85	0.68
Hong Kong SAR	0.85	49	0.49	0.55	0.82	0.41	0.76	0.75	0.86	0.86	0.61
Hungary	0.89	54	0.69	0.60	0.85	0.71	0.70	0.70	0.84	0.85	0.62
Iran, Islamic Rep. of	0.79	42	0.36	0.50	0.78	0.26	0.69	0.75	0.81	0.82	0.58
Ireland	0.89	55	0.77	0.59	0.83	0.76	0.70	0.58	0.82	0.86	0.70
Israel	0.86	49	0.70	0.50	0.83	0.66	0.70	0.61	0.80	0.84	0.60
Italy	0.87	50	0.66	0.54	0.82	0.68	0.71	0.65	0.81	0.83	0.62
Jordan	0.82	46	0.26	0.67	0.79	0.12	0.80	0.76	0.84	0.85	0.56
Kazakhstan	0.78	42	0.21	0.53	0.79	0.26	0.74	0.75	0.79	0.82	0.56
Kosovo	0.74	39	0.31	0.43	0.78	0.36	0.68	0.74	0.80	0.75	0.57
Latvia	0.87	51	0.70	0.43	0.83	0.72	0.66	0.67	0.84	0.84	0.63
Lithuania	0.89	55	0.73	0.60	0.82	0.70	0.73	0.66	0.86	0.82	0.72
Macao SAR	0.84	48	0.49	0.50	0.77	0.48	0.76	0.77	0.86	0.86	0.58
Malta	0.87	50	0.69	0.51	0.81	0.70	0.62	0.69	0.83	0.85	0.62
Montenegro	0.82	43	0.60	0.44	0.77	0.64	0.65	0.58	0.80	0.76	0.56
Morocco	0.82	50	-0.01	0.77	0.80	-0.13	0.82	0.78	0.89	0.86	0.67
Netherlands	0.91	59	0.83	0.56	0.88	0.81	0.65	0.58	0.89	0.87	0.76
New Zealand	0.89	55	0.79	0.55	0.84	0.77	0.70	0.60	0.83	0.87	0.67
North Macedonia	0.84	48	0.46	0.54	0.81	0.50	0.77	0.69	0.84	0.84	0.64
Northern Ireland	0.91	60	0.82	0.66	0.87	0.79	0.71	0.61	0.84	0.89	0.72

Exhibit 15.9: Cronbach's Alpha (Internal Consistency) Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 *Parents Like Reading* Scale (Continued)

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ASBH11A ^R	ASBH11B	ASBH11C	ASBH11D ^R	ASBH11E	ASBH11F	ASBH11G	ASBH11H	ASBH11I	ASBH11J
Norway (5)	0.89	55	0.75	0.56	0.86	0.77	0.74	0.58	0.85	0.82	0.67	
Oman	0.78	41	0.26	0.53	0.77	0.35	0.71	0.70	0.81	0.82	0.53	
Poland	0.91	58	0.73	0.69	0.86	0.77	0.78	0.68	0.85	0.82	0.64	
Portugal	0.87	51	0.71	0.50	0.81	0.70	0.73	0.64	0.81	0.84	0.60	
Qatar	0.81	43	0.45	0.50	0.77	0.48	0.72	0.67	0.82	0.84	0.52	
Russian Federation	0.87	50	0.59	0.56	0.83	0.61	0.68	0.72	0.85	0.84	0.62	
Saudi Arabia	0.81	43	0.40	0.49	0.78	0.34	0.75	0.71	0.83	0.84	0.55	
Serbia	0.86	50	0.69	0.52	0.84	0.67	0.74	0.59	0.85	0.80	0.60	
Singapore	0.86	50	0.59	0.45	0.82	0.55	0.72	0.75	0.86	0.87	0.62	
Slovak Republic	0.91	60	0.76	0.66	0.86	0.69	0.76	0.74	0.88	0.89	0.70	
Slovenia	0.89	54	0.76	0.42	0.87	0.66	0.71	0.71	0.88	0.84	0.64	
South Africa	0.79	42	0.21	0.63	0.79	0.22	0.70	0.65	0.83	0.83	0.63	
Spain	0.89	53	0.72	0.54	0.84	0.74	0.68	0.65	0.81	0.86	0.67	
Sweden	0.87	51	0.71	0.56	0.87	0.74	0.66	0.56	0.86	0.81	0.61	
Turkiye	0.89	57	0.59	0.75	0.83	0.33	0.83	0.80	0.88	0.88	0.74	
United Arab Emirates	0.80	43	0.39	0.54	0.79	0.30	0.74	0.70	0.83	0.85	0.54	
United States	—	—	—	—	—	—	—	—	—	—	—	
Uzbekistan	0.69	37	0.22	0.47	0.70	0.22	0.67	0.74	0.79	0.80	0.48	
Benchmarking Participants												
Alberta, Canada	0.88	53	0.73	0.48	0.81	0.72	0.73	0.66	0.82	0.84	0.67	
British Columbia, Canada	0.88	53	0.73	0.54	0.81	0.72	0.70	0.65	0.85	0.84	0.64	
Newfoundland & Labrador, Can.	0.91	58	0.82	0.52	0.86	0.79	0.69	0.67	0.85	0.88	0.74	
Quebec, Canada	0.90	57	0.76	0.61	0.85	0.75	0.73	0.64	0.86	0.86	0.71	
Moscow City, Russian Fed.	0.87	50	0.65	0.54	0.81	0.66	0.68	0.63	0.84	0.84	0.62	
South Africa (6)	0.79	42	0.21	0.60	0.80	0.27	0.71	0.66	0.82	0.81	0.63	
Abu Dhabi, UAE	0.80	43	0.35	0.58	0.79	0.23	0.74	0.71	0.83	0.85	0.54	
Dubai, UAE	0.82	45	0.50	0.44	0.81	0.50	0.73	0.66	0.83	0.86	0.58	

^R Reverse coded

A dash (—) indicates comparable data not available.

A positive relationship with reading achievement is an important aspect of validity for the PIRLS context questionnaire scales. The average correlations between scale scores and reading achievement vary both across scales and among countries. For example, the PIRLS 2021 *Home Socioeconomic Status* scale showed a stronger relationship with students' reading achievement than some teacher-based scales, such as the *Teachers' Job Satisfaction* scale (see Appendices 15B and 15C).

For the *Parents Like Reading* scale, Exhibit 15.10 presents the r Pearson correlation with reading achievement in PIRLS 2021 for each country, together with R^2 , which is the proportion of variance in reading achievement attributable to the scale. These figures show a small to moderate relationship with achievement across participating countries. Also shown is the proportion of variance in achievement attributable to differences between the regions of the *Parents Like Reading* scale. This is very similar to the proportion of variance explained by the scale as a whole, indicating that dividing the scale into regions loses little of its power to account for achievement differences.

Exhibit 15.10: Relationship Between the PIRLS 2021 *Parents Like Reading Scale* and PIRLS 2021 Reading Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	R ²	
Albania	0.21	0.05	0.04
Australia	–	–	–
Austria	0.33	0.11	0.10
Azerbaijan	0.12	0.01	0.02
Bahrain	0.20	0.04	0.03
Belgium (Flemish)	0.23	0.05	0.04
Belgium (French)	0.29	0.08	0.09
Brazil	0.16	0.02	0.02
Bulgaria	0.37	0.14	0.13
Chinese Taipei	0.17	0.03	0.02
Croatia	0.20	0.04	0.04
Cyprus	0.23	0.05	0.05
Czech Republic	0.23	0.05	0.05
Denmark	0.23	0.05	0.04
Egypt	0.12	0.02	0.02
England	–	–	–
Finland	0.26	0.07	0.07
France	0.25	0.06	0.05
Georgia	0.17	0.03	0.03
Germany	0.29	0.08	0.07
Hong Kong SAR	0.12	0.01	0.01
Hungary	0.27	0.07	0.06
Iran, Islamic Rep. of	0.24	0.06	0.05
Ireland	0.23	0.05	0.05
Israel	0.20	0.04	0.05
Italy	0.21	0.04	0.04
Jordan	0.15	0.02	0.02
Kazakhstan	0.12	0.01	0.02
Kosovo	0.21	0.05	0.04
Latvia	0.21	0.04	0.04
Lithuania	0.22	0.05	0.05
Macao SAR	0.11	0.01	0.01
Malta	0.13	0.02	0.02
Montenegro	0.24	0.06	0.05
Morocco	0.23	0.05	0.05
Netherlands	0.24	0.06	0.05
New Zealand	0.25	0.06	0.06
North Macedonia	0.23	0.05	0.05
Northern Ireland	0.19	0.03	0.04
Norway (5)	0.22	0.05	0.04
Oman	0.13	0.02	0.01

Exhibit 15.10: Relationship Between the PIRLS 2021 *Parents Like Reading Scale* and PIRLS 2021 Reading Achievement (Continued)

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	R ²	
Poland	0.19	0.04	0.03
Portugal	0.21	0.04	0.04
Qatar	0.10	0.01	0.01
Russian Federation	0.19	0.04	0.03
Saudi Arabia	0.09	0.01	0.01
Serbia	0.25	0.06	0.06
Singapore	0.20	0.04	0.04
Slovak Republic	0.27	0.07	0.06
Slovenia	0.22	0.05	0.04
South Africa	0.20	0.04	0.04
Spain	0.23	0.05	0.05
Sweden	0.20	0.04	0.03
Turkiye	0.33	0.11	0.10
United Arab Emirates	0.14	0.02	0.02
United States	–	–	–
Uzbekistan	0.14	0.02	0.02
International Median	0.21	0.05	0.04
Benchmarking Participants			
Alberta, Canada	0.18	0.03	0.03
British Columbia, Canada	0.19	0.04	0.04
Newfoundland & Labrador, Can.	0.18	0.03	0.03
Quebec, Canada	0.17	0.03	0.04
Moscow City, Russian Fed.	0.17	0.03	0.03
South Africa (6)	0.20	0.04	0.04
Abu Dhabi, UAE	0.15	0.02	0.03
Dubai, UAE	0.18	0.03	0.03

A dash (–) indicates comparable data not available.

Detailed information on each of the PIRLS 2021 Context Questionnaire scales, including item parameter estimates and scale statistics described above, can be found in Appendices 15A through 15D for scales based on reports from students, their parents,³ teachers, and school principals, respectively.

³ The *Home Resources for Learning* scale, based on data collected from students and their parents, is presented in Appendix 15B.

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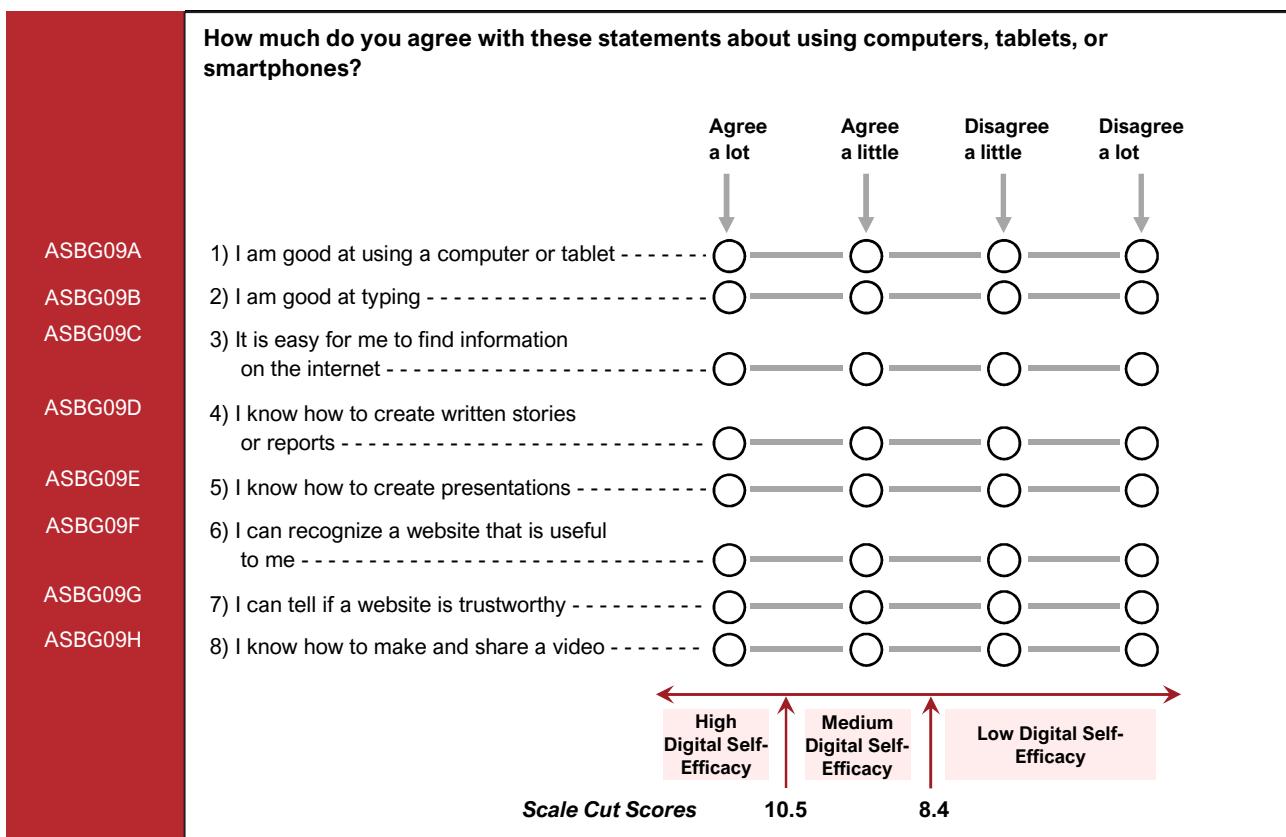
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Appendix 15A: PIRLS 2021 Context Questionnaire Scales Based on Students' Reports

Digital Self-Efficacy

About the Scale

Students were scored according to their responses to eight statements on the *Digital Self-Efficacy* scale. Cut scores divide the scale into three categories. Students with **High Digital Self-Efficacy** had a score at or above the cut score corresponding to “agreeing a lot” with four of the eight statements and “agreeing a little” with the other four statements, on average. Students with **Low Digital Self-Efficacy** had a score at or below the cut score corresponding to “disagreeing a little” to four of the eight statements and “agreeing a little” with the other four statements, on average. All other students had **Medium Digital Self-Efficacy**.



Item Parameters for the PIRLS 2021 *Digital Self-Efficacy* Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBG09A	-0.57278	0.23786	-0.66058	0.42272	0.99	0.14
ASBG09B	-0.19853	-0.10194	-0.46508	0.56702	1.03	0.15
ASBG09C	-0.28508	-0.27865	-0.30566	0.58431	0.99	0.14
ASBG09D	0.32435	-0.21649	-0.31783	0.53432	1.02	0.13
ASBG09E	0.39076	-0.05623	-0.26358	0.31981	1.06	0.13
ASBG09F	-0.01991	0.06771	-0.46301	0.39530	0.97	0.11
ASBG09G	0.36085	-0.28293	-0.35827	0.64120	1.01	0.13
ASBG09H	0.00034	0.34169	-0.08605	-0.25564	1.14	0.14

Scale Transformation Constants for the PIRLS 2021 *Digital Self-Efficacy* Scale

Scale Transformation Constants

A = 8.428655

B = 1.949361

Transformed Scale Score = 8.428655 + 1.949361 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the
PIRLS 2021 Digital Self-Efficacy Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	2.95473	
1	4.64298	
2	5.40442	
3	5.91589	
4	6.31442	
5	6.64764	
6	6.93942	
7	7.20676	
8	7.45376	
9	7.68647	
10	7.90958	
11	8.12699	
12	8.34208	8.4
13	8.55821	
14	8.77882	
15	9.00789	
16	9.25019	
17	9.51164	
18	9.79644	
19	10.12084	
20	10.50352	10.5
21	10.97885	
22	11.61875	
23	12.60945	
24	14.77909	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Digital Self-Efficacy Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item							
			ASBG09A	ASBG09B	ASBG09C	ASBG09D	ASBG09E	ASBG09F	ASBG09G	ASBG09H
Albania	0.78	39	0.65	0.57	0.63	0.65	0.63	0.67	0.56	0.62
Australia	0.76	37	0.50	0.56	0.65	0.65	0.63	0.70	0.65	0.53
Austria	0.74	37	0.54	0.57	0.65	0.57	0.58	0.72	0.68	0.51
Azerbaijan	0.73	35	0.58	0.53	0.55	0.60	0.61	0.65	0.66	0.51
Bahrain	0.74	36	0.59	0.57	0.55	0.64	0.63	0.63	0.60	0.55
Belgium (Flemish)	0.73	35	0.58	0.54	0.63	0.58	0.58	0.65	0.62	0.55
Belgium (French)	0.77	39	0.55	0.62	0.65	0.54	0.53	0.74	0.72	0.59
Brazil	0.75	36	0.56	0.61	0.63	0.61	0.60	0.68	0.54	0.56
Bulgaria	0.84	48	0.69	0.69	0.72	0.72	0.62	0.72	0.69	0.67
Chinese Taipei	0.78	40	0.50	0.64	0.68	0.69	0.66	0.65	0.63	0.60
Croatia	0.76	38	0.60	0.58	0.67	0.62	0.61	0.66	0.68	0.51
Cyprus	0.76	37	0.52	0.63	0.63	0.63	0.62	0.68	0.63	0.54
Czech Republic	0.77	40	0.62	0.61	0.64	0.60	0.59	0.71	0.69	0.55
Denmark	0.76	38	0.55	0.61	0.71	0.61	0.56	0.69	0.66	0.53
Egypt	0.86	49	0.66	0.68	0.71	0.66	0.65	0.76	0.72	0.72
England	0.72	34	0.52	0.57	0.62	0.62	0.60	0.64	0.60	0.50
Finland	0.79	41	0.63	0.60	0.69	0.69	0.67	0.68	0.62	0.53
France	0.75	37	0.57	0.57	0.63	0.56	0.60	0.71	0.65	0.56
Georgia	0.73	35	0.46	0.48	0.57	0.64	0.61	0.70	0.65	0.58
Germany	0.78	40	0.59	0.59	0.65	0.66	0.62	0.69	0.69	0.55
Hong Kong SAR	0.77	40	0.54	0.43	0.68	0.73	0.69	0.69	0.65	0.60
Hungary	0.75	37	0.60	0.63	0.62	0.62	0.56	0.65	0.61	0.53
Iran, Islamic Rep. of	0.78	39	0.56	0.66	0.62	0.56	0.64	0.68	0.66	0.64
Ireland	0.74	37	0.61	0.59	0.64	0.59	0.57	0.68	0.59	0.56
Israel	0.75	37	0.56	0.59	0.66	0.59	0.59	0.66	0.65	0.53
Italy	0.74	36	0.56	0.58	0.63	0.50	0.57	0.71	0.68	0.53
Jordan	0.87	52	0.68	0.66	0.70	0.76	0.74	0.78	0.73	0.73
Kazakhstan	0.76	37	0.54	0.56	0.58	0.68	0.63	0.65	0.63	0.59
Kosovo	0.73	35	0.59	0.45	0.66	0.59	0.59	0.67	0.56	0.57
Latvia	0.76	38	0.59	0.61	0.64	0.64	0.61	0.68	0.62	0.53
Lithuania	0.75	36	0.53	0.57	0.63	0.63	0.63	0.64	0.64	0.55
Macao SAR	0.74	36	0.47	0.50	0.65	0.66	0.68	0.66	0.62	0.50
Malta	0.71	33	0.45	0.56	0.60	0.62	0.63	0.61	0.61	0.50
Montenegro	0.74	35	0.52	0.52	0.54	0.62	0.60	0.72	0.70	0.48
Morocco	0.85	47	0.72	0.72	0.72	0.64	0.64	0.74	0.68	0.64
Netherlands	0.71	34	0.49	0.54	0.62	0.60	0.56	0.67	0.67	0.48
New Zealand	0.76	39	0.59	0.62	0.68	0.63	0.63	0.64	0.63	0.54
North Macedonia	0.81	43	0.59	0.62	0.64	0.67	0.66	0.75	0.70	0.59
Northern Ireland	0.73	36	0.54	0.60	0.64	0.62	0.61	0.65	0.58	0.50

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Digital Self-Efficacy Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item							
			ASBG09A	ASBG09B	ASBG09C	ASBG09D	ASBG09E	ASBG09F	ASBG09G	ASBG09H
Norway (5)	0.72	35	0.54	0.53	0.66	0.67	0.60	0.63	0.61	0.46
Oman	0.74	35	0.52	0.53	0.55	0.61	0.64	0.65	0.61	0.59
Poland	0.72	36	0.61	0.59	0.66	0.58	0.57	0.69	0.56	0.50
Portugal	0.74	37	0.55	0.58	0.61	0.62	0.62	0.67	0.64	0.54
Qatar	0.69	32	0.50	0.53	0.56	0.63	0.60	0.58	0.59	0.51
Russian Federation	0.74	36	0.55	0.60	0.59	0.67	0.64	0.63	0.58	0.52
Saudi Arabia	0.75	35	0.53	0.59	0.47	0.68	0.68	0.57	0.63	0.59
Serbia	0.73	35	0.54	0.53	0.54	0.57	0.55	0.73	0.71	0.55
Singapore	0.77	39	0.57	0.58	0.64	0.69	0.67	0.63	0.64	0.56
Slovak Republic	0.78	41	0.65	0.60	0.68	0.64	0.61	0.72	0.70	0.49
Slovenia	0.79	41	0.66	0.65	0.69	0.62	0.58	0.67	0.67	0.59
South Africa	0.80	41	0.67	0.63	0.70	0.56	0.64	0.70	0.67	0.57
Spain	0.72	34	0.56	0.58	0.55	0.62	0.59	0.64	0.62	0.51
Sweden	0.75	37	0.58	0.59	0.67	0.50	0.53	0.70	0.70	0.55
Turkiye	0.74	35	0.54	0.59	0.57	0.57	0.58	0.66	0.66	0.54
United Arab Emirates	0.73	34	0.50	0.55	0.61	0.64	0.62	0.59	0.60	0.55
United States	0.72	34	0.48	0.55	0.61	0.64	0.64	0.63	0.61	0.45
Uzbekistan	0.82	44	0.67	0.48	0.72	0.59	0.62	0.75	0.75	0.67
Benchmarking Participants										
Alberta, Canada	0.77	39	0.54	0.59	0.66	0.63	0.61	0.68	0.67	0.57
British Columbia, Canada	0.78	40	0.56	0.55	0.70	0.65	0.63	0.71	0.66	0.56
Newfoundland & Labrador, Can.	0.75	37	0.52	0.54	0.64	0.66	0.65	0.67	0.62	0.53
Quebec, Canada	0.73	35	0.49	0.54	0.65	0.55	0.56	0.71	0.71	0.51
Moscow City, Russian Fed.	0.71	33	0.50	0.59	0.59	0.65	0.63	0.58	0.55	0.50
South Africa (6)	0.78	39	0.63	0.59	0.67	0.59	0.65	0.70	0.66	0.45
Abu Dhabi, UAE	0.74	35	0.51	0.60	0.64	0.65	0.63	0.58	0.59	0.52
Dubai, UAE	0.73	35	0.52	0.54	0.58	0.64	0.62	0.61	0.62	0.56

Relationship Between the PIRLS 2021 Digital Self-Efficacy Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.10	0.01	0.01
Australia	0.25	0.06	0.07
Austria	0.04	0.00	0.00
Azerbaijan	0.15	0.02	0.02
Bahrain	0.16	0.02	0.03
Belgium (Flemish)	0.06	0.00	0.00
Belgium (French)	-0.04	0.00	0.00
Brazil	0.08	0.01	0.02
Bulgaria	0.26	0.07	0.08
Chinese Taipei	0.08	0.01	0.01
Croatia	0.12	0.02	0.03
Cyprus	0.12	0.01	0.02
Czech Republic	0.02	0.00	0.00
Denmark	0.15	0.02	0.03
Egypt	-0.01	0.00	0.00
England	0.19	0.04	0.05
Finland	0.07	0.00	0.01
France	0.02	0.00	0.00
Georgia	0.13	0.02	0.02
Germany	0.03	0.00	0.00
Hong Kong SAR	0.11	0.01	0.02
Hungary	0.08	0.01	0.01
Iran, Islamic Rep. of	0.21	0.04	0.04
Ireland	0.08	0.01	0.01
Israel	0.16	0.03	0.03
Italy	0.02	0.00	0.00
Jordan	0.14	0.02	0.02
Kazakhstan	0.15	0.02	0.02
Kosovo	0.11	0.01	0.02
Latvia	0.16	0.02	0.04
Lithuania	0.12	0.01	0.02
Macao SAR	0.12	0.02	0.01
Malta	0.15	0.02	0.04
Montenegro	0.06	0.00	0.01
Morocco	0.18	0.03	0.02
Netherlands	0.05	0.00	0.01
New Zealand	0.14	0.02	0.03
North Macedonia	0.13	0.02	0.02
Northern Ireland	0.17	0.03	0.04
Norway (5)	0.12	0.01	0.02
Oman	0.07	0.00	0.01

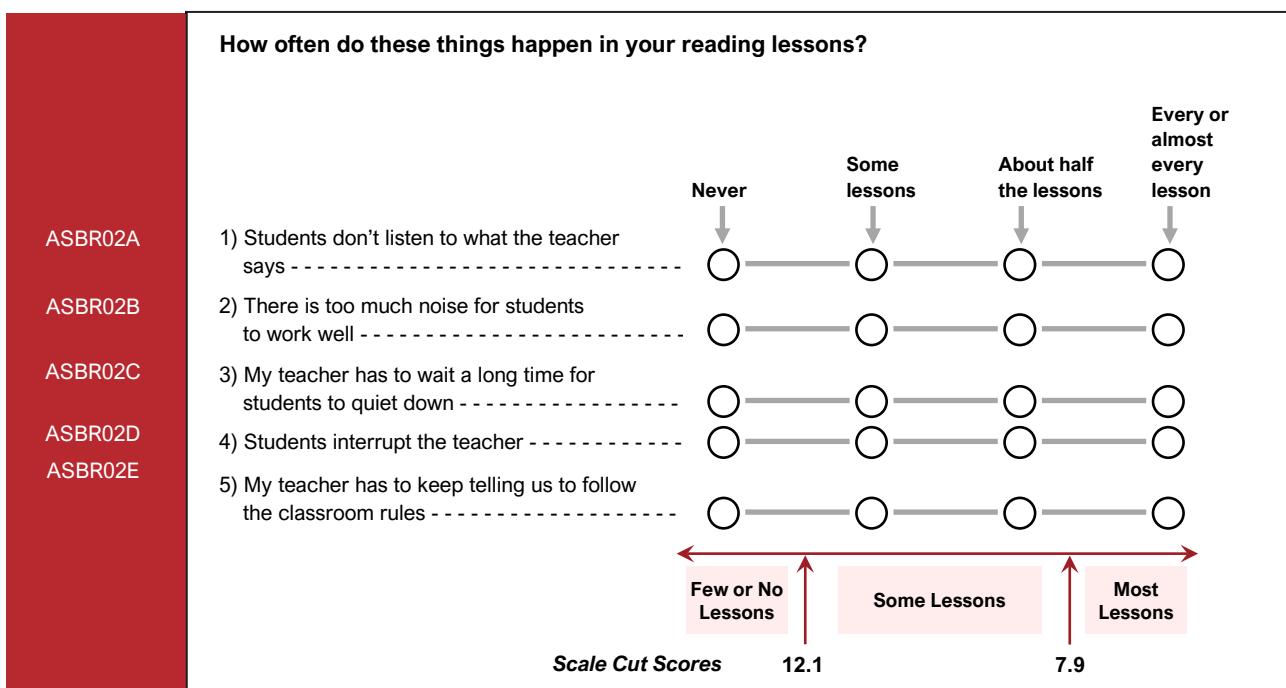
Relationship Between the PIRLS 2021 *Digital Self-Efficacy* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Poland	0.02	0.00	0.01
Portugal	0.14	0.02	0.02
Qatar	0.20	0.04	0.04
Russian Federation	0.15	0.02	0.02
Saudi Arabia	0.05	0.00	0.00
Serbia	0.15	0.02	0.02
Singapore	0.17	0.03	0.03
Slovak Republic	0.17	0.03	0.04
Slovenia	0.02	0.00	0.00
South Africa	0.14	0.02	0.02
Spain	0.11	0.01	0.01
Sweden	0.08	0.01	0.02
Turkiye	0.25	0.06	0.06
United Arab Emirates	0.22	0.05	0.06
United States	0.25	0.06	0.06
Uzbekistan	-0.04	0.00	0.00
International Median	0.12	0.02	0.02
Benchmarking Participants			
Alberta, Canada	0.15	0.02	0.03
British Columbia, Canada	0.11	0.01	0.02
Newfoundland & Labrador, Can.	0.23	0.05	0.06
Quebec, Canada	0.11	0.01	0.01
Moscow City, Russian Fed.	0.14	0.02	0.02
South Africa (6)	0.28	0.08	0.08
Abu Dhabi, UAE	0.25	0.06	0.08
Dubai, UAE	0.19	0.04	0.05

Disorderly Behavior During Reading Lessons

About the Scale

Students were scored according to their responses to five statements on the *Disorderly Behavior Reading Lessons* scale. Cut scores divide the scale into three categories. Students who reported disorderly behavior in **Few or No Lessons** had a score at or above the cut score corresponding to reporting that three of the five situations “never” happened in their reading lessons and the other two happened in “some lessons,” on average. Students who reported disorderly behavior in **Most Lessons** had a score at or below the cut score corresponding to reporting that three of the five situations happened in “every or almost every lesson” and the other two happened in “about half the lessons,” on average. All other students reported disorderly behavior in **Some Lessons**.



Item Parameters for the PIRLS 2021 *Disorderly Behavior During Reading Lessons* Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBR02A	-0.12445	-0.56257	-0.80388	1.36645	1.10	0.11
ASBR02B	0.01065	-0.53384	-0.51057	1.04441	0.98	0.09
ASBR02C	0.06669	-0.22488	-0.63403	0.85891	0.93	0.07
ASBR02D	-0.11122	-0.26865	-0.63539	0.90404	0.94	0.08
ASBR02E	0.15833	0.05939	-0.83339	0.77400	1.30	0.13

Scale Transformation Constants for the PIRLS 2021 *Disorderly Behavior During Reading Lessons* Scale

Scale Transformation Constants

A = 9.942916

B = 1.519860

Transformed Scale Score = 9.942916 + 1.519860 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 *Disorderly Behavior During Reading Lessons* Scale

Raw Score	Transformed Scale Score	Cutpoint
0	5.92238	
1	7.23115	
2	7.86603	7.9
3	8.31437	
4	8.68040	
5	9.00419	
6	9.30655	
7	9.60657	
8	9.89746	
9	10.21804	
10	10.57259	
11	10.98651	
12	11.50099	
13	12.18062	12.1
14	13.15938	
15	15.04369	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 *Disorderly Behavior During Reading Lessons* Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item				
			ASBR02A	ASBR02B	ASBR02C	ASBR02D	ASBR02E
Albania	0.72	48	0.75	0.76	0.71	0.73	0.48
Australia	0.82	58	0.67	0.76	0.81	0.82	0.74
Austria	0.81	57	0.69	0.75	0.81	0.78	0.73
Azerbaijan	0.77	52	0.71	0.76	0.75	0.76	0.61
Bahrain	0.78	53	0.69	0.76	0.78	0.76	0.65
Belgium (Flemish)	0.82	57	0.71	0.77	0.80	0.78	0.73
Belgium (French)	0.75	50	0.66	0.72	0.76	0.74	0.67
Brazil	0.79	55	0.63	0.70	0.79	0.80	0.77
Bulgaria	0.79	54	0.57	0.75	0.82	0.76	0.75
Chinese Taipei	0.86	64	0.80	0.83	0.84	0.85	0.68
Croatia	0.86	64	0.69	0.82	0.86	0.84	0.79
Cyprus	0.77	52	0.62	0.72	0.78	0.79	0.67
Czech Republic	0.83	59	0.72	0.79	0.81	0.81	0.69
Denmark	0.81	57	0.72	0.78	0.82	0.78	0.68
Egypt	0.76	52	0.74	0.80	0.79	0.76	0.46
England	0.81	57	0.70	0.74	0.81	0.80	0.71
Finland	0.86	63	0.76	0.82	0.84	0.79	0.76
France	0.76	52	0.61	0.75	0.79	0.74	0.69
Georgia	0.85	62	0.65	0.80	0.84	0.85	0.78
Germany	0.84	60	0.68	0.76	0.81	0.80	0.81
Hong Kong SAR	0.83	60	0.77	0.82	0.83	0.81	0.65
Hungary	0.86	63	0.70	0.80	0.84	0.80	0.83
Iran, Islamic Rep. of	0.77	52	0.65	0.72	0.76	0.76	0.71
Ireland	0.83	60	0.75	0.76	0.82	0.81	0.72
Israel	0.85	63	0.74	0.80	0.83	0.85	0.74
Italy	0.79	55	0.66	0.77	0.78	0.79	0.70
Jordan	0.78	55	0.75	0.78	0.79	0.78	0.56
Kazakhstan	0.86	64	0.78	0.84	0.82	0.81	0.76
Kosovo	0.79	55	0.76	0.81	0.79	0.78	0.53
Latvia	0.85	62	0.73	0.81	0.84	0.80	0.77
Lithuania	0.87	66	0.79	0.84	0.86	0.81	0.75
Macao SAR	0.77	53	0.70	0.73	0.78	0.76	0.65
Malta	0.79	54	0.69	0.73	0.80	0.78	0.68
Montenegro	0.81	57	0.67	0.78	0.81	0.78	0.73
Morocco	0.71	46	0.62	0.74	0.69	0.75	0.58
Netherlands	0.81	57	0.67	0.77	0.81	0.79	0.73
New Zealand	0.83	60	0.72	0.76	0.81	0.81	0.76
North Macedonia	0.79	55	0.71	0.77	0.81	0.76	0.65
Northern Ireland	0.82	58	0.70	0.77	0.81	0.80	0.73

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 *Disorderly Behavior During Reading Lessons* Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item				
			ASBR02A	ASBR02B	ASBR02C	ASBR02D	ASBR02E
Norway (5)	0.84	62	0.76	0.80	0.84	0.82	0.69
Oman	0.80	55	0.73	0.80	0.78	0.76	0.65
Poland	0.85	63	0.66	0.79	0.85	0.81	0.82
Portugal	0.83	60	0.69	0.77	0.80	0.81	0.80
Qatar	0.81	56	0.74	0.79	0.81	0.78	0.61
Russian Federation	0.86	63	0.77	0.82	0.83	0.81	0.75
Saudi Arabia	0.83	59	0.77	0.80	0.82	0.82	0.61
Serbia	0.81	58	0.67	0.78	0.82	0.78	0.73
Singapore	0.84	61	0.76	0.81	0.82	0.80	0.73
Slovak Republic	0.85	62	0.74	0.80	0.82	0.83	0.75
Slovenia	0.84	60	0.71	0.77	0.82	0.81	0.77
South Africa	0.69	45	0.60	0.67	0.71	0.70	0.66
Spain	0.79	54	0.62	0.71	0.80	0.82	0.71
Sweden	0.85	63	0.77	0.80	0.83	0.82	0.76
Turkiye	0.75	50	0.63	0.76	0.75	0.73	0.67
United Arab Emirates	0.86	64	0.77	0.82	0.84	0.82	0.73
United States	0.84	60	0.69	0.77	0.83	0.80	0.78
Uzbekistan	0.83	61	0.76	0.80	0.81	0.79	0.73
Benchmarking Participants							
Alberta, Canada	0.84	61	0.72	0.79	0.84	0.81	0.76
British Columbia, Canada	0.85	62	0.73	0.79	0.82	0.82	0.76
Newfoundland & Labrador, Can.	0.85	62	0.75	0.79	0.83	0.82	0.76
Quebec, Canada	0.85	62	0.74	0.81	0.84	0.79	0.77
Moscow City, Russian Fed.	0.85	62	0.77	0.81	0.83	0.79	0.75
South Africa (6)	0.67	43	0.63	0.68	0.70	0.70	0.58
Abu Dhabi, UAE	0.85	62	0.75	0.81	0.83	0.82	0.73
Dubai, UAE	0.86	63	0.76	0.81	0.84	0.82	0.75

Relationship Between the PIRLS 2021 *Disorderly Behavior During Reading Lessons* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.09	0.01	0.01
Australia	0.17	0.03	0.02
Austria	0.26	0.07	0.05
Azerbaijan	0.12	0.01	0.02
Bahrain	0.18	0.03	0.03
Belgium (Flemish)	0.19	0.03	0.02
Belgium (French)	0.21	0.05	0.04
Brazil	0.09	0.01	0.00
Bulgaria	0.21	0.04	0.04
Chinese Taipei	-0.02	0.00	0.00
Croatia	0.08	0.01	0.01
Cyprus	0.16	0.03	0.02
Czech Republic	0.18	0.03	0.02
Denmark	0.10	0.01	0.01
Egypt	0.15	0.02	0.01
England	0.22	0.05	0.02
Finland	0.13	0.02	0.01
France	0.18	0.03	0.02
Georgia	0.22	0.05	0.04
Germany	0.18	0.03	0.02
Hong Kong SAR	0.01	0.00	0.00
Hungary	0.10	0.01	0.01
Iran, Islamic Rep. of	-0.06	0.00	0.00
Ireland	0.18	0.03	0.02
Israel	0.07	0.00	0.00
Italy	0.06	0.00	0.01
Jordan	0.06	0.00	0.01
Kazakhstan	0.07	0.01	0.01
Kosovo	0.16	0.03	0.03
Latvia	0.09	0.01	0.01
Lithuania	0.14	0.02	0.02
Macao SAR	0.04	0.00	0.00
Malta	0.11	0.01	0.01
Montenegro	0.17	0.03	0.04
Morocco	0.05	0.00	0.00
Netherlands	0.18	0.03	0.01
New Zealand	0.20	0.04	0.03
North Macedonia	0.24	0.06	0.05
Northern Ireland	0.25	0.06	0.04
Norway (5)	0.06	0.00	0.01

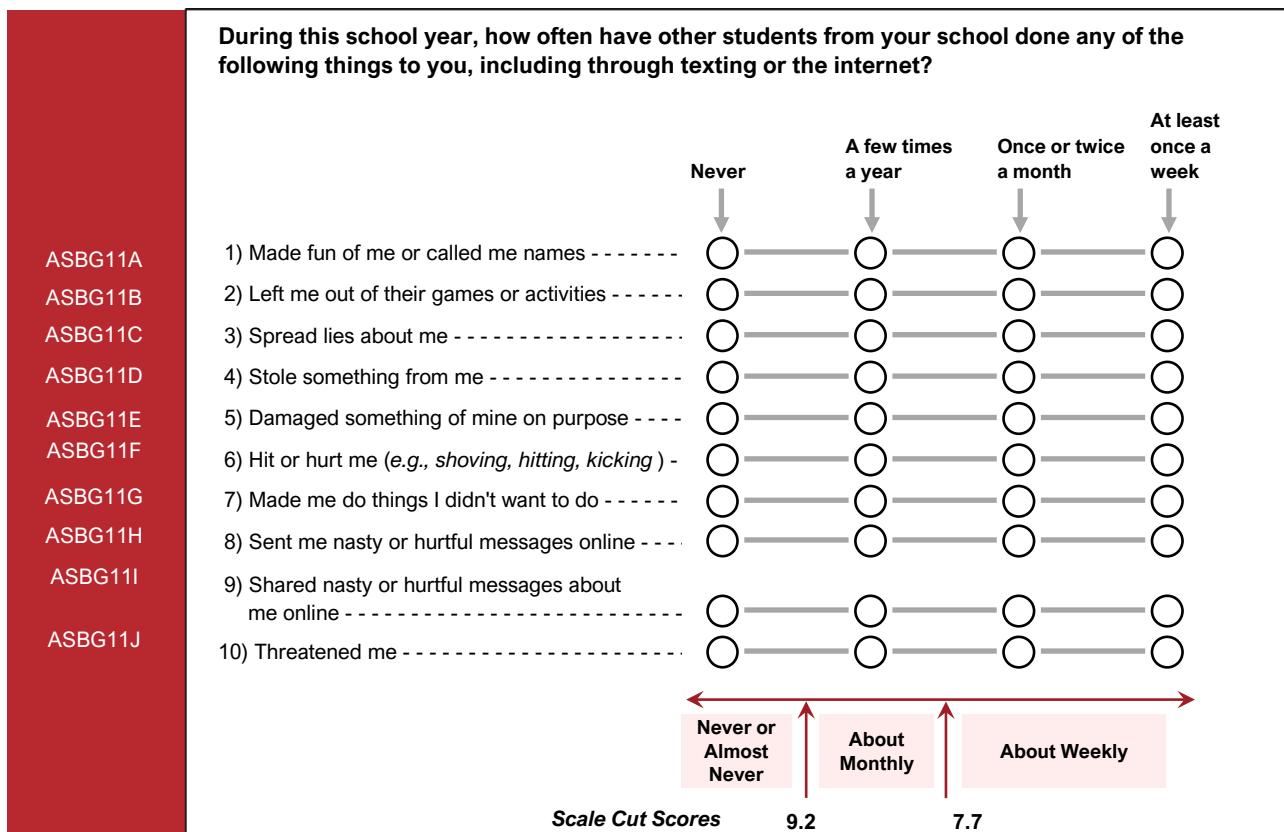
Relationship Between the PIRLS 2021 *Disorderly Behavior During Reading Lessons* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.16	0.02	0.02
Poland	0.07	0.00	0.01
Portugal	0.12	0.01	0.02
Qatar	0.16	0.02	0.02
Russian Federation	0.15	0.02	0.01
Saudi Arabia	0.19	0.04	0.03
Serbia	0.14	0.02	0.02
Singapore	0.12	0.01	0.01
Slovak Republic	0.11	0.01	0.01
Slovenia	0.14	0.02	0.02
South Africa	0.02	0.00	0.00
Spain	0.13	0.02	0.01
Sweden	0.13	0.02	0.01
Turkiye	0.14	0.02	0.01
United Arab Emirates	0.15	0.02	0.02
United States	0.23	0.05	0.04
Uzbekistan	0.22	0.05	0.05
International Median	0.14	0.02	0.02
Benchmarking Participants			
Alberta, Canada	0.13	0.02	0.02
British Columbia, Canada	0.18	0.03	0.02
Newfoundland & Labrador, Can.	0.13	0.02	0.02
Quebec, Canada	0.15	0.02	0.02
Moscow City, Russian Fed.	0.18	0.03	0.02
South Africa (6)	0.07	0.01	0.01
Abu Dhabi, UAE	0.18	0.03	0.02
Dubai, UAE	0.07	0.01	0.02

Student Bullying

About the Scale

Students were scored according to their reports regarding ten bullying behaviors on the *Student Bullying* scale. Cut scores divide the scale into three categories. Students bullied **Never or Almost Never** had a score at or above the cut score corresponding to reporting that they “never” experienced five of the ten bullying behaviors and experienced the other five “a few times a year,” on average. Students bullied **About Weekly** had a score at or below the cut score corresponding to reporting that they experienced five of the ten behaviors “once or twice a month” and the other five “a few times a year,” on average. All other students were bullied **About Monthly**.



Item Parameters for the PIRLS 2021 Student Bullying Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBG11A	0.56579	0.19320	-0.25541	0.06221	1.12	0.09
ASBG11B	0.44692	-0.09595	0.02846	0.06749	1.20	0.10
ASBG11C	0.38012	0.04672	-0.05269	0.00597	1.03	0.08
ASBG11D	-0.17192	0.36037	-0.13792	-0.22245	1.07	0.10
ASBG11E	-0.13092	0.31492	-0.09336	-0.22156	0.98	0.08
ASBG11F	0.29337	0.02310	-0.15892	0.13582	1.03	0.09
ASBG11G	-0.09987	0.16607	0.09610	-0.26217	1.00	0.08
ASBG11H	-0.39836	0.33822	0.30730	-0.64552	1.02	0.09
ASBG11I	-0.62374	0.53100	0.44798	-0.97898	0.95	0.08
ASBG11J	-0.26139	0.36241	0.02769	-0.39010	0.99	0.08

Scale Transformation Constants for the PIRLS 2021 Student Bullying Scale

Scale Transformation Constants

A = 7.692988

B = 1.678254

Transformed Scale Score = 7.692988 + 1.678254 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the
PIRLS 2021 Student Bullying Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	3.16484	
1	4.64766	
2	5.24314	
3	5.62177	
4	5.90639	
5	6.13793	
6	6.33387	
7	6.51306	
8	6.67670	
9	6.82884	
10	6.97258	
11	7.11040	
12	7.24426	
13	7.37578	
14	7.50627	
15	7.63692	7.7
16	7.76886	
17	7.90321	
18	8.04113	
19	8.18398	
20	8.33331	
21	8.49100	
22	8.65929	
23	8.83840	
24	9.03816	
25	9.26414	9.2
26	9.52871	
27	9.85265	
28	10.28695	
29	10.96501	
30	12.56749	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Student Bullying Scale**

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ASBG11A	ASBG11B	ASBG11C	ASBG11D	ASBG11E	ASBG11F	ASBG11G	ASBG11H	ASBG11I	ASBG11J
Albania	0.85	46	0.63	0.62	0.67	0.67	0.69	0.70	0.72	0.70	0.72	0.70
Australia	0.87	46	0.67	0.66	0.72	0.66	0.72	0.70	0.70	0.63	0.60	0.70
Austria	0.87	47	0.68	0.64	0.71	0.66	0.71	0.69	0.72	0.70	0.67	0.68
Azerbaijan	0.87	50	0.59	0.53	0.69	0.74	0.76	0.74	0.74	0.74	0.75	0.73
Bahrain	0.90	53	0.69	0.66	0.73	0.72	0.76	0.76	0.75	0.73	0.73	0.76
Belgium (Flemish)	0.88	48	0.72	0.69	0.74	0.64	0.71	0.69	0.70	0.64	0.68	0.68
Belgium (French)	0.85	43	0.69	0.59	0.71	0.61	0.70	0.70	0.64	0.56	0.62	0.69
Brazil	0.88	49	0.64	0.61	0.71	0.69	0.73	0.72	0.71	0.73	0.72	0.73
Bulgaria	0.85	44	0.66	0.53	0.70	0.66	0.68	0.69	0.69	0.70	0.64	0.71
Chinese Taipei	0.86	46	0.70	0.68	0.68	0.62	0.70	0.70	0.71	0.63	0.62	0.72
Croatia	0.88	49	0.71	0.69	0.69	0.66	0.72	0.71	0.67	0.74	0.73	0.70
Cyprus	0.87	46	0.69	0.62	0.72	0.63	0.70	0.71	0.68	0.66	0.69	0.70
Czech Republic	0.86	45	0.71	0.57	0.70	0.62	0.72	0.69	0.70	0.66	0.63	0.71
Denmark	0.87	47	0.69	0.68	0.75	0.62	0.72	0.68	0.71	0.69	0.61	0.71
Egypt	0.94	64	0.78	0.72	0.80	0.79	0.81	0.80	0.84	0.83	0.82	0.81
England	0.86	44	0.68	0.63	0.73	0.61	0.67	0.69	0.68	0.63	0.61	0.71
Finland	0.88	49	0.73	0.68	0.72	0.63	0.72	0.71	0.70	0.71	0.67	0.75
France	0.82	39	0.67	0.61	0.70	0.57	0.64	0.66	0.62	0.55	0.52	0.68
Georgia	0.85	48	0.67	0.53	0.73	0.70	0.73	0.70	0.69	0.74	0.71	0.70
Germany	0.88	50	0.67	0.63	0.74	0.67	0.73	0.71	0.77	0.71	0.72	0.73
Hong Kong SAR	0.84	43	0.63	0.59	0.72	0.60	0.67	0.65	0.69	0.67	0.66	0.64
Hungary	0.86	46	0.70	0.63	0.73	0.62	0.70	0.67	0.71	0.68	0.61	0.70
Iran, Islamic Rep. of	0.82	41	0.55	0.41	0.66	0.66	0.71	0.65	0.67	0.66	0.65	0.70
Ireland	0.87	47	0.71	0.68	0.73	0.62	0.70	0.72	0.68	0.66	0.61	0.73
Israel	—	—	—	—	—	—	—	—	—	—	—	—
Italy	0.86	45	0.70	0.67	0.73	0.62	0.68	0.69	0.68	0.61	0.59	0.71
Jordan	0.91	57	0.70	0.69	0.73	0.74	0.77	0.77	0.79	0.79	0.78	0.77
Kazakhstan	0.87	47	0.68	0.57	0.71	0.67	0.74	0.71	0.70	0.73	0.64	0.67
Kosovo	0.90	53	0.65	0.66	0.69	0.72	0.79	0.75	0.77	0.77	0.77	0.74
Latvia	0.86	45	0.68	0.57	0.74	0.62	0.71	0.72	0.67	0.71	0.63	0.67
Lithuania	0.89	51	0.72	0.61	0.74	0.67	0.75	0.74	0.72	0.75	0.71	0.75
Macao SAR	0.83	41	0.61	0.58	0.68	0.61	0.70	0.67	0.69	0.59	0.57	0.68
Malta	0.87	47	0.69	0.65	0.72	0.60	0.70	0.70	0.67	0.70	0.70	0.71
Montenegro	0.87	50	0.66	0.67	0.73	0.69	0.75	0.71	0.68	0.74	0.72	0.69
Morocco	0.85	43	0.63	0.61	0.62	0.61	0.70	0.65	0.68	0.67	0.69	0.69
Netherlands	0.88	48	0.71	0.65	0.73	0.66	0.69	0.68	0.72	0.67	0.69	0.68
New Zealand	0.89	50	0.71	0.67	0.74	0.68	0.75	0.70	0.73	0.68	0.68	0.72
North Macedonia	0.92	59	0.67	0.67	0.74	0.78	0.81	0.77	0.79	0.79	0.80	0.81
Northern Ireland	0.87	46	0.69	0.66	0.76	0.61	0.70	0.69	0.66	0.70	0.65	0.67

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Student Bullying Scale**

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ASBG11A	ASBG11B	ASBG11C	ASBG11D	ASBG11E	ASBG11F	ASBG11G	ASBG11H	ASBG11I	ASBG11J
Norway (5)	0.87	48	0.72	0.67	0.73	0.65	0.73	0.68	0.75	0.67	0.63	0.73
Oman	0.91	57	0.69	0.65	0.77	0.76	0.78	0.78	0.79	0.79	0.79	0.76
Poland	0.87	48	0.69	0.61	0.73	0.69	0.70	0.71	0.72	0.68	0.65	0.73
Portugal	0.85	44	0.69	0.63	0.72	0.61	0.69	0.70	0.67	0.62	0.60	0.67
Qatar	0.90	53	0.70	0.64	0.72	0.70	0.74	0.74	0.74	0.77	0.76	0.76
Russian Federation	0.85	43	0.68	0.43	0.68	0.58	0.69	0.73	0.66	0.69	0.69	0.69
Saudi Arabia	0.93	62	0.78	0.72	0.79	0.76	0.80	0.82	0.81	0.81	0.81	0.80
Serbia	0.86	47	0.66	0.65	0.72	0.62	0.70	0.69	0.67	0.69	0.70	0.73
Singapore	0.87	47	0.67	0.63	0.74	0.67	0.73	0.70	0.70	0.68	0.66	0.70
Slovak Republic	0.87	47	0.69	0.61	0.71	0.64	0.73	0.70	0.69	0.69	0.68	0.73
Slovenia	0.89	50	0.68	0.70	0.74	0.67	0.75	0.70	0.73	0.69	0.68	0.75
South Africa	0.87	45	0.62	0.61	0.65	0.61	0.68	0.68	0.71	0.71	0.71	0.69
Spain	0.86	44	0.67	0.65	0.71	0.59	0.71	0.67	0.69	0.61	0.59	0.71
Sweden	0.88	50	0.72	0.67	0.75	0.62	0.76	0.72	0.72	0.71	0.66	0.72
Turkiye	0.82	40	0.58	0.58	0.66	0.63	0.71	0.64	0.58	0.61	0.64	0.67
United Arab Emirates	0.92	58	0.71	0.71	0.76	0.75	0.78	0.76	0.77	0.79	0.79	0.78
United States	0.86	46	0.66	0.64	0.72	0.68	0.71	0.67	0.69	0.70	0.67	0.65
Uzbekistan	0.90	55	0.63	0.65	0.76	0.74	0.77	0.77	0.78	0.80	0.80	0.70
Benchmarking Participants												
Alberta, Canada	0.89	51	0.72	0.66	0.75	0.68	0.75	0.71	0.72	0.68	0.69	0.74
British Columbia, Canada	0.89	50	0.71	0.68	0.74	0.69	0.75	0.72	0.73	0.65	0.65	0.74
Newfoundland & Labrador, Can.	0.89	50	0.75	0.68	0.76	0.68	0.74	0.72	0.71	0.68	0.67	0.71
Quebec, Canada	0.86	46	0.70	0.63	0.67	0.62	0.67	0.71	0.68	0.68	0.67	0.72
Moscow City, Russian Fed.	0.86	44	0.70	0.51	0.72	0.59	0.68	0.73	0.63	0.69	0.70	0.68
South Africa (6)	0.83	40	0.59	0.61	0.63	0.51	0.66	0.65	0.68	0.67	0.69	0.65
Abu Dhabi, UAE	0.92	59	0.71	0.72	0.77	0.76	0.78	0.75	0.77	0.80	0.80	0.79
Dubai, UAE	0.89	52	0.71	0.67	0.74	0.68	0.73	0.72	0.73	0.75	0.74	0.75

A dash (-) indicates comparable data not available.

Relationship Between the PIRLS 2021 Student Bullying Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.09	0.01	0.01
Australia	0.16	0.03	0.03
Austria	0.28	0.08	0.09
Azerbaijan	0.27	0.07	0.09
Bahrain	0.36	0.13	0.16
Belgium (Flemish)	0.15	0.02	0.04
Belgium (French)	0.18	0.03	0.05
Brazil	0.31	0.10	0.14
Bulgaria	0.22	0.05	0.05
Chinese Taipei	0.16	0.02	0.04
Croatia	0.19	0.04	0.06
Cyprus	0.23	0.05	0.06
Czech Republic	0.20	0.04	0.05
Denmark	0.15	0.02	0.03
Egypt	0.26	0.07	0.08
England	0.15	0.02	0.04
Finland	0.15	0.02	0.04
France	0.16	0.03	0.04
Georgia	0.28	0.08	0.08
Germany	0.30	0.09	0.12
Hong Kong SAR	0.16	0.02	0.04
Hungary	0.17	0.03	0.05
Iran, Islamic Rep. of	0.21	0.05	0.06
Ireland	0.18	0.03	0.04
Israel	–	–	–
Italy	0.20	0.04	0.06
Jordan	0.12	0.02	0.03
Kazakhstan	0.24	0.06	0.07
Kosovo	0.29	0.08	0.11
Latvia	0.22	0.05	0.07
Lithuania	0.27	0.07	0.10
Macao SAR	0.18	0.03	0.04
Malta	0.12	0.01	0.03
Montenegro	0.29	0.08	0.08
Morocco	0.18	0.03	0.06
Netherlands	0.20	0.04	0.05
New Zealand	0.25	0.06	0.10
North Macedonia	0.33	0.11	0.12
Northern Ireland	0.22	0.05	0.05
Norway (5)	0.13	0.02	0.03
Oman	0.29	0.08	0.10

Relationship Between the PIRLS 2021 Student Bullying Scale and PIRLS 2021 Achievement

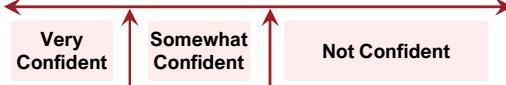
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Poland	0.22	0.05	0.06
Portugal	0.16	0.03	0.05
Qatar	0.40	0.16	0.20
Russian Federation	0.17	0.03	0.03
Saudi Arabia	0.42	0.18	0.19
Serbia	0.15	0.02	0.04
Singapore	0.22	0.05	0.06
Slovak Republic	0.18	0.03	0.05
Slovenia	0.21	0.04	0.08
South Africa	0.35	0.12	0.13
Spain	0.23	0.05	0.07
Sweden	0.20	0.04	0.05
Turkiye	0.24	0.06	0.07
United Arab Emirates	0.41	0.17	0.22
United States	0.24	0.06	0.08
Uzbekistan	0.27	0.07	0.09
International Median	0.22	0.05	0.06
Benchmarking Participants			
Alberta, Canada	0.20	0.04	0.05
British Columbia, Canada	0.19	0.03	0.04
Newfoundland & Labrador, Can.	0.16	0.03	0.03
Quebec, Canada	0.16	0.03	0.03
Moscow City, Russian Fed.	0.22	0.05	0.06
South Africa (6)	0.44	0.19	0.20
Abu Dhabi, UAE	0.47	0.22	0.27
Dubai, UAE	0.29	0.08	0.11

A dash (–) indicates comparable data not available.

Students Confident in Reading

About the Scale

Students were scored according to their responses to six statements on the *Students Confident in Reading* scale. Cut scores divide the scale into three categories. Students **Very Confident in Reading** had a score at or above the cut score corresponding to “agreeing a lot” with three of the six statements and “agreeing a little” with the other three, on average. Students who were **Not Confident in Reading** had a score at or below the cut score corresponding to “disagreeing a little” with three of the six statements and “agreeing a little” with the other three, on average. All other students were **Somewhat Confident in Reading**.

	<p>How well do you read? Tell how much you agree with each of these statements.</p> <p style="text-align: center;"> <input type="radio"/> Agree a lot <input type="radio"/> Agree a little <input type="radio"/> Disagree a little <input type="radio"/> Disagree a lot </p> <p>1) I usually do well in reading - - - - - <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>2) Reading is easy for me - - - - - <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>3) I have trouble reading stories with difficult words^R - - - - - <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>4) Reading is harder for me than for many of my classmates^R - - - - - <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>5) Reading is harder for me than any other subject^R - - - - - <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>6) I am just not good at reading^R - - - - - <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p style="text-align: center;">  Very Confident Somewhat Confident Not Confident </p> <p style="text-align: center;">Scale Cut Scores 10.2 8.2</p> <p>^R Reverse coded</p>
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^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Students Confident in Reading Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBR08A	-0.64759	-0.32517	-0.65071	0.97588	1.12	0.17
ASBR08B	-0.63234	-0.36808	-0.43307	0.80115	1.07	0.15
ASBR08C R	1.00691	-0.88096	0.42690	0.45406	1.22	0.13
ASBR08D R	0.26134	-0.36177	0.20366	0.15811	0.91	0.07
ASBR08E R	0.00964	-0.08565	0.22888	-0.14323	0.90	0.06
ASBR08F R	0.00204	-0.01448	0.20157	-0.18709	0.94	0.06

R Reverse coded

Scale Transformation Constants for the PIRLS 2021 Students Confident in Reading Scale

Scale Transformation Constants

A = 8.137507

B = 1.764782

Transformed Scale Score = 8.137507 + 1.764782 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Students Confident in Reading Scale

Raw Score	Transformed Scale Score	Cutpoint
0	2.96784	
1	4.58611	
2	5.37728	
3	5.95198	
4	6.42311	
5	6.83123	
6	7.19857	
7	7.53217	
8	7.84162	
9	8.13680	8.2
10	8.42824	
11	8.72693	
12	9.04570	
13	9.39964	
14	9.80410	
15	10.28978	10.2
16	10.90567	
17	11.76022	
18	13.45388	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Students Confident in Reading Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ASBR08A	ASBR08B	ASBR08C ^R	ASBR08D ^R	ASBR08E ^R	ASBR08F ^R
Albania	0.77	47	0.50	0.48	0.69	0.78	0.77	0.83
Australia	0.81	52	0.69	0.74	0.61	0.78	0.73	0.78
Austria	0.80	51	0.65	0.68	0.59	0.76	0.78	0.80
Azerbaijan	0.65	37	0.23	0.35	0.59	0.76	0.80	0.68
Bahrain	0.71	42	0.25	0.49	0.63	0.75	0.79	0.79
Belgium (Flemish)	0.82	54	0.68	0.73	0.60	0.78	0.76	0.83
Belgium (French)	0.77	47	0.62	0.65	0.60	0.75	0.72	0.78
Brazil	0.69	39	0.43	0.52	0.50	0.72	0.74	0.77
Bulgaria	0.79	52	0.68	0.71	0.47	0.79	0.82	0.80
Chinese Taipei	0.77	47	0.47	0.58	0.54	0.81	0.81	0.81
Croatia	0.81	52	0.60	0.64	0.59	0.83	0.81	0.81
Cyprus	0.77	48	0.69	0.71	0.52	0.73	0.72	0.78
Czech Republic	0.79	50	0.60	0.69	0.52	0.78	0.78	0.80
Denmark	0.84	57	0.72	0.76	0.64	0.80	0.77	0.81
Egypt	0.66	41	-0.10	0.04	0.68	0.81	0.84	0.78
England	0.84	56	0.73	0.77	0.61	0.80	0.77	0.79
Finland	0.82	54	0.67	0.71	0.59	0.80	0.79	0.80
France	0.79	51	0.72	0.71	0.56	0.75	0.73	0.79
Georgia	0.76	47	0.64	0.62	0.52	0.73	0.78	0.79
Germany	0.81	52	0.63	0.66	0.59	0.80	0.81	0.81
Hong Kong SAR	0.80	51	0.60	0.64	0.57	0.79	0.80	0.81
Hungary	0.81	51	0.61	0.64	0.53	0.82	0.81	0.83
Iran, Islamic Rep. of	0.70	40	0.27	0.33	0.62	0.79	0.79	0.77
Ireland	0.85	58	0.76	0.79	0.62	0.81	0.77	0.81
Israel	0.77	47	0.52	0.62	0.54	0.80	0.79	0.81
Italy	0.76	46	0.58	0.62	0.58	0.76	0.75	0.76
Jordan	0.62	37	0.02	0.16	0.66	0.77	0.81	0.71
Kazakhstan	0.76	46	0.36	0.45	0.67	0.81	0.83	0.78
Kosovo	0.73	44	0.34	0.13	0.70	0.83	0.82	0.82
Latvia	0.78	49	0.73	0.76	0.43	0.71	0.72	0.78
Lithuania	0.79	49	0.57	0.61	0.58	0.79	0.80	0.80
Macao SAR	0.73	44	0.62	0.69	0.32	0.72	0.76	0.77
Malta	0.79	49	0.57	0.61	0.62	0.80	0.76	0.78
Montenegro	0.74	46	0.59	0.64	0.42	0.80	0.78	0.77
Morocco	0.55	36	-0.22	0.28	0.57	0.73	0.77	0.76
Netherlands	0.85	58	0.69	0.79	0.58	0.82	0.81	0.82
New Zealand	0.79	48	0.55	0.62	0.58	0.80	0.80	0.77
North Macedonia	0.77	46	0.39	0.36	0.69	0.84	0.84	0.79
Northern Ireland	0.82	54	0.70	0.76	0.61	0.79	0.75	0.78

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Students Confident in Reading Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ASBR08A	ASBR08B	ASBR08C ^R	ASBR08D ^R	ASBR08E ^R	ASBR08F ^R
Norway (5)	0.82	53	0.65	0.74	0.63	0.79	0.80	0.74
Oman	0.68	39	0.25	0.38	0.58	0.79	0.79	0.75
Poland	0.81	53	0.68	0.72	0.63	0.80	0.76	0.78
Portugal	0.78	49	0.67	0.66	0.59	0.73	0.70	0.80
Qatar	0.75	45	0.33	0.45	0.65	0.81	0.83	0.79
Russian Federation	0.77	48	0.62	0.65	0.52	0.80	0.77	0.75
Saudi Arabia	0.75	46	0.04	0.21	0.73	0.86	0.88	0.83
Serbia	0.75	48	0.69	0.65	0.44	0.78	0.78	0.74
Singapore	0.81	51	0.62	0.66	0.65	0.81	0.76	0.77
Slovak Republic	0.83	55	0.66	0.74	0.60	0.81	0.77	0.84
Slovenia	0.82	52	0.62	0.68	0.70	0.80	0.78	0.76
South Africa	0.56	35	-0.17	-0.13	0.63	0.74	0.75	0.73
Spain	0.69	40	0.57	0.59	0.41	0.73	0.69	0.75
Sweden	0.83	54	0.68	0.72	0.64	0.79	0.78	0.79
Turkiye	0.68	40	0.51	0.52	0.42	0.73	0.74	0.78
United Arab Emirates	0.78	48	0.27	0.37	0.70	0.86	0.86	0.84
United States	0.82	53	0.68	0.75	0.58	0.79	0.76	0.79
Uzbekistan	0.63	38	-0.05	0.18	0.73	0.84	0.84	0.57
Benchmarking Participants								
Alberta, Canada	0.79	50	0.62	0.67	0.61	0.80	0.78	0.75
British Columbia, Canada	0.81	52	0.64	0.71	0.59	0.80	0.81	0.78
Newfoundland & Labrador, Can.	0.82	53	0.66	0.73	0.62	0.79	0.79	0.75
Quebec, Canada	0.82	54	0.67	0.71	0.64	0.80	0.80	0.79
Moscow City, Russian Fed.	0.77	48	0.65	0.71	0.51	0.79	0.76	0.71
South Africa (6)	0.68	38	0.35	0.41	0.53	0.77	0.78	0.73
Abu Dhabi, UAE	0.77	47	0.26	0.33	0.68	0.86	0.86	0.83
Dubai, UAE	0.80	50	0.45	0.54	0.68	0.84	0.83	0.81

^R Reverse coded

Relationship Between the PIRLS 2021 Students Confident in Reading Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.31	0.09	0.11
Australia	0.49	0.24	0.23
Austria	0.49	0.24	0.24
Azerbaijan	0.29	0.09	0.10
Bahrain	0.43	0.19	0.20
Belgium (Flemish)	0.42	0.17	0.19
Belgium (French)	0.47	0.22	0.23
Brazil	0.46	0.21	0.23
Bulgaria	0.43	0.19	0.18
Chinese Taipei	0.41	0.17	0.18
Croatia	0.39	0.15	0.17
Cyprus	0.40	0.16	0.17
Czech Republic	0.38	0.14	0.16
Denmark	0.51	0.26	0.24
Egypt	0.25	0.06	0.07
England	0.47	0.22	0.22
Finland	0.42	0.18	0.17
France	0.41	0.17	0.18
Georgia	0.35	0.12	0.15
Germany	0.45	0.20	0.21
Hong Kong SAR	0.38	0.15	0.15
Hungary	0.45	0.20	0.22
Iran, Islamic Rep. of	0.42	0.17	0.19
Ireland	0.48	0.24	0.21
Israel	0.49	0.24	0.29
Italy	0.36	0.13	0.14
Jordan	0.28	0.08	0.08
Kazakhstan	0.27	0.07	0.11
Kosovo	0.33	0.11	0.14
Latvia	0.40	0.16	0.17
Lithuania	0.45	0.20	0.23
Macao SAR	0.37	0.14	0.14
Malta	0.44	0.20	0.20
Montenegro	0.37	0.13	0.17
Morocco	0.36	0.13	0.15
Netherlands	0.43	0.19	0.19
New Zealand	0.50	0.25	0.25
North Macedonia	0.34	0.12	0.15
Northern Ireland	0.47	0.22	0.22
Norway (5)	0.47	0.22	0.22

Relationship Between the PIRLS 2021 Students Confident in Reading Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.35	0.12	0.13
Poland	0.37	0.14	0.16
Portugal	0.47	0.22	0.23
Qatar	0.44	0.19	0.21
Russian Federation	0.38	0.14	0.16
Saudi Arabia	0.34	0.12	0.12
Serbia	0.39	0.15	0.16
Singapore	0.45	0.21	0.21
Slovak Republic	0.35	0.12	0.15
Slovenia	0.45	0.20	0.22
South Africa	0.44	0.19	0.18
Spain	0.42	0.18	0.19
Sweden	0.42	0.18	0.18
Turkiye	0.38	0.14	0.15
United Arab Emirates	0.47	0.22	0.25
United States	0.49	0.24	0.23
Uzbekistan	0.30	0.09	0.13
International Median	0.42	0.17	0.18
Benchmarking Participants			
Alberta, Canada	0.48	0.23	0.23
British Columbia, Canada	0.44	0.19	0.20
Newfoundland & Labrador, Can.	0.48	0.23	0.23
Quebec, Canada	0.43	0.18	0.18
Moscow City, Russian Fed.	0.42	0.18	0.19
South Africa (6)	0.51	0.26	0.26
Abu Dhabi, UAE	0.53	0.28	0.29
Dubai, UAE	0.41	0.17	0.19

Students Engaged in Reading Lessons

About the Scale

Students were scored according to their responses to nine statements on the *Students Engaged in Reading Lessons* scale. Cut scores divide the scale into three categories. Students **Very Engaged** in reading lessons had a score at or above the cut score corresponding to “agreeing a lot” with five of the nine statements and “agreeing a little” with the other four, on average. Students who were **Less than Engaged** had a score at or below the cut score corresponding to “disagreeing a little” with five of the nine statements and “agreeing a little” with the other four, on average. All other students were **Somewhat Engaged** in reading lessons.

<p>ASBR01A T</p> <p>ASBR01B T</p> <p>ASBR01C T</p> <p>ASBR01D T</p> <p>ASBR01E T</p> <p>ASBR01F T</p> <p>ASBR01G T</p> <p>ASBR01H T</p> <p>ASBR01I T</p>	<p>Think about the reading you do for school. How much do you agree with these statements about your reading lessons.</p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: center;">Agree a lot</th> <th style="text-align: center;">Agree a little</th> <th style="text-align: center;">Disagree a little</th> <th style="text-align: center;">Disagree a lot</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td style="text-align: center;">1) I like what I read about in school</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">-----</td> </tr> <tr> <td style="text-align: center;">2) My teacher gives me interesting things to read</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td style="text-align: center;">3) I know what my teacher expects me to do</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td style="text-align: center;">4) My teacher is easy to understand</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td style="text-align: center;">5) I am interested in what my teacher says</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td style="text-align: center;">6) My teacher encourages me to say what I think about what I have read</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td style="text-align: center;">7) My teacher lets me show what I have learned</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td style="text-align: center;">8) My teacher does a variety of things to help us learn</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td style="text-align: center;">9) My teacher tells me how to do better when I make a mistake</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> </tbody> </table> <p style="text-align: center; margin-top: 10px;"> Scale Cut Scores 9.5 7.1 </p> <p style="text-align: center; margin-top: 10px;"> Very Engaged Somewhat Engaged Less than Engaged </p>	Agree a lot	Agree a little	Disagree a little	Disagree a lot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1) I like what I read about in school	-----	-----	-----	2) My teacher gives me interesting things to read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	3) I know what my teacher expects me to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	4) My teacher is easy to understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	5) I am interested in what my teacher says	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	6) My teacher encourages me to say what I think about what I have read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	7) My teacher lets me show what I have learned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	8) My teacher does a variety of things to help us learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	9) My teacher tells me how to do better when I make a mistake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Agree a lot	Agree a little	Disagree a little	Disagree a lot																																										
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^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Students Engaged in Reading Lessons Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBR01A	0.20193	-0.54560	-0.64652	1.19212	1.09	0.11
ASBR01B	0.27147	-0.58689	-0.43406	1.02095	0.97	0.08
ASBR01C	0.19451	-0.34836	-0.63735	0.98571	1.28	0.13
ASBR01D	-0.10822	-0.51275	-0.57877	1.09152	1.04	0.11
ASBR01E	0.06869	-0.45433	-0.56026	1.01459	0.98	0.06
ASBR01F	0.30830	-0.50978	-0.45725	0.96703	1.06	0.09
ASBR01G	0.00215	-0.44662	-0.45319	0.89981	1.02	0.09
ASBR01H	-0.56508	-0.01771	-0.51757	0.53528	0.97	0.09
ASBR01I	-0.37375	-0.07110	-0.50737	0.57847	0.99	0.09

Scale Transformation Constants for the PIRLS 2021 Students Engaged in Reading Lessons Scale

Scale Transformation Constants

A = 7.347685

B = 1.521279

Transformed Scale Score = 7.347685 + 1.521279 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the
PIRLS 2021 Students Engaged in Reading Lessons Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	2.39842	
1	3.84251	
2	4.49049	
3	4.92202	
4	5.25253	
5	5.52656	
6	5.76416	
7	5.97910	
8	6.17829	
9	6.36679	
10	6.54828	
11	6.72566	
12	6.90346	
13	7.07874	7.1
14	7.25705	
15	7.44071	
16	7.63232	
17	7.83480	
18	8.05152	
19	8.28542	
20	8.54448	
21	8.83577	
22	9.17010	
23	9.56347	9.5
24	10.04278	
25	10.66007	
26	11.54818	
27	13.33453	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Students Engaged in Reading Lessons Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBR01A	ASBR01B	ASBR01C	ASBR01D	ASBR01E	ASBR01F	ASBR01G	ASBR01H	ASBR01I
Albania	0.71	34	0.43	0.57	0.45	0.59	0.59	0.71	0.63	0.62	0.61
Australia	0.85	47	0.63	0.75	0.58	0.68	0.76	0.68	0.66	0.69	0.69
Austria	0.82	42	0.66	0.72	0.55	0.53	0.68	0.69	0.68	0.67	0.60
Azerbaijan	0.81	42	0.60	0.61	0.52	0.63	0.72	0.70	0.67	0.70	0.69
Bahrain	0.81	40	0.54	0.66	0.57	0.63	0.66	0.69	0.62	0.68	0.62
Belgium (Flemish)	0.83	43	0.61	0.72	0.62	0.66	0.72	0.58	0.68	0.64	0.63
Belgium (French)	0.82	43	0.58	0.71	0.66	0.68	0.73	0.64	0.53	0.65	0.67
Brazil	0.83	43	0.61	0.71	0.57	0.66	0.70	0.64	0.67	0.65	0.65
Bulgaria	0.82	42	0.63	0.70	0.54	0.62	0.67	0.67	0.66	0.67	0.66
Chinese Taipei	0.89	53	0.64	0.76	0.73	0.68	0.75	0.75	0.76	0.77	0.72
Croatia	0.85	46	0.71	0.73	0.64	0.66	0.67	0.65	0.72	0.70	0.62
Cyprus	0.85	46	0.65	0.74	0.59	0.57	0.75	0.70	0.68	0.71	0.71
Czech Republic	0.86	47	0.66	0.73	0.61	0.68	0.69	0.67	0.70	0.72	0.68
Denmark	0.85	47	0.70	0.74	0.56	0.59	0.72	0.73	0.72	0.70	0.69
Egypt	0.88	50	0.60	0.67	0.63	0.73	0.76	0.76	0.75	0.74	0.72
England	0.83	42	0.60	0.73	0.59	0.63	0.71	0.67	0.63	0.64	0.63
Finland	0.87	50	0.66	0.73	0.61	0.73	0.73	0.69	0.74	0.75	0.72
France	0.82	41	0.65	0.72	0.53	0.58	0.71	0.64	0.66	0.61	0.63
Georgia	0.72	36	0.61	0.71	0.46	0.66	0.46	0.59	0.64	0.65	0.56
Germany	0.85	46	0.68	0.75	0.55	0.71	0.70	0.67	0.69	0.69	0.67
Hong Kong SAR	0.89	53	0.65	0.77	0.73	0.72	0.78	0.75	0.73	0.72	0.69
Hungary	0.87	50	0.68	0.75	0.64	0.71	0.76	0.68	0.71	0.73	0.68
Iran, Islamic Rep. of	0.83	44	0.63	0.67	0.52	0.62	0.75	0.68	0.71	0.65	0.68
Ireland	0.84	44	0.62	0.73	0.58	0.67	0.74	0.70	0.66	0.65	0.61
Israel	0.87	49	0.68	0.78	0.59	0.66	0.77	0.70	0.68	0.70	0.71
Italy	0.81	40	0.68	0.76	0.49	0.62	0.70	0.57	0.64	0.59	0.62
Jordan	0.89	56	0.64	0.73	0.60	0.74	0.82	0.80	0.76	0.81	0.76
Kazakhstan	0.81	41	0.66	0.72	0.50	0.66	0.71	0.60	0.65	0.59	0.62
Kosovo	0.77	40	0.58	0.63	0.44	0.61	0.67	0.67	0.69	0.67	0.66
Latvia	0.84	45	0.68	0.70	0.65	0.69	0.72	0.57	0.67	0.68	0.63
Lithuania	0.87	48	0.71	0.77	0.65	0.70	0.75	0.62	0.67	0.69	0.69
Macao SAR	0.86	48	0.65	0.74	0.69	0.62	0.73	0.72	0.70	0.68	0.66
Malta	0.82	42	0.64	0.72	0.61	0.63	0.72	0.56	0.64	0.64	0.65
Montenegro	0.81	42	0.56	0.66	0.56	0.67	0.63	0.66	0.70	0.65	0.70
Morocco	0.72	34	0.53	0.53	0.45	0.57	0.67	0.66	0.63	0.59	0.57
Netherlands	0.81	40	0.57	0.66	0.52	0.65	0.69	0.59	0.69	0.68	0.66
New Zealand	0.85	45	0.63	0.73	0.64	0.67	0.75	0.63	0.66	0.69	0.66
North Macedonia	0.83	45	0.60	0.69	0.47	0.65	0.73	0.71	0.75	0.71	0.70
Northern Ireland	0.82	41	0.60	0.68	0.60	0.66	0.71	0.64	0.63	0.59	0.61

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Students Engaged in Reading Lessons Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ASBR01A	ASBR01B	ASBR01C	ASBR01D	ASBR01E	ASBR01F	ASBR01G	ASBR01H	ASBR01I	ASBR01J
Norway (5)	0.87	50	0.66	0.75	0.63	0.71	0.73	0.75	0.71	0.71	0.71	0.69
Oman	0.84	46	0.55	0.65	0.55	0.70	0.74	0.72	0.70	0.73	0.71	0.71
Poland	0.86	47	0.64	0.76	0.68	0.64	0.75	0.67	0.67	0.67	0.71	0.67
Portugal	0.79	38	0.58	0.70	0.54	0.58	0.69	0.61	0.61	0.56	0.63	0.63
Qatar	0.83	42	0.60	0.70	0.63	0.67	0.68	0.57	0.66	0.68	0.67	0.67
Russian Federation	0.84	44	0.68	0.74	0.61	0.69	0.76	0.54	0.62	0.66	0.66	0.66
Saudi Arabia	0.83	44	0.49	0.72	0.56	0.68	0.70	0.64	0.72	0.73	0.70	0.70
Serbia	0.79	39	0.59	0.64	0.61	0.60	0.63	0.67	0.63	0.62	0.63	0.63
Singapore	0.86	47	0.66	0.74	0.62	0.71	0.75	0.68	0.67	0.68	0.68	0.68
Slovak Republic	0.86	48	0.66	0.73	0.64	0.70	0.71	0.69	0.68	0.71	0.69	0.69
Slovenia	0.85	47	0.63	0.74	0.64	0.75	0.61	0.65	0.70	0.70	0.72	0.72
South Africa	0.85	45	0.62	0.69	0.63	0.66	0.67	0.69	0.69	0.69	0.69	0.66
Spain	0.80	41	0.63	0.71	0.54	0.61	0.68	0.62	0.62	0.66	0.66	0.66
Sweden	0.87	49	0.66	0.75	0.64	0.71	0.73	0.69	0.71	0.72	0.71	0.71
Turkiye	0.72	32	0.48	0.47	0.49	0.56	0.63	0.65	0.64	0.61	0.57	0.57
United Arab Emirates	0.86	46	0.66	0.73	0.63	0.70	0.73	0.63	0.69	0.70	0.66	0.66
United States	0.83	42	0.60	0.68	0.59	0.68	0.72	0.69	0.60	0.64	0.65	0.65
Uzbekistan	0.79	39	0.58	0.66	0.53	0.63	0.63	0.63	0.65	0.61	0.67	0.67
Benchmarking Participants												
Alberta, Canada	0.84	45	0.66	0.73	0.62	0.68	0.75	0.62	0.63	0.66	0.69	0.69
British Columbia, Canada	0.85	46	0.62	0.75	0.64	0.70	0.74	0.62	0.67	0.69	0.68	0.68
Newfoundland & Labrador, Can.	0.83	43	0.62	0.75	0.61	0.68	0.75	0.56	0.63	0.66	0.61	0.61
Quebec, Canada	0.85	46	0.62	0.71	0.62	0.68	0.73	0.65	0.72	0.69	0.69	0.69
Moscow City, Russian Fed.	0.85	46	0.68	0.78	0.61	0.72	0.77	0.54	0.62	0.69	0.68	0.68
South Africa (6)	0.82	41	0.63	0.68	0.59	0.64	0.66	0.64	0.66	0.63	0.66	0.66
Abu Dhabi, UAE	0.86	47	0.63	0.73	0.66	0.70	0.74	0.62	0.68	0.70	0.67	0.67
Dubai, UAE	0.84	45	0.69	0.73	0.59	0.68	0.73	0.65	0.67	0.65	0.64	0.64

Relationship Between the PIRLS 2021 Students Engaged in Reading Lessons Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.10	0.01	0.01
Australia	0.09	0.01	0.01
Austria	0.06	0.00	0.01
Azerbaijan	0.14	0.02	0.03
Bahrain	0.17	0.03	0.04
Belgium (Flemish)	0.03	0.00	0.01
Belgium (French)	-0.04	0.00	0.01
Brazil	0.05	0.00	0.02
Bulgaria	0.04	0.00	0.01
Chinese Taipei	0.12	0.01	0.02
Croatia	0.03	0.00	0.01
Cyprus	0.12	0.01	0.01
Czech Republic	-0.03	0.00	0.01
Denmark	0.10	0.01	0.01
Egypt	0.14	0.02	0.03
England	0.05	0.00	0.01
Finland	0.06	0.00	0.01
France	0.01	0.00	0.00
Georgia	0.17	0.03	0.03
Germany	0.12	0.01	0.02
Hong Kong SAR	0.11	0.01	0.02
Hungary	0.04	0.00	0.01
Iran, Islamic Rep. of	0.14	0.02	0.04
Ireland	0.03	0.00	0.00
Israel	0.03	0.00	0.00
Italy	0.06	0.00	0.01
Jordan	0.14	0.02	0.03
Kazakhstan	0.06	0.00	0.01
Kosovo	0.11	0.01	0.03
Latvia	0.08	0.01	0.01
Lithuania	0.05	0.00	0.00
Macao SAR	0.09	0.01	0.01
Malta	0.05	0.00	0.01
Montenegro	0.14	0.02	0.03
Morocco	0.08	0.01	0.02
Netherlands	0.08	0.01	0.01
New Zealand	0.03	0.00	0.01
North Macedonia	0.13	0.02	0.02
Northern Ireland	0.07	0.01	0.01
Norway (5)	0.05	0.00	0.01

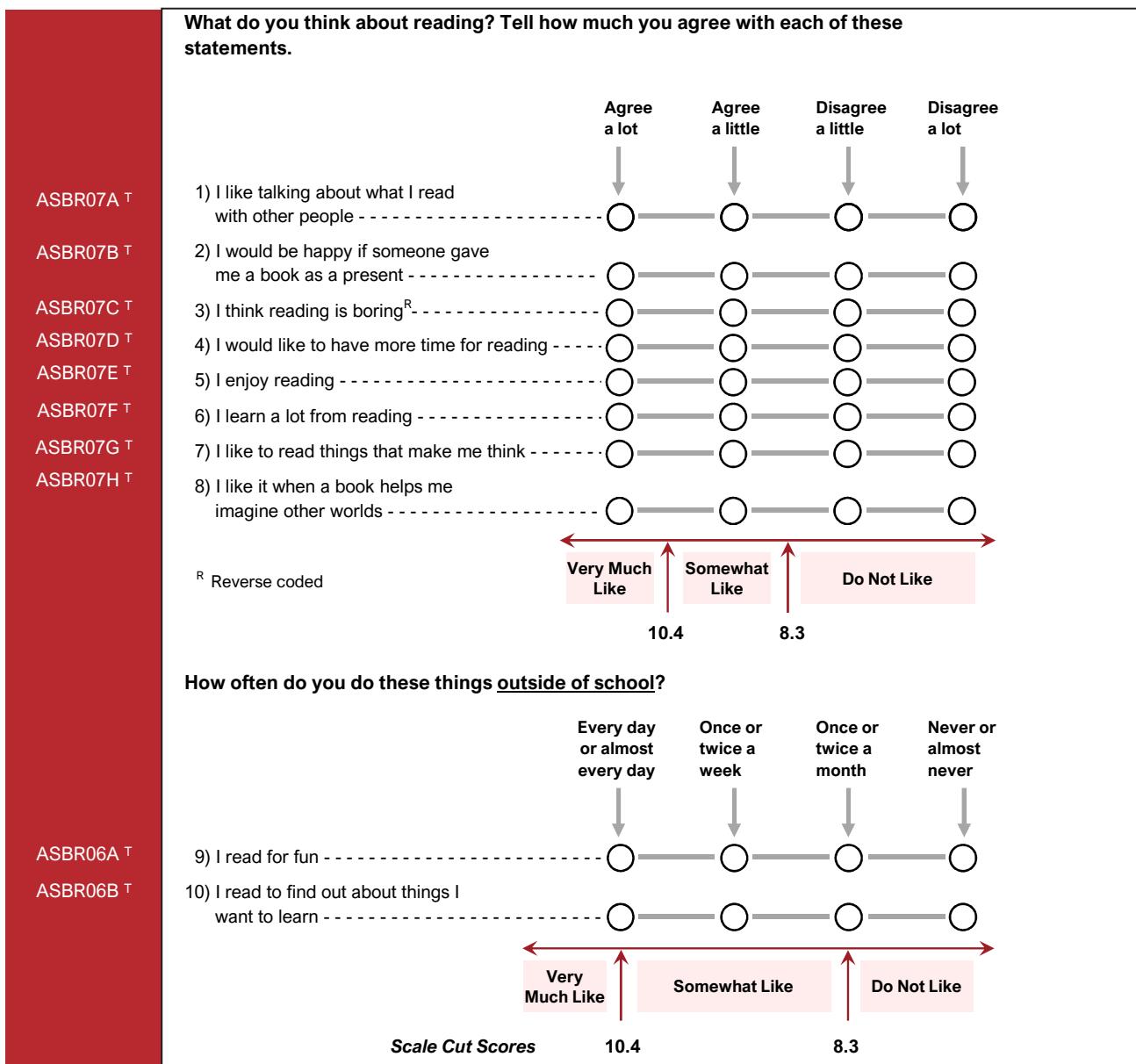
Relationship Between the PIRLS 2021 Students Engaged in Reading Lessons Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.16	0.03	0.04
Poland	-0.04	0.00	0.00
Portugal	0.07	0.00	0.00
Qatar	0.23	0.05	0.07
Russian Federation	0.01	0.00	0.00
Saudi Arabia	0.26	0.07	0.07
Serbia	0.07	0.01	0.01
Singapore	0.09	0.01	0.01
Slovak Republic	-0.09	0.01	0.00
Slovenia	0.06	0.00	0.01
South Africa	0.17	0.03	0.05
Spain	0.05	0.00	0.01
Sweden	-0.01	0.00	0.01
Turkiye	0.20	0.04	0.05
United Arab Emirates	0.24	0.06	0.08
United States	0.15	0.02	0.03
Uzbekistan	0.15	0.02	0.04
International Median	0.08	0.01	0.01
Benchmarking Participants			
Alberta, Canada	0.15	0.02	0.03
British Columbia, Canada	0.11	0.01	0.01
Newfoundland & Labrador, Can.	0.14	0.02	0.03
Quebec, Canada	0.04	0.00	0.00
Moscow City, Russian Fed.	0.07	0.00	0.01
South Africa (6)	0.24	0.06	0.06
Abu Dhabi, UAE	0.30	0.09	0.11
Dubai, UAE	0.08	0.01	0.02

Students Like Reading

About the Scale

Students were scored on the *Students Like Reading* scale according to their degree of agreement with eight statements and how often they did two reading activities outside of school. Students who **Very Much Like Reading** had a score at or above the cut score corresponding to “agreeing a lot” with four of the eight statements and “agreeing a little” with the other four, as well as doing one of the two reading activities outside of school “every day or almost every day,” on average. Students who **Do Not Like Reading** had a score at or below the cut score corresponding to “disagreeing a little” with four of the eight statements and “agreeing a little” with the other four, as well as doing one of two the reading activities only “once or twice a month,” on average. All other students **Somewhat Like Reading**.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Students Like Reading Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBR07A	0.23204	-0.47232	-0.18036	0.65268	1.16	0.14
ASBR07B	-0.04324	-0.30109	-0.31134	0.61243	0.94	0.10
ASBR07C ^R	0.17387	-0.34274	0.15259	0.19015	1.39	0.18
ASBR07D	0.40801	-0.56568	-0.08811	0.65379	0.93	0.09
ASBR07E	-0.17711	-0.26568	-0.35679	0.62247	0.72	0.06
ASBR07F	-0.55913	-0.53505	-0.19149	0.72654	0.88	0.10
ASBR07G	-0.14549	-0.42765	-0.16744	0.59509	0.94	0.11
ASBR07H	-0.43107	-0.01840	-0.27381	0.29221	0.99	0.11
ASBR06A	0.32670	-0.22600	-0.37657	0.60257	1.17	0.14
ASBR06B	0.21542	-0.47617	-0.17118	0.64735	1.12	0.13

^R Reverse coded

Scale Transformation Constants for the PIRLS 2021 Students Like Reading Scale

Scale Transformation Constants

A = 8.281596

B = 1.823026

Transformed Scale Score = 8.281596 + 1.823026 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the
PIRLS 2021 Students Like Reading Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	2.10925	
1	3.96788	
2	4.80423	
3	5.35292	
4	5.76631	
5	6.10437	
6	6.39342	
7	6.64926	
8	6.88069	
9	7.09749	
10	7.30132	
11	7.49556	
12	7.68295	
13	7.86575	
14	8.04592	
15	8.22519	8.3
16	8.40525	
17	8.58785	
18	8.77480	
19	8.96826	
20	9.17072	
21	9.38515	
22	9.61297	
23	9.86291	
24	10.14141	
25	10.45984	10.4
26	10.83607	
27	11.30153	
28	11.92203	
29	12.86204	
30	14.87956	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Students Like Reading Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item											
			ASBR07A	ASBR07B	ASBR07C ^R	ASBR07D	ASBR07E	ASBR07F	ASBR07G	ASBR07H	ASBR06A	ASBR06B		
Albania	0.73	33	0.50	0.65	0.34	0.53	0.75	0.65	0.62	0.62	0.47	0.53		
Australia	0.89	51	0.55	0.73	0.70	0.77	0.84	0.74	0.73	0.71	0.70	0.59		
Austria	0.88	48	0.55	0.72	0.65	0.73	0.84	0.69	0.69	0.68	0.75	0.60		
Azerbaijan	0.68	32	0.46	0.69	0.25	0.54	0.75	0.68	0.64	0.64	0.28	0.45		
Bahrain	0.82	40	0.53	0.68	0.40	0.72	0.77	0.71	0.68	0.59	0.57	0.60		
Belgium (Flemish)	0.88	49	0.58	0.73	0.65	0.74	0.84	0.73	0.74	0.70	0.72	0.51		
Belgium (French)	0.85	44	0.51	0.69	0.56	0.72	0.81	0.70	0.66	0.61	0.65	0.64		
Brazil	0.84	41	0.58	0.68	0.42	0.75	0.79	0.63	0.68	0.60	0.58	0.63		
Bulgaria	0.87	47	0.62	0.69	0.60	0.75	0.82	0.69	0.72	0.62	0.69	0.63		
Chinese Taipei	0.89	51	0.63	0.63	0.55	0.79	0.84	0.79	0.78	0.72	0.69	0.68		
Croatia	0.89	51	0.65	0.71	0.60	0.74	0.83	0.73	0.76	0.74	0.69	0.64		
Cyprus	0.87	47	0.65	0.75	0.49	0.70	0.80	0.68	0.73	0.67	0.68	0.60		
Czech Republic	0.88	48	0.61	0.71	0.62	0.67	0.84	0.72	0.65	0.66	0.73	0.65		
Denmark	0.86	45	0.63	0.69	0.64	0.69	0.84	0.65	0.76	0.68	0.55	0.46		
Egypt	0.79	40	0.53	0.70	0.08	0.73	0.77	0.79	0.77	0.73	0.32	0.51		
England	0.87	47	0.58	0.69	0.72	0.75	0.84	0.68	0.66	0.63	0.68	0.57		
Finland	0.90	53	0.61	0.75	0.68	0.69	0.86	0.75	0.82	0.77	0.72	0.56		
France	0.86	44	0.52	0.69	0.69	0.71	0.82	0.65	0.66	0.62	0.69	0.60		
Georgia	0.80	40	0.60	0.71	0.41	0.70	0.80	0.66	0.67	0.70	0.34	0.58		
Germany	0.89	51	0.58	0.72	0.63	0.66	0.86	0.75	0.70	0.74	0.79	0.63		
Hong Kong SAR	0.88	49	0.56	0.67	0.48	0.79	0.83	0.74	0.72	0.76	0.69	0.66		
Hungary	0.87	47	0.65	0.72	0.58	0.75	0.83	0.71	0.72	0.71	0.67	0.46		
Iran, Islamic Rep. of	0.74	34	0.52	0.67	0.28	0.68	0.76	0.68	0.55	0.65	0.34	0.51		
Ireland	0.88	49	0.58	0.73	0.73	0.74	0.85	0.69	0.68	0.66	0.72	0.55		
Israel	0.87	47	0.58	0.69	0.48	0.73	0.83	0.73	0.74	0.68	0.69	0.64		
Italy	0.87	47	0.60	0.70	0.64	0.74	0.83	0.68	0.70	0.66	0.63	0.66		
Jordan	0.81	43	0.61	0.73	0.19	0.66	0.81	0.78	0.77	0.74	0.47	0.53		
Kazakhstan	0.77	38	0.52	0.71	0.47	0.69	0.77	0.71	0.67	0.63	0.20	0.57		
Kosovo	0.72	36	0.43	0.67	0.22	0.67	0.77	0.72	0.65	0.68	0.45	0.51		
Latvia	0.88	48	0.62	0.75	0.62	0.75	0.83	0.69	0.69	0.65	0.72	0.60		
Lithuania	0.89	49	0.68	0.75	0.56	0.69	0.82	0.73	0.69	0.69	0.72	0.68		
Macao SAR	0.86	45	0.54	0.62	0.51	0.80	0.82	0.71	0.70	0.64	0.67	0.65		
Malta	0.86	45	0.56	0.70	0.62	0.77	0.82	0.70	0.64	0.62	0.62	0.59		
Montenegro	0.83	42	0.58	0.70	0.48	0.69	0.79	0.66	0.71	0.66	0.54	0.59		
Morocco	0.73	35	0.47	0.61	0.34	0.66	0.76	0.72	0.69	0.63	0.41	0.46		
Netherlands	0.87	46	0.58	0.74	0.65	0.72	0.83	0.69	0.71	0.65	0.68	0.47		
New Zealand	0.87	47	0.55	0.67	0.54	0.75	0.83	0.71	0.73	0.70	0.70	0.58		
North Macedonia	0.81	41	0.53	0.71	0.36	0.69	0.80	0.71	0.74	0.66	0.50	0.60		
Northern Ireland	0.88	48	0.55	0.71	0.73	0.76	0.84	0.68	0.67	0.65	0.69	0.58		

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Students Like Reading Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item											
			ASBR07A	ASBR07B	ASBR07C ^R	ASBR07D	ASBR07E	ASBR07F	ASBR07G	ASBR07H	ASBR06A	ASBR06B		
Norway (5)	0.87	47	0.61	0.70	0.63	0.72	0.83	0.68	0.74	0.67	0.67	0.67	0.53	
Oman	0.77	37	0.48	0.65	0.20	0.67	0.76	0.75	0.69	0.67	0.45	0.53		
Poland	0.89	51	0.64	0.75	0.66	0.72	0.85	0.74	0.75	0.69	0.72	0.61		
Portugal	0.83	42	0.57	0.69	0.54	0.61	0.80	0.67	0.68	0.62	0.63	0.61		
Qatar	0.84	43	0.56	0.69	0.47	0.72	0.79	0.75	0.74	0.62	0.55	0.59		
Russian Federation	0.87	46	0.59	0.71	0.57	0.74	0.81	0.70	0.71	0.63	0.68	0.60		
Saudi Arabia	0.81	41	0.57	0.70	0.26	0.67	0.74	0.76	0.74	0.66	0.49	0.63		
Serbia	0.87	47	0.63	0.72	0.59	0.73	0.82	0.68	0.64	0.68	0.67	0.64		
Singapore	0.85	45	0.49	0.71	0.63	0.80	0.84	0.74	0.71	0.65	0.40	0.59		
Slovak Republic	0.88	49	0.64	0.74	0.59	0.70	0.83	0.68	0.67	0.70	0.76	0.67		
Slovenia	0.88	47	0.62	0.75	0.57	0.72	0.84	0.71	0.62	0.73	0.69	0.60		
South Africa	0.76	36	0.53	0.66	0.10	0.70	0.73	0.70	0.68	0.66	0.40	0.53		
Spain	0.86	46	0.57	0.66	0.60	0.73	0.81	0.72	0.69	0.66	0.65	0.64		
Sweden	0.89	50	0.64	0.70	0.67	0.73	0.85	0.72	0.73	0.70	0.74	0.57		
Turkiye	0.78	37	0.42	0.69	0.50	0.67	0.78	0.70	0.62	0.57	0.42	0.56		
United Arab Emirates	0.83	43	0.57	0.69	0.33	0.71	0.79	0.75	0.74	0.65	0.55	0.63		
United States	0.85	43	0.48	0.66	0.63	0.75	0.82	0.66	0.65	0.64	0.69	0.56		
Uzbekistan	0.72	34	0.43	0.67	0.27	0.60	0.68	0.72	0.62	0.69	0.41	0.53		
Benchmarking Participants														
Alberta, Canada	0.86	46	0.53	0.69	0.61	0.73	0.83	0.72	0.74	0.68	0.65	0.58		
British Columbia, Canada	0.86	44	0.50	0.67	0.61	0.71	0.80	0.73	0.71	0.67	0.64	0.57		
Newfoundland & Labrador, Can.	0.88	50	0.57	0.69	0.67	0.75	0.85	0.74	0.76	0.69	0.68	0.63		
Quebec, Canada	0.86	45	0.51	0.68	0.59	0.72	0.83	0.72	0.69	0.64	0.68	0.61		
Moscow City, Russian Fed.	0.88	49	0.62	0.74	0.66	0.76	0.84	0.70	0.70	0.64	0.71	0.60		
South Africa (6)	0.78	36	0.55	0.66	0.40	0.71	0.75	0.67	0.65	0.60	0.33	0.54		
Abu Dhabi, UAE	0.84	43	0.58	0.69	0.28	0.71	0.78	0.75	0.75	0.67	0.56	0.63		
Dubai, UAE	0.86	45	0.60	0.71	0.47	0.74	0.82	0.73	0.71	0.64	0.59	0.65		

^R Reverse coded

Relationship Between the PIRLS 2021 Students Like Reading Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.10	0.01	0.01
Australia	0.19	0.03	0.04
Austria	0.12	0.02	0.01
Azerbaijan	0.08	0.01	0.00
Bahrain	0.11	0.01	0.01
Belgium (Flemish)	0.06	0.00	0.00
Belgium (French)	0.06	0.00	0.01
Brazil	-0.04	0.00	0.00
Bulgaria	0.08	0.01	0.02
Chinese Taipei	0.19	0.04	0.04
Croatia	0.04	0.00	0.00
Cyprus	0.09	0.01	0.01
Czech Republic	0.04	0.00	0.01
Denmark	0.20	0.04	0.04
Egypt	0.20	0.04	0.04
England	0.15	0.02	0.03
Finland	0.17	0.03	0.03
France	0.15	0.02	0.03
Georgia	-0.01	0.00	0.00
Germany	0.16	0.03	0.03
Hong Kong SAR	0.22	0.05	0.05
Hungary	0.14	0.02	0.02
Iran, Islamic Rep. of	0.16	0.03	0.03
Ireland	0.19	0.04	0.03
Israel	0.07	0.00	0.00
Italy	0.05	0.00	0.00
Jordan	0.12	0.02	0.02
Kazakhstan	-0.06	0.00	0.00
Kosovo	0.12	0.01	0.01
Latvia	0.11	0.01	0.01
Lithuania	0.04	0.00	0.00
Macao SAR	0.21	0.05	0.04
Malta	0.01	0.00	0.00
Montenegro	0.07	0.01	0.01
Morocco	0.19	0.04	0.04
Netherlands	0.19	0.04	0.04
New Zealand	0.06	0.00	0.01
North Macedonia	0.05	0.00	0.00
Northern Ireland	0.19	0.03	0.04
Norway (5)	0.18	0.03	0.02
Oman	0.20	0.04	0.03

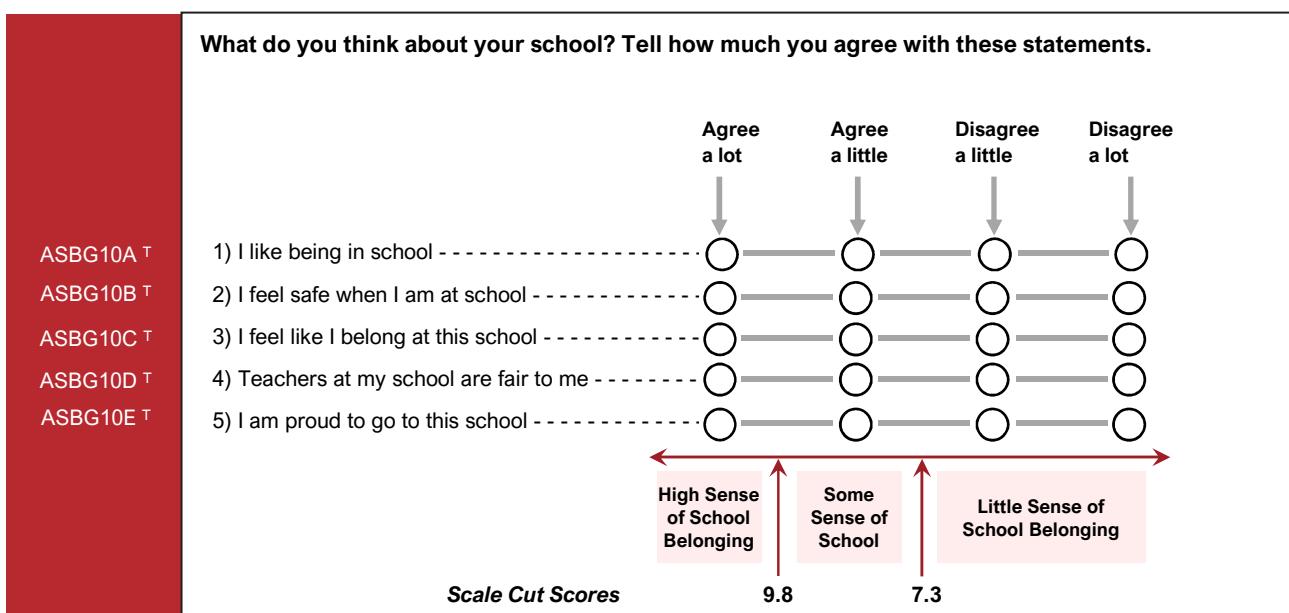
Relationship Between the PIRLS 2021 Students Like Reading Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Poland	0.11	0.01	0.02
Portugal	-0.02	0.00	0.00
Qatar	0.12	0.01	0.02
Russian Federation	-0.02	0.00	0.00
Saudi Arabia	0.18	0.03	0.02
Serbia	0.02	0.00	0.00
Singapore	0.20	0.04	0.04
Slovak Republic	0.03	0.00	0.00
Slovenia	0.11	0.01	0.01
South Africa	0.17	0.03	0.02
Spain	0.09	0.01	0.01
Sweden	0.05	0.00	0.00
Turkiye	0.09	0.01	0.01
United Arab Emirates	0.12	0.01	0.02
United States	0.13	0.02	0.02
Uzbekistan	0.26	0.07	0.06
International Median	0.11	0.01	0.01
Benchmarking Participants			
Alberta, Canada	0.11	0.01	0.01
British Columbia, Canada	0.14	0.02	0.02
Newfoundland & Labrador, Can.	0.11	0.01	0.02
Quebec, Canada	0.11	0.01	0.02
Moscow City, Russian Fed.	0.10	0.01	0.01
South Africa (6)	0.19	0.04	0.04
Abu Dhabi, UAE	0.18	0.03	0.04
Dubai, UAE	0.01	0.00	0.00

Sense of School Belonging

About the Scale

Students were scored according to their responses to five statements on the *Sense of School Belonging* scale. Cut scores divide the scale into three categories. Students with a **High Sense of School Belonging** had a score at or above the cut score corresponding to “agreeing a lot” with three of the five statements and “agreeing a little” with the other two statements, on average. Students with **Little Sense of School Belonging** had a score at or below the cut score corresponding to “disagreeing a little” to three of the five statements and “agreeing a little” with the other two statements, on average. All other students had **Some Sense of School Belonging**.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Sense of School Belonging Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBG10A	0.30378	-0.41936	-0.64536	1.06472	1.03	0.09
ASBG10B	-0.05432	-0.40891	-0.49095	0.89986	1.01	0.09
ASBG10C	0.10972	-0.32807	-0.36342	0.69149	1.06	0.08
ASBG10D	-0.16037	-0.17098	-0.41825	0.58923	1.15	0.11
ASBG10E	-0.19881	-0.20978	-0.42962	0.63940	0.91	0.07

Scale Transformation Constants for the PIRLS 2021 Sense of School Belonging Scale

Scale Transformation Constants

A = 7.558990

B = 1.664144

Transformed Scale Score = 7.558990 + 1.664144 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Sense of School Belonging Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.24506	
1	4.71585	
2	5.40935	
3	5.88997	
4	6.27818	
5	6.61933	
6	6.93638	
7	7.24879	7.3
8	7.55475	
9	7.87932	
10	8.23773	
11	8.64972	
12	9.15299	
13	9.82079	9.8
14	10.82106	
15	12.85262	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 *Sense of School Belonging* Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item				
			ASBG10A	ASBG10B	ASBG10C	ASBG10D	ASBG10E
Albania	0.69	46	0.65	0.69	0.66	0.62	0.76
Australia	0.80	57	0.74	0.75	0.77	0.67	0.83
Austria	0.78	54	0.77	0.80	0.75	0.57	0.78
Azerbaijan	0.71	47	0.71	0.67	0.66	0.65	0.74
Bahrain	0.75	50	0.71	0.70	0.72	0.64	0.76
Belgium (Flemish)	0.81	58	0.74	0.78	0.78	0.69	0.80
Belgium (French)	0.74	50	0.70	0.69	0.77	0.53	0.81
Brazil	0.72	48	0.73	0.71	0.66	0.57	0.79
Bulgaria	0.75	50	0.70	0.68	0.78	0.57	0.80
Chinese Taipei	0.81	56	0.73	0.75	0.77	0.70	0.80
Croatia	0.82	58	0.72	0.79	0.79	0.70	0.81
Cyprus	0.80	56	0.77	0.71	0.76	0.69	0.82
Czech Republic	0.76	52	0.74	0.74	0.63	0.70	0.78
Denmark	0.81	57	0.76	0.77	0.79	0.65	0.78
Egypt	0.81	56	0.67	0.75	0.77	0.75	0.81
England	0.79	55	0.74	0.73	0.74	0.67	0.81
Finland	0.82	58	0.78	0.78	0.77	0.73	0.76
France	0.67	45	0.71	0.70	0.65	0.47	0.79
Georgia	0.53	39	0.66	0.65	0.46	0.60	0.73
Germany	0.78	53	0.71	0.76	0.73	0.64	0.78
Hong Kong SAR	0.81	57	0.72	0.80	0.84	0.64	0.75
Hungary	0.79	55	0.69	0.75	0.79	0.66	0.82
Iran, Islamic Rep. of	0.60	43	0.72	0.69	0.73	0.68	0.42
Ireland	0.79	56	0.71	0.77	0.75	0.69	0.79
Israel	0.84	61	0.77	0.79	0.79	0.73	0.83
Italy	0.76	52	0.73	0.73	0.69	0.66	0.78
Jordan	0.82	58	0.72	0.77	0.80	0.71	0.81
Kazakhstan	0.77	52	0.73	0.71	0.74	0.69	0.74
Kosovo	0.67	47	0.72	0.70	0.57	0.65	0.76
Latvia	0.78	54	0.73	0.74	0.75	0.66	0.78
Lithuania	0.78	54	0.75	0.74	0.72	0.66	0.79
Macao SAR	0.76	51	0.75	0.74	0.75	0.69	0.64
Malta	0.77	53	0.72	0.74	0.77	0.62	0.77
Montenegro	0.70	47	0.67	0.68	0.71	0.60	0.77
Morocco	0.67	45	0.61	0.67	0.71	0.60	0.73
Netherlands	0.75	51	0.73	0.72	0.72	0.66	0.74
New Zealand	0.82	58	0.76	0.74	0.79	0.67	0.83
North Macedonia	0.66	43	0.65	0.67	0.66	0.67	0.63
Northern Ireland	0.79	56	0.70	0.78	0.75	0.70	0.80

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 *Sense of School Belonging* Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item				
			ASBG10A	ASBG10B	ASBG10C	ASBG10D	ASBG10E
Norway (5)	0.80	56	0.72	0.74	0.79	0.68	0.81
Oman	0.76	51	0.71	0.72	0.74	0.66	0.75
Poland	0.80	56	0.78	0.75	0.76	0.66	0.80
Portugal	0.75	50	0.72	0.72	0.71	0.61	0.77
Qatar	0.81	56	0.75	0.74	0.79	0.65	0.80
Russian Federation	0.78	54	0.76	0.73	0.72	0.68	0.77
Saudi Arabia	0.79	54	0.69	0.74	0.73	0.72	0.78
Serbia	0.74	51	0.74	0.72	0.71	0.62	0.77
Singapore	0.83	60	0.77	0.78	0.81	0.69	0.82
Slovak Republic	0.81	58	0.73	0.78	0.76	0.71	0.81
Slovenia	0.83	59	0.74	0.77	0.79	0.72	0.82
South Africa	0.73	48	0.69	0.71	0.71	0.64	0.73
Spain	0.77	53	0.73	0.75	0.70	0.67	0.78
Sweden	0.81	57	0.73	0.73	0.81	0.69	0.82
Turkiye	0.65	43	0.67	0.69	0.67	0.51	0.72
United Arab Emirates	0.80	55	0.73	0.76	0.75	0.67	0.80
United States	0.77	53	0.71	0.72	0.78	0.63	0.79
Uzbekistan	0.67	45	0.66	0.60	0.69	0.67	0.74
Benchmarking Participants							
Alberta, Canada	0.81	58	0.74	0.77	0.80	0.65	0.83
British Columbia, Canada	0.82	58	0.75	0.75	0.78	0.71	0.82
Newfoundland & Labrador, Can.	0.79	55	0.73	0.73	0.76	0.64	0.83
Quebec, Canada	0.80	55	0.74	0.76	0.77	0.64	0.78
Moscow City, Russian Fed.	0.80	56	0.77	0.74	0.75	0.69	0.77
South Africa (6)	0.72	48	0.68	0.74	0.72	0.56	0.75
Abu Dhabi, UAE	0.81	56	0.73	0.77	0.76	0.67	0.79
Dubai, UAE	0.79	54	0.74	0.73	0.74	0.66	0.79

Relationship Between the PIRLS 2021 *Sense of School Belonging* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.06	0.00	0.00
Australia	0.15	0.02	0.02
Austria	0.15	0.02	0.02
Azerbaijan	0.11	0.01	0.02
Bahrain	0.21	0.04	0.05
Belgium (Flemish)	0.13	0.02	0.02
Belgium (French)	0.09	0.01	0.02
Brazil	0.01	0.00	0.01
Bulgaria	-0.03	0.00	0.00
Chinese Taipei	0.10	0.01	0.01
Croatia	0.08	0.01	0.02
Cyprus	0.12	0.01	0.02
Czech Republic	0.06	0.00	0.01
Denmark	0.16	0.02	0.02
Egypt	0.15	0.02	0.03
England	0.12	0.02	0.02
Finland	0.12	0.01	0.02
France	0.12	0.02	0.01
Georgia	0.10	0.01	0.01
Germany	0.20	0.04	0.03
Hong Kong SAR	0.16	0.03	0.03
Hungary	0.10	0.01	0.01
Iran, Islamic Rep. of	-0.04	0.00	0.01
Ireland	0.16	0.03	0.03
Israel	0.02	0.00	0.00
Italy	0.14	0.02	0.02
Jordan	0.05	0.00	0.01
Kazakhstan	0.02	0.00	0.00
Kosovo	0.12	0.02	0.02
Latvia	0.10	0.01	0.01
Lithuania	0.08	0.01	0.01
Macao SAR	0.19	0.04	0.04
Malta	0.10	0.01	0.02
Montenegro	0.10	0.01	0.02
Morocco	0.12	0.02	0.02
Netherlands	0.23	0.05	0.04
New Zealand	0.11	0.01	0.02
North Macedonia	0.10	0.01	0.01
Northern Ireland	0.21	0.04	0.04
Norway (5)	0.13	0.02	0.01

Relationship Between the PIRLS 2021 *Sense of School Belonging* Scale and PIRLS 2021 Achievement

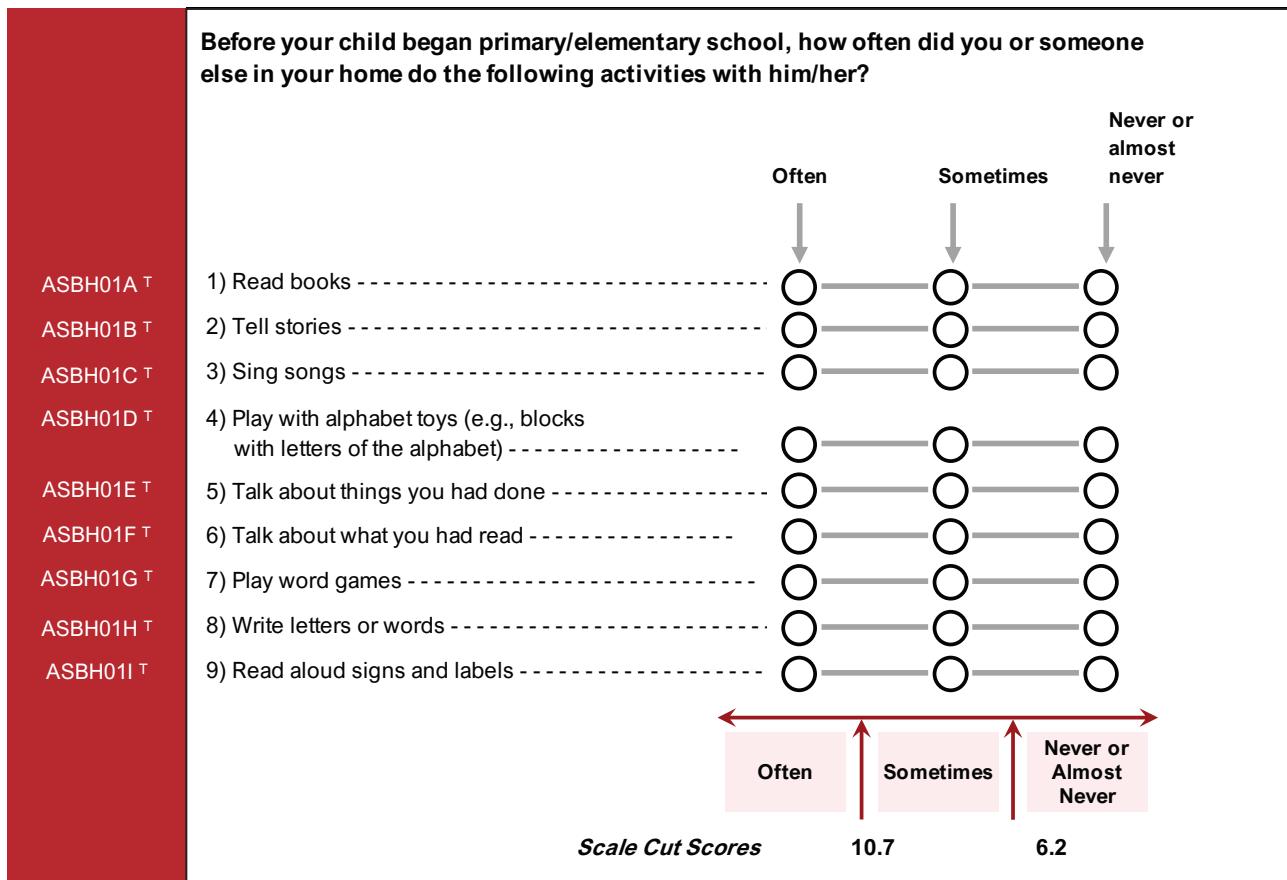
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.16	0.03	0.03
Poland	-0.03	0.00	0.01
Portugal	0.09	0.01	0.01
Qatar	0.24	0.06	0.06
Russian Federation	0.01	0.00	0.00
Saudi Arabia	0.29	0.08	0.08
Serbia	0.02	0.00	0.00
Singapore	0.14	0.02	0.02
Slovak Republic	-0.05	0.00	0.01
Slovenia	0.11	0.01	0.02
South Africa	0.10	0.01	0.02
Spain	0.11	0.01	0.01
Sweden	0.12	0.02	0.02
Turkiye	0.20	0.04	0.05
United Arab Emirates	0.21	0.04	0.06
United States	0.22	0.05	0.06
Uzbekistan	0.18	0.03	0.04
International Median	0.12	0.01	0.02
Benchmarking Participants			
Alberta, Canada	0.18	0.03	0.03
British Columbia, Canada	0.13	0.02	0.02
Newfoundland & Labrador, Can.	0.15	0.02	0.02
Quebec, Canada	0.11	0.01	0.01
Moscow City, Russian Fed.	0.09	0.01	0.01
South Africa (6)	0.17	0.03	0.03
Abu Dhabi, UAE	0.25	0.06	0.08
Dubai, UAE	0.12	0.01	0.02

Appendix 15B: PIRLS 2021 Context Questionnaire Scales Based on Parents' Reports

Early Literacy Activities

About the Scale

Students were scored according to their parents' reports regarding the frequency they or someone in the home engaged their children in the nine activities on the *Early Literacy Activities* scale. Cut scores divide the scale into three categories. Students who **Often** engaged in early literacy activities before primary school had a score at or above the cut score corresponding to their parents reporting they "often" did five of the nine activities and "sometimes" did the other four, on average. Students who **Never or Almost Never** engaged in early literacy activities before primary school had a score at or below the cut score corresponding to their parents reporting they "never or almost never" did five of the nine activities and "sometimes" did the other four, on average. All other students **Sometimes** engaged in early literacy activities before primary school.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Early Literacy Activities Scale

Item	delta	tau_1	tau_2	Infit	Q-Index
ASBH01A	-0.35545	-1.38609	1.38609	0.99	0.16
ASBH01B	-0.22320	-1.36249	1.36249	0.95	0.15
ASBH01C	-0.02859	-0.94698	0.94698	1.17	0.20
ASBH01D	0.39025	-0.97329	0.97329	1.01	0.15
ASBH01E	-0.91060	-1.11960	1.11960	1.04	0.18
ASBH01F	0.25814	-1.31239	1.31239	0.94	0.13
ASBH01G	0.46321	-1.18785	1.18785	0.94	0.13
ASBH01H	0.07856	-1.08371	1.08371	0.97	0.14
ASBH01I	0.32768	-1.02960	1.02960	1.03	0.15

Scale Transformation Constants for the PIRLS 2021 Early Literacy Activities Scale

Scale Transformation Constants

A = 8.467126

B = 1.515277

Transformed Scale Score = 8.467126 + 1.515277 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Early Literacy Activities Scale

Raw Score	Transformed Scale Score	Cutpoint
0	2.07166	
1	3.91689	
2	4.87777	
3	5.58478	
4	6.16995	6.2
5	6.68634	
6	7.16522	
7	7.61837	
8	8.05673	
9	8.48851	
10	8.91792	
11	9.35253	
12	9.79887	
13	10.26741	
14	10.77067	10.7
15	11.33758	
16	12.02203	
17	12.95777	
18	14.77456	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Early Literacy Activities Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBH01A	ASBH01B	ASBH01C	ASBH01D	ASBH01E	ASBH01F	ASBH01G	ASBH01H	ASBH01I
Albania	0.80	38	0.66	0.58	0.47	0.63	0.55	0.65	0.67	0.68	0.66
Australia	—	—	—	—	—	—	—	—	—	—	—
Austria	0.71	31	0.55	0.62	0.51	0.48	0.50	0.64	0.63	0.46	0.56
Azerbaijan	0.69	30	0.60	0.56	0.36	0.58	0.39	0.61	0.55	0.61	0.60
Bahrain	0.75	34	0.60	0.57	0.38	0.62	0.52	0.61	0.67	0.64	0.57
Belgium (Flemish)	0.73	32	0.55	0.56	0.49	0.51	0.50	0.61	0.69	0.53	0.60
Belgium (French)	0.73	32	0.54	0.59	0.45	0.60	0.49	0.58	0.68	0.55	0.54
Brazil	0.81	40	0.68	0.69	0.51	0.68	0.49	0.65	0.69	0.65	0.62
Bulgaria	0.86	47	0.73	0.68	0.49	0.73	0.60	0.74	0.73	0.74	0.68
Chinese Taipei	0.79	38	0.65	0.66	0.56	0.60	0.54	0.62	0.65	0.58	0.66
Croatia	0.76	35	0.54	0.63	0.51	0.59	0.47	0.64	0.65	0.63	0.63
Cyprus	0.78	37	0.58	0.62	0.51	0.67	0.53	0.64	0.68	0.62	0.58
Czech Republic	0.69	29	0.45	0.57	0.42	0.53	0.48	0.67	0.59	0.57	0.54
Denmark	0.75	34	0.58	0.58	0.48	0.56	0.46	0.68	0.70	0.58	0.59
Egypt	0.79	37	0.58	0.61	0.39	0.64	0.58	0.65	0.66	0.67	0.63
England	—	—	—	—	—	—	—	—	—	—	—
Finland	0.75	33	0.54	0.56	0.51	0.57	0.49	0.67	0.60	0.63	0.59
France	0.73	32	0.57	0.58	0.45	0.62	0.48	0.57	0.64	0.60	0.53
Georgia	0.73	32	0.59	0.57	0.42	0.63	0.55	0.59	0.57	0.54	0.62
Germany	0.70	29	0.47	0.58	0.48	0.49	0.44	0.62	0.65	0.52	0.59
Hong Kong SAR	0.76	35	0.63	0.63	0.54	0.49	0.55	0.64	0.66	0.55	0.58
Hungary	0.72	31	0.51	0.49	0.45	0.63	0.46	0.58	0.61	0.60	0.62
Iran, Islamic Rep. of	0.79	37	0.61	0.53	0.55	0.65	0.52	0.62	0.70	0.65	0.63
Ireland	0.78	37	0.60	0.64	0.48	0.57	0.52	0.67	0.66	0.64	0.65
Israel	0.76	35	0.46	0.57	0.46	0.63	0.49	0.69	0.70	0.65	0.61
Italy	0.71	30	0.51	0.57	0.46	0.62	0.43	0.60	0.61	0.59	0.56
Jordan	0.78	37	0.56	0.60	0.47	0.62	0.61	0.58	0.65	0.68	0.64
Kazakhstan	0.75	34	0.61	0.51	0.43	0.59	0.57	0.67	0.56	0.65	0.59
Kosovo	0.66	27	0.48	0.54	0.47	0.56	0.42	0.55	0.53	0.57	0.57
Latvia	0.72	32	0.56	0.58	0.46	0.57	0.48	0.68	0.60	0.58	0.52
Lithuania	0.75	34	0.57	0.57	0.47	0.65	0.53	0.70	0.66	0.60	0.46
Macao SAR	0.74	33	0.60	0.57	0.52	0.52	0.54	0.63	0.65	0.56	0.58
Malta	0.77	35	0.61	0.65	0.50	0.58	0.50	0.67	0.67	0.56	0.58
Montenegro	0.72	31	0.59	0.60	0.52	0.55	0.46	0.63	0.60	0.51	0.55
Morocco	0.83	42	0.68	0.65	0.33	0.66	0.61	0.72	0.67	0.74	0.66
Netherlands	0.72	31	0.43	0.50	0.50	0.59	0.45	0.52	0.69	0.64	0.66
New Zealand	0.82	41	0.62	0.68	0.57	0.60	0.56	0.71	0.71	0.63	0.68
North Macedonia	0.80	38	0.63	0.65	0.51	0.65	0.55	0.64	0.66	0.65	0.61
Northern Ireland	0.80	39	0.58	0.66	0.54	0.61	0.55	0.71	0.69	0.61	0.64

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Early Literacy Activities Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBH01A	ASBH01B	ASBH01C	ASBH01D	ASBH01E	ASBH01F	ASBH01G	ASBH01H	ASBH01I
Norway (5)	0.77	36	0.57	0.62	0.48	0.64	0.45	0.67	0.70	0.60	0.59
Oman	0.70	31	0.59	0.49	0.24	0.59	0.47	0.59	0.62	0.65	0.62
Poland	0.75	34	0.53	0.60	0.51	0.58	0.54	0.68	0.62	0.58	0.59
Portugal	0.75	34	0.63	0.63	0.48	0.61	0.47	0.62	0.65	0.57	0.54
Qatar	0.73	32	0.57	0.56	0.41	0.58	0.50	0.58	0.62	0.61	0.62
Russian Federation	0.80	39	0.63	0.59	0.54	0.65	0.62	0.70	0.67	0.66	0.53
Saudi Arabia	0.78	37	0.57	0.60	0.42	0.63	0.59	0.66	0.68	0.68	0.58
Serbia	0.72	31	0.58	0.59	0.42	0.62	0.48	0.63	0.64	0.50	0.54
Singapore	0.85	46	0.71	0.73	0.62	0.66	0.62	0.71	0.67	0.66	0.68
Slovak Republic	0.78	37	0.60	0.59	0.34	0.63	0.63	0.71	0.63	0.62	0.66
Slovenia	0.75	34	0.49	0.58	0.50	0.61	0.50	0.63	0.64	0.59	0.67
South Africa	0.80	39	0.67	0.60	0.46	0.62	0.54	0.68	0.67	0.66	0.65
Spain	0.74	33	0.57	0.59	0.46	0.62	0.46	0.62	0.65	0.61	0.56
Sweden	0.76	35	0.50	0.54	0.47	0.63	0.49	0.67	0.69	0.66	0.62
Turkiye	0.88	51	0.74	0.74	0.57	0.66	0.74	0.79	0.77	0.70	0.71
United Arab Emirates	0.79	37	0.64	0.60	0.44	0.60	0.61	0.66	0.68	0.65	0.59
United States	–	–	–	–	–	–	–	–	–	–	–
Uzbekistan	0.65	27	0.57	0.48	0.41	0.58	0.37	0.59	0.50	0.57	0.57
Benchmarking Participants											
Alberta, Canada	0.81	40	0.65	0.67	0.56	0.57	0.58	0.72	0.69	0.61	0.62
British Columbia, Canada	0.81	40	0.60	0.64	0.59	0.63	0.63	0.72	0.70	0.59	0.62
Newfoundland & Labrador, Can.	0.81	40	0.61	0.64	0.56	0.64	0.58	0.73	0.70	0.64	0.56
Quebec, Canada	0.76	34	0.58	0.60	0.44	0.61	0.48	0.65	0.68	0.62	0.57
Moscow City, Russian Fed.	0.75	35	0.54	0.57	0.52	0.62	0.62	0.69	0.65	0.61	0.44
South Africa (6)	0.79	37	0.66	0.62	0.44	0.61	0.53	0.66	0.62	0.67	0.66
Abu Dhabi, UAE	0.80	39	0.65	0.64	0.47	0.61	0.61	0.67	0.67	0.67	0.61
Dubai, UAE	0.78	36	0.63	0.56	0.47	0.57	0.59	0.69	0.66	0.63	0.59

A dash (–) indicates comparable data not available.

Relationship Between the PIRLS 2021 *Early Literacy Activities* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.21	0.05	0.05
Australia	–	–	–
Austria	0.21	0.04	0.03
Azerbaijan	0.18	0.03	0.03
Bahrain	0.24	0.06	0.05
Belgium (Flemish)	0.14	0.02	0.01
Belgium (French)	0.19	0.04	0.02
Brazil	0.21	0.05	0.04
Bulgaria	0.37	0.14	0.13
Chinese Taipei	0.21	0.05	0.03
Croatia	0.23	0.05	0.04
Cyprus	0.23	0.05	0.03
Czech Republic	0.07	0.00	0.00
Denmark	0.15	0.02	0.02
Egypt	0.14	0.02	0.02
England	–	–	–
Finland	0.15	0.02	0.02
France	0.20	0.04	0.03
Georgia	0.05	0.00	0.01
Germany	0.13	0.02	0.02
Hong Kong SAR	0.17	0.03	0.01
Hungary	0.12	0.01	0.02
Iran, Islamic Rep. of	0.21	0.04	0.04
Ireland	0.20	0.04	0.03
Israel	0.14	0.02	0.02
Italy	0.17	0.03	0.02
Jordan	0.17	0.03	0.02
Kazakhstan	0.11	0.01	0.01
Kosovo	0.16	0.02	0.02
Latvia	0.13	0.02	0.01
Lithuania	0.15	0.02	0.02
Macao SAR	0.10	0.01	0.00
Malta	0.16	0.03	0.02
Montenegro	0.18	0.03	0.03
Morocco	0.23	0.05	0.04
Netherlands	0.12	0.02	0.01
New Zealand	0.22	0.05	0.04
North Macedonia	0.16	0.03	0.02
Northern Ireland	0.14	0.02	0.01
Norway (5)	0.16	0.03	0.02
Oman	0.17	0.03	0.03

Relationship Between the PIRLS 2021 *Early Literacy Activities* Scale and PIRLS 2021 Achievement

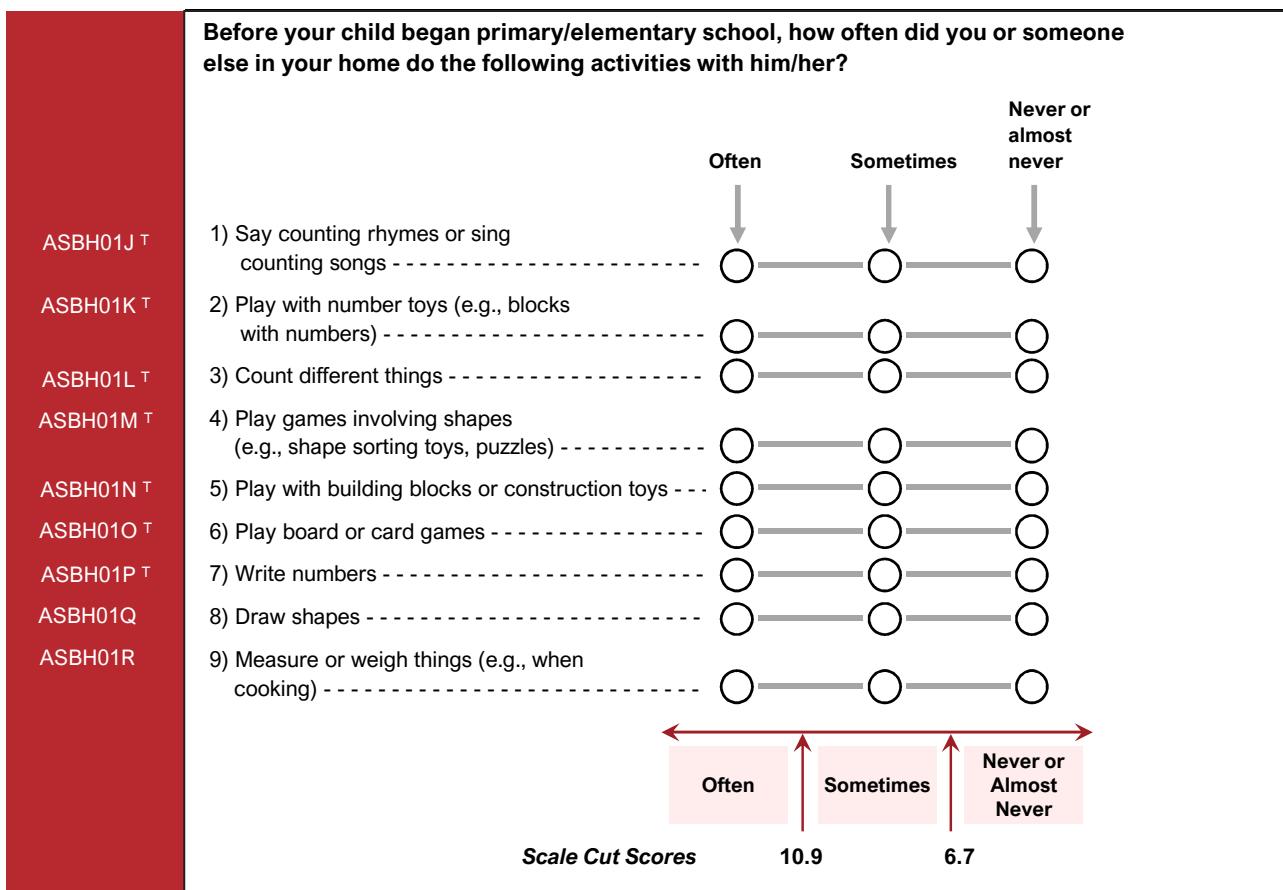
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Poland	0.12	0.02	0.02
Portugal	0.18	0.03	0.03
Qatar	0.17	0.03	0.02
Russian Federation	0.14	0.02	0.01
Saudi Arabia	0.08	0.01	0.01
Serbia	0.16	0.03	0.02
Singapore	0.22	0.05	0.04
Slovak Republic	0.20	0.04	0.05
Slovenia	0.13	0.02	0.01
South Africa	0.17	0.03	0.02
Spain	0.23	0.05	0.04
Sweden	0.16	0.03	0.01
Turkiye	0.38	0.15	0.14
United Arab Emirates	0.21	0.04	0.03
United States	–	–	–
Uzbekistan	0.12	0.01	0.01
International Median	0.17	0.03	0.02
Benchmarking Participants			
Alberta, Canada	0.14	0.02	0.01
British Columbia, Canada	0.13	0.02	0.01
Newfoundland & Labrador, Can.	0.16	0.02	0.02
Quebec, Canada	0.11	0.01	0.01
Moscow City, Russian Fed.	0.09	0.01	0.01
South Africa (6)	0.17	0.03	0.02
Abu Dhabi, UAE	0.22	0.05	0.04
Dubai, UAE	0.21	0.04	0.03

A dash (–) indicates comparable data not available.

Early Numeracy Activities

About the Scale

Students were scored according to their parents' reports regarding the frequency they or someone in the home engaged their children in the nine activities on the *Early Numeracy Activities* scale. Cut scores divide the scale into three categories. Students who **Often** engaged in early numeracy activities before primary school had a score at or above the cut score corresponding to their parents reporting they "often" did five of the nine activities and "sometimes" did the other four, on average. Students who **Never or Almost Never** engaged in early numeracy activities before primary school had a score at or below the cut score corresponding to their parents reporting they "never or almost never" did five of the nine activities and "sometimes" did the other four, on average. All other students **Sometimes** engaged in early numeracy activities before primary school.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Early Numeracy Activities Scale

Item	delta	tau_1	tau_2	Infit	Q-Index
ASBH01J	0.45467	-1.08249	1.08249	1.06	0.15
ASBH01K	0.25063	-1.06828	1.06828	0.92	0.11
ASBH01L	-0.78806	-1.23272	1.23272	0.90	0.13
ASBH01M	-0.48344	-1.06391	1.06391	0.94	0.13
ASBH01N	-0.52130	-0.82717	0.82717	1.05	0.15
ASBH01O	-0.05391	-1.18890	1.18890	1.07	0.17
ASBH01P	-0.25082	-1.22086	1.22086	1.00	0.14
ASBH01Q	-0.20124	-1.25638	1.25638	0.97	0.13
ASBH01R	1.59347	-1.17184	1.17184	1.13	0.19

Scale Transformation Constants for the PIRLS 2021 Early Numeracy Activities Scale

Scale Transformation Constants

A = 8.835875

B = 1.409821

Transformed Scale Score = 8.835875 + 1.409821 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Early Numeracy Activities Scale

Raw Score	Transformed Scale Score	Cutpoint
0	2.85854	
1	4.56760	
2	5.45510	
3	6.10765	
4	6.64902	6.7
5	7.12878	
6	7.57471	
7	7.99769	
8	8.40746	
9	8.81024	
10	9.21443	
11	9.62426	
12	10.04897	
13	10.50035	
14	10.99170	10.9
15	11.55635	
16	12.25036	
17	13.20593	
18	15.01872	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Early Numeracy Activities Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ASBHQ01J	ASBHQ01K	ASBHQ01L	ASBHQ01M	ASBHQ01N	ASBHQ01O	ASBHQ01P	ASBHQ01Q	ASBHQ01R	
Albania	0.82	42	0.63	0.72	0.66	0.72	0.67	0.63	0.64	0.64	0.48	
Australia	—	—	—	—	—	—	—	—	—	—	—	
Austria	0.74	33	0.58	0.63	0.62	0.60	0.52	0.48	0.58	0.62	0.52	
Azerbaijan	0.76	36	0.53	0.68	0.59	0.71	0.69	0.43	0.55	0.65	0.49	
Bahrain	0.80	39	0.60	0.70	0.66	0.69	0.66	0.61	0.63	0.65	0.39	
Belgium (Flemish)	0.76	35	0.58	0.66	0.65	0.64	0.51	0.55	0.60	0.63	0.46	
Belgium (French)	0.76	35	0.55	0.69	0.66	0.65	0.57	0.50	0.58	0.61	0.49	
Brazil	0.81	41	0.62	0.73	0.58	0.74	0.73	0.53	0.64	0.67	0.42	
Bulgaria	0.85	47	0.62	0.77	0.74	0.77	0.74	0.63	0.72	0.61	0.52	
Chinese Taipei	0.85	47	0.70	0.77	0.78	0.78	0.74	0.47	0.69	0.73	0.42	
Croatia	0.80	39	0.60	0.73	0.69	0.69	0.61	0.55	0.64	0.67	0.40	
Cyprus	0.81	40	0.60	0.72	0.67	0.69	0.61	0.55	0.66	0.68	0.50	
Czech Republic	0.74	33	0.49	0.65	0.62	0.61	0.52	0.46	0.66	0.62	0.52	
Denmark	0.75	34	0.58	0.65	0.60	0.60	0.47	0.50	0.65	0.63	0.54	
Egypt	0.80	40	0.60	0.70	0.64	0.67	0.70	0.60	0.67	0.64	0.39	
England	—	—	—	—	—	—	—	—	—	—	—	
Finland	0.77	35	0.56	0.66	0.65	0.58	0.46	0.48	0.71	0.63	0.55	
France	0.75	34	0.53	0.67	0.64	0.64	0.56	0.49	0.61	0.63	0.45	
Georgia	0.80	39	0.62	0.70	0.59	0.66	0.67	0.57	0.59	0.65	0.52	
Germany	0.72	32	0.57	0.63	0.58	0.59	0.49	0.45	0.62	0.64	0.46	
Hong Kong SAR	0.84	44	0.67	0.74	0.77	0.77	0.71	0.54	0.67	0.64	0.41	
Hungary	0.75	34	0.61	0.69	0.64	0.58	0.48	0.47	0.57	0.64	0.55	
Iran, Islamic Rep. of	0.80	39	0.59	0.66	0.64	0.68	0.65	0.65	0.60	0.63	0.47	
Ireland	0.82	42	0.63	0.71	0.69	0.73	0.64	0.49	0.70	0.71	0.51	
Israel	0.79	39	0.59	0.71	0.65	0.63	0.59	0.57	0.68	0.68	0.45	
Italy	0.74	33	0.58	0.67	0.66	0.58	0.50	0.43	0.62	0.63	0.44	
Jordan	0.82	41	0.65	0.68	0.65	0.67	0.67	0.64	0.67	0.68	0.41	
Kazakhstan	0.77	36	0.61	0.67	0.61	0.63	0.57	0.47	0.64	0.68	0.52	
Kosovo	0.74	33	0.54	0.68	0.61	0.65	0.62	0.55	0.49	0.54	0.45	
Latvia	0.77	36	0.61	0.70	0.66	0.63	0.50	0.46	0.66	0.65	0.52	
Lithuania	0.80	39	0.62	0.74	0.67	0.65	0.58	0.49	0.67	0.64	0.53	
Macao SAR	0.82	42	0.62	0.74	0.75	0.76	0.71	0.49	0.65	0.62	0.41	
Malta	0.80	40	0.62	0.72	0.71	0.74	0.63	0.45	0.64	0.68	0.44	
Montenegro	0.76	35	0.61	0.69	0.62	0.64	0.58	0.47	0.56	0.61	0.49	
Morocco	0.84	43	0.69	0.70	0.60	0.68	0.70	0.67	0.69	0.72	0.44	
Netherlands	0.79	37	0.63	0.70	0.67	0.62	0.50	0.46	0.67	0.64	0.56	
New Zealand	0.85	46	0.67	0.74	0.71	0.74	0.60	0.61	0.68	0.70	0.62	
North Macedonia	0.82	42	0.66	0.69	0.66	0.66	0.53	0.63	0.69	0.70	0.62	
Northern Ireland	0.83	43	0.60	0.73	0.69	0.70	0.62	0.58	0.69	0.71	0.57	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Early Numeracy Activities Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ASBHQ01J	ASBHQ01K	ASBHQ01L	ASBHQ01M	ASBHQ01N	ASBHQ01O	ASBHQ01P	ASBHQ01Q	ASBHQ01R	
Norway (5)	0.77	36	0.61	0.70	0.63	0.63	0.49	0.53	0.66	0.57	0.54	
Oman	0.76	35	0.51	0.64	0.57	0.64	0.60	0.66	0.60	0.60	0.43	
Poland	0.78	37	0.57	0.67	0.65	0.59	0.53	0.53	0.68	0.68	0.52	
Portugal	0.79	38	0.61	0.71	0.69	0.66	0.59	0.52	0.63	0.65	0.50	
Qatar	0.80	40	0.60	0.73	0.68	0.70	0.65	0.56	0.66	0.66	0.36	
Russian Federation	0.82	42	0.59	0.72	0.65	0.71	0.66	0.64	0.68	0.65	0.52	
Saudi Arabia	0.83	42	0.58	0.67	0.61	0.69	0.70	0.70	0.69	0.70	0.47	
Serbia	0.75	34	0.61	0.69	0.60	0.63	0.51	0.52	0.56	0.61	0.51	
Singapore	0.87	51	0.71	0.76	0.77	0.79	0.71	0.58	0.75	0.76	0.51	
Slovak Republic	0.82	42	0.63	0.72	0.68	0.70	0.63	0.53	0.68	0.70	0.55	
Slovenia	0.78	36	0.61	0.68	0.67	0.64	0.43	0.48	0.65	0.67	0.53	
South Africa	0.82	41	0.60	0.70	0.68	0.68	0.67	0.58	0.61	0.66	0.53	
Spain	0.76	35	0.58	0.69	0.57	0.64	0.55	0.48	0.64	0.62	0.49	
Sweden	0.81	40	0.66	0.71	0.63	0.68	0.53	0.52	0.70	0.68	0.53	
Turkiye	0.89	54	0.73	0.77	0.75	0.80	0.71	0.73	0.73	0.76	0.63	
United Arab Emirates	0.85	47	0.65	0.74	0.72	0.75	0.72	0.62	0.73	0.73	0.47	
United States	—	—	—	—	—	—	—	—	—	—	—	
Uzbekistan	0.69	30	0.53	0.63	0.55	0.63	0.52	0.48	0.51	0.57	0.44	
Benchmarking Participants												
Alberta, Canada	0.83	43	0.64	0.73	0.69	0.72	0.59	0.55	0.70	0.70	0.56	
British Columbia, Canada	0.83	43	0.63	0.74	0.71	0.74	0.62	0.54	0.67	0.69	0.53	
Newfoundland & Labrador, Can.	0.83	44	0.65	0.73	0.70	0.73	0.64	0.55	0.71	0.71	0.54	
Quebec, Canada	0.79	39	0.62	0.72	0.68	0.67	0.60	0.54	0.61	0.60	0.51	
Moscow City, Russian Fed.	0.79	38	0.60	0.68	0.61	0.63	0.57	0.60	0.66	0.66	0.54	
South Africa (6)	0.81	41	0.59	0.69	0.66	0.73	0.68	0.59	0.63	0.66	0.48	
Abu Dhabi, UAE	0.86	49	0.67	0.74	0.73	0.75	0.73	0.66	0.75	0.74	0.48	
Dubai, UAE	0.83	44	0.64	0.73	0.71	0.73	0.69	0.56	0.69	0.70	0.46	

A dash (—) indicates comparable data not available.

Relationship Between the PIRLS 2021 *Early Numeracy Activities* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.17	0.03	0.03
Australia	–	–	–
Austria	0.09	0.01	0.01
Azerbaijan	0.20	0.04	0.04
Bahrain	0.18	0.03	0.03
Belgium (Flemish)	0.06	0.00	0.00
Belgium (French)	0.10	0.01	0.01
Brazil	0.18	0.03	0.02
Bulgaria	0.32	0.10	0.09
Chinese Taipei	0.18	0.03	0.02
Croatia	0.16	0.03	0.02
Cyprus	0.19	0.04	0.02
Czech Republic	-0.02	0.00	0.00
Denmark	0.09	0.01	0.01
Egypt	0.11	0.01	0.01
England	–	–	–
Finland	0.07	0.00	0.00
France	0.16	0.03	0.02
Georgia	0.03	0.00	0.00
Germany	0.02	0.00	0.00
Hong Kong SAR	0.08	0.01	0.01
Hungary	0.10	0.01	0.01
Iran, Islamic Rep. of	0.18	0.03	0.04
Ireland	0.15	0.02	0.02
Israel	0.05	0.00	0.00
Italy	0.09	0.01	0.00
Jordan	0.15	0.02	0.02
Kazakhstan	0.06	0.00	0.00
Kosovo	0.17	0.03	0.03
Latvia	0.07	0.00	0.00
Lithuania	0.08	0.01	0.01
Macao SAR	0.04	0.00	0.00
Malta	0.12	0.01	0.01
Montenegro	0.12	0.01	0.01
Morocco	0.23	0.05	0.04
Netherlands	0.06	0.00	0.00
New Zealand	0.17	0.03	0.02
North Macedonia	0.07	0.01	0.01
Northern Ireland	0.10	0.01	0.02
Norway (5)	0.10	0.01	0.01

Relationship Between the PIRLS 2021 *Early Numeracy Activities* Scale and PIRLS 2021 Achievement

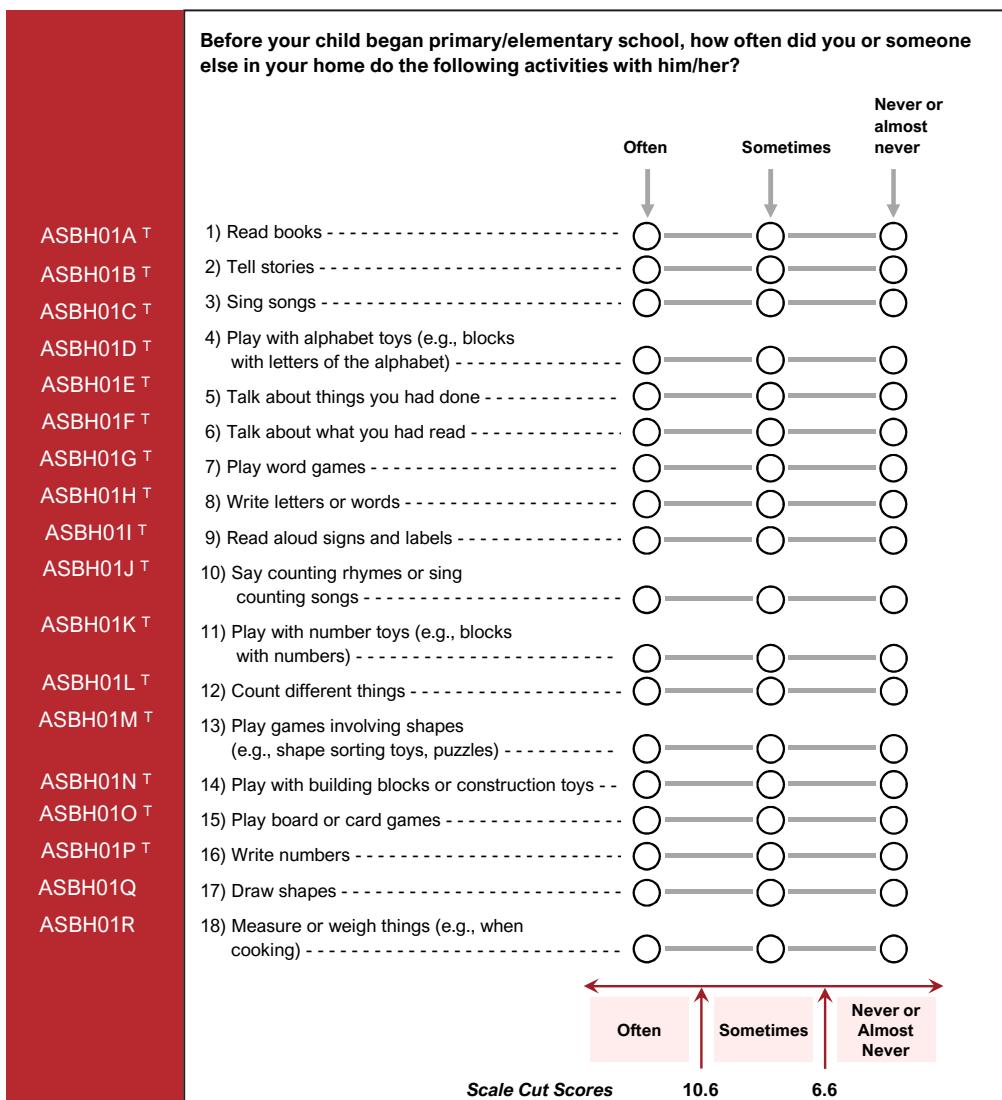
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.14	0.02	0.01
Poland	0.05	0.00	0.00
Portugal	0.12	0.02	0.01
Qatar	0.11	0.01	0.01
Russian Federation	0.09	0.01	0.01
Saudi Arabia	0.07	0.00	0.00
Serbia	0.09	0.01	0.01
Singapore	0.17	0.03	0.02
Slovak Republic	0.16	0.02	0.05
Slovenia	0.06	0.00	0.00
South Africa	0.15	0.02	0.03
Spain	0.12	0.01	0.01
Sweden	0.07	0.00	0.00
Turkiye	0.35	0.13	0.12
United Arab Emirates	0.11	0.01	0.02
United States	–	–	–
Uzbekistan	0.10	0.01	0.01
International Median	0.10	0.01	0.01
Benchmarking Participants			
Alberta, Canada	0.09	0.01	0.01
British Columbia, Canada	0.10	0.01	0.00
Newfoundland & Labrador, Can.	0.10	0.01	0.01
Quebec, Canada	0.06	0.00	0.00
Moscow City, Russian Fed.	0.05	0.00	0.00
South Africa (6)	0.16	0.03	0.03
Abu Dhabi, UAE	0.11	0.01	0.01
Dubai, UAE	0.15	0.02	0.02

A dash (–) indicates comparable data not available.

Early Literacy and Numeracy Activities

About the Scale

Students were scored according to their parents' reports regarding the frequency they or someone in the home engaged their children in the eighteen activities on the *Early Literacy and Numeracy Activities* scale. Cut scores divide the scale into three categories. Students **Often** engaged in early literacy and numeracy activities before primary school had a score at or above the cut score corresponding to their parents reporting they "often" did nine of the eighteen activities and "sometimes" did the other nine, on average. Students **Never or Almost Never** engaged in early literacy and numeracy activities before primary school had a score at or below the cut score corresponding to their parents reporting they "never or almost never" did nine of the eighteen activities and "sometimes" did the other nine, on average. All other students **Sometimes** engaged in early literacy and numeracy activities.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Early Literacy and Numeracy Activities Scale

Item	delta	tau_1	tau_2	Infit	Q-Index
ASBH01A	-0.39815	-1.38612	1.38612	1.03	0.20
ASBH01B	-0.27084	-1.36591	1.36591	0.99	0.19
ASBH01C	-0.07626	-0.94911	0.94911	1.20	0.23
ASBH01D	0.34161	-0.97569	0.97569	0.95	0.15
ASBH01E	-0.97514	-1.13702	1.13702	1.09	0.21
ASBH01F	0.20652	-1.31732	1.31732	0.99	0.17
ASBH01G	0.41270	-1.19198	1.19198	0.93	0.14
ASBH01H	0.02639	-1.08810	1.08810	0.95	0.15
ASBH01I	0.27655	-1.03300	1.03300	1.03	0.17
ASBH01J	0.48895	-1.03701	1.03701	1.02	0.17
ASBH01K	0.29015	-1.02381	1.02381	0.89	0.13
ASBH01L	-0.72944	-1.19802	1.19802	0.88	0.14
ASBH01M	-0.42437	-1.02352	1.02352	0.96	0.15
ASBH01N	-0.45303	-0.78422	0.78422	1.07	0.18
ASBH01O	0.00038	-1.14074	1.14074	1.07	0.20
ASBH01P	-0.18464	-1.16906	1.16906	0.95	0.15
ASBH01Q	-0.13457	-1.20297	1.20297	0.96	0.16
ASBH01R	1.60319	-1.13187	1.13187	1.12	0.22

Scale Transformation Constants for the PIRLS 2021 Early Literacy and Numeracy Activities Scale

Scale Transformation Constants

A = 8.577414

B = 1.490716

Transformed Scale Score = 8.577414 + 1.490716 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the
PIRLS 2021 Early Literacy and Numeracy Activities Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	1.30233	
1	3.02642	
2	3.87559	
3	4.46700	
4	4.93172	
5	5.32476	
6	5.66934	
7	5.98011	
8	6.26627	
9	6.53399	6.6
10	6.78757	
11	7.02962	
12	7.26405	
13	7.49173	
14	7.71419	
15	7.93271	
16	8.14839	
17	8.36223	
18	8.57506	
19	8.78784	
20	9.00134	
21	9.21650	
22	9.43432	
23	9.65595	
24	9.88273	
25	10.11630	
26	10.35760	
27	10.61066	10.6
28	10.87826	
29	11.16498	
30	11.47732	
31	11.82488	
32	12.22172	
33	12.69565	
34	13.29912	
35	14.16594	
36	15.91536	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Early Literacy and Numeracy Activities Scale

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item																	
			ASBHO1A	ASBHO1B	ASBHO1C	ASBHO1D	ASBHO1E	ASBHO1F	ASBHO1G	ASBHO1H	ASBHO1I	ASBHO1J	ASBHO1K	ASBHO1L	ASBHO1M	ASBHO1N	ASBHO1O	ASBHO1P	ASBHO1Q	ASBHO1R
Albania	0.89	36	0.60	0.50	0.44	0.62	0.49	0.59	0.64	0.68	0.63	0.62	0.69	0.62	0.68	0.61	0.58	0.62	0.47	
Australia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Austria	0.83	27	0.42	0.49	0.43	0.54	0.38	0.52	0.58	0.54	0.56	0.62	0.59	0.57	0.50	0.43	0.42	0.55	0.57	0.50
Azerbaijan	0.84	27	0.48	0.48	0.30	0.60	0.31	0.48	0.52	0.57	0.55	0.52	0.65	0.52	0.65	0.62	0.41	0.54	0.60	0.47
Bahrain	0.87	31	0.51	0.51	0.38	0.63	0.44	0.50	0.62	0.60	0.53	0.57	0.68	0.62	0.65	0.59	0.57	0.61	0.59	0.38
Belgium (Flemish)	0.85	28	0.43	0.45	0.44	0.56	0.39	0.49	0.65	0.55	0.56	0.58	0.63	0.61	0.54	0.40	0.49	0.58	0.57	0.46
Belgium (French)	0.85	28	0.42	0.48	0.41	0.62	0.36	0.47	0.64	0.57	0.52	0.54	0.66	0.63	0.56	0.47	0.47	0.55	0.56	0.48
Brazil	0.89	36	0.61	0.63	0.49	0.68	0.45	0.58	0.67	0.62	0.59	0.59	0.71	0.55	0.68	0.67	0.47	0.63	0.61	0.40
Bulgaria	0.92	42	0.66	0.62	0.46	0.74	0.56	0.68	0.71	0.73	0.64	0.61	0.75	0.71	0.71	0.68	0.58	0.71	0.56	0.49
Chinese Taipei	0.90	37	0.59	0.59	0.50	0.64	0.44	0.50	0.60	0.53	0.65	0.70	0.72	0.74	0.72	0.66	0.48	0.64	0.68	0.44
Croatia	0.87	32	0.44	0.54	0.45	0.63	0.37	0.52	0.61	0.63	0.59	0.61	0.69	0.64	0.61	0.52	0.51	0.64	0.63	0.40
Cyprus	0.88	33	0.50	0.51	0.44	0.66	0.45	0.54	0.64	0.62	0.56	0.59	0.69	0.62	0.61	0.53	0.52	0.63	0.62	0.49
Czech Republic	0.83	27	0.32	0.45	0.37	0.59	0.38	0.54	0.56	0.62	0.50	0.48	0.66	0.57	0.52	0.43	0.41	0.66	0.57	0.51
Denmark	0.85	29	0.46	0.48	0.41	0.60	0.38	0.60	0.66	0.61	0.56	0.61	0.63	0.57	0.51	0.38	0.43	0.61	0.56	0.50
Egypt	0.88	34	0.48	0.55	0.38	0.63	0.53	0.58	0.63	0.66	0.60	0.58	0.68	0.59	0.64	0.64	0.55	0.63	0.60	0.39
England	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Finland	0.86	30	0.44	0.48	0.44	0.59	0.40	0.58	0.60	0.64	0.58	0.57	0.64	0.61	0.52	0.40	0.45	0.67	0.56	0.52
France	0.84	28	0.49	0.49	0.41	0.64	0.40	0.47	0.61	0.61	0.49	0.53	0.65	0.60	0.56	0.46	0.44	0.59	0.57	0.44
Georgia	0.86	30	0.53	0.47	0.36	0.64	0.43	0.49	0.53	0.54	0.58	0.59	0.68	0.56	0.60	0.60	0.51	0.60	0.63	0.47
Germany	0.83	26	0.33	0.45	0.39	0.59	0.31	0.46	0.60	0.61	0.56	0.59	0.63	0.53	0.47	0.38	0.38	0.61	0.58	0.45
Hong Kong SAR	0.88	33	0.51	0.53	0.47	0.49	0.46	0.51	0.61	0.54	0.54	0.65	0.70	0.71	0.70	0.66	0.52	0.63	0.60	0.41
Hungary	0.84	28	0.43	0.42	0.39	0.63	0.40	0.49	0.59	0.57	0.56	0.59	0.66	0.57	0.49	0.39	0.42	0.61	0.58	0.54
Iran, Islamic Rep. of	0.88	33	0.55	0.48	0.50	0.63	0.47	0.55	0.66	0.62	0.61	0.58	0.65	0.60	0.61	0.57	0.60	0.59	0.59	0.46
Ireland	0.88	34	0.49	0.52	0.42	0.62	0.42	0.57	0.63	0.66	0.63	0.62	0.68	0.65	0.66	0.57	0.48	0.66	0.66	0.51
Israel	0.87	31	0.37	0.50	0.41	0.63	0.42	0.58	0.66	0.65	0.57	0.60	0.69	0.58	0.55	0.50	0.52	0.66	0.63	0.45
Italy	0.83	26	0.39	0.45	0.41	0.63	0.32	0.49	0.56	0.62	0.53	0.58	0.64	0.60	0.49	0.40	0.38	0.61	0.57	0.42
Jordan	0.89	34	0.45	0.53	0.45	0.61	0.56	0.51	0.61	0.65	0.61	0.62	0.66	0.62	0.63	0.59	0.59	0.65	0.63	0.41
Kazakhstan	0.85	30	0.52	0.45	0.40	0.58	0.50	0.57	0.55	0.62	0.56	0.59	0.63	0.56	0.56	0.49	0.42	0.63	0.62	0.51
Kosovo	0.82	25	0.40	0.45	0.42	0.58	0.34	0.44	0.50	0.51	0.49	0.55	0.64	0.57	0.58	0.53	0.48	0.50	0.52	0.45
Latvia	0.85	29	0.44	0.48	0.40	0.60	0.43	0.56	0.56	0.59	0.49	0.61	0.66	0.62	0.57	0.44	0.43	0.63	0.59	0.48
Lithuania	0.87	32	0.45	0.48	0.40	0.67	0.46	0.59	0.62	0.64	0.42	0.59	0.72	0.64	0.60	0.53	0.46	0.65	0.59	0.50
Macao SAR	0.86	31	0.51	0.49	0.48	0.45	0.44	0.50	0.58	0.47	0.55	0.61	0.68	0.69	0.63	0.47	0.60	0.58	0.44	
Malta	0.87	33	0.51	0.54	0.47	0.64	0.40	0.54	0.63	0.58	0.55	0.60	0.69	0.66	0.67	0.56	0.43	0.61	0.64	0.45
Montenegro	0.85	28	0.49	0.49	0.45	0.58	0.39	0.51	0.56	0.54	0.52	0.62	0.65	0.56	0.58	0.51	0.42	0.53	0.56	0.47
Morocco	0.91	38	0.61	0.60	0.32	0.65	0.55	0.66	0.66	0.72	0.64	0.65	0.67	0.54	0.65	0.65	0.63	0.69	0.70	0.40
Netherlands	0.86	30	0.38	0.41	0.44	0.60	0.35	0.43	0.66	0.64	0.60	0.62	0.67	0.64	0.54	0.43	0.42	0.66	0.61	0.55
New Zealand	0.91	39	0.55	0.59	0.50	0.65	0.49	0.63	0.69	0.65	0.66	0.66	0.70	0.69	0.69	0.55	0.58	0.65	0.66	0.62
North Macedonia	0.89	36	0.57	0.55	0.46	0.65	0.47	0.56	0.62	0.66	0.61	0.64	0.67	0.64	0.66	0.46	0.56	0.66	0.67	0.58
Northern Ireland	0.89	36	0.49	0.55	0.48	0.65	0.46	0.62	0.66	0.64	0.62	0.61	0.70	0.66	0.64	0.54	0.55	0.67	0.66	0.56
Norway (5)	0.87	31	0.47	0.53	0.41	0.65	0.39	0.58	0.66	0.63	0.59	0.63	0.68	0.59	0.54	0.41	0.47	0.62	0.51	0.51

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Early Literacy and Numeracy Activities Scale

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item																	
			ASBHQ1A	ASBHQ1B	ASBHQ1C	ASBHQ1D	ASBHQ1E	ASBHQ1F	ASBHQ1G	ASBHQ1H	ASBHQ1I	ASBHQ1J	ASBHQ1K	ASBHQ1L	ASBHQ1M	ASBHQ1N	ASBHQ1O	ASBHQ1P	ASBHQ1Q	ASBHQ1R
Oman	0.84	28	0.50	0.43	0.28	0.57	0.41	0.49	0.59	0.59	0.57	0.48	0.61	0.51	0.59	0.51	0.62	0.61	0.39	
Poland	0.86	31	0.43	0.50	0.45	0.59	0.48	0.57	0.58	0.62	0.59	0.59	0.66	0.62	0.50	0.43	0.47	0.65	0.63	0.52
Portugal	0.87	31	0.51	0.52	0.43	0.62	0.41	0.52	0.63	0.59	0.51	0.61	0.69	0.65	0.59	0.51	0.47	0.60	0.59	0.47
Qatar	0.86	31	0.46	0.49	0.39	0.61	0.41	0.46	0.57	0.58	0.59	0.58	0.69	0.64	0.67	0.57	0.53	0.63	0.62	0.38
Russian Federation	0.89	36	0.58	0.52	0.50	0.65	0.55	0.63	0.65	0.65	0.51	0.57	0.69	0.62	0.67	0.62	0.59	0.66	0.61	0.49
Saudi Arabia	0.89	34	0.49	0.53	0.41	0.62	0.50	0.56	0.63	0.64	0.55	0.56	0.64	0.57	0.65	0.63	0.65	0.66	0.64	0.44
Serbia	0.84	28	0.49	0.50	0.37	0.60	0.41	0.53	0.59	0.53	0.51	0.61	0.65	0.55	0.57	0.45	0.46	0.53	0.55	0.48
Singapore	0.92	43	0.63	0.64	0.57	0.68	0.55	0.62	0.64	0.66	0.68	0.71	0.73	0.73	0.74	0.66	0.55	0.71	0.71	0.51
Slovak Republic	0.89	35	0.53	0.50	0.29	0.65	0.55	0.63	0.58	0.64	0.64	0.61	0.68	0.65	0.64	0.57	0.48	0.68	0.67	0.54
Slovenia	0.86	30	0.39	0.46	0.44	0.61	0.42	0.53	0.61	0.63	0.65	0.62	0.64	0.63	0.56	0.35	0.41	0.65	0.61	0.50
South Africa	0.89	34	0.58	0.54	0.44	0.63	0.48	0.60	0.63	0.61	0.62	0.58	0.67	0.65	0.61	0.59	0.53	0.60	0.60	0.52
Spain	0.86	29	0.47	0.50	0.41	0.64	0.41	0.54	0.61	0.61	0.53	0.57	0.67	0.54	0.58	0.50	0.45	0.60	0.56	0.44
Sweden	0.88	33	0.39	0.47	0.42	0.67	0.40	0.57	0.66	0.66	0.57	0.64	0.69	0.61	0.62	0.48	0.48	0.67	0.63	0.52
Turkiye	0.94	48	0.67	0.69	0.53	0.66	0.70	0.72	0.73	0.67	0.70	0.71	0.73	0.72	0.76	0.66	0.71	0.70	0.72	0.61
United Arab Emirates	0.89	37	0.53	0.51	0.39	0.62	0.52	0.55	0.63	0.62	0.58	0.64	0.71	0.69	0.71	0.66	0.59	0.69	0.67	0.48
United States	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uzbekistan	0.79	23	0.45	0.42	0.39	0.56	0.30	0.49	0.49	0.51	0.50	0.52	0.60	0.49	0.55	0.41	0.43	0.49	0.52	0.42
Alberta, Canada	0.90	37	0.56	0.58	0.49	0.61	0.50	0.63	0.67	0.63	0.61	0.62	0.67	0.66	0.65	0.53	0.54	0.66	0.65	0.56
British Columbia, Canada	0.90	37	0.52	0.57	0.54	0.65	0.54	0.63	0.67	0.59	0.61	0.62	0.70	0.69	0.67	0.56	0.53	0.61	0.63	0.55
Newfoundland & Labrador	0.89	36	0.52	0.53	0.49	0.63	0.49	0.65	0.67	0.66	0.55	0.61	0.70	0.63	0.67	0.55	0.55	0.68	0.65	0.55
Quebec, Canada	0.87	32	0.49	0.52	0.42	0.64	0.40	0.54	0.64	0.61	0.53	0.61	0.68	0.64	0.61	0.51	0.51	0.60	0.57	0.51
Moscow City, Russian Fed.	0.87	32	0.49	0.48	0.47	0.63	0.54	0.60	0.61	0.63	0.42	0.57	0.67	0.58	0.58	0.51	0.56	0.63	0.62	0.52
South Africa (6)	0.89	34	0.58	0.55	0.42	0.63	0.48	0.56	0.58	0.64	0.63	0.58	0.66	0.62	0.67	0.61	0.54	0.61	0.61	0.47
Abu Dhabi, UAE	0.90	38	0.55	0.53	0.40	0.62	0.53	0.56	0.62	0.63	0.61	0.66	0.70	0.70	0.72	0.67	0.61	0.70	0.68	0.49
Dubai, UAE	0.89	35	0.52	0.48	0.41	0.61	0.49	0.56	0.61	0.61	0.59	0.62	0.68	0.68	0.68	0.61	0.54	0.66	0.65	0.48

A dash (-) indicates comparable data not available.

Relationship Between the PIRLS 2021 *Early Literacy and Numeracy Activities* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.20	0.04	0.04
Australia	–	–	–
Austria	0.16	0.03	0.02
Azerbaijan	0.19	0.04	0.04
Bahrain	0.23	0.05	0.04
Belgium (Flemish)	0.11	0.01	0.01
Belgium (French)	0.16	0.02	0.01
Brazil	0.19	0.04	0.03
Bulgaria	0.36	0.13	0.12
Chinese Taipei	0.21	0.04	0.03
Croatia	0.21	0.04	0.03
Cyprus	0.23	0.05	0.03
Czech Republic	0.02	0.00	0.00
Denmark	0.13	0.02	0.01
Egypt	0.13	0.02	0.02
England	–	–	–
Finland	0.11	0.01	0.01
France	0.19	0.04	0.03
Georgia	0.04	0.00	0.00
Germany	0.08	0.01	0.01
Hong Kong SAR	0.14	0.02	0.01
Hungary	0.12	0.01	0.02
Iran, Islamic Rep. of	0.20	0.04	0.05
Ireland	0.18	0.03	0.02
Israel	0.10	0.01	0.01
Italy	0.14	0.02	0.01
Jordan	0.17	0.03	0.02
Kazakhstan	0.08	0.01	0.00
Kosovo	0.17	0.03	0.03
Latvia	0.10	0.01	0.01
Lithuania	0.12	0.01	0.01
Macao SAR	0.07	0.01	0.00
Malta	0.15	0.02	0.01
Montenegro	0.16	0.02	0.02
Morocco	0.24	0.06	0.04
Netherlands	0.10	0.01	0.00
New Zealand	0.20	0.04	0.03
North Macedonia	0.11	0.01	0.02
Northern Ireland	0.12	0.02	0.01
Norway (5)	0.14	0.02	0.02

Relationship Between the PIRLS 2021 *Early Literacy and Numeracy Activities* Scale and PIRLS 2021 Achievement

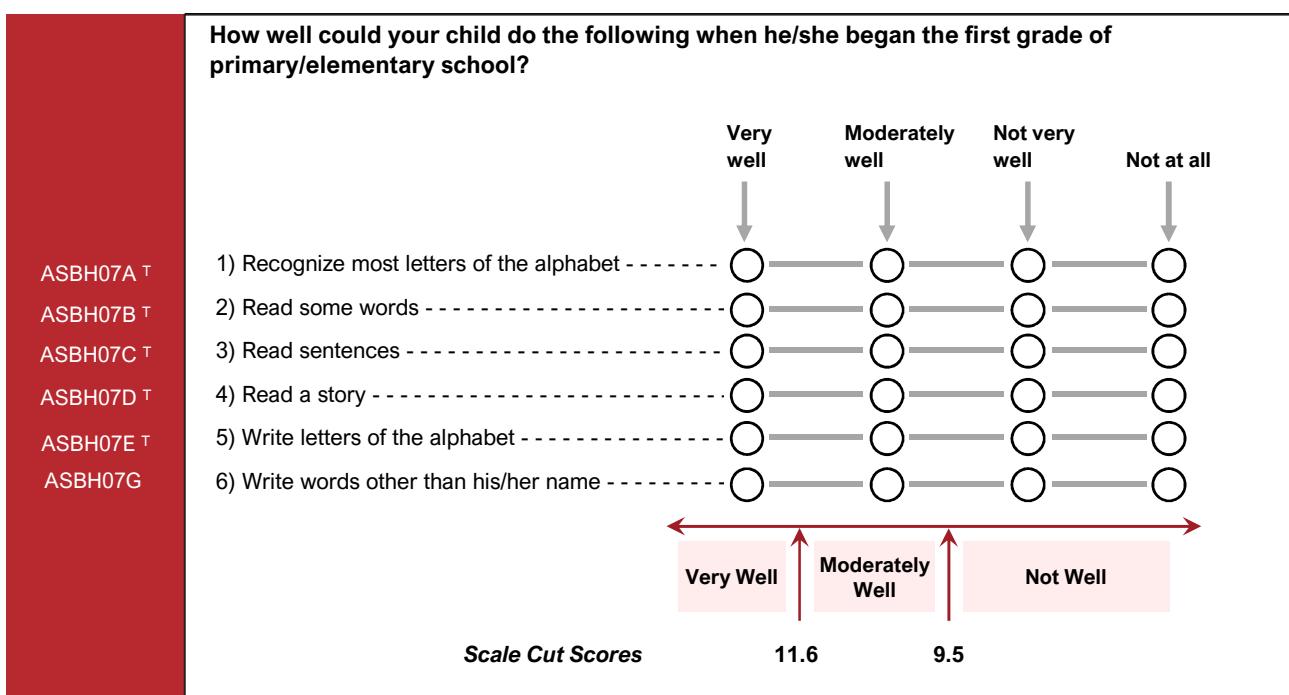
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.16	0.03	0.03
Poland	0.09	0.01	0.01
Portugal	0.16	0.03	0.02
Qatar	0.15	0.02	0.02
Russian Federation	0.12	0.01	0.01
Saudi Arabia	0.08	0.01	0.00
Serbia	0.13	0.02	0.02
Singapore	0.20	0.04	0.03
Slovak Republic	0.19	0.04	0.06
Slovenia	0.10	0.01	0.01
South Africa	0.16	0.03	0.03
Spain	0.19	0.03	0.02
Sweden	0.12	0.01	0.01
Turkiye	0.38	0.15	0.14
United Arab Emirates	0.17	0.03	0.03
United States	–	–	–
Uzbekistan	0.12	0.01	0.01
International Median	0.15	0.02	0.02
Benchmarking Participants			
Alberta, Canada	0.12	0.01	0.01
British Columbia, Canada	0.12	0.01	0.01
Newfoundland & Labrador, Can.	0.14	0.02	0.01
Quebec, Canada	0.10	0.01	0.01
Moscow City, Russian Fed.	0.08	0.01	0.00
South Africa (6)	0.17	0.03	0.03
Abu Dhabi, UAE	0.17	0.03	0.03
Dubai, UAE	0.19	0.04	0.03

A dash (–) indicates comparable data not available.

Early Literacy Tasks

About the Scale

Students were scored according to their parents' reports regarding how well their children could do the six tasks on the *Early Literacy Tasks* scale when they began primary school. Cut scores divide the scale into three categories. Students who could do the tasks **Very Well** had a score at or above the cut score corresponding to their parents reporting the students could do three of the six tasks "very well" and the other three "moderately well," on average. Students who could do the tasks **Not Well** had a score at or below the cut score corresponding to their parents reporting the students could do three of the six tasks "not very well" and the other three "moderately well," on average. All other students could do the early literacy tasks **Moderately Well** when they began primary school.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Early Literacy Tasks Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBH07A	-1.68714	-2.62711	-0.17431	2.80142	1.14	0.08
ASBH07B	-0.10607	-2.47126	-0.21686	2.68812	0.83	0.03
ASBH07C	1.28716	-2.18477	-0.19388	2.37865	0.82	0.03
ASBH07D	2.09702	-2.12959	-0.26341	2.39300	1.07	0.04
ASBH07E	-1.27941	-2.94605	-0.03125	2.97730	1.15	0.08
ASBH07G	-0.31156	-2.56729	-0.07438	2.64167	1.18	0.06

Scale Transformation Constants for the PIRLS 2021 Early Literacy Tasks Scale

Scale Transformation Constants

A = 9.372309

B = 0.773129

Transformed Scale Score = 9.372309 + 0.773129 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Early Literacy Tasks Scale

Raw Score	Transformed Scale Score	Cutpoint
0	4.74222	
1	5.83720	
2	6.51512	
3	7.06955	
4	7.54587	
5	7.97118	
6	8.36153	
7	8.72843	
8	9.07960	
9	9.42233	9.5
10	9.76177	
11	10.10135	
12	10.44539	
13	10.80194	
14	11.18387	
15	11.61328	11.6
16	12.12899	
17	12.79881	
18	13.91987	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Early Literacy Tasks Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ASBH07A	ASBH07B	ASBH07C	ASBH07D	ASBH07E	ASBH07G
Albania	0.90	68	0.81	0.88	0.86	0.77	0.82	0.81
Australia	—	—	—	—	—	—	—	—
Austria	0.90	67	0.81	0.88	0.86	0.79	0.78	0.78
Azerbaijan	0.92	71	0.82	0.89	0.88	0.79	0.83	0.84
Bahrain	0.90	69	0.77	0.89	0.89	0.81	0.79	0.81
Belgium (Flemish)	0.91	68	0.76	0.87	0.88	0.84	0.79	0.81
Belgium (French)	0.88	62	0.73	0.85	0.85	0.78	0.77	0.73
Brazil	0.91	68	0.76	0.88	0.89	0.81	0.76	0.82
Bulgaria	0.93	74	0.83	0.92	0.89	0.83	0.83	0.87
Chinese Taipei	0.92	71	0.82	0.90	0.89	0.84	0.84	0.77
Croatia	0.91	69	0.76	0.88	0.89	0.83	0.81	0.83
Cyprus	0.92	72	0.77	0.90	0.90	0.83	0.80	0.86
Czech Republic	0.93	74	0.80	0.91	0.90	0.85	0.82	0.86
Denmark	0.90	68	0.77	0.89	0.89	0.81	0.78	0.80
Egypt	0.89	66	0.77	0.88	0.86	0.76	0.76	0.82
England	—	—	—	—	—	—	—	—
Finland	0.92	71	0.76	0.90	0.91	0.85	0.78	0.85
France	0.86	59	0.68	0.84	0.84	0.76	0.73	0.74
Georgia	0.92	72	0.79	0.89	0.90	0.80	0.84	0.85
Germany	0.89	64	0.78	0.86	0.86	0.78	0.78	0.76
Hong Kong SAR	0.91	70	0.77	0.88	0.90	0.84	0.83	0.79
Hungary	0.92	73	0.82	0.90	0.89	0.81	0.86	0.84
Iran, Islamic Rep. of	0.92	71	0.82	0.88	0.87	0.81	0.85	0.82
Ireland	0.92	72	0.78	0.88	0.90	0.87	0.81	0.84
Israel	0.90	68	0.74	0.89	0.88	0.82	0.81	0.81
Italy	0.91	69	0.79	0.88	0.87	0.79	0.80	0.83
Jordan	0.92	71	0.82	0.90	0.88	0.79	0.83	0.83
Kazakhstan	0.91	70	0.76	0.87	0.89	0.84	0.81	0.85
Kosovo	0.88	62	0.74	0.86	0.86	0.79	0.73	0.75
Latvia	0.90	68	0.77	0.87	0.89	0.83	0.78	0.80
Lithuania	0.92	72	0.77	0.89	0.91	0.88	0.76	0.85
Macao SAR	0.88	63	0.78	0.84	0.86	0.78	0.78	0.71
Malta	0.91	70	0.74	0.89	0.89	0.84	0.80	0.84
Montenegro	0.92	72	0.79	0.89	0.89	0.84	0.83	0.83
Morocco	0.92	72	0.83	0.91	0.89	0.76	0.84	0.86
Netherlands	0.91	70	0.79	0.88	0.89	0.83	0.80	0.82
New Zealand	0.92	72	0.77	0.88	0.89	0.86	0.83	0.86
North Macedonia	0.91	68	0.80	0.89	0.87	0.80	0.79	0.79
Northern Ireland	—	—	—	—	—	—	—	—

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Early Literacy Tasks Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item						
			ASBH07A	ASBH07B	ASBH07C	ASBH07D	ASBH07E	ASBH07F	ASBH07G
Norway (5)	0.91	69	0.81	0.89	0.88	0.77	0.80	0.82	
Oman	0.90	67	0.77	0.89	0.88	0.80	0.77	0.79	
Poland	0.91	70	0.77	0.88	0.89	0.82	0.81	0.82	
Portugal	0.90	68	0.76	0.89	0.88	0.81	0.79	0.82	
Qatar	0.89	65	0.73	0.87	0.87	0.81	0.76	0.78	
Russian Federation	0.93	73	0.79	0.90	0.91	0.86	0.81	0.85	
Saudi Arabia	0.91	68	0.77	0.88	0.88	0.80	0.79	0.81	
Serbia	0.91	70	0.77	0.87	0.90	0.84	0.80	0.83	
Singapore	0.92	71	0.77	0.89	0.90	0.86	0.80	0.84	
Slovak Republic	0.91	69	0.79	0.90	0.87	0.78	0.82	0.83	
Slovenia	0.91	70	0.82	0.90	0.88	0.80	0.84	0.79	
South Africa	0.88	63	0.71	0.83	0.87	0.83	0.77	0.75	
Spain	0.92	71	0.79	0.89	0.90	0.83	0.81	0.82	
Sweden	0.91	70	0.77	0.87	0.89	0.83	0.80	0.84	
Turkiye	0.95	81	0.86	0.94	0.92	0.88	0.88	0.91	
United Arab Emirates	0.90	69	0.77	0.88	0.88	0.83	0.79	0.81	
United States	—	—	—	—	—	—	—	—	
Uzbekistan	0.89	64	0.72	0.83	0.87	0.82	0.75	0.82	
Benchmarking Participants									
Alberta, Canada	0.91	69	0.73	0.88	0.89	0.84	0.79	0.85	
British Columbia, Canada	0.91	70	0.75	0.88	0.89	0.85	0.78	0.86	
Newfoundland & Labrador, Can.	0.91	69	0.72	0.88	0.89	0.86	0.77	0.85	
Quebec, Canada	0.90	67	0.71	0.88	0.88	0.82	0.77	0.84	
Moscow City, Russian Fed.	0.90	68	0.73	0.87	0.90	0.84	0.78	0.80	
South Africa (6)	0.88	61	0.72	0.81	0.85	0.83	0.74	0.75	
Abu Dhabi, UAE	0.91	69	0.79	0.88	0.89	0.83	0.80	0.81	
Dubai, UAE	0.90	68	0.75	0.88	0.88	0.84	0.79	0.81	

A dash (—) indicates comparable data not available.

Relationship Between the PIRLS 2021 Early Literacy Tasks Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.22	0.05	0.05
Australia	–	–	–
Austria	0.03	0.00	0.00
Azerbaijan	0.24	0.06	0.05
Bahrain	0.30	0.09	0.07
Belgium (Flemish)	-0.02	0.00	0.00
Belgium (French)	0.09	0.01	0.01
Brazil	0.33	0.11	0.09
Bulgaria	0.38	0.15	0.10
Chinese Taipei	0.31	0.10	0.10
Croatia	0.33	0.11	0.09
Cyprus	0.21	0.05	0.05
Czech Republic	0.11	0.01	0.02
Denmark	0.32	0.10	0.09
Egypt	0.16	0.03	0.03
England	–	–	–
Finland	0.36	0.13	0.11
France	0.21	0.04	0.03
Georgia	0.12	0.01	0.02
Germany	0.08	0.01	0.01
Hong Kong SAR	0.36	0.13	0.12
Hungary	0.11	0.01	0.01
Iran, Islamic Rep. of	0.13	0.02	0.02
Ireland	0.39	0.15	0.13
Israel	0.08	0.01	0.00
Italy	0.11	0.01	0.02
Jordan	0.29	0.09	0.08
Kazakhstan	0.13	0.02	0.01
Kosovo	0.14	0.02	0.02
Latvia	0.42	0.17	0.16
Lithuania	0.42	0.18	0.16
Macao SAR	0.31	0.10	0.09
Malta	0.24	0.06	0.05
Montenegro	0.20	0.04	0.04
Morocco	0.31	0.09	0.10
Netherlands	0.19	0.04	0.03
New Zealand	0.15	0.02	0.02
North Macedonia	0.12	0.01	0.01
Northern Ireland	–	–	–
Norway (5)	0.26	0.07	0.05
Oman	0.30	0.09	0.08

Relationship Between the PIRLS 2021 Early Literacy Tasks Scale and PIRLS 2021 Achievement

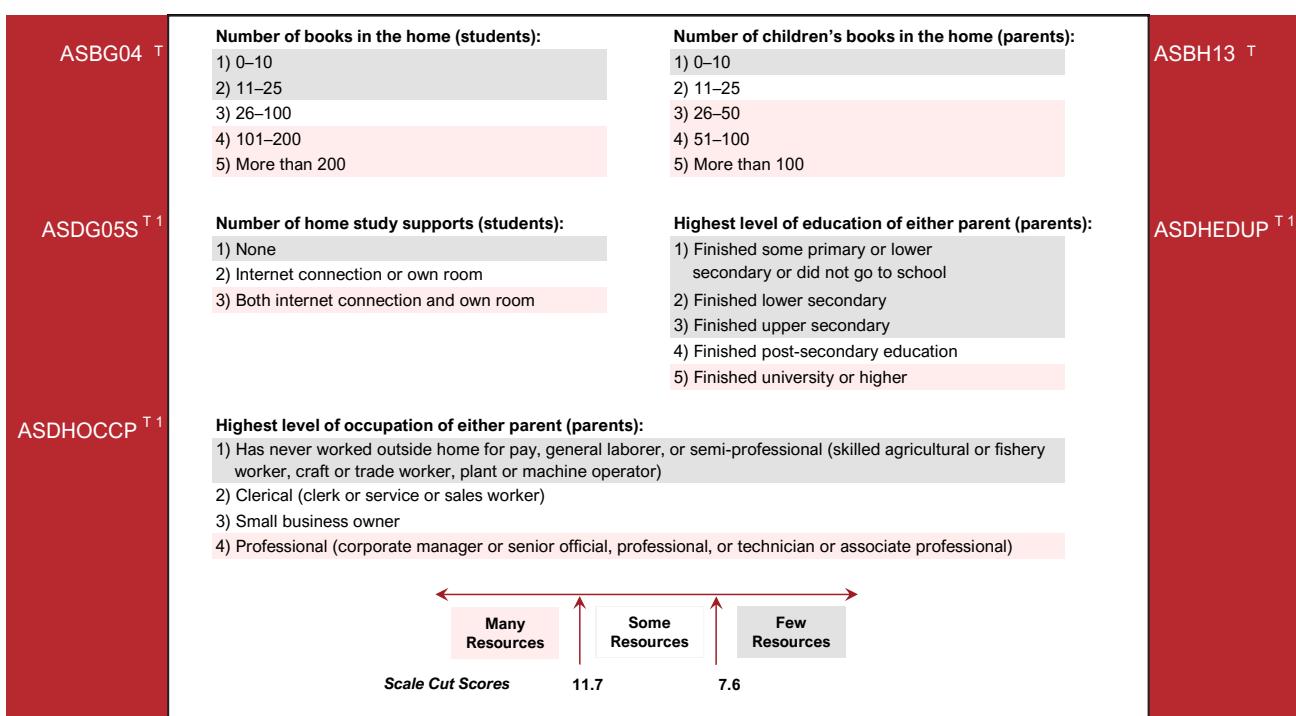
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Poland	0.29	0.09	0.07
Portugal	0.18	0.03	0.02
Qatar	0.23	0.05	0.05
Russian Federation	0.29	0.09	0.07
Saudi Arabia	0.11	0.01	0.01
Serbia	0.26	0.07	0.07
Singapore	0.43	0.19	0.16
Slovak Republic	0.14	0.02	0.01
Slovenia	0.24	0.06	0.06
South Africa	0.25	0.06	0.06
Spain	0.37	0.14	0.12
Sweden	0.34	0.12	0.09
Turkiye	0.23	0.05	0.02
United Arab Emirates	0.25	0.06	0.06
United States	—	—	—
Uzbekistan	0.19	0.04	0.03
International Median	0.24	0.06	0.05
Benchmarking Participants			
Alberta, Canada	0.27	0.07	0.06
British Columbia, Canada	0.33	0.11	0.10
Newfoundland & Labrador, Can.	0.36	0.13	0.12
Quebec, Canada	0.20	0.04	0.03
Moscow City, Russian Fed.	0.34	0.11	0.11
South Africa (6)	0.18	0.03	0.03
Abu Dhabi, UAE	0.27	0.07	0.07
Dubai, UAE	0.19	0.03	0.04

A dash (—) indicates comparable data not available.

Home Resources for Learning

About the Scale

Students were scored according to their own and their parents' reports regarding the availability of five resources on the *Home Resources for Learning* scale. Cut scores divide the scale into three categories. Students with **Many Resources** had a score at or above the cut score corresponding to students reporting they had more than 100 books and both home study supports in their home and their parents reporting they had more than 25 children's books in their home, that at least one parent finished university, and that at least one parent had a professional occupation, on average. Students with **Few Resources** had a score at or below the cut score corresponding to students reporting they had 25 or fewer books and neither of the home study supports in their home and their parents reporting they had 10 or fewer children's books in the home, that neither parent had gone beyond upper secondary education, and that neither parent was a small business owner or worked in a clerical or professional occupation, on average. All other students had **Some Resources**.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

¹ Derived variable. For details, see Supplement 3 of the *PIRLS 2021 User Guide for the International Database*.

Item Parameters for the PIRLS 2021 Home Resources for Learning Scale

Item	delta	tau_1	tau_2	tau_3	tau_4	Infit	Q-Index
ASBG04	0.76712	-1.23479	-0.47642	0.95349	0.75772	1.01	0.12
ASBH13	0.73751	-0.86044	-0.51221	0.41029	0.96236	0.94	0.09
ASDG05S	-1.11963	-0.90853	0.90853			1.10	0.29
ASDHEDUP	-0.48614	-0.64976	-0.88603	1.26033	0.27546	0.95	0.12
ASDHOCCP	0.10114	-0.28853	0.88508	-0.59655		1.00	0.11

Scale Transformation Constants for the PIRLS 2021 Home Resources for Learning Scale

Scale Transformation Constants

A = 9.449654

B = 1.574800

Transformed Scale Score = 9.449654 + 1.574800 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Home Resources for Learning Scale

Raw Score	Transformed Scale Score	Cutpoint
0	4.08500	
1	5.95459	
2	6.87523	
3	7.54207	7.6
4	8.08848	
5	8.54792	
6	8.94299	
7	9.29058	
8	9.60729	
9	9.91526	
10	10.22238	
11	10.54337	
12	10.89263	
13	11.28642	
14	11.74392	11.7
15	12.29825	
16	13.04647	
17	14.50919	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 *Home Resources for Learning* Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item				
			ASBG04	ASBH13	ASDG05S	ASDHEDUP	ASDHOCCP
Albania	0.73	48	0.70	0.75	0.32	0.79	0.80
Australia	—	—	—	—	—	—	—
Austria	0.72	48	0.73	0.79	0.23	0.79	0.76
Azerbaijan	0.55	35	0.51	0.53	0.35	0.77	0.72
Bahrain	0.61	39	0.62	0.68	0.21	0.76	0.71
Belgium (Flemish)	0.67	45	0.68	0.73	0.33	0.77	0.74
Belgium (French)	0.70	46	0.71	0.77	0.36	0.74	0.73
Brazil	0.69	45	0.57	0.72	0.37	0.81	0.78
Bulgaria	0.81	57	0.79	0.82	0.36	0.87	0.81
Chinese Taipei	0.68	46	0.76	0.79	0.07	0.78	0.71
Croatia	0.66	44	0.65	0.72	0.05	0.79	0.78
Cyprus	0.67	44	0.67	0.77	0.18	0.76	0.76
Czech Republic	0.66	44	0.68	0.74	0.11	0.78	0.73
Denmark	0.63	42	0.69	0.73	0.25	0.71	0.72
Egypt	0.53	35	0.38	0.50	0.40	0.78	0.76
England	—	—	—	—	—	—	—
Finland	0.63	41	0.66	0.67	0.23	0.76	0.73
France	0.72	48	0.73	0.78	0.39	0.78	0.71
Georgia	0.66	41	0.68	0.75	0.27	0.79	0.58
Germany	0.71	47	0.70	0.76	0.22	0.81	0.76
Hong Kong SAR	0.74	50	0.74	0.79	0.21	0.82	0.78
Hungary	0.76	53	0.71	0.81	0.18	0.87	0.83
Iran, Islamic Rep. of	0.63	40	0.63	0.70	0.28	0.78	0.67
Ireland	0.71	48	0.77	0.78	0.14	0.78	0.74
Israel	0.69	53	0.64	0.74	—	0.78	0.75
Italy	0.69	46	0.67	0.76	0.11	0.81	0.78
Jordan	0.57	37	0.50	0.50	0.46	0.74	0.75
Kazakhstan	0.48	33	0.46	0.43	0.39	0.76	0.73
Kosovo	0.67	43	0.69	0.75	0.23	0.73	0.71
Latvia	0.67	44	0.69	0.76	0.21	0.77	0.73
Lithuania	0.66	45	0.72	0.74	0.08	0.75	0.76
Macao SAR	0.70	46	0.72	0.78	0.20	0.77	0.74
Malta	0.60	40	0.54	0.61	0.00	0.82	0.79
Montenegro	0.67	44	0.63	0.71	0.19	0.79	0.79
Morocco	0.62	40	0.60	0.64	0.51	0.75	0.63
Netherlands	0.66	43	0.68	0.71	0.11	0.79	0.72
New Zealand	0.65	43	0.64	0.68	0.36	0.77	0.73
North Macedonia	0.69	46	0.66	0.77	0.11	0.82	0.77

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 *Home Resources for Learning* Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item				
			ASBG04	ASBH13	ASDG05S	ASDHEDUP	ASDHOCCP
Northern Ireland	0.70	46	0.74	0.74	0.19	0.81	0.73
Norway (5)	0.65	44	0.68	0.73	0.32	0.76	0.72
Oman	0.51	34	0.40	0.55	0.17	0.79	0.78
Poland	0.69	46	0.70	0.74	0.24	0.78	0.76
Portugal	0.71	47	0.70	0.77	0.07	0.80	0.80
Qatar	0.51	34	0.44	0.65	0.24	0.72	0.72
Russian Federation	0.60	40	0.61	0.71	0.32	0.74	0.70
Saudi Arabia	0.37	30	0.14	0.49	0.16	0.79	0.78
Serbia	0.72	49	0.73	0.78	0.11	0.82	0.79
Singapore	0.64	42	0.70	0.72	0.16	0.77	0.71
Slovak Republic	0.74	51	0.72	0.81	0.18	0.83	0.80
Slovenia	0.61	41	0.61	0.69	0.07	0.78	0.76
South Africa	0.69	42	0.57	0.60	0.54	0.73	0.76
Spain	0.69	46	0.69	0.77	0.01	0.80	0.78
Sweden	0.69	47	0.71	0.75	0.48	0.75	0.70
Turkiye	0.73	48	0.68	0.76	0.52	0.80	0.69
United Arab Emirates	0.53	34	0.55	0.70	0.29	0.65	0.65
United States	—	—	—	—	—	—	—
Uzbekistan	0.47	32	0.45	0.57	0.31	0.69	0.71
Benchmarking Participants							
Alberta, Canada	0.58	38	0.72	0.71	0.25	0.58	0.69
British Columbia, Canada	0.63	41	0.72	0.72	0.31	0.63	0.72
Newfoundland & Labrador, Can.	0.57	39	0.61	0.62	0.16	0.78	0.76
Quebec, Canada	0.59	38	0.66	0.71	0.14	0.70	0.69
Moscow City, Russian Fed.	0.56	38	0.65	0.72	0.27	0.65	0.66
South Africa (6)	0.70	43	0.64	0.60	0.60	0.71	0.73
Abu Dhabi, UAE	0.49	34	0.43	0.66	0.27	0.70	0.70
Dubai, UAE	0.60	39	0.70	0.76	0.37	0.61	0.61

A dash (—) indicates comparable data not available.

Relationship Between the PIRLS 2021 *Home Resources for Learning* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.38	0.15	0.07
Australia	–	–	–
Austria	0.52	0.27	0.16
Azerbaijan	0.29	0.09	0.03
Bahrain	0.37	0.14	0.06
Belgium (Flemish)	0.38	0.14	0.10
Belgium (French)	0.45	0.20	0.14
Brazil	0.46	0.21	0.11
Bulgaria	0.54	0.29	0.21
Chinese Taipei	0.35	0.12	0.07
Croatia	0.40	0.16	0.08
Cyprus	0.44	0.19	0.12
Czech Republic	0.41	0.17	0.09
Denmark	0.37	0.14	0.10
Egypt	0.16	0.03	0.01
England	–	–	–
Finland	0.34	0.12	0.07
France	0.47	0.22	0.16
Georgia	0.33	0.11	0.05
Germany	0.45	0.21	0.14
Hong Kong SAR	0.29	0.08	0.06
Hungary	0.52	0.27	0.17
Iran, Islamic Rep. of	0.44	0.19	0.13
Ireland	0.46	0.21	0.15
Israel	0.42	0.17	0.09
Italy	0.37	0.13	0.07
Jordan	0.28	0.08	0.04
Kazakhstan	0.19	0.04	0.01
Kosovo	0.37	0.13	0.07
Latvia	0.33	0.11	0.06
Lithuania	0.37	0.13	0.08
Macao SAR	0.24	0.06	0.04
Malta	0.37	0.14	0.09
Montenegro	0.34	0.11	0.06
Morocco	0.26	0.07	0.06
Netherlands	0.32	0.10	0.06
New Zealand	0.42	0.18	0.14
North Macedonia	0.42	0.17	0.07
Northern Ireland	0.41	0.17	0.13
Norway (5)	0.36	0.13	0.10

Relationship Between the PIRLS 2021 *Home Resources for Learning* Scale and PIRLS 2021 Achievement

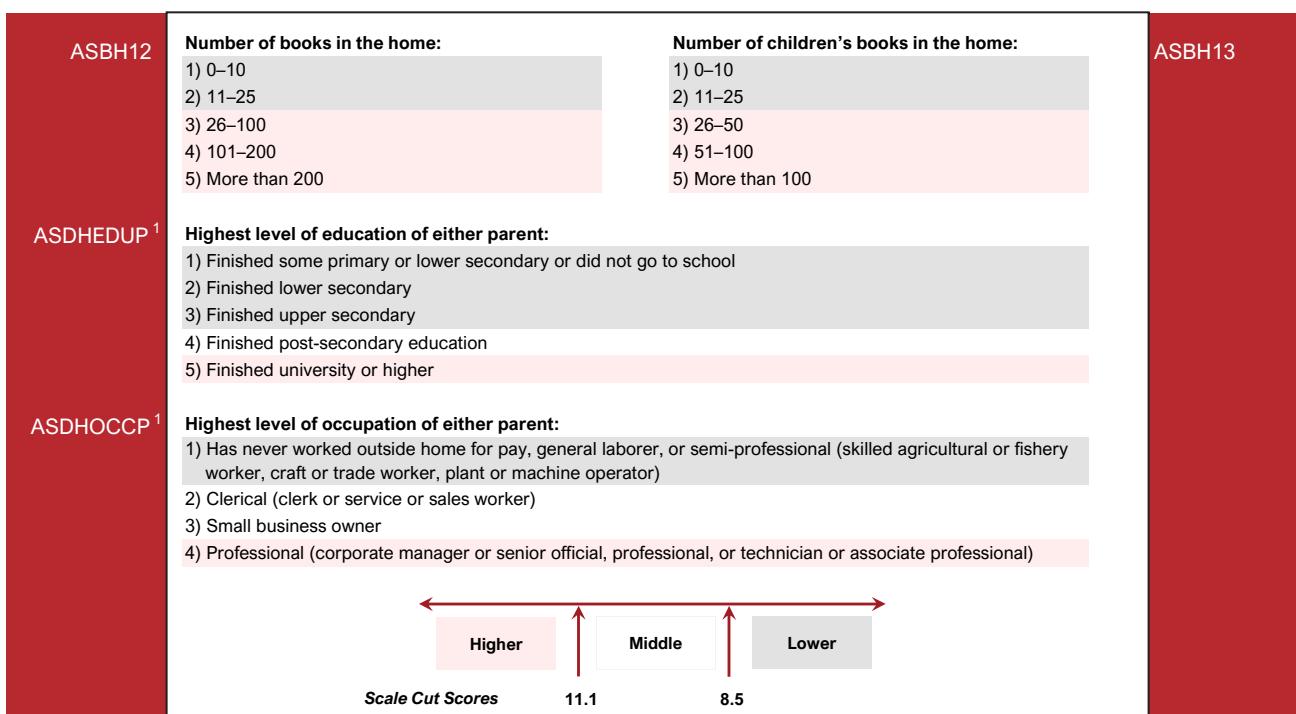
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.27	0.07	0.02
Poland	0.41	0.16	0.10
Portugal	0.38	0.15	0.09
Qatar	0.33	0.11	0.05
Russian Federation	0.37	0.14	0.06
Saudi Arabia	0.14	0.02	0.01
Serbia	0.44	0.20	0.10
Singapore	0.43	0.19	0.12
Slovak Republic	0.47	0.22	0.13
Slovenia	0.38	0.14	0.08
South Africa	0.41	0.17	0.11
Spain	0.37	0.14	0.09
Sweden	0.41	0.17	0.12
Turkiye	0.50	0.25	0.17
United Arab Emirates	0.39	0.15	0.07
United States	–	–	–
Uzbekistan	0.19	0.04	0.02
International Median	0.38	0.14	0.08
Benchmarking Participants			
Alberta, Canada	0.30	0.09	0.06
British Columbia, Canada	0.31	0.09	0.07
Newfoundland & Labrador, Can.	0.30	0.09	0.06
Quebec, Canada	0.28	0.08	0.05
Moscow City, Russian Fed.	0.29	0.08	0.05
South Africa (6)	0.41	0.17	0.10
Abu Dhabi, UAE	0.41	0.17	0.06
Dubai, UAE	0.44	0.19	0.09

A dash (–) indicates comparable data not available.

Home Socioeconomic Status

About the Scale

Students were scored according to their parents' reports regarding the four indicators on the *Home Socioeconomic Status* scale. Cut scores divide the scale into three categories. Students with **Higher** socioeconomic status had a score at or above the cut score corresponding to their parents reporting they had more than 25 books and more than 25 children's books in their home, that at least one parent finished university, and that at least one parent had a professional occupation, on average. Students with **Lower** socioeconomic status had a score at or below the cut score corresponding to their parents reporting they had 25 or fewer books and 25 or fewer children's books in the home, that neither parent had gone beyond upper secondary education, and that neither parent was a small business owner or worked in a clerical or professional occupation, on average. All other students had **Middle** socioeconomic status.



¹ Derived variable. For details, see Supplement 3 of the *PIRLS 2021 User Guide for the International Database*.

Item Parameters for the PIRLS 2021 Home Socioeconomic Status Scale

Item	delta	tau_1	tau_2	tau_3	tau_4	Infit	Q-Index
ASBH12	0.55443	-1.10690	-0.78940	1.13938	0.75692	0.93	0.06
ASBH13	0.56601	-1.16145	-0.60992	0.49628	1.27509	0.97	0.06
ASDHEDUP	-0.92069	-0.96584	-0.98614	1.35267	0.59931	1.05	0.16
ASDHOCPP	-0.19975	-0.48928	0.88063	-0.39135		1.13	0.15

Scale Transformation Constants for the PIRLS 2021 Home Socioeconomic Status Scale

Scale Transformation Constants

A = 9.763919

B = 1.511695

Transformed Scale Score = 9.763919 + 1.511695 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Home Socioeconomic Status Scale

Raw Score	Transformed Scale Score	Cutpoint
0	4.82627	
1	6.33435	
2	7.22491	
3	7.92896	
4	8.47905	8.5
5	8.92588	
6	9.30780	
7	9.65449	
8	9.99175	
9	10.34719	
10	10.72985	
11	11.17158	11.1
12	11.68005	
13	12.27791	
14	13.04932	
15	14.51060	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Home Socioeconomic Status Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item			
			ASBH12	ASBH13	ASDHEDUP	ASDHOCPP
Albania	0.82	66	0.86	0.82	0.78	0.78
Australia	—	—	—	—	—	—
Austria	0.81	65	0.84	0.83	0.79	0.75
Azerbaijan	0.67	51	0.80	0.71	0.70	0.64
Bahrain	0.70	54	0.78	0.78	0.72	0.65
Belgium (Flemish)	0.74	58	0.77	0.79	0.75	0.73
Belgium (French)	0.77	59	0.81	0.80	0.74	0.73
Brazil	0.77	59	0.74	0.78	0.79	0.76
Bulgaria	0.87	73	0.87	0.85	0.87	0.81
Chinese Taipei	0.78	61	0.83	0.83	0.76	0.70
Croatia	0.78	60	0.81	0.77	0.77	0.76
Cyprus	0.77	60	0.80	0.80	0.75	0.74
Czech Republic	0.77	59	0.82	0.80	0.76	0.71
Denmark	0.71	55	0.79	0.75	0.70	0.73
Egypt	0.64	50	0.78	0.73	0.67	0.65
England	—	—	—	—	—	—
Finland	0.71	54	0.77	0.74	0.72	0.70
France	0.78	61	0.80	0.79	0.79	0.73
Georgia	0.75	58	0.86	0.82	0.78	0.54
Germany	0.80	63	0.83	0.82	0.80	0.74
Hong Kong SAR	0.79	62	0.75	0.80	0.82	0.78
Hungary	0.86	71	0.85	0.85	0.86	0.81
Iran, Islamic Rep. of	0.73	56	0.81	0.75	0.77	0.66
Ireland	0.77	61	0.80	0.80	0.77	0.74
Israel	0.74	58	0.77	0.79	0.76	0.71
Italy	0.81	64	0.84	0.80	0.80	0.76
Jordan	0.67	51	0.79	0.70	0.67	0.68
Kazakhstan	0.60	47	0.82	0.76	0.60	0.53
Kosovo	0.77	60	0.85	0.79	0.73	0.71
Latvia	0.76	59	0.80	0.81	0.75	0.70
Lithuania	0.75	59	0.81	0.79	0.72	0.75
Macao SAR	0.78	60	0.79	0.81	0.76	0.73
Malta	0.71	54	0.73	0.71	0.77	0.73
Montenegro	0.78	61	0.81	0.77	0.78	0.76
Morocco	0.68	53	0.81	0.77	0.73	0.60
Netherlands	0.74	57	0.78	0.74	0.78	0.71
New Zealand	0.74	56	0.79	0.77	0.74	0.71
North Macedonia	0.83	66	0.86	0.83	0.81	0.75

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Home Socioeconomic Status Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item			
			ASBH12	ASBH13	ASDHEDUP	ASDHOCPP
Northern Ireland	0.76	59	0.79	0.78	0.80	0.71
Norway (5)	0.74	58	0.81	0.79	0.75	0.68
Oman	0.65	49	0.75	0.73	0.68	0.65
Poland	0.77	60	0.80	0.78	0.77	0.75
Portugal	0.81	64	0.82	0.79	0.80	0.79
Qatar	0.66	50	0.78	0.80	0.63	0.60
Russian Federation	0.72	56	0.82	0.81	0.69	0.65
Saudi Arabia	0.61	47	0.79	0.73	0.61	0.59
Serbia	0.82	66	0.84	0.80	0.82	0.79
Singapore	0.69	53	0.71	0.76	0.75	0.70
Slovak Republic	0.83	68	0.84	0.83	0.83	0.79
Slovenia	0.73	56	0.78	0.77	0.74	0.71
South Africa	0.74	55	0.80	0.76	0.70	0.71
Spain	0.80	62	0.81	0.80	0.79	0.76
Sweden	0.75	59	0.81	0.80	0.75	0.69
Turkiye	0.78	61	0.82	0.82	0.79	0.69
United Arab Emirates	0.65	49	0.81	0.81	0.58	0.57
United States	—	—	—	—	—	—
Uzbekistan	0.64	49	0.83	0.76	0.59	0.59
Benchmarking Participants						
Alberta, Canada	0.64	49	0.79	0.76	0.56	0.65
British Columbia, Canada	0.67	51	0.77	0.77	0.62	0.70
Newfoundland & Labrador, Can.	0.62	49	0.63	0.66	0.76	0.74
Quebec, Canada	0.67	51	0.77	0.76	0.68	0.65
Moscow City, Russian Fed.	0.67	51	0.81	0.83	0.59	0.58
South Africa (6)	0.72	53	0.80	0.76	0.66	0.68
Abu Dhabi, UAE	0.65	50	0.81	0.80	0.59	0.58
Dubai, UAE	0.67	51	0.80	0.82	0.59	0.60

A dash (—) indicates comparable data not available.

Relationship Between the PIRLS 2021 Home Socioeconomic Status Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.36	0.13	0.12
Australia	–	–	–
Austria	0.50	0.25	0.23
Azerbaijan	0.26	0.07	0.05
Bahrain	0.38	0.14	0.12
Belgium (Flemish)	0.36	0.13	0.12
Belgium (French)	0.44	0.20	0.17
Brazil	0.45	0.20	0.15
Bulgaria	0.53	0.28	0.27
Chinese Taipei	0.34	0.12	0.11
Croatia	0.39	0.15	0.13
Cyprus	0.43	0.19	0.15
Czech Republic	0.40	0.16	0.14
Denmark	0.36	0.13	0.11
Egypt	0.19	0.04	0.03
England	–	–	–
Finland	0.33	0.11	0.09
France	0.46	0.21	0.19
Georgia	0.29	0.08	0.07
Germany	0.43	0.18	0.16
Hong Kong SAR	0.26	0.07	0.06
Hungary	0.52	0.27	0.26
Iran, Islamic Rep. of	0.43	0.19	0.14
Ireland	0.42	0.18	0.15
Israel	0.42	0.18	0.15
Italy	0.37	0.14	0.12
Jordan	0.29	0.09	0.07
Kazakhstan	0.21	0.04	0.03
Kosovo	0.35	0.13	0.10
Latvia	0.30	0.09	0.08
Lithuania	0.34	0.12	0.11
Macao SAR	0.22	0.05	0.04
Malta	0.36	0.13	0.11
Montenegro	0.35	0.12	0.10
Morocco	0.21	0.04	0.03
Netherlands	0.33	0.11	0.09
New Zealand	0.36	0.13	0.11
North Macedonia	0.41	0.17	0.14
Northern Ireland	0.38	0.14	0.13
Norway (5)	0.34	0.11	0.09

Relationship Between the PIRLS 2021 Home Socioeconomic Status Scale and PIRLS 2021 Achievement

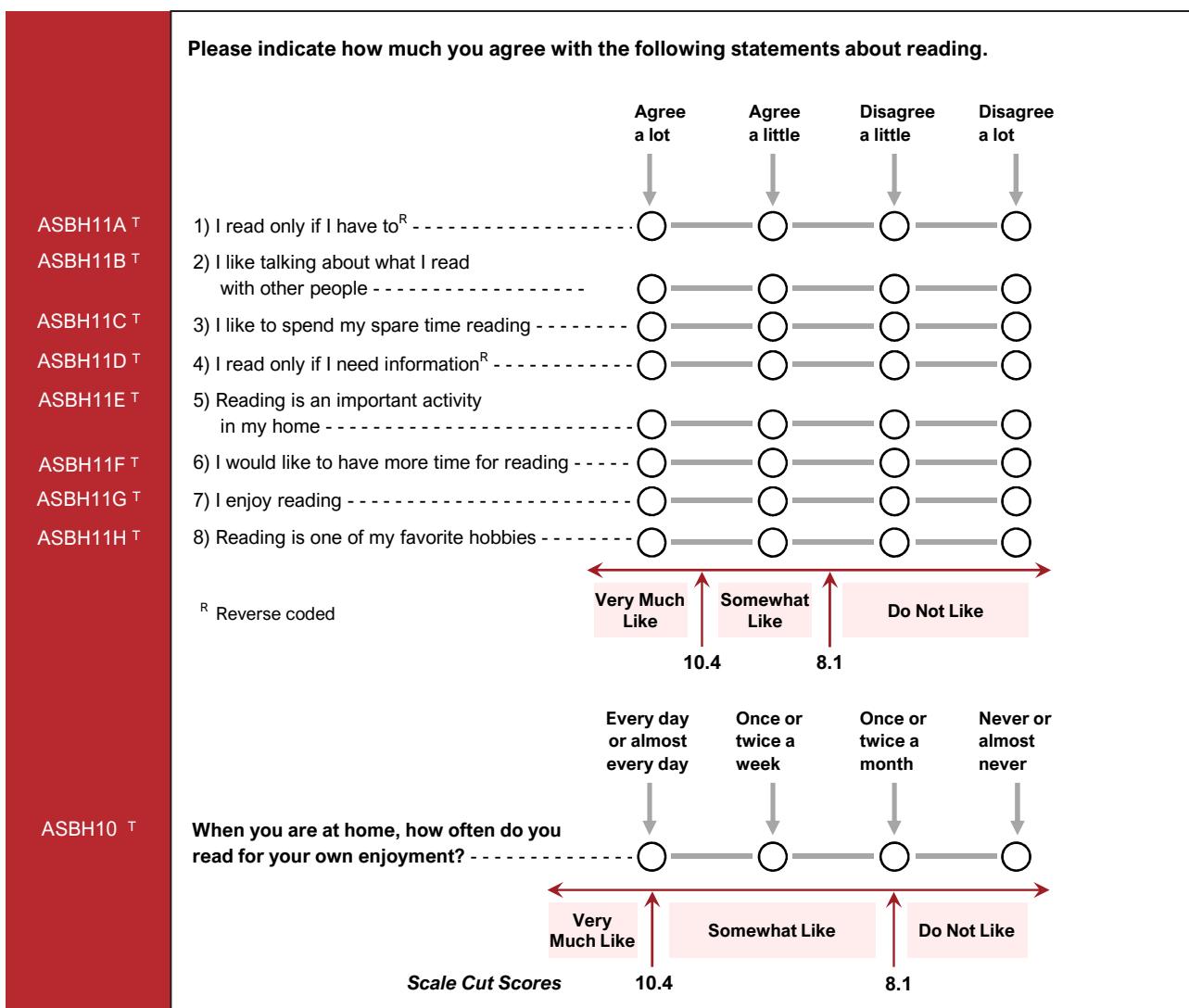
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.29	0.08	0.07
Poland	0.36	0.13	0.11
Portugal	0.37	0.13	0.12
Qatar	0.35	0.12	0.10
Russian Federation	0.34	0.12	0.10
Saudi Arabia	0.18	0.03	0.03
Serbia	0.44	0.19	0.17
Singapore	0.41	0.17	0.15
Slovak Republic	0.46	0.21	0.19
Slovenia	0.36	0.13	0.12
South Africa	0.38	0.14	0.13
Spain	0.36	0.13	0.11
Sweden	0.39	0.15	0.13
Turkiye	0.49	0.24	0.20
United Arab Emirates	0.40	0.16	0.14
United States	—	—	—
Uzbekistan	0.20	0.04	0.03
International Median	0.36	0.13	0.12
Benchmarking Participants			
Alberta, Canada	0.30	0.09	0.07
British Columbia, Canada	0.27	0.07	0.05
Newfoundland & Labrador, Can.	0.26	0.07	0.05
Quebec, Canada	0.26	0.07	0.05
Moscow City, Russian Fed.	0.26	0.07	0.06
South Africa (6)	0.33	0.11	0.09
Abu Dhabi, UAE	0.43	0.18	0.16
Dubai, UAE	0.44	0.19	0.18

A dash (—) indicates comparable data not available.

Parents Like Reading

About the Scale

Students were scored on the *Parents Like Reading* scale according to their parents' responses to eight statements about reading as well as how often they read for enjoyment. Cut scores divide the scale into three categories. Students whose parents **Very Much Like Reading** had a score at or above the cut score corresponding to their parents "agreeing a lot" with four of the eight statements and "agreeing a little" with the other four, as well as reading for enjoyment "every day or almost every day," on average. Students whose parents **Do Not Like Reading** had a score at or below the cut score corresponding to their parents "disagreeing a little" with four of the eight statements and "agreeing a little" with the other four, as well as reading for enjoyment only "once or twice a month," on average. All other students had parents who **Somewhat Like Reading**.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 *Parents Like Reading* Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ASBH11A R	0.50897	-0.63117	0.30040	0.33077	1.37	0.14
ASBH11B	-0.23785	-1.05099	-0.44563	1.49662	1.19	0.19
ASBH11C	-0.00112	-1.11031	-0.22330	1.33361	0.79	0.08
ASBH11D R	0.72012	-0.83058	0.17130	0.65928	1.27	0.13
ASBH11E	-0.18388	-1.39601	-0.09784	1.49385	0.94	0.12
ASBH11F	-0.53539	-0.83250	-0.18143	1.01393	0.99	0.14
ASBH11G	-0.71724	-0.70553	-0.32243	1.02796	0.69	0.06
ASBH11H	0.20210	-1.06956	-0.12629	1.19585	0.80	0.08
ASBH10	0.24429	-0.77111	-0.46117	1.23228	1.12	0.15

R Reverse coded

Scale Transformation Constants for the PIRLS 2021 *Parents Like Reading* Scale

Scale Transformation Constants

A = 8.166833

B = 1.363641

Transformed Scale Score = 8.166833 + 1.363641 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the
PIRLS 2021 Parents Like Reading Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	2.77140	
1	4.27605	
2	4.99244	
3	5.47972	
4	5.86197	
5	6.18279	
6	6.46527	
7	6.72098	
8	6.96180	
9	7.19013	
10	7.40977	
11	7.62363	
12	7.83390	
13	8.04235	8.1
14	8.25040	
15	8.45942	
16	8.67085	
17	8.88647	
18	9.10865	
19	9.34052	
20	9.58447	
21	9.84880	
22	10.14182	
23	10.47788	10.4
24	10.88150	
25	11.39900	
26	12.15735	
27	13.71967	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Parents Like Reading Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBH11A ^R	ASBH11B	ASBH11C	ASBH11D ^R	ASBH11E	ASBH11F	ASBH11G	ASBH11H	ASBH11I
Albania	0.80	45	0.32	0.63	0.79	0.30	0.76	0.76	0.82	0.82	0.60
Australia	—	—	—	—	—	—	—	—	—	—	—
Austria	0.91	58	0.76	0.55	0.87	0.75	0.81	0.67	0.86	0.85	0.70
Azerbaijan	0.83	51	0.00	0.54	0.76	0.00	0.73	0.70	0.84	0.83	0.53
Bahrain	0.82	44	0.46	0.51	0.79	0.49	0.69	0.67	0.82	0.83	0.59
Belgium (Flemish)	0.91	60	0.76	0.56	0.88	0.76	0.75	0.70	0.88	0.86	0.73
Belgium (French)	0.90	56	0.72	0.52	0.84	0.74	0.75	0.70	0.86	0.86	0.69
Brazil	0.85	46	0.50	0.66	0.80	0.52	0.67	0.63	0.81	0.82	0.64
Bulgaria	0.92	62	0.64	0.73	0.89	0.57	0.82	0.84	0.91	0.88	0.72
Chinese Taipei	0.86	50	0.58	0.46	0.78	0.55	0.79	0.79	0.86	0.87	0.55
Croatia	0.90	56	0.77	0.57	0.86	0.75	0.75	0.68	0.86	0.85	0.61
Cyprus	0.86	49	0.62	0.44	0.83	0.69	0.73	0.66	0.83	0.85	0.55
Czech Republic	0.91	58	0.77	0.63	0.86	0.76	0.71	0.69	0.87	0.90	0.63
Denmark	0.90	57	0.75	0.58	0.88	0.77	0.74	0.64	0.86	0.82	0.69
Egypt	0.79	48	-0.07	0.73	0.80	-0.18	0.82	0.82	0.88	0.86	0.53
England	—	—	—	—	—	—	—	—	—	—	—
Finland	0.91	60	0.75	0.60	0.88	0.78	0.83	0.66	0.87	0.87	0.68
France	0.88	52	0.72	0.53	0.83	0.71	0.65	0.60	0.83	0.85	0.67
Georgia	0.81	44	0.50	0.56	0.79	0.47	0.64	0.67	0.81	0.81	0.58
Germany	0.90	57	0.79	0.58	0.88	0.68	0.72	0.67	0.87	0.85	0.68
Hong Kong SAR	0.85	49	0.49	0.55	0.82	0.41	0.76	0.75	0.86	0.86	0.61
Hungary	0.89	54	0.69	0.60	0.85	0.71	0.70	0.70	0.84	0.85	0.62
Iran, Islamic Rep. of	0.79	42	0.36	0.50	0.78	0.26	0.69	0.75	0.81	0.82	0.58
Ireland	0.89	55	0.77	0.59	0.83	0.76	0.70	0.58	0.82	0.86	0.70
Israel	0.86	49	0.70	0.50	0.83	0.66	0.70	0.61	0.80	0.84	0.60
Italy	0.87	50	0.66	0.54	0.82	0.68	0.71	0.65	0.81	0.83	0.62
Jordan	0.82	46	0.26	0.67	0.79	0.12	0.80	0.76	0.84	0.85	0.56
Kazakhstan	0.78	42	0.21	0.53	0.79	0.26	0.74	0.75	0.79	0.82	0.56
Kosovo	0.74	39	0.31	0.43	0.78	0.36	0.68	0.74	0.80	0.75	0.57
Latvia	0.87	51	0.70	0.43	0.83	0.72	0.66	0.67	0.84	0.84	0.63
Lithuania	0.89	55	0.73	0.60	0.82	0.70	0.73	0.66	0.86	0.82	0.72
Macao SAR	0.84	48	0.49	0.50	0.77	0.48	0.76	0.77	0.86	0.86	0.58
Malta	0.87	50	0.69	0.51	0.81	0.70	0.62	0.69	0.83	0.85	0.62
Montenegro	0.82	43	0.60	0.44	0.77	0.64	0.65	0.58	0.80	0.76	0.56
Morocco	0.82	50	-0.01	0.77	0.80	-0.13	0.82	0.78	0.89	0.86	0.67
Netherlands	0.91	59	0.83	0.56	0.88	0.81	0.65	0.58	0.89	0.87	0.76
New Zealand	0.89	55	0.79	0.55	0.84	0.77	0.70	0.60	0.83	0.87	0.67
North Macedonia	0.84	48	0.46	0.54	0.81	0.50	0.77	0.69	0.84	0.84	0.64
Northern Ireland	0.91	60	0.82	0.66	0.87	0.79	0.71	0.61	0.84	0.89	0.72

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Parents Like Reading Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ASBH11A ^R	ASBH11B	ASBH11C	ASBH11D ^R	ASBH11E	ASBH11F	ASBH11G	ASBH11H	ASBH11I
Norway (5)	0.89	55	0.75	0.56	0.86	0.77	0.74	0.58	0.85	0.82	0.67
Oman	0.78	41	0.26	0.53	0.77	0.35	0.71	0.70	0.81	0.82	0.53
Poland	0.91	58	0.73	0.69	0.86	0.77	0.78	0.68	0.85	0.82	0.64
Portugal	0.87	51	0.71	0.50	0.81	0.70	0.73	0.64	0.81	0.84	0.60
Qatar	0.81	43	0.45	0.50	0.77	0.48	0.72	0.67	0.82	0.84	0.52
Russian Federation	0.87	50	0.59	0.56	0.83	0.61	0.68	0.72	0.85	0.84	0.62
Saudi Arabia	0.81	43	0.40	0.49	0.78	0.34	0.75	0.71	0.83	0.84	0.55
Serbia	0.86	50	0.69	0.52	0.84	0.67	0.74	0.59	0.85	0.80	0.60
Singapore	0.86	50	0.59	0.45	0.82	0.55	0.72	0.75	0.86	0.87	0.62
Slovak Republic	0.91	60	0.76	0.66	0.86	0.69	0.76	0.74	0.88	0.89	0.70
Slovenia	0.89	54	0.76	0.42	0.87	0.66	0.71	0.71	0.88	0.84	0.64
South Africa	0.79	42	0.21	0.63	0.79	0.22	0.70	0.65	0.83	0.83	0.63
Spain	0.89	53	0.72	0.54	0.84	0.74	0.68	0.65	0.81	0.86	0.67
Sweden	0.87	51	0.71	0.56	0.87	0.74	0.66	0.56	0.86	0.81	0.61
Turkiye	0.89	57	0.59	0.75	0.83	0.33	0.83	0.80	0.88	0.88	0.74
United Arab Emirates	0.80	43	0.39	0.54	0.79	0.30	0.74	0.70	0.83	0.85	0.54
United States	—	—	—	—	—	—	—	—	—	—	—
Uzbekistan	0.69	37	0.22	0.47	0.70	0.22	0.67	0.74	0.79	0.80	0.48
Benchmarking Participants											
Alberta, Canada	0.88	53	0.73	0.48	0.81	0.72	0.73	0.66	0.82	0.84	0.67
British Columbia, Canada	0.88	53	0.73	0.54	0.81	0.72	0.70	0.65	0.85	0.84	0.64
Newfoundland & Labrador, Can.	0.91	58	0.82	0.52	0.86	0.79	0.69	0.67	0.85	0.88	0.74
Quebec, Canada	0.90	57	0.76	0.61	0.85	0.75	0.73	0.64	0.86	0.86	0.71
Moscow City, Russian Fed.	0.87	50	0.65	0.54	0.81	0.66	0.68	0.63	0.84	0.84	0.62
South Africa (6)	0.79	42	0.21	0.60	0.80	0.27	0.71	0.66	0.82	0.81	0.63
Abu Dhabi, UAE	0.80	43	0.35	0.58	0.79	0.23	0.74	0.71	0.83	0.85	0.54
Dubai, UAE	0.82	45	0.50	0.44	0.81	0.50	0.73	0.66	0.83	0.86	0.58

^R Reverse coded

A dash (—) indicates comparable data not available.

Relationship Between the PIRLS 2021 *Parents Like Reading* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.21	0.05	0.04
Australia	–	–	–
Austria	0.33	0.11	0.10
Azerbaijan	0.12	0.01	0.02
Bahrain	0.20	0.04	0.03
Belgium (Flemish)	0.23	0.05	0.04
Belgium (French)	0.29	0.08	0.09
Brazil	0.16	0.02	0.02
Bulgaria	0.37	0.14	0.13
Chinese Taipei	0.17	0.03	0.02
Croatia	0.20	0.04	0.04
Cyprus	0.23	0.05	0.05
Czech Republic	0.23	0.05	0.05
Denmark	0.23	0.05	0.04
Egypt	0.12	0.02	0.02
England	–	–	–
Finland	0.26	0.07	0.07
France	0.25	0.06	0.05
Georgia	0.17	0.03	0.03
Germany	0.29	0.08	0.07
Hong Kong SAR	0.12	0.01	0.01
Hungary	0.27	0.07	0.06
Iran, Islamic Rep. of	0.24	0.06	0.05
Ireland	0.23	0.05	0.05
Israel	0.20	0.04	0.05
Italy	0.21	0.04	0.04
Jordan	0.15	0.02	0.02
Kazakhstan	0.12	0.01	0.02
Kosovo	0.21	0.05	0.04
Latvia	0.21	0.04	0.04
Lithuania	0.22	0.05	0.05
Macao SAR	0.11	0.01	0.01
Malta	0.13	0.02	0.02
Montenegro	0.24	0.06	0.05
Morocco	0.23	0.05	0.05
Netherlands	0.24	0.06	0.05
New Zealand	0.25	0.06	0.06
North Macedonia	0.23	0.05	0.05
Northern Ireland	0.19	0.03	0.04
Norway (5)	0.22	0.05	0.04
Oman	0.13	0.02	0.01

Relationship Between the PIRLS 2021 *Parents Like Reading* Scale and PIRLS 2021 Achievement

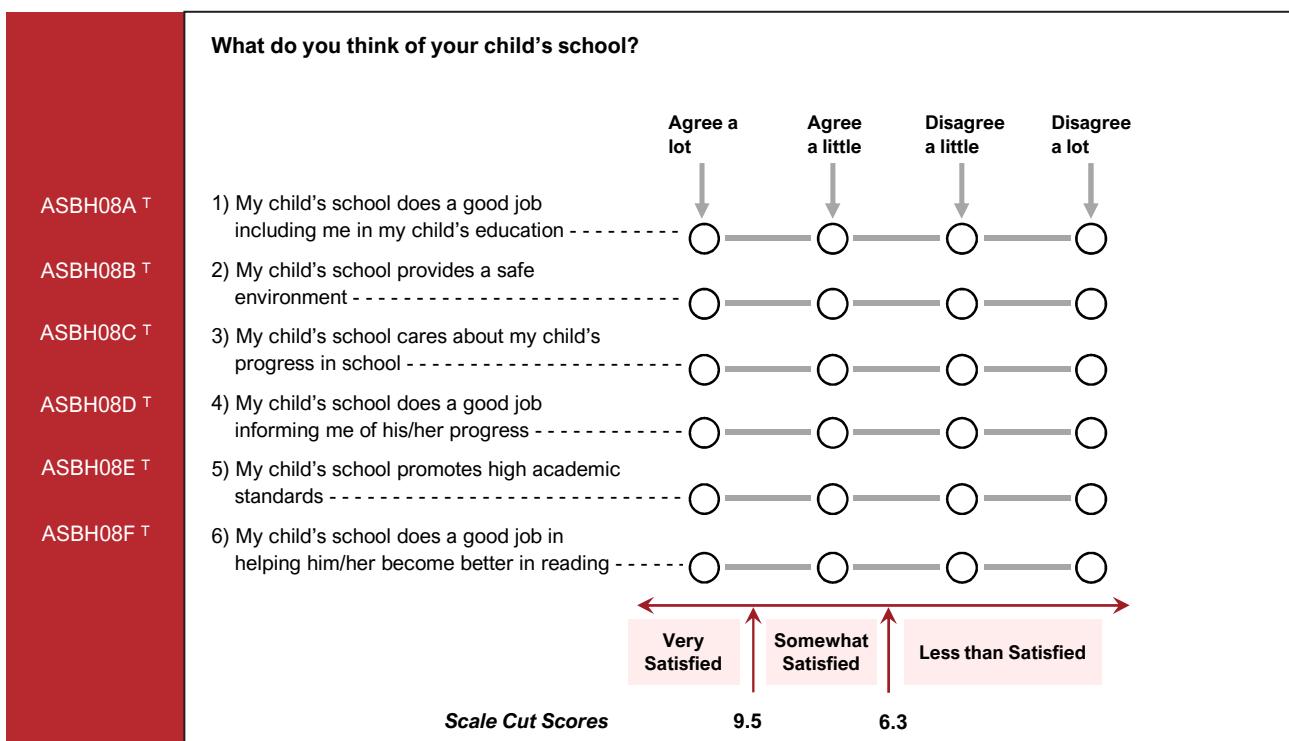
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Poland	0.19	0.04	0.03
Portugal	0.21	0.04	0.04
Qatar	0.10	0.01	0.01
Russian Federation	0.19	0.04	0.03
Saudi Arabia	0.09	0.01	0.01
Serbia	0.25	0.06	0.06
Singapore	0.20	0.04	0.04
Slovak Republic	0.27	0.07	0.06
Slovenia	0.22	0.05	0.04
South Africa	0.20	0.04	0.04
Spain	0.23	0.05	0.05
Sweden	0.20	0.04	0.03
Turkiye	0.33	0.11	0.10
United Arab Emirates	0.14	0.02	0.02
United States	–	–	–
Uzbekistan	0.14	0.02	0.02
International Median	0.21	0.05	0.04
Benchmarking Participants			
Alberta, Canada	0.18	0.03	0.03
British Columbia, Canada	0.19	0.04	0.04
Newfoundland & Labrador, Can.	0.18	0.03	0.03
Quebec, Canada	0.17	0.03	0.04
Moscow City, Russian Fed.	0.17	0.03	0.03
South Africa (6)	0.20	0.04	0.04
Abu Dhabi, UAE	0.15	0.02	0.03
Dubai, UAE	0.18	0.03	0.03

A dash (–) indicates comparable data not available.

Parents' Perceptions of Their Child's School

About the Scale¹

Students were scored according to their parents' responses to six statements on the *Parents' Perceptions of Their Child's School* scale. Cut scores divide the scale into three categories. Students whose parents are **Very Satisfied** with their child's school had a score at or above the cut score corresponding to their parents "agreeing a lot" with three of the six statements and "agreeing a little" with the other three, on average. Students whose parents are **Less than Satisfied** had a score at or below the cut score corresponding to their parents "disagreeing a little" with three of the six statements and "agreeing a little" with the other three, on average. All other students had parents who are **Somewhat Satisfied**.



¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories "Disagree a little" and "Disagree a lot" were combined for all variables. Scale statistics reflect analysis of the items following collapsing.

^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 *Parents' Perceptions of Their Child's School* Scale

Item	delta	tau_1	tau_2	Infit	Q-Index
ASBH08A	0.06049	-1.71466	1.71466	1.03	0.07
ASBH08B	-0.73338	-1.68044	1.68044	1.25	0.12
ASBH08C	-0.48074	-1.69200	1.69200	0.82	0.05
ASBH08D	0.06226	-1.47395	1.47395	0.93	0.06
ASBH08E	1.13338	-1.72542	1.72542	1.12	0.07
ASBH08F	-0.04201	-1.57614	1.57614	1.01	0.07

Scale Transformation Constants for the PIRLS 2021 *Parents' Perceptions of Their Child's School* Scale

Scale Transformation Constants

A = 7.908785

B = 0.951525

Transformed Scale Score = 7.908785 + 0.951525 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 *Parents' Perceptions of Their Child's School* Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.75630	
1	4.99314	
2	5.69599	
3	6.27013	6.3
4	6.80582	
5	7.35062	
6	7.91212	
7	8.46496	
8	8.99479	
9	9.52492	9.5
10	10.10603	
11	10.83953	
12	12.13203	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Parents' Perceptions of Their Child's School Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ASBH08A	ASBH08B	ASBH08C	ASBH08D	ASBH08E	ASBH08F
Albania	0.77	50	0.73	0.64	0.78	0.73	0.64	0.71
Australia	—	—	—	—	—	—	—	—
Austria	0.87	60	0.79	0.65	0.82	0.84	0.75	0.79
Azerbaijan	0.78	50	0.66	0.68	0.77	0.72	0.67	0.73
Bahrain	0.87	61	0.79	0.71	0.82	0.81	0.80	0.76
Belgium (Flemish)	0.85	58	0.82	0.68	0.82	0.85	0.64	0.74
Belgium (French)	0.87	61	0.81	0.73	0.84	0.83	0.72	0.74
Brazil	0.85	58	0.79	0.66	0.79	0.80	0.75	0.77
Bulgaria	0.85	59	0.74	0.73	0.80	0.77	0.80	0.76
Chinese Taipei	0.87	63	0.81	0.75	0.88	0.87	0.66	0.78
Croatia	0.89	64	0.79	0.74	0.85	0.78	0.82	0.81
Cyprus	0.83	55	0.74	0.64	0.81	0.77	0.77	0.73
Czech Republic	0.87	60	0.74	0.65	0.84	0.83	0.78	0.79
Denmark	0.89	64	0.81	0.71	0.85	0.84	0.80	0.77
Egypt	0.89	64	0.80	0.76	0.83	0.80	0.79	0.80
England	—	—	—	—	—	—	—	—
Finland	0.83	55	0.76	0.68	0.83	0.79	0.64	0.75
France	0.87	61	0.81	0.71	0.85	0.83	0.72	0.77
Georgia	0.86	60	0.76	0.70	0.84	0.80	0.78	0.75
Germany	0.87	61	0.83	0.65	0.83	0.83	0.75	0.78
Hong Kong SAR	0.86	59	0.79	0.62	0.83	0.83	0.74	0.79
Hungary	0.89	65	0.79	0.73	0.85	0.83	0.82	0.82
Iran, Islamic Rep. of	0.83	56	0.72	0.70	0.80	0.76	0.72	0.77
Ireland	0.85	59	0.81	0.59	0.82	0.84	0.77	0.75
Israel	0.90	67	0.84	0.68	0.86	0.86	0.82	0.81
Italy	0.83	55	0.78	0.58	0.80	0.79	0.74	0.75
Jordan	0.90	66	0.79	0.78	0.84	0.83	0.80	0.84
Kazakhstan	0.85	57	0.70	0.70	0.81	0.77	0.77	0.77
Kosovo	0.79	52	0.73	0.68	0.78	0.74	0.66	0.71
Latvia	0.84	56	0.70	0.67	0.82	0.66	0.83	0.79
Lithuania	0.86	60	0.76	0.73	0.84	0.76	0.76	0.76
Macao SAR	0.85	57	0.76	0.64	0.82	0.83	0.74	0.73
Malta	0.82	54	0.78	0.56	0.80	0.79	0.75	0.69
Montenegro	0.84	57	0.71	0.66	0.84	0.78	0.76	0.78
Morocco	0.84	58	0.76	0.73	0.81	0.77	0.68	0.80
Netherlands	0.84	57	0.82	0.69	0.84	0.84	0.56	0.74
New Zealand	0.88	62	0.81	0.64	0.85	0.85	0.80	0.78
North Macedonia	0.82	55	0.70	0.71	0.84	0.75	0.71	0.73
Northern Ireland	0.87	62	0.84	0.53	0.85	0.86	0.81	0.78

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Parents' Perceptions of Their Child's School Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ASBH08A	ASBH08B	ASBH08C	ASBH08D	ASBH08E	ASBH08F
Norway (5)	0.89	64	0.82	0.65	0.85	0.84	0.83	0.80
Oman	0.83	55	0.75	0.67	0.80	0.75	0.72	0.77
Poland	0.88	63	0.74	0.73	0.86	0.78	0.84	0.80
Portugal	0.86	60	0.83	0.67	0.85	0.82	0.72	0.76
Qatar	0.86	60	0.76	0.67	0.82	0.78	0.82	0.77
Russian Federation	0.88	62	0.63	0.75	0.85	0.75	0.88	0.85
Saudi Arabia	0.87	63	0.76	0.74	0.86	0.83	0.76	0.80
Serbia	0.86	60	0.75	0.65	0.86	0.81	0.75	0.79
Singapore	0.88	62	0.81	0.68	0.86	0.83	0.76	0.78
Slovak Republic	0.85	58	0.73	0.60	0.82	0.79	0.83	0.79
Slovenia	0.86	60	0.73	0.71	0.84	0.83	0.75	0.77
South Africa	0.83	54	0.72	0.65	0.76	0.76	0.76	0.76
Spain	0.86	60	0.80	0.66	0.84	0.81	0.75	0.78
Sweden	0.90	66	0.81	0.74	0.86	0.84	0.82	0.80
Turkiye	0.89	64	0.75	0.74	0.84	0.82	0.82	0.80
United Arab Emirates	0.90	67	0.80	0.72	0.86	0.84	0.84	0.82
United States	—	—	—	—	—	—	—	—
Uzbekistan	0.76	47	0.69	0.61	0.73	0.64	0.69	0.75
Benchmarking Participants								
Alberta, Canada	0.88	63	0.82	0.68	0.85	0.82	0.80	0.77
British Columbia, Canada	0.88	63	0.82	0.65	0.85	0.84	0.80	0.79
Newfoundland & Labrador, Can.	0.88	64	0.82	0.66	0.85	0.85	0.79	0.82
Quebec, Canada	0.89	64	0.81	0.68	0.85	0.85	0.79	0.80
Moscow City, Russian Fed.	0.85	59	0.46	0.72	0.86	0.77	0.88	0.85
South Africa (6)	0.83	54	0.75	0.67	0.77	0.74	0.73	0.75
Abu Dhabi, UAE	0.90	67	0.81	0.72	0.87	0.84	0.85	0.83
Dubai, UAE	0.89	64	0.79	0.69	0.87	0.82	0.82	0.81

A dash (—) indicates comparable data not available.

Relationship Between the PIRLS 2021 Parents' Perceptions of Their Child's School Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.11	0.01	0.01
Australia	–	–	–
Austria	0.02	0.00	0.00
Azerbaijan	0.02	0.00	0.00
Bahrain	0.19	0.03	0.03
Belgium (Flemish)	-0.02	0.00	0.00
Belgium (French)	-0.08	0.01	0.01
Brazil	0.00	0.00	0.00
Bulgaria	-0.07	0.00	0.00
Chinese Taipei	-0.01	0.00	0.00
Croatia	-0.03	0.00	0.00
Cyprus	0.01	0.00	0.00
Czech Republic	-0.07	0.01	0.00
Denmark	0.05	0.00	0.00
Egypt	0.06	0.00	0.00
England	–	–	–
Finland	0.08	0.01	0.01
France	0.04	0.00	0.00
Georgia	-0.01	0.00	0.00
Germany	0.05	0.00	0.01
Hong Kong SAR	0.10	0.01	0.01
Hungary	-0.06	0.00	0.00
Iran, Islamic Rep. of	0.02	0.00	0.00
Ireland	-0.04	0.00	0.00
Israel	-0.09	0.01	0.00
Italy	0.03	0.00	0.00
Jordan	0.13	0.02	0.01
Kazakhstan	0.01	0.00	0.00
Kosovo	0.03	0.00	0.00
Latvia	-0.03	0.00	0.00
Lithuania	0.11	0.01	0.01
Macao SAR	0.09	0.01	0.01
Malta	-0.04	0.00	0.00
Montenegro	-0.01	0.00	0.00
Morocco	0.17	0.03	0.02
Netherlands	0.03	0.00	0.00
New Zealand	0.02	0.00	0.00
North Macedonia	-0.07	0.00	0.01
Northern Ireland	0.07	0.01	0.00
Norway (5)	0.02	0.00	0.00

**Relationship Between the PIRLS 2021 *Parents' Perceptions of Their Child's School* Scale and
PIRLS 2021 Achievement**

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.09	0.01	0.01
Poland	-0.07	0.00	0.00
Portugal	0.05	0.00	0.00
Qatar	0.10	0.01	0.02
Russian Federation	-0.07	0.00	0.00
Saudi Arabia	0.04	0.00	0.00
Serbia	-0.07	0.00	0.00
Singapore	0.07	0.01	0.01
Slovak Republic	-0.06	0.00	0.00
Slovenia	-0.02	0.00	0.00
South Africa	0.13	0.02	0.01
Spain	0.02	0.00	0.00
Sweden	0.04	0.00	0.00
Turkiye	-0.05	0.00	0.00
United Arab Emirates	0.09	0.01	0.01
United States	—	—	—
Uzbekistan	0.08	0.01	0.00
International Median	0.02	0.00	0.00
Benchmarking Participants			
Alberta, Canada	0.04	0.00	0.01
British Columbia, Canada	0.07	0.00	0.01
Newfoundland & Labrador, Can.	0.02	0.00	0.00
Quebec, Canada	0.05	0.00	0.00
Moscow City, Russian Fed.	0.01	0.00	0.00
South Africa (6)	0.14	0.02	0.02
Abu Dhabi, UAE	0.12	0.01	0.02
Dubai, UAE	0.10	0.01	0.01

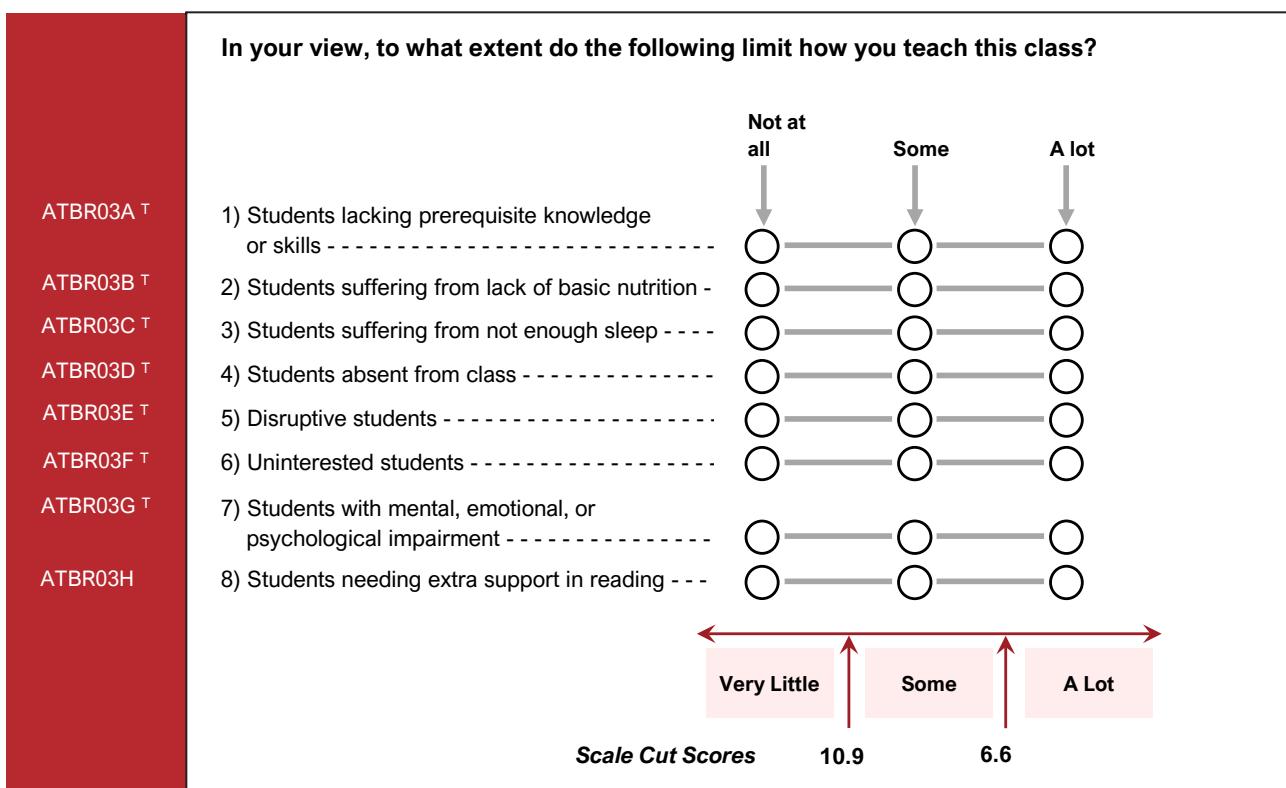
A dash (—) indicates comparable data not available.

Appendix 15C: PIRLS 2021 Context Questionnaire Scales Based on Teachers' Reports

Classroom Teaching Limited by Student Not Ready for Instruction

About the Scale

Students were scored according to their teachers' reports regarding eight student attributes on the *Classroom Teaching Limited by Students Not Ready for Instruction* scale. Cut scores divide the scale into three categories. Students with teachers who felt their teaching was limited **Very Little** had a score at or above the cut score corresponding to their teachers reporting they were "not at all" limited by four of the eight student attributes and were limited "some" by the other four, on average. Students with teachers who felt their teaching was limited **A Lot** had a score at or below the cut score corresponding to their teachers reporting they were limited "a lot" by four of the eight attributes and were limited "some" by the other four, on average. All other students had teachers who felt their teaching was limited **Some**.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Classroom Teaching Limited by Student Not Ready for Instruction Scale

Item	delta	tau_1	tau_2	Infit	Q-Index
ATBR03A	0.77764	-1.81297	1.81297	1.00	0.13
ATBR03B	-1.35648	-0.80680	0.80680	1.08	0.12
ATBR03C	-0.41070	-1.50709	1.50709	0.96	0.11
ATBR03D	-0.09823	-1.25947	1.25947	1.01	0.12
ATBR03E	0.11314	-1.30257	1.30257	1.01	0.12
ATBR03F	0.43837	-1.76165	1.76165	0.88	0.09
ATBR03G	-0.26713	-1.39159	1.39159	1.04	0.12
ATBR03H	0.80339	-1.78839	1.78839	1.07	0.14

Scale Transformation Constants for the PIRLS 2021 Classroom Teaching Limited by Student Not Ready for Instruction Scale

Scale Transformation Constants

A = 8.721039

B = 1.358071

Transformed Scale Score = 8.721039 + 1.358071 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Classroom Teaching Limited by Student Not Ready for Instruction Scale

Raw Score	Transformed Scale Score	Cutpoint
0	2.79550	
1	4.44897	
2	5.31576	
3	5.96314	
4	6.51654	6.6
5	7.02686	
6	7.52318	
7	8.02670	
8	8.54995	
9	9.10220	
10	9.68037	
11	10.27928	
12	10.90415	10.9
13	11.57611	
14	12.34223	
15	13.32137	
16	15.07968	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Classroom Teaching Limited by Student Not Ready for Instruction Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item							
			ATBR03A	ATBR03B	ATBR03C	ATBR03D	ATBR03E	ATBR03F	ATBR03G	ATBR03H
Albania	0.82	45	0.48	0.69	0.72	0.65	0.53	0.75	0.81	0.65
Australia	0.82	44	0.70	0.69	0.70	0.60	0.73	0.67	0.65	0.53
Austria	0.76	38	0.62	0.48	0.72	0.68	0.58	0.69	0.61	0.49
Azerbaijan	0.83	46	0.58	0.59	0.71	0.73	0.71	0.71	0.79	0.56
Bahrain	0.79	41	0.64	0.54	0.68	0.56	0.63	0.80	0.58	0.65
Belgium (Flemish)	0.74	36	0.55	0.59	0.69	0.65	0.60	0.55	0.62	0.54
Belgium (French)	0.73	35	0.70	0.47	0.64	0.58	0.52	0.68	0.60	0.52
Brazil	0.81	43	0.61	0.75	0.74	0.74	0.51	0.81	0.56	0.46
Bulgaria	0.85	49	0.82	0.50	0.56	0.73	0.66	0.84	0.76	0.67
Chinese Taipei	0.65	30	0.59	0.51	0.53	0.33	0.50	0.62	0.51	0.68
Croatia	0.75	37	0.52	0.60	0.61	0.61	0.59	0.67	0.60	0.64
Cyprus	0.82	45	0.64	0.65	0.73	0.68	0.66	0.71	0.73	0.54
Czech Republic	0.67	31	0.70	0.09	0.47	0.51	0.60	0.69	0.44	0.67
Denmark	0.79	41	0.68	0.49	0.61	0.62	0.76	0.75	0.58	0.59
Egypt	0.75	37	0.64	0.61	0.59	0.45	0.73	0.74	0.56	0.47
England	0.85	49	0.69	0.72	0.71	0.70	0.72	0.72	0.73	0.61
Finland	0.73	35	0.60	0.49	0.70	0.48	0.58	0.60	0.68	0.60
France	0.71	35	0.54	0.61	0.68	0.66	0.64	0.68	0.51	0.29
Georgia	0.85	49	0.64	0.68	0.70	0.73	0.72	0.77	0.78	0.56
Germany	0.73	36	0.68	0.45	0.59	0.54	0.60	0.67	0.67	0.54
Hong Kong SAR	0.79	41	0.54	0.51	0.60	0.62	0.70	0.63	0.74	0.74
Hungary	–	–	–	–	–	–	–	–	–	–
Iran, Islamic Rep. of	0.82	44	0.63	0.68	0.63	0.63	0.74	0.70	0.76	0.53
Ireland	–	–	–	–	–	–	–	–	–	–
Israel	0.85	48	0.69	0.63	0.77	0.71	0.67	0.75	0.75	0.56
Italy	0.81	43	0.69	0.64	0.73	0.73	0.78	0.67	0.53	0.41
Jordan	0.74	36	0.54	0.64	0.51	0.69	0.71	0.66	0.52	0.48
Kazakhstan	0.86	51	0.64	0.61	0.69	0.79	0.77	0.78	0.75	0.64
Kosovo	0.76	37	0.54	0.53	0.67	0.64	0.55	0.67	0.62	0.62
Latvia	0.75	37	0.54	0.63	0.65	0.64	0.59	0.66	0.55	0.56
Lithuania	0.80	43	0.60	0.65	0.71	0.62	0.72	0.71	0.69	0.50
Macao SAR	0.85	49	0.60	0.66	0.73	0.74	0.72	0.74	0.78	0.60
Malta	0.85	50	0.66	0.66	0.74	0.73	0.70	0.74	0.79	0.60
Montenegro	0.78	40	0.47	0.59	0.60	0.68	0.68	0.69	0.69	0.60
Morocco	0.65	31	0.58	0.63	0.46	0.64	0.70	0.66	0.35	0.25
Netherlands	0.79	42	0.66	0.66	0.72	0.60	0.67	0.78	0.57	0.45
New Zealand	0.80	41	0.54	0.70	0.68	0.64	0.63	0.67	0.69	0.56
North Macedonia	0.78	40	0.65	0.56	0.60	0.72	0.60	0.72	0.55	0.61
Northern Ireland	0.76	39	0.56	0.59	0.69	0.65	0.60	0.80	0.65	0.34

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Classroom Teaching Limited by Student Not Ready for Instruction Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item							
			ATBR03A	ATBR03B	ATBR03C	ATBR03D	ATBR03E	ATBR03F	ATBR03G	ATBR03H
Norway (5)	0.76	38	0.67	0.47	0.72	0.49	0.62	0.73	0.62	0.54
Oman	0.81	42	0.50	0.59	0.67	0.67	0.72	0.71	0.68	0.58
Poland	0.73	34	0.64	0.29	0.61	0.53	0.59	0.72	0.62	0.60
Portugal	0.81	43	0.65	0.57	0.71	0.67	0.69	0.77	0.59	0.57
Qatar	0.83	45	0.68	0.65	0.72	0.66	0.69	0.76	0.59	0.63
Russian Federation	0.87	52	0.63	0.63	0.71	0.76	0.80	0.77	0.73	0.72
Saudi Arabia	0.85	49	0.69	0.71	0.65	0.69	0.64	0.79	0.74	0.70
Serbia	0.74	39	0.62	0.29	0.57	0.71	0.52	0.75	0.73	0.65
Singapore	0.83	47	0.65	0.65	0.71	0.76	0.62	0.64	0.71	0.71
Slovak Republic	0.77	39	0.70	0.45	0.59	0.69	0.49	0.70	0.60	0.71
Slovenia	0.78	40	0.62	0.61	0.67	0.58	0.67	0.76	0.67	0.43
South Africa	0.78	40	0.63	0.59	0.62	0.56	0.69	0.75	0.58	0.59
Spain	0.80	44	0.61	0.65	0.68	0.79	0.71	0.72	0.57	0.51
Sweden	0.69	32	0.61	0.40	0.58	0.54	0.67	0.57	0.50	0.63
Turkiye	0.84	47	0.68	0.69	0.67	0.65	0.67	0.74	0.64	0.74
United Arab Emirates	0.84	47	0.69	0.57	0.76	0.70	0.72	0.75	0.68	0.58
United States	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uzbekistan	0.78	41	0.52	0.46	0.58	0.72	0.79	0.78	0.61	0.59
Benchmarking Participants										
Alberta, Canada	0.76	38	0.63	0.77	0.71	0.53	0.53	0.40	0.72	0.59
British Columbia, Canada	0.84	48	0.66	0.69	0.74	0.72	0.69	0.69	0.72	0.64
Newfoundland & Labrador, Can.	0.83	46	0.72	0.72	0.68	0.54	0.69	0.55	0.80	0.66
Quebec, Canada	0.79	41	0.51	0.64	0.73	0.69	0.69	0.71	0.66	0.46
Moscow City, Russian Fed.	0.80	42	0.67	0.54	0.67	0.66	0.71	0.70	0.67	0.55
South Africa (6)	0.77	38	0.57	0.59	0.61	0.59	0.74	0.70	0.57	0.53
Abu Dhabi, UAE	0.81	43	0.61	0.51	0.75	0.67	0.74	0.74	0.63	0.58
Dubai, UAE	0.85	48	0.73	0.63	0.75	0.73	0.70	0.75	0.70	0.53

A dash (–) indicates comparable data not available.

Relationship Between the PIRLS 2021 Classroom Teaching Limited by Student Not Ready for Instruction Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.05	0.00	0.01
Australia	0.20	0.04	0.03
Austria	0.18	0.03	0.03
Azerbaijan	0.00	0.00	0.00
Bahrain	0.24	0.06	0.05
Belgium (Flemish)	0.12	0.02	0.01
Belgium (French)	0.21	0.05	0.03
Brazil	0.22	0.05	0.03
Bulgaria	0.30	0.09	0.07
Chinese Taipei	0.10	0.01	0.01
Croatia	0.08	0.01	0.00
Cyprus	0.14	0.02	0.02
Czech Republic	0.12	0.02	0.01
Denmark	0.11	0.01	0.01
Egypt	0.08	0.01	0.01
England	0.14	0.02	0.01
Finland	0.19	0.04	0.03
France	0.19	0.03	0.02
Georgia	0.06	0.00	0.00
Germany	0.21	0.04	0.03
Hong Kong SAR	0.16	0.03	0.02
Hungary	–	–	–
Iran, Islamic Rep. of	0.15	0.02	0.03
Ireland	–	–	–
Israel	0.14	0.02	0.03
Italy	0.05	0.00	0.01
Jordan	0.02	0.00	0.00
Kazakhstan	-0.09	0.01	0.02
Kosovo	0.07	0.00	0.01
Latvia	0.09	0.01	0.01
Lithuania	0.03	0.00	0.00
Macao SAR	0.07	0.00	0.01
Malta	0.19	0.04	0.03
Montenegro	0.09	0.01	0.00
Morocco	0.15	0.02	0.01
Netherlands	0.17	0.03	0.02
New Zealand	0.23	0.05	0.03
North Macedonia	0.08	0.01	0.00
Northern Ireland	0.19	0.04	0.03
Norway (5)	0.10	0.01	0.01

Relationship Between the PIRLS 2021 Classroom Teaching Limited by Student Not Ready for Instruction Scale and PIRLS 2021 Achievement

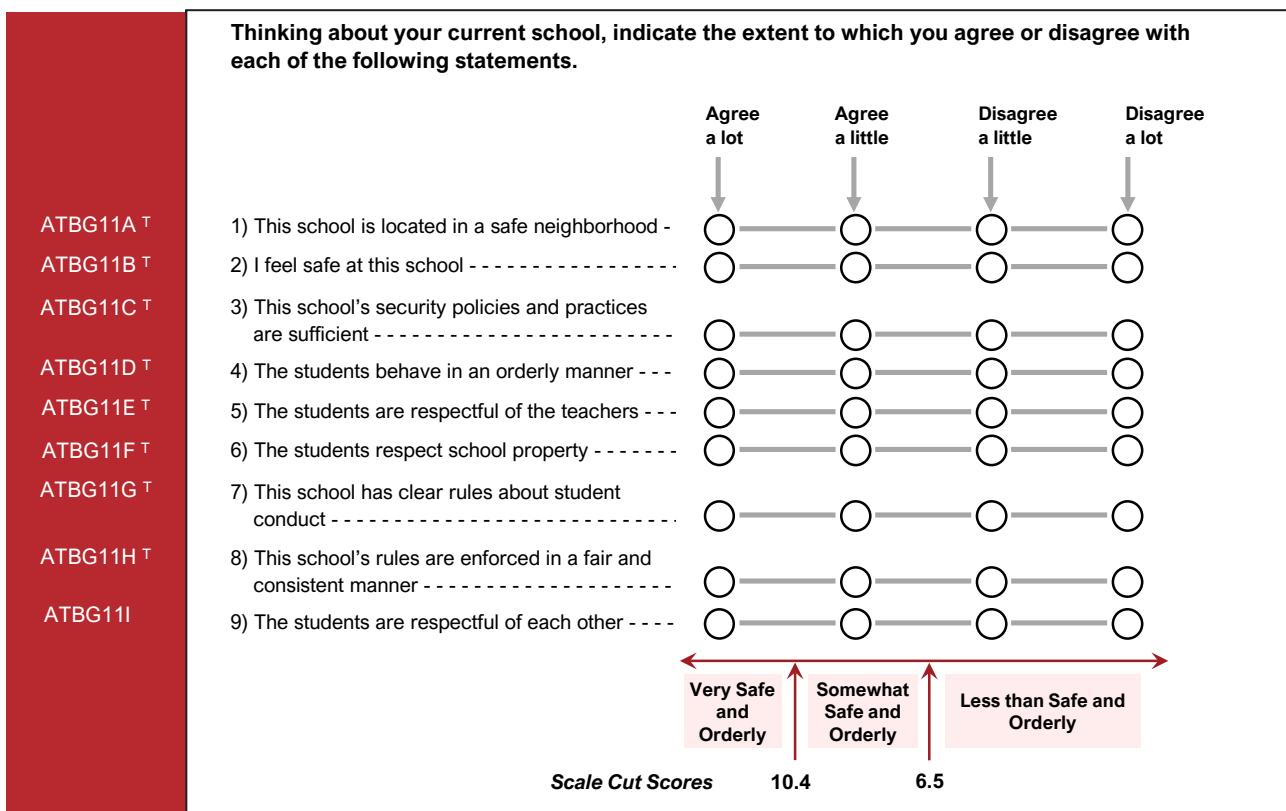
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.11	0.01	0.01
Poland	0.08	0.01	0.00
Portugal	0.16	0.02	0.02
Qatar	0.14	0.02	0.02
Russian Federation	0.06	0.00	0.00
Saudi Arabia	0.12	0.01	0.01
Serbia	0.11	0.01	0.01
Singapore	0.28	0.08	0.08
Slovak Republic	0.26	0.07	0.12
Slovenia	0.06	0.00	0.00
South Africa	0.14	0.02	0.01
Spain	0.17	0.03	0.02
Sweden	0.14	0.02	0.01
Turkiye	0.14	0.02	0.01
United Arab Emirates	0.24	0.06	0.04
United States	–	–	–
Uzbekistan	0.05	0.00	0.00
International Median	0.14	0.02	0.01
Benchmarking Participants			
Alberta, Canada	0.17	0.03	0.03
British Columbia, Canada	0.25	0.06	0.06
Newfoundland & Labrador, Can.	0.16	0.03	0.03
Quebec, Canada	0.09	0.01	0.01
Moscow City, Russian Fed.	0.05	0.00	0.00
South Africa (6)	0.14	0.02	0.02
Abu Dhabi, UAE	0.20	0.04	0.02
Dubai, UAE	0.15	0.02	0.02

A dash (–) indicates comparable data not available.

Safe and Orderly School

About the Scale¹

Students were scored according to their teachers' responses to nine statements on the *Safe and Orderly School* scale. Cut scores divide the scale into three categories. Students in **Very Safe and Orderly** schools had a score at or above the cut score corresponding to their teachers "agreeing a lot" with five of the nine statements and "agreeing a little" with the other four, on average. Students in **Less than Safe and Orderly** schools had a score at or below the cut score corresponding to their teachers "disagreeing a little" with five of the nine statements and "agreeing a little" with the other four, on average. All other students were in **Somewhat Safe and Orderly** schools.



¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories "Disagree a little" and "Disagree a lot" were combined for all variables. Scale statistics reflect analysis of the items following collapsing.

^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Safe and Orderly School Scale

Item	delta	tau_1	tau_2	Infit	Q-Index
ATBG11A	-0.63042	-1.06582	1.06582	1.43	0.14
ATBG11B	-1.61318	-1.20178	1.20178	1.09	0.10
ATBG11C	-0.75938	-1.37217	1.37217	1.27	0.11
ATBG11D	0.83487	-1.97679	1.97679	0.87	0.05
ATBG11E	0.35905	-1.89383	1.89383	0.87	0.05
ATBG11F	1.18956	-1.89270	1.89270	0.90	0.05
ATBG11G	-0.59819	-1.39472	1.39472	1.11	0.09
ATBG11H	-0.02814	-1.52653	1.52653	1.07	0.07
ATBG11I	1.24583	-2.17160	2.17160	0.88	0.05

Scale Transformation Constants for the PIRLS 2021 Safe and Orderly School Scale

Scale Transformation Constants

A = 8.421107

B = 0.997188

Transformed Scale Score = 8.421107 + 0.997188 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Safe and Orderly School Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.67446	
1	4.91298	
2	5.56887	
3	6.05453	
4	6.46434	6.5
5	6.83434	
6	7.18418	
7	7.52665	
8	7.87142	
9	8.22671	
10	8.59932	
11	8.99685	
12	9.42597	
13	9.89419	
14	10.40627	10.4
15	10.96579	
16	11.59163	
17	12.35702	
18	13.68151	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Safe and Orderly School Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ATBG11A	ATBG11B	ATBG11C	ATBG11D	ATBG11E	ATBG11F	ATBG11G	ATBG11H	ATBG11I
Albania	0.83	50	0.59	0.75	0.35	0.71	0.82	0.86	0.66	0.66	0.81
Australia	0.92	61	0.61	0.60	0.69	0.88	0.89	0.88	0.74	0.78	0.87
Austria	0.84	45	0.57	0.53	0.55	0.82	0.81	0.78	0.41	0.63	0.80
Azerbaijan	0.83	44	0.56	0.67	0.53	0.63	0.71	0.72	0.69	0.76	0.67
Bahrain	0.85	46	0.47	0.36	0.49	0.75	0.72	0.78	0.79	0.79	0.78
Belgium (Flemish)	0.87	50	0.46	0.48	0.59	0.84	0.82	0.77	0.73	0.76	0.81
Belgium (French)	0.87	50	0.67	0.60	0.66	0.77	0.77	0.76	0.67	0.73	0.74
Brazil	0.89	55	0.57	0.70	0.72	0.83	0.80	0.87	0.74	0.64	0.76
Bulgaria	0.83	44	0.48	0.63	0.64	0.76	0.77	0.77	0.54	0.56	0.73
Chinese Taipei	0.88	52	0.60	0.64	0.69	0.77	0.76	0.77	0.71	0.78	0.75
Croatia	0.91	58	0.68	0.74	0.77	0.79	0.82	0.78	0.76	0.80	0.74
Cyprus	0.90	55	0.56	0.68	0.72	0.85	0.84	0.76	0.70	0.75	0.76
Czech Republic	0.83	43	0.52	0.60	0.63	0.74	0.75	0.72	0.60	0.63	0.67
Denmark	0.90	55	0.61	0.51	0.62	0.84	0.83	0.81	0.74	0.82	0.82
Egypt	0.86	47	0.54	0.46	0.67	0.71	0.76	0.76	0.70	0.72	0.79
England	0.88	52	0.60	0.67	0.57	0.85	0.86	0.83	0.65	0.61	0.80
Finland	0.88	53	0.61	0.64	0.63	0.81	0.81	0.80	0.66	0.80	0.73
France	0.88	51	0.68	0.65	0.64	0.79	0.79	0.76	0.63	0.66	0.79
Georgia	0.78	38	0.28	0.25	0.57	0.72	0.77	0.70	0.56	0.70	0.76
Germany	0.84	46	0.65	0.53	0.57	0.77	0.75	0.78	0.57	0.65	0.75
Hong Kong SAR	0.89	53	0.50	0.58	0.57	0.79	0.83	0.81	0.78	0.78	0.83
Hungary	—	—	—	—	—	—	—	—	—	—	—
Iran, Islamic Rep. of	0.91	60	0.76	0.78	0.73	0.80	0.81	0.76	0.80	0.73	0.79
Ireland	—	—	—	—	—	—	—	—	—	—	—
Israel	0.86	49	0.31	0.46	0.38	0.84	0.88	0.79	0.77	0.78	0.81
Italy	0.85	47	0.51	0.63	0.62	0.77	0.77	0.79	0.62	0.65	0.73
Jordan	0.88	52	0.65	0.69	0.80	0.79	0.64	0.76	0.61	0.77	0.76
Kazakhstan	0.88	55	0.46	0.65	0.75	0.79	0.75	0.84	0.76	0.77	0.82
Kosovo	0.76	40	0.26	0.30	0.17	0.75	0.80	0.77	0.64	0.74	0.80
Latvia	0.79	38	0.42	0.38	0.50	0.68	0.73	0.81	0.56	0.62	0.71
Lithuania	0.88	51	0.40	0.67	0.72	0.76	0.79	0.80	0.73	0.69	0.81
Macao SAR	0.90	55	0.55	0.68	0.73	0.79	0.78	0.77	0.84	0.81	0.71
Malta	0.88	52	0.40	0.65	0.68	0.78	0.83	0.78	0.73	0.77	0.76
Montenegro	0.88	52	0.50	0.52	0.70	0.77	0.84	0.86	0.77	0.75	0.72
Morocco	0.79	48	0.68	0.69	-0.32	0.76	0.71	0.79	0.65	0.71	0.81
Netherlands	0.89	54	0.59	0.55	0.72	0.85	0.84	0.77	0.68	0.74	0.82
New Zealand	0.89	53	0.57	0.66	0.67	0.80	0.83	0.77	0.67	0.73	0.82
North Macedonia	0.86	49	0.45	0.41	0.50	0.81	0.75	0.83	0.63	0.82	0.87
Northern Ireland	0.88	53	0.54	0.38	0.37	0.86	0.90	0.79	0.77	0.82	0.87

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 Safe and Orderly School Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item								
			ATBG11A	ATBG11B	ATBG11C	ATBG11D	ATBG11E	ATBG11F	ATBG11G	ATBG11H	ATBG11I
Norway (5)	0.88	50	0.45	0.48	0.54	0.84	0.86	0.86	0.66	0.72	0.81
Oman	0.85	46	0.52	0.62	0.61	0.76	0.72	0.72	0.67	0.70	0.72
Poland	0.85	46	0.50	0.61	0.63	0.77	0.77	0.71	0.68	0.74	0.66
Portugal	0.87	50	0.63	0.69	0.69	0.76	0.79	0.78	0.63	0.65	0.75
Qatar	0.91	59	0.40	0.59	0.67	0.85	0.85	0.87	0.82	0.85	0.86
Russian Federation	0.90	55	0.59	0.63	0.62	0.84	0.83	0.84	0.57	0.84	0.84
Saudi Arabia	0.89	55	0.57	0.61	0.82	0.72	0.78	0.80	0.79	0.80	0.76
Serbia	0.85	47	0.55	0.54	0.69	0.79	0.71	0.79	0.69	0.72	0.64
Singapore	0.90	56	0.47	0.63	0.64	0.84	0.87	0.85	0.75	0.80	0.82
Slovak Republic	0.87	49	0.49	0.62	0.64	0.76	0.81	0.80	0.68	0.71	0.74
Slovenia	0.86	47	0.65	0.69	0.72	0.76	0.75	0.69	0.65	0.68	0.60
South Africa	0.90	55	0.66	0.70	0.73	0.81	0.76	0.83	0.65	0.70	0.81
Spain	0.87	50	0.58	0.59	0.60	0.76	0.85	0.80	0.69	0.71	0.72
Sweden	0.89	55	0.64	0.66	0.73	0.83	0.87	0.77	0.64	0.77	0.72
Turkiye	0.92	60	0.75	0.75	0.81	0.81	0.75	0.82	0.72	0.75	0.81
United Arab Emirates	0.88	51	0.31	0.31	0.52	0.87	0.83	0.85	0.71	0.85	0.87
United States	—	—	—	—	—	—	—	—	—	—	—
Uzbekistan	0.84	46	0.57	0.65	0.68	0.59	0.76	0.72	0.55	0.77	0.77
Benchmarking Participants											
Alberta, Canada	0.87	50	0.53	0.61	0.65	0.78	0.78	0.81	0.69	0.67	0.78
British Columbia, Canada	0.90	56	0.58	0.68	0.63	0.76	0.85	0.84	0.79	0.77	0.79
Newfoundland & Labrador, Can.	0.89	54	0.60	0.64	0.65	0.79	0.90	0.88	0.65	0.69	0.76
Quebec, Canada	0.86	49	0.62	0.63	0.61	0.81	0.73	0.78	0.63	0.67	0.75
Moscow City, Russian Fed.	0.89	54	0.54	0.65	0.67	0.81	0.80	0.82	0.65	0.82	0.80
South Africa (6)	0.91	58	0.67	0.69	0.74	0.79	0.80	0.81	0.75	0.80	0.82
Abu Dhabi, UAE	0.88	52	0.38	0.32	0.56	0.88	0.83	0.87	0.67	0.84	0.88
Dubai, UAE	0.87	49	0.16	0.27	0.42	0.86	0.83	0.83	0.78	0.85	0.84

A dash (—) indicates comparable data not available.

Relationship Between the PIRLS 2021 *Safe and Orderly School* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.03	0.00	0.00
Australia	0.15	0.02	0.02
Austria	0.19	0.04	0.03
Azerbaijan	0.00	0.00	0.00
Bahrain	0.19	0.03	0.02
Belgium (Flemish)	0.12	0.02	0.02
Belgium (French)	0.17	0.03	0.01
Brazil	0.24	0.06	0.07
Bulgaria	0.13	0.02	0.02
Chinese Taipei	-0.01	0.00	0.00
Croatia	0.04	0.00	0.00
Cyprus	0.11	0.01	0.01
Czech Republic	0.07	0.01	0.00
Denmark	0.09	0.01	0.01
Egypt	0.11	0.01	0.00
England	0.16	0.02	0.01
Finland	0.11	0.01	0.01
France	0.14	0.02	0.01
Georgia	-0.01	0.00	0.00
Germany	0.18	0.03	0.02
Hong Kong SAR	0.15	0.02	0.01
Hungary	–	–	–
Iran, Islamic Rep. of	0.10	0.01	0.02
Ireland	–	–	–
Israel	-0.10	0.01	0.01
Italy	0.05	0.00	0.00
Jordan	0.20	0.04	0.02
Kazakhstan	-0.04	0.00	0.00
Kosovo	0.03	0.00	0.00
Latvia	-0.01	0.00	0.00
Lithuania	-0.06	0.00	0.00
Macao SAR	0.14	0.02	0.02
Malta	0.14	0.02	0.02
Montenegro	-0.06	0.00	0.00
Morocco	0.18	0.03	0.03
Netherlands	0.13	0.02	0.01
New Zealand	0.17	0.03	0.02
North Macedonia	0.04	0.00	0.00
Northern Ireland	0.16	0.03	0.03
Norway (5)	0.07	0.00	0.00

Relationship Between the PIRLS 2021 *Safe and Orderly School* Scale and PIRLS 2021 Achievement

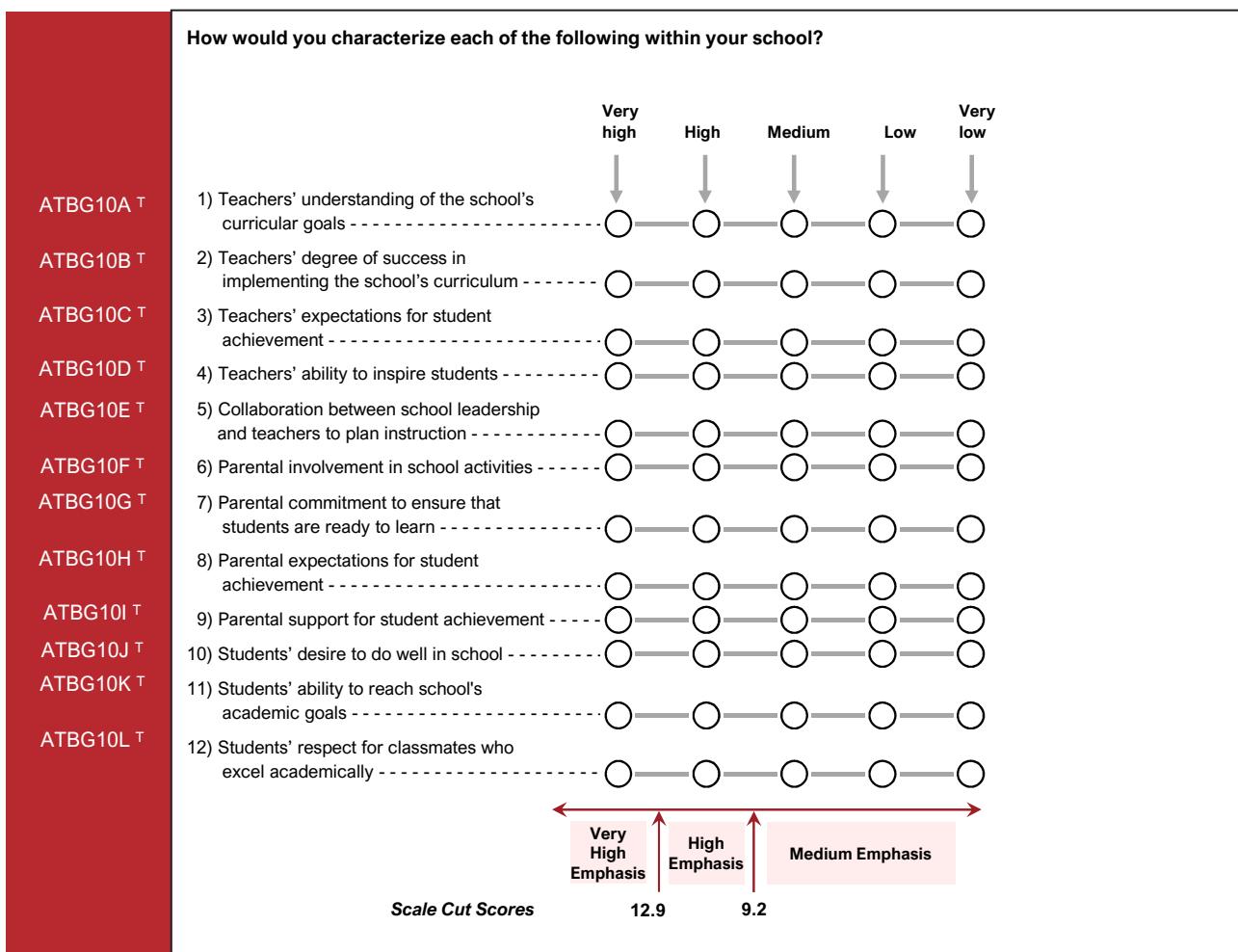
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.08	0.01	0.01
Poland	-0.04	0.00	0.00
Portugal	0.12	0.01	0.01
Qatar	0.03	0.00	0.00
Russian Federation	-0.01	0.00	0.00
Saudi Arabia	0.13	0.02	0.02
Serbia	-0.01	0.00	0.00
Singapore	0.07	0.00	0.01
Slovak Republic	0.11	0.01	0.01
Slovenia	-0.01	0.00	0.00
South Africa	0.08	0.01	0.01
Spain	0.08	0.01	0.00
Sweden	0.19	0.04	0.04
Turkiye	0.09	0.01	0.01
United Arab Emirates	0.23	0.05	0.05
United States	—	—	—
Uzbekistan	0.08	0.01	0.00
International Median	0.10	0.01	0.01
Benchmarking Participants			
Alberta, Canada	0.15	0.02	0.02
British Columbia, Canada	0.18	0.03	0.03
Newfoundland & Labrador, Can.	0.11	0.01	0.02
Quebec, Canada	0.09	0.01	0.01
Moscow City, Russian Fed.	0.09	0.01	0.01
South Africa (6)	0.17	0.03	0.04
Abu Dhabi, UAE	0.26	0.07	0.06
Dubai, UAE	0.06	0.00	0.00

A dash (—) indicates comparable data not available.

School Emphasis on Academic Success – Teachers' Reports

About the Scale¹

Students were scored according to their teachers' responses characterizing twelve aspects on the *School Emphasis on Academic Success* scale. Cut scores divide the scale into three categories. Students in schools with a **Very High Emphasis** on academic success had a score at or above the cut score corresponding to their teachers characterizing six of the twelve aspects as "very high" and the other six as "high," on average. Students in schools with a **Medium Emphasis** on academic success had a score at or below the cut score corresponding to their teachers characterizing six of the twelve aspects as "medium" and the other six as "high," on average. All other students attended schools with a **High Emphasis** on academic success.



¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories "Low" and "Very Low" were combined for all variables. Scale statistics reflect analysis of the items following collapsing.

^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 School Emphasis on Academic Success – Teachers' Reports Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ATBG10A	-1.04676	-2.53137	-0.11284	2.64421	1.07	0.16
ATBG10B	-0.83404	-2.90962	-0.00207	2.91169	0.98	0.14
ATBG10C	-0.71575	-2.87636	-0.04684	2.92320	1.05	0.17
ATBG10D	-0.96237	-2.65997	0.00948	2.65049	1.00	0.14
ATBG10E	-0.21718	-1.39579	-0.18632	1.58211	1.22	0.16
ATBG10F	0.95289	-2.03221	0.06660	1.96561	1.01	0.13
ATBG10G	1.14759	-2.23487	0.14799	2.08688	0.87	0.09
ATBG10H	0.04044	-2.30568	-0.06777	2.37345	1.12	0.16
ATBG10I	0.99895	-2.46596	0.18533	2.28063	0.92	0.11
ATBG10J	0.16856	-2.68487	0.08560	2.59927	0.92	0.12
ATBG10K	0.64317	-3.20334	0.24992	2.95342	0.87	0.11
ATBG10L	-0.17550	-2.45011	-0.12566	2.57577	1.11	0.17

Scale Transformation Constants for the PIRLS 2021 School Emphasis on Academic Success – Teachers' Reports Scale

Scale Transformation Constants

A = 9.085861

B = 1.423624

Transformed Scale Score = 9.085861 + 1.423624 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS
2021 School Emphasis on Academic Success – Teachers’ Reports Scale**

Raw Score	Transformed Scale Score	Cutpoint
1	2.11046	
2	3.02450	
3	3.69700	
4	4.25334	
5	4.74295	
6	5.18576	
7	5.59410	
8	5.97557	
9	6.33546	
10	6.67793	
11	7.00620	
12	7.32427	
13	7.63433	
14	7.93892	
15	8.24023	
16	8.54003	
17	8.83963	
18	9.13986	9.2
19	9.44107	
20	9.74330	
21	10.04645	
22	10.35049	
23	10.65566	
24	10.96267	
25	11.27266	
26	11.58744	
27	11.90844	
28	12.24020	
29	12.58648	
30	12.95333	12.9
31	13.34977	
32	13.79010	
33	14.29769	
34	14.92360	
35	15.79388	
36	17.49801	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 School Emphasis on Academic Success – Teachers' Reports Scale

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item											
			ATBG10A	ATBG10B	ATBG10C	ATBG10D	ATBG10E	ATBG10F	ATBG10G	ATBG10H	ATBG10I	ATBG10J	ATBG10K	ATBG10L
Albania	0.86	40	0.43	0.62	0.62	0.57	0.53	0.57	0.75	0.71	0.75	0.65	0.65	0.65
Australia	0.90	49	0.68	0.73	0.73	0.68	0.62	0.64	0.76	0.70	0.79	0.77	0.72	0.57
Austria	0.84	38	0.43	0.66	0.60	0.49	0.37	0.73	0.82	0.55	0.77	0.62	0.74	0.45
Azerbaijan	0.86	39	0.66	0.67	0.62	0.62	0.65	0.62	0.71	0.51	0.70	0.55	0.58	0.53
Bahrain	0.91	50	0.65	0.63	0.70	0.69	0.61	0.74	0.77	0.70	0.78	0.76	0.76	0.64
Belgium (Flemish)	0.84	38	0.42	0.64	0.63	0.61	0.38	0.70	0.76	0.61	0.75	0.60	0.69	0.43
Belgium (French)	0.84	38	0.36	0.55	0.58	0.36	0.35	0.73	0.80	0.67	0.78	0.70	0.71	0.53
Brazil	0.90	49	0.58	0.71	0.63	0.60	0.59	0.78	0.82	0.76	0.75	0.68	0.74	0.72
Bulgaria	0.89	46	0.47	0.57	0.71	0.69	0.57	0.74	0.71	0.63	0.78	0.78	0.81	0.60
Chinese Taipei	0.89	46	0.64	0.52	0.70	0.71	0.63	0.61	0.72	0.66	0.75	0.75	0.78	0.64
Croatia	0.89	46	0.71	0.67	0.59	0.69	0.64	0.71	0.77	0.61	0.71	0.71	0.71	0.60
Cyprus	0.89	48	0.60	0.68	0.69	0.61	0.43	0.69	0.81	0.78	0.82	0.75	0.78	0.53
Czech Republic	0.84	37	0.48	0.57	0.53	0.56	0.58	0.61	0.70	0.55	0.63	0.71	0.73	0.58
Denmark	0.89	47	0.63	0.58	0.66	0.57	0.55	0.79	0.80	0.68	0.76	0.74	0.80	0.61
Egypt	0.91	52	0.71	0.73	0.56	0.60	0.65	0.68	0.82	0.74	0.76	0.77	0.81	0.74
England	0.87	42	0.47	0.60	0.49	0.63	0.48	0.66	0.75	0.77	0.76	0.72	0.77	0.56
Finland	0.85	38	0.54	0.56	0.57	0.50	0.56	0.61	0.74	0.68	0.70	0.69	0.63	0.56
France	0.83	36	0.42	0.53	0.54	0.51	0.44	0.69	0.77	0.62	0.73	0.68	0.71	0.41
Georgia	0.90	49	0.69	0.71	0.68	0.71	0.65	0.74	0.74	0.57	0.79	0.74	0.67	0.65
Germany	0.81	35	0.39	0.46	0.53	0.43	0.32	0.62	0.80	0.65	0.80	0.65	0.74	0.43
Hong Kong SAR	0.88	43	0.59	0.66	0.63	0.66	0.63	0.65	0.76	0.68	0.71	0.71	0.73	0.33
Hungary	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Iran, Islamic Rep. of	0.89	47	0.59	0.67	0.60	0.60	0.63	0.78	0.77	0.57	0.72	0.71	0.75	0.75
Ireland	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Israel	0.88	44	0.68	0.72	0.54	0.72	0.69	0.46	0.66	0.60	0.72	0.74	0.75	0.60
Italy	0.85	39	0.66	0.69	0.58	0.54	0.62	0.56	0.76	0.56	0.71	0.62	0.69	0.48
Jordan	0.91	51	0.69	0.69	0.49	0.56	0.56	0.81	0.86	0.77	0.78	0.79	0.80	0.70
Kazakhstan	0.93	56	0.67	0.71	0.77	0.74	0.73	0.71	0.74	0.80	0.80	0.77	0.76	0.77
Kosovo	0.88	47	0.70	0.70	0.59	0.65	0.69	0.72	0.72	0.68	0.78	0.66	0.72	0.56
Latvia	0.85	38	0.68	0.69	0.62	0.59	0.70	0.61	0.72	0.19	0.70	0.61	0.66	0.49
Lithuania	0.89	47	0.66	0.71	0.52	0.68	0.68	0.73	0.73	0.63	0.73	0.71	0.72	0.67
Macao SAR	0.92	54	0.75	0.80	0.75	0.78	0.75	0.75	0.78	0.65	0.74	0.75	0.74	0.57
Malta	0.88	45	0.65	0.62	0.68	0.61	0.60	0.66	0.78	0.62	0.75	0.73	0.74	0.53
Montenegro	0.85	39	0.74	0.68	0.59	0.68	0.66	0.58	0.66	0.35	0.63	0.62	0.61	0.59
Morocco	0.87	43	0.63	0.69	0.61	0.60	0.68	0.69	0.75	0.49	0.61	0.70	0.69	0.69
Netherlands	0.80	34	0.32	0.57	0.59	0.62	0.18	0.61	0.68	0.60	0.74	0.73	0.71	0.37
New Zealand	0.89	46	0.62	0.72	0.63	0.63	0.55	0.66	0.79	0.76	0.76	0.71	0.74	0.54
North Macedonia	0.91	50	0.61	0.72	0.70	0.67	0.58	0.75	0.76	0.64	0.78	0.71	0.77	0.75
Northern Ireland	0.90	49	0.57	0.57	0.70	0.67	0.53	0.68	0.81	0.69	0.83	0.79	0.81	0.66

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
 PIRLS 2021 School Emphasis on Academic Success – Teachers' Reports Scale**

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item													
			ATBG10A	ATBG10B	ATBG10C	ATBG10D	ATBG10E	ATBG10F	ATBG10G	ATBG10H	ATBG10I	ATBG10J	ATBG10K	ATBG10L		
Norway (5)	0.80	33	0.45	0.59	0.63	0.60	0.40	0.59	0.66	0.56	0.57	0.64	0.65	0.45		
Oman	0.88	43	0.46	0.41	0.70	0.52	0.59	0.70	0.77	0.72	0.73	0.75	0.72	0.67		
Poland	0.84	37	0.53	0.59	0.56	0.66	0.53	0.65	0.76	0.51	0.66	0.68	0.66	0.48		
Portugal	0.88	44	0.44	0.56	0.61	0.50	0.53	0.75	0.82	0.75	0.80	0.77	0.78	0.53		
Qatar	0.91	52	0.74	0.76	0.70	0.71	0.73	0.62	0.76	0.56	0.79	0.74	0.81	0.68		
Russian Federation	0.89	45	0.65	0.73	0.68	0.69	0.67	0.70	0.72	0.49	0.69	0.62	0.73	0.63		
Saudi Arabia	0.92	56	0.74	0.77	0.73	0.66	0.65	0.63	0.74	0.77	0.77	0.81	0.87	0.77		
Serbia	0.87	42	0.64	0.65	0.43	0.70	0.61	0.77	0.74	0.27	0.72	0.70	0.71	0.66		
Singapore	0.91	50	0.53	0.61	0.66	0.62	0.67	0.76	0.82	0.72	0.81	0.77	0.82	0.61		
Slovak Republic	0.88	44	0.57	0.67	0.54	0.57	0.47	0.71	0.76	0.60	0.79	0.78	0.80	0.59		
Slovenia	0.83	36	0.70	0.69	0.67	0.67	0.66	0.56	0.71	0.26	0.64	0.49	0.55	0.49		
South Africa	0.91	50	0.57	0.60	0.53	0.61	0.61	0.78	0.79	0.70	0.77	0.83	0.81	0.75		
Spain	0.87	42	0.50	0.65	0.72	0.52	0.51	0.72	0.79	0.72	0.77	0.69	0.64	0.48		
Sweden	0.85	40	0.64	0.63	0.71	0.60	0.39	0.63	0.75	0.63	0.75	0.67	0.67	0.40		
Turkiye	0.90	48	0.64	0.67	0.65	0.70	0.66	0.74	0.76	0.64	0.74	0.71	0.78	0.59		
United Arab Emirates	0.92	54	0.73	0.76	0.73	0.71	0.70	0.68	0.81	0.65	0.78	0.77	0.80	0.63		
United States	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Uzbekistan	0.88	43	0.57	0.61	0.70	0.66	0.52	0.64	0.68	0.69	0.74	0.68	0.70	0.64		
Benchmarking Participants																
Alberta, Canada	0.89	46	0.45	0.60	0.64	0.60	0.52	0.74	0.79	0.82	0.78	0.73	0.74	0.60		
British Columbia, Canada	0.89	47	0.54	0.71	0.71	0.64	0.54	0.70	0.83	0.75	0.83	0.66	0.75	0.48		
Newfoundland & Labrador, Can	0.87	46	0.67	0.63	0.64	0.65	0.29	0.70	0.80	0.79	0.80	0.81	0.56	0.65		
Quebec, Canada	0.85	39	0.61	0.56	0.48	0.57	0.44	0.60	0.70	0.69	0.78	0.73	0.71	0.55		
Moscow City, Russian Fed.	0.89	46	0.64	0.76	0.74	0.74	0.75	0.71	0.72	0.49	0.70	0.59	0.71	0.53		
South Africa (6)	0.91	49	0.56	0.63	0.47	0.58	0.68	0.77	0.77	0.70	0.79	0.81	0.83	0.73		
Abu Dhabi, UAE	0.93	58	0.73	0.75	0.77	0.70	0.71	0.75	0.84	0.71	0.82	0.77	0.84	0.73		
Dubai, UAE	0.90	49	0.74	0.78	0.68	0.74	0.71	0.59	0.77	0.54	0.74	0.76	0.76	0.50		

A dash (–) indicates comparable data not available.

Relationship Between the PIRLS 2021 School Emphasis on Academic Success – Teachers’ Reports Scale and PIRLS 2021 Achievement

Country	Pearson’s Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.13	0.02	0.02
Australia	0.14	0.02	0.01
Austria	0.23	0.05	0.04
Azerbaijan	-0.01	0.00	0.00
Bahrain	0.21	0.05	0.04
Belgium (Flemish)	0.12	0.01	0.01
Belgium (French)	0.19	0.04	0.02
Brazil	0.23	0.05	0.04
Bulgaria	0.35	0.12	0.09
Chinese Taipei	0.12	0.01	0.01
Croatia	0.02	0.00	0.01
Cyprus	0.23	0.05	0.05
Czech Republic	0.08	0.01	0.00
Denmark	0.15	0.02	0.02
Egypt	0.13	0.02	0.02
England	0.16	0.03	0.03
Finland	0.16	0.02	0.02
France	0.13	0.02	0.02
Georgia	0.06	0.00	0.00
Germany	0.27	0.07	0.05
Hong Kong SAR	0.12	0.02	0.02
Hungary	–	–	–
Iran, Islamic Rep. of	0.15	0.02	0.01
Ireland	–	–	–
Israel	0.03	0.00	0.00
Italy	-0.02	0.00	0.00
Jordan	0.17	0.03	0.04
Kazakhstan	-0.06	0.00	0.00
Kosovo	0.07	0.01	0.01
Latvia	0.05	0.00	0.01
Lithuania	-0.05	0.00	0.00
Macao SAR	0.17	0.03	0.03
Malta	0.08	0.01	0.01
Montenegro	0.02	0.00	0.00
Morocco	0.26	0.07	0.08
Netherlands	0.18	0.03	0.01
New Zealand	0.20	0.04	0.04
North Macedonia	0.03	0.00	0.01
Northern Ireland	0.17	0.03	0.03
Norway (5)	0.05	0.00	0.00

Relationship Between the PIRLS 2021 School Emphasis on Academic Success – Teachers' Reports Scale and PIRLS 2021 Achievement

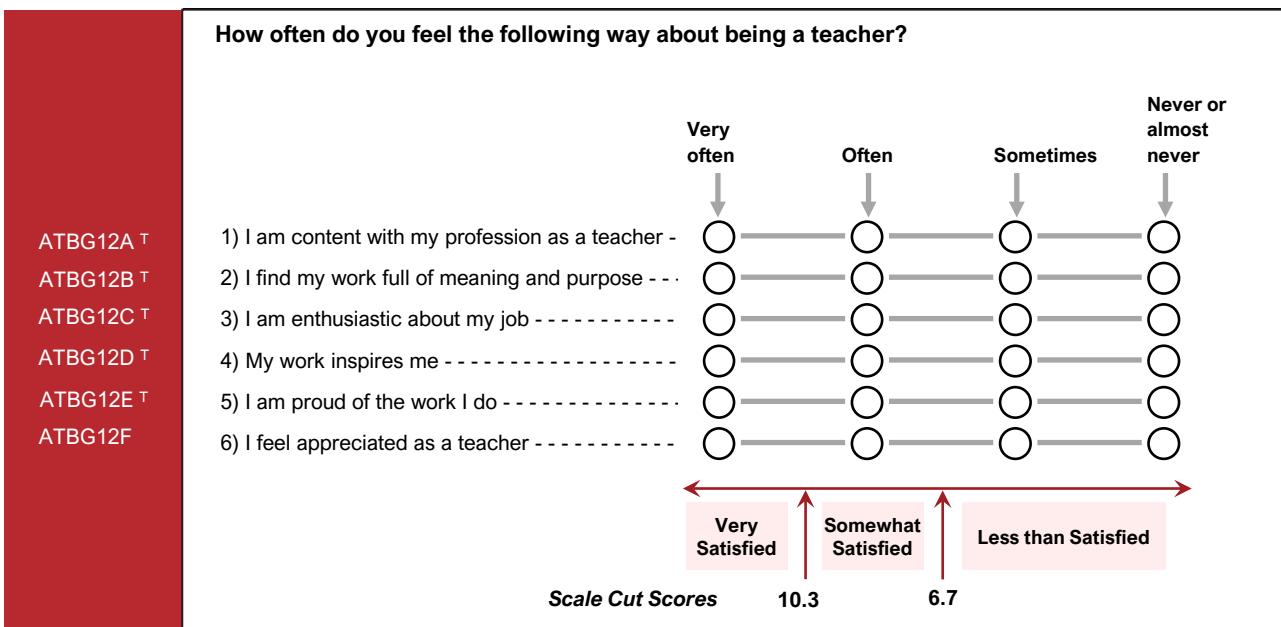
Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.07	0.01	0.01
Poland	0.03	0.00	0.00
Portugal	0.17	0.03	0.02
Qatar	0.02	0.00	0.00
Russian Federation	0.16	0.02	0.02
Saudi Arabia	0.07	0.01	0.01
Serbia	0.09	0.01	0.01
Singapore	0.20	0.04	0.03
Slovak Republic	0.20	0.04	0.04
Slovenia	0.00	0.00	0.00
South Africa	0.09	0.01	0.01
Spain	0.05	0.00	0.00
Sweden	0.17	0.03	0.02
Turkiye	0.21	0.05	0.03
United Arab Emirates	0.14	0.02	0.04
United States	–	–	–
Uzbekistan	0.06	0.00	0.00
International Median	0.13	0.02	0.01
Benchmarking Participants			
Alberta, Canada	0.09	0.01	0.00
British Columbia, Canada	0.17	0.03	0.03
Newfoundland & Labrador, Can.	0.15	0.02	0.01
Quebec, Canada	0.12	0.01	0.01
Moscow City, Russian Fed.	0.07	0.01	0.01
South Africa (6)	0.00	0.00	0.01
Abu Dhabi, UAE	0.20	0.04	0.07
Dubai, UAE	0.04	0.00	0.00

A dash (–) indicates comparable data not available.

Teachers' Job Satisfaction

About the Scale¹

Students were scored according to their teachers' responses to six statements on the *Teachers' Job Satisfaction* scale. Cut scores divide the scale into three categories. Students with **Very Satisfied** teachers had a score at or above the cut score corresponding to their teachers responding "very often" to three of the six statements and "often" to the other three, on average. Students with **Less than Satisfied** teachers had a score at or below the cut score corresponding to their teachers responding "sometimes" to three of the six statements and "often" to the other three, on average. All other students had **Somewhat Satisfied** teachers.



¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories "Sometimes" and "Never or Almost Never" were combined for all variables. Scale statistics reflect analysis of the items following collapsing.

^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 Teachers' Job Satisfaction Scale

Item	delta	tau_1	tau_2	Infit	Q-Index
ATBG12A	-0.20935	-1.86029	1.86029	0.95	0.06
ATBG12B	-1.08962	-1.82456	1.82456	0.97	0.06
ATBG12C	-0.20649	-1.81103	1.81103	0.87	0.04
ATBG12D	0.09996	-1.64132	1.64132	0.88	0.04
ATBG12E	-0.42069	-1.51054	1.51054	0.98	0.06
ATBG12F	1.82619	-1.29045	1.29045	1.42	0.09

Scale Transformation Constants for the PIRLS 2021 Teachers' Job Satisfaction Scale

Scale Transformation Constants

A = 8.566821

B = 1.024015

Transformed Scale Score = 8.566821 + 1.024015 • Logit Scale Score

Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS 2021 Teachers' Job Satisfaction Scale

Raw Score	Transformed Scale Score	Cutpoint
0	3.83998	
1	5.21324	
2	6.01233	
3	6.68030	6.7
4	7.33436	
5	8.01840	
6	8.67953	
7	9.27422	
8	9.82876	
9	10.39017	10.3
10	11.01744	
11	11.82034	
12	13.24134	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Teachers' Job Satisfaction Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ATBG12A	ATBG12B	ATBG12C	ATBG12D	ATBG12E	ATBG12F
Albania	0.83	55	0.71	0.78	0.81	0.77	0.65	0.71
Australia	0.91	70	0.83	0.89	0.91	0.90	0.79	0.68
Austria	0.83	58	0.77	0.73	0.84	0.83	0.78	0.56
Azerbaijan	0.75	45	0.56	0.63	0.75	0.75	0.73	0.59
Bahrain	0.83	55	0.79	0.68	0.83	0.80	0.65	0.69
Belgium (Flemish)	0.88	65	0.82	0.77	0.86	0.86	0.82	0.68
Belgium (French)	0.88	64	0.84	0.85	0.89	0.87	0.70	0.63
Brazil	0.81	53	0.78	0.68	0.79	0.82	0.66	0.64
Bulgaria	0.85	59	0.73	0.68	0.85	0.80	0.78	0.73
Chinese Taipei	0.92	71	0.86	0.87	0.88	0.88	0.84	0.70
Croatia	0.86	62	0.82	0.75	0.80	0.85	0.80	0.68
Cyprus	0.92	73	0.88	0.89	0.92	0.90	0.85	0.66
Czech Republic	0.88	64	0.79	0.82	0.86	0.84	0.81	0.65
Denmark	0.89	65	0.87	0.78	0.84	0.85	0.76	0.75
Egypt	0.79	53	0.71	0.75	0.83	0.75	0.72	0.57
England	0.89	65	0.82	0.80	0.86	0.86	0.79	0.70
Finland	0.90	68	0.85	0.78	0.88	0.89	0.81	0.73
France	0.85	57	0.78	0.67	0.84	0.84	0.76	0.61
Georgia	0.69	44	0.67	0.70	0.67	0.68	0.73	0.54
Germany	0.86	60	0.79	0.69	0.87	0.84	0.79	0.64
Hong Kong SAR	0.91	70	0.86	0.88	0.81	0.83	0.88	0.76
Hungary	—	—	—	—	—	—	—	—
Iran, Islamic Rep. of	0.86	65	0.81	0.76	0.84	0.90	0.81	0.70
Ireland	—	—	—	—	—	—	—	—
Israel	0.89	68	0.81	0.86	0.87	0.90	0.83	0.65
Italy	0.86	61	0.77	0.74	0.83	0.85	0.82	0.67
Jordan	0.88	65	0.82	0.82	0.89	0.82	0.83	0.65
Kazakhstan	0.92	70	0.80	0.77	0.87	0.88	0.87	0.85
Kosovo	0.66	41	0.64	0.67	0.79	0.60	0.58	0.51
Latvia	0.88	62	0.80	0.74	0.78	0.85	0.81	0.73
Lithuania	0.89	66	0.81	0.72	0.83	0.88	0.88	0.73
Macao SAR	0.93	76	0.89	0.92	0.88	0.91	0.89	0.74
Malta	0.90	69	0.87	0.89	0.88	0.90	0.76	0.64
Montenegro	0.84	60	0.83	0.61	0.85	0.89	0.81	0.63
Morocco	0.78	51	0.79	0.59	0.85	0.81	0.61	0.59
Netherlands	0.88	65	0.83	0.79	0.89	0.86	0.81	0.61
New Zealand	0.89	66	0.83	0.86	0.88	0.86	0.72	0.67
North Macedonia	0.87	64	0.86	0.75	0.83	0.86	0.79	0.68
Northern Ireland	0.91	69	0.87	0.86	0.87	0.88	0.79	0.71

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Teachers' Job Satisfaction Scale

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item					
			ATBG12A	ATBG12B	ATBG12C	ATBG12D	ATBG12E	ATBG12F
Norway (5)	0.89	66	0.82	0.83	0.87	0.87	0.78	0.70
Oman	0.80	53	0.70	0.74	0.80	0.65	0.76	0.71
Poland	0.88	64	0.80	0.87	0.81	0.83	0.82	0.64
Portugal	0.86	61	0.81	0.76	0.88	0.87	0.77	0.57
Qatar	0.91	72	0.85	0.88	0.90	0.87	0.83	0.75
Russian Federation	0.88	65	0.82	0.76	0.85	0.86	0.83	0.69
Saudi Arabia	0.90	70	0.82	0.79	0.90	0.90	0.81	0.79
Serbia	0.85	59	0.74	0.66	0.86	0.85	0.82	0.67
Singapore	0.94	78	0.88	0.90	0.93	0.93	0.89	0.75
Slovak Republic	0.88	65	0.82	0.84	0.88	0.89	0.86	0.44
Slovenia	0.88	64	0.76	0.82	0.86	0.87	0.82	0.65
South Africa	0.87	63	0.79	0.80	0.85	0.85	0.79	0.65
Spain	0.80	53	0.69	0.63	0.78	0.81	0.76	0.67
Sweden	0.89	65	0.83	0.74	0.86	0.89	0.80	0.70
Turkiye	0.88	66	0.88	0.70	0.92	0.91	0.84	0.58
United Arab Emirates	0.91	70	0.83	0.85	0.89	0.89	0.79	0.76
United States	—	—	—	—	—	—	—	—
Uzbekistan	0.82	54	0.71	0.76	0.71	0.79	0.77	0.64
Benchmarking Participants								
Alberta, Canada	0.88	66	0.82	0.88	0.87	0.89	0.75	0.62
British Columbia, Canada	0.92	72	0.85	0.88	0.89	0.92	0.82	0.72
Newfoundland & Labrador, Can.	0.92	71	0.87	0.90	0.91	0.88	0.77	0.71
Quebec, Canada	0.87	63	0.82	0.74	0.86	0.86	0.84	0.60
Moscow City, Russian Fed.	0.88	64	0.81	0.73	0.81	0.86	0.82	0.75
South Africa (6)	0.86	64	0.80	0.83	0.86	0.90	0.76	0.59
Abu Dhabi, UAE	0.91	71	0.85	0.84	0.88	0.89	0.82	0.77
Dubai, UAE	0.90	70	0.82	0.86	0.90	0.90	0.77	0.74

A dash (—) indicates comparable data not available.

Relationship Between the PIRLS 2021 Teachers' Job Satisfaction Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.02	0.00	0.00
Australia	0.01	0.00	0.00
Austria	0.08	0.01	0.01
Azerbaijan	0.01	0.00	0.01
Bahrain	0.06	0.00	0.00
Belgium (Flemish)	0.05	0.00	0.01
Belgium (French)	0.03	0.00	0.00
Brazil	0.05	0.00	0.00
Bulgaria	0.13	0.02	0.02
Chinese Taipei	-0.01	0.00	0.00
Croatia	-0.03	0.00	0.00
Cyprus	0.04	0.00	0.00
Czech Republic	0.04	0.00	0.00
Denmark	0.05	0.00	0.00
Egypt	0.03	0.00	0.00
England	0.01	0.00	0.00
Finland	0.03	0.00	0.00
France	-0.01	0.00	0.00
Georgia	0.05	0.00	0.00
Germany	0.08	0.01	0.01
Hong Kong SAR	0.05	0.00	0.00
Hungary	—	—	—
Iran, Islamic Rep. of	0.03	0.00	0.01
Ireland	—	—	—
Israel	-0.07	0.00	0.01
Italy	-0.08	0.01	0.01
Jordan	0.12	0.01	0.01
Kazakhstan	-0.07	0.00	0.00
Kosovo	-0.02	0.00	0.00
Latvia	0.04	0.00	0.00
Lithuania	-0.05	0.00	0.00
Macao SAR	0.04	0.00	0.00
Malta	-0.02	0.00	0.00
Montenegro	-0.06	0.00	0.00
Morocco	0.12	0.01	0.01
Netherlands	0.05	0.00	0.02
New Zealand	0.01	0.00	0.00
North Macedonia	-0.05	0.00	0.01
Northern Ireland	0.02	0.00	0.00
Norway (5)	0.01	0.00	0.00

Relationship Between the PIRLS 2021 Teachers' Job Satisfaction Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	-0.01	0.00	0.00
Poland	-0.03	0.00	0.00
Portugal	0.04	0.00	0.00
Qatar	-0.12	0.02	0.00
Russian Federation	0.07	0.01	0.00
Saudi Arabia	0.05	0.00	0.00
Serbia	-0.01	0.00	0.00
Singapore	0.02	0.00	0.00
Slovak Republic	0.06	0.00	0.01
Slovenia	0.01	0.00	0.00
South Africa	-0.05	0.00	0.00
Spain	-0.02	0.00	0.00
Sweden	0.01	0.00	0.00
Turkiye	0.01	0.00	0.00
United Arab Emirates	0.06	0.00	0.00
United States	—	—	—
Uzbekistan	0.04	0.00	0.00
International Median	0.02	0.00	0.00
Benchmarking Participants			
Alberta, Canada	0.05	0.00	0.00
British Columbia, Canada	0.06	0.00	0.01
Newfoundland & Labrador, Can.	0.05	0.00	0.00
Quebec, Canada	0.08	0.01	0.01
Moscow City, Russian Fed.	0.02	0.00	0.00
South Africa (6)	-0.11	0.01	0.01
Abu Dhabi, UAE	0.12	0.01	0.01
Dubai, UAE	-0.03	0.00	0.00

A dash (—) indicates comparable data not available.

Appendix 15D: PIRLS 2021 Context Questionnaire Scales Based on Principals' Reports

Instruction Affected by Reading Resource Shortages

About the Scale

Students were scored according to their principals' responses regarding thirteen school and classroom resources on the *Instruction Affected by Reading Resource Shortages* scale. Cut scores divide the scale into three categories. Students in schools where instruction was **Not Affected** by resource shortages had a score at or above the cut score corresponding to their principals reporting that shortages affected instruction "not at all" for seven of the thirteen resources and "a little" for the other six, on average. Students in schools where instruction was **Affected A Lot** had a score at or below the cut score corresponding to their principals reporting that shortages affected instruction "a lot" for seven of the thirteen resources and "some" for the other six, on average. All other students attended schools where instruction was **Somewhat Affected** by resource shortages.

<p>How much is your school's capacity to provide instruction affected by a shortage or inadequacy of the following?</p> <p>A. General School Resources</p> <p>ACBG10AA^T ACBG10AB^T ACBG10AC^T ACBG10AD^T ACBG10AE^T ACBG10AF^T ACBG10AG ACBG10AH ACBG10AJ</p> <p>B. Resources for Reading Instruction</p> <p>ACBG10BA^T ACBG10BB^T ACBG10BC^T ACBG10BD^T</p>	<p>Not at all A little Some A lot</p> <p>1) Instructional materials (e.g., textbooks) ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 2) Supplies (e.g., papers, pencils, materials) ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 3) School buildings and grounds ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 4) Heating/cooling and lighting systems ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 5) Instructional space (e.g., classrooms) ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 6) Technologically competent staff ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 7) Technology and media resources to support teaching ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 8) Technology and media resources to support student learning and expression ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 9) Internet connection ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 10) Teachers with a specialization in reading ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 11) Computer software/applications for reading instruction ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 12) Library resources (books, ebooks, magazines, etc.) ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 13) Instructional materials for reading (e.g., reading series, textbooks) ----- <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>Not Affected Somewhat Affected Affected A Lot</p> <p>Scale Cut Scores 11.0 7.0</p>
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^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 *Instruction Affected by Reading Resource Shortages* Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ACBG10AA	-0.26427	-0.24118	-0.05757	0.29875	0.94	0.07
ACBG10AB	-0.65516	-0.59399	0.36508	0.22891	0.92	0.07
ACBG10AC	0.03505	-0.82995	0.09925	0.73070	1.11	0.10
ACBG10AD	-0.15590	-0.51017	0.04308	0.46709	1.00	0.07
ACBG10AE	0.09436	-0.63322	-0.02418	0.65740	1.04	0.09
ACBG10AF	0.20701	-1.42190	-0.06557	1.48747	0.97	0.09
ACBG10AG	0.29343	-1.48245	-0.01001	1.49246	0.86	0.08
ACBG10AH	0.32739	-1.68561	-0.01156	1.69717	0.95	0.09
ACBG10AJ	0.22953	-0.46622	-0.02952	0.49574	1.08	0.09
ACBG10BA	-0.11507	-1.05932	-0.06165	1.12097	1.16	0.12
ACBG10BB	0.23614	-1.73737	0.08800	1.64937	1.41	0.15
ACBG10BC	-0.03046	-1.35587	0.07931	1.27656	1.01	0.09
ACBG10BD	-0.20205	-1.03150	-0.05253	1.08403	0.80	0.06

Scale Transformation Constants for the PIRLS 2021 *Instruction Affected by Reading Resource Shortages* Scale

Scale Transformation Constants

A = 8.981884

B = 1.268457

Transformed Scale Score = 8.981884 + 1.268457 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the
PIRLS 2021 *Instruction Affected by Reading Resource Shortages* Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	3.46925	
1	4.90722	
2	5.59729	
3	6.06469	
4	6.42218	
5	6.71386	
6	6.96147	7.0
7	7.17829	
8	7.37191	
9	7.54777	
10	7.70980	
11	7.86029	
12	8.00322	
13	8.13929	
14	8.26986	
15	8.39617	
16	8.51928	
17	8.64017	
18	8.75973	
19	8.87873	
20	8.99854	
21	9.11829	
22	9.24037	
23	9.36508	
24	9.49330	
25	9.62597	
26	9.76415	
27	9.90835	
28	10.06135	
29	10.22454	
30	10.40025	
31	10.59151	
32	10.80226	
33	11.03794	11.0
34	11.30655	
35	11.62098	
36	12.00306	
37	12.49677	
38	13.21407	
39	14.68053	

Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS 2021 Instruction Affected by Reading Resource Shortages Scale

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item														
			ACBG10A4	ACBG10AB	ACBG10AC	ACBG10AD	ACBG10AE	ACBG10AF	ACBG10AG	ACBG10AH	ACBG10AJ	ACBG10BA	ACBG10BB	ACBG10BC	ACBG10BD		
Albania	0.94	60	0.77	0.76	0.77	0.82	0.78	0.80	0.77	0.74	0.77	0.75	0.65	0.80	0.85		
Australia	0.95	62	0.79	0.78	0.81	0.85	0.79	0.81	0.86	0.87	0.78	0.63	0.70	0.78	0.79		
Austria	0.81	31	0.38	0.55	0.49	0.48	0.50	0.47	0.72	0.76	0.52	0.48	0.67	0.57	0.49		
Azerbaijan	0.94	58	0.82	0.73	0.74	0.83	0.79	0.80	0.69	0.57	0.68	0.86	0.63	0.83	0.87		
Bahrain	0.98	77	0.91	0.91	0.91	0.92	0.92	0.89	0.93	0.93	0.65	0.78	0.77	0.90	0.91		
Belgium (Flemish)	0.83	35	0.61	0.47	0.48	0.50	0.57	0.58	0.67	0.71	0.58	0.44	0.67	0.67	0.66		
Belgium (French)	0.84	35	0.58	0.46	0.29	0.29	0.41	0.62	0.76	0.80	0.59	0.57	0.70	0.63	0.69		
Brazil	0.89	44	0.67	0.69	0.68	0.63	0.60	0.72	0.76	0.76	0.65	0.61	0.54	0.66	0.64		
Bulgaria	0.88	52	0.93	0.85	0.69	0.93	0.72	0.35	0.61	0.56	0.87	0.84	0.20	0.49	0.89		
Chinese Taipei	0.95	63	0.81	0.75	0.83	0.84	0.83	0.82	0.87	0.84	0.83	0.68	0.57	0.80	0.79		
Croatia	0.91	50	0.76	0.76	0.75	0.80	0.78	0.77	0.77	0.71	0.60	0.62	0.39	0.63	0.75		
Cyprus	0.92	51	0.72	0.68	0.74	0.74	0.78	0.85	0.80	0.73	0.67	0.62	0.53	0.58	0.80		
Czech Republic	0.79	30	0.65	0.57	0.49	0.47	0.60	0.62	0.73	0.72	0.35	0.27	0.54	0.36	0.52		
Denmark	0.89	45	0.69	0.68	0.56	0.52	0.54	0.69	0.78	0.76	0.67	0.54	0.73	0.73	0.76		
Egypt	0.89	43	0.68	0.76	0.63	0.46	0.69	0.60	0.69	0.65	0.53	0.71	0.69	0.69	0.71		
England	0.90	48	0.69	0.68	0.68	0.58	0.61	0.75	0.77	0.71	0.66	0.66	0.70	0.75	0.76		
Finland	0.88	43	0.69	0.65	0.57	0.55	0.59	0.74	0.65	0.67	0.67	0.70	0.64	0.62	0.78		
France	0.86	39	0.64	0.64	0.64	0.62	0.65	0.54	0.72	0.72	0.55	0.46	0.56	0.75	0.59		
Georgia	0.93	53	0.69	0.74	0.70	0.75	0.74	0.73	0.72	0.76	0.71	0.65	0.66	0.79	0.79		
Germany	0.85	37	0.51	0.61	0.59	0.63	0.58	0.72	0.76	0.78	0.46	0.33	0.62	0.61	0.55		
Hong Kong SAR	0.92	53	0.68	0.65	0.78	0.78	0.78	0.81	0.81	0.72	0.70	0.64	0.62	0.73	0.74		
Hungary	0.92	50	0.73	0.72	0.71	0.77	0.69	0.72	0.72	0.64	0.72	0.78	0.59	0.65	0.74		
Iran, Islamic Rep. of	0.93	56	0.74	0.77	0.80	0.80	0.78	0.79	0.74	0.73	0.68	0.76	0.75	0.62	0.78		
Ireland	0.89	44	0.63	0.61	0.66	0.59	0.75	0.67	0.75	0.71	0.49	0.59	0.69	0.66	0.75		
Israel	0.95	64	0.83	0.82	0.75	0.83	0.73	0.81	0.85	0.78	0.73	0.81	0.81	0.72	0.87		
Italy	0.87	40	0.53	0.61	0.63	0.60	0.61	0.61	0.70	0.70	0.50	0.65	0.67	0.60	0.74		
Jordan	0.91	46	0.70	0.69	0.68	0.66	0.70	0.75	0.73	0.67	0.66	0.69	0.59	0.57	0.72		
Kazakhstan	0.97	75	0.89	0.85	0.82	0.90	0.84	0.89	0.85	0.85	0.83	0.87	0.85	0.89	0.89		
Kosovo	0.90	48	0.69	0.79	0.60	0.73	0.69	0.80	0.74	0.74	0.72	0.55	0.55	0.64	0.68		
Latvia	0.90	48	0.63	0.71	0.72	0.75	0.74	0.80	0.67	0.68	0.69	0.68	0.31	0.77	0.75		
Lithuania	0.89	44	0.75	0.64	0.40	0.48	0.60	0.70	0.68	0.68	0.75	0.68	0.76	0.68	0.75		
Macao SAR	0.96	66	0.83	0.74	0.82	0.85	0.75	0.86	0.91	0.82	0.70	0.82	0.77	0.81	0.87		
Malta	0.94	60	0.75	0.83	0.66	0.57	0.65	0.82	0.90	0.89	0.75	0.69	0.76	0.84	0.86		
Montenegro	0.86	37	0.43	0.49	0.61	0.71	0.68	0.73	0.60	0.51	0.51	0.66	0.58	0.70	0.66		
Morocco	0.84	35	0.58	0.61	0.44	0.53	0.43	0.58	0.66	0.66	0.60	0.62	0.62	0.69	0.64		
Netherlands	0.87	43	0.74	0.82	0.63	0.53	0.63	0.67	0.72	0.69	0.79	0.57	0.43	0.58	0.56		
New Zealand	0.90	48	0.72	0.82	0.57	0.73	0.52	0.63	0.73	0.65	0.66	0.64	0.68	0.79	0.78		
North Macedonia	0.84	35	0.60	0.68	0.53	0.43	0.41	0.37	0.78	0.71	0.51	0.59	0.56	0.69	0.70		
Northern Ireland	0.85	38	0.67	0.66	0.48	0.48	0.50	0.54	0.70	0.75	0.48	0.45	0.64	0.72	0.77		

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the PIRLS
 2021 Instruction Affected by Reading Resource Shortages Scale**

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item														
			ACBG10A4	ACBG10AB	ACBG10AC	ACBG10AD	ACBG10AE	ACBG10AF	ACBG10AG	ACBG10AH	ACBG10AJ	ACBG10B4	ACBG10B8	ACBG10BC	ACBG10BD		
Norway (5)	0.89	45	0.66	0.55	0.62	0.58	0.68	0.69	0.80	0.79	0.62	0.48	0.74	0.71	0.74		
Oman	0.96	69	0.81	0.80	0.71	0.83	0.84	0.88	0.89	0.90	0.72	0.87	0.79	0.86	0.87		
Poland	0.92	50	0.76	0.72	0.70	0.75	0.64	0.68	0.76	0.75	0.70	0.72	0.54	0.70	0.74		
Portugal	0.87	40	0.48	0.50	0.64	0.59	0.61	0.64	0.78	0.76	0.62	0.47	0.67	0.67	0.67	0.67	
Qatar	0.99	87	0.93	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.93	0.90	0.86	0.93	0.95		
Russian Federation	0.95	61	0.80	0.79	0.74	0.79	0.72	0.72	0.81	0.79	0.77	0.83	0.68	0.85	0.87		
Saudi Arabia	0.94	58	0.74	0.67	0.60	0.82	0.81	0.84	0.81	0.82	0.78	0.81	0.80	0.70	0.70		
Serbia	0.86	40	0.70	0.71	0.66	0.75	0.73	0.68	0.58	0.60	0.73	0.33	0.32	0.61	0.61		
Singapore	0.98	81	0.93	0.89	0.90	0.93	0.93	0.89	0.94	0.93	0.93	0.76	0.78	0.90	0.92		
Slovak Republic	0.87	40	0.69	0.57	0.62	0.60	0.68	0.72	0.74	0.67	0.70	0.48	0.46	0.48	0.71		
Slovenia	0.79	31	0.50	0.64	0.42	0.51	0.38	0.51	0.72	0.68	0.42	0.62	0.60	0.55	0.52		
South Africa	0.84	35	0.43	0.24	0.54	0.61	0.53	0.68	0.75	0.73	0.65	0.54	0.53	0.63	0.61		
Spain	0.92	51	0.70	0.75	0.72	0.78	0.74	0.68	0.80	0.78	0.73	0.62	0.62	0.59	0.74		
Sweden	0.90	45	0.74	0.61	0.61	0.67	0.61	0.66	0.66	0.63	0.66	0.67	0.78	0.60	0.79		
Turkiye	0.94	61	0.83	0.84	0.65	0.81	0.82	0.63	0.85	0.84	0.85	0.79	0.60	0.68	0.85		
United Arab Emirates	0.98	77	0.88	0.89	0.88	0.90	0.90	0.92	0.92	0.92	0.89	0.79	0.77	0.87	0.90		
United States	0.94	58	0.78	0.77	0.76	0.75	0.73	0.85	0.83	0.83	0.70	0.69	0.70	0.75	0.73		
Uzbekistan	0.96	69	0.87	0.79	0.73	0.85	0.85	0.87	0.84	0.83	0.80	0.87	0.80	0.85	0.86		
Benchmarking Participants																	
Alberta, Canada	0.91	50	0.77	0.77	0.77	0.65	0.58	0.71	0.77	0.82	0.69	0.52	0.54	0.74	0.82		
British Columbia, Canada	0.92	50	0.71	0.78	0.78	0.74	0.75	0.71	0.79	0.77	0.73	0.60	0.57	0.63	0.62		
Newfoundland & Labrador, Can	0.90	49	0.60	0.75	0.65	0.68	0.46	0.63	0.73	0.76	0.66	0.78	0.83	0.77	0.75		
Quebec, Canada	0.90	47	0.69	0.66	0.72	0.64	0.64	0.71	0.72	0.69	0.67	0.62	0.62	0.75	0.74		
Moscow City, Russian Fed.	0.97	72	0.84	0.84	0.79	0.86	0.86	0.87	0.88	0.86	0.87	0.86	0.68	0.91	0.89		
South Africa (6)	0.86	40	0.31	0.10	0.55	0.60	0.55	0.67	0.76	0.76	0.75	0.65	0.68	0.76	0.66		
Abu Dhabi, UAE	0.97	74	0.86	0.89	0.87	0.89	0.87	0.90	0.88	0.88	0.88	0.77	0.77	0.80	0.88		
Dubai, UAE	0.98	79	0.90	0.89	0.82	0.92	0.85	0.90	0.95	0.94	0.92	0.76	0.88	0.90	0.93		

Relationship Between the PIRLS 2021 *Instruction Affected by Reading Resource Shortages* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.07	0.01	0.02
Australia	0.07	0.01	0.01
Austria	0.03	0.00	0.00
Azerbaijan	-0.07	0.00	0.00
Bahrain	0.13	0.02	0.02
Belgium (Flemish)	0.06	0.00	0.00
Belgium (French)	0.02	0.00	0.00
Brazil	0.26	0.07	0.09
Bulgaria	0.14	0.02	0.01
Chinese Taipei	0.04	0.00	0.00
Croatia	-0.01	0.00	0.00
Cyprus	0.06	0.00	0.01
Czech Republic	0.04	0.00	0.00
Denmark	0.02	0.00	0.00
Egypt	0.03	0.00	0.01
England	0.05	0.00	0.00
Finland	0.10	0.01	0.02
France	0.16	0.02	0.02
Georgia	0.04	0.00	0.00
Germany	0.10	0.01	0.01
Hong Kong SAR	0.04	0.00	0.00
Hungary	-0.01	0.00	0.00
Iran, Islamic Rep. of	0.08	0.01	0.01
Ireland	0.06	0.00	0.01
Israel	0.22	0.05	0.04
Italy	0.11	0.01	0.00
Jordan	-0.10	0.01	0.01
Kazakhstan	0.03	0.00	0.00
Kosovo	-0.04	0.00	0.00
Latvia	-0.03	0.00	0.00
Lithuania	0.01	0.00	0.00
Macao SAR	0.01	0.00	0.00
Malta	0.09	0.01	0.01
Montenegro	-0.02	0.00	0.00
Morocco	-0.14	0.02	0.04
Netherlands	-0.02	0.00	0.00
New Zealand	0.13	0.02	0.01
North Macedonia	0.06	0.00	0.00
Northern Ireland	-0.02	0.00	0.00
Norway (5)	0.01	0.00	0.00

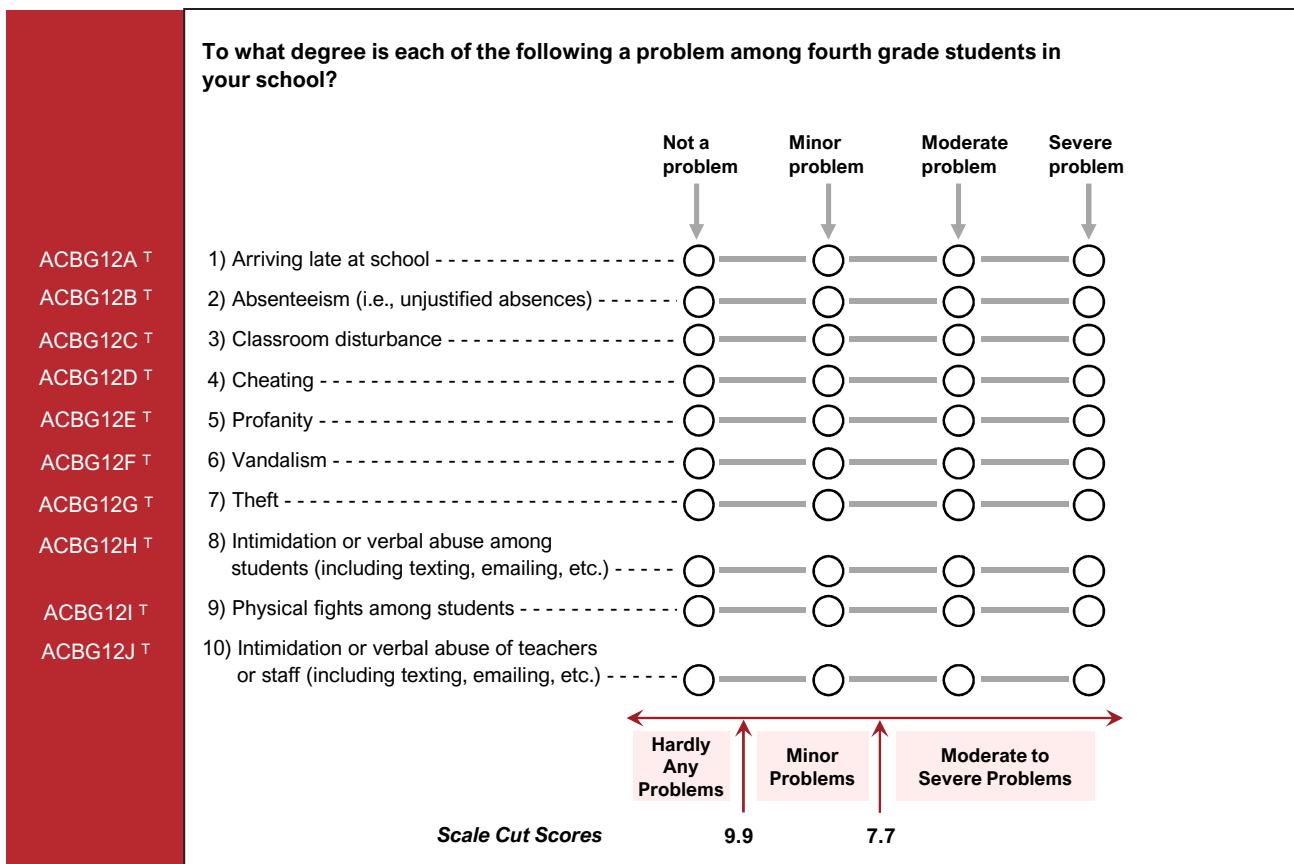
Relationship Between the PIRLS 2021 *Instruction Affected by Reading Resource Shortages* Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.04	0.00	0.00
Poland	0.04	0.00	0.00
Portugal	0.08	0.01	0.01
Qatar	0.11	0.01	0.01
Russian Federation	0.11	0.01	0.02
Saudi Arabia	0.02	0.00	0.01
Serbia	0.05	0.00	0.01
Singapore	0.01	0.00	0.00
Slovak Republic	0.08	0.01	0.01
Slovenia	-0.02	0.00	0.00
South Africa	0.33	0.11	0.13
Spain	0.11	0.01	0.01
Sweden	-0.01	0.00	0.00
Turkiye	0.07	0.00	0.00
United Arab Emirates	0.15	0.02	0.05
United States	0.09	0.01	0.03
Uzbekistan	0.04	0.00	0.00
International Median	0.04	0.00	0.00
Benchmarking Participants			
Alberta, Canada	0.02	0.00	0.01
British Columbia, Canada	0.02	0.00	0.01
Newfoundland & Labrador, Can.	-0.04	0.00	0.01
Quebec, Canada	0.06	0.00	0.00
Moscow City, Russian Fed.	-0.06	0.00	0.01
South Africa (6)	0.19	0.03	0.09
Abu Dhabi, UAE	0.13	0.02	0.06
Dubai, UAE	0.14	0.02	0.01

School Discipline

About the Scale

Students were scored according to their principals' reports regarding ten potential problems on the *School Discipline* scale. Cut scores divide the scale into three categories. Students in schools with **Hardly Any Problems** had a score at or above the cut score corresponding to their principals reporting that five of the ten issues are "not a problem" and the other five are a "minor problem," on average. Students in schools with **Moderate to Severe Problems** had a score at or below the cut score corresponding to their principals reporting that five of the ten issues are a "moderate problem" and the other five are a "minor problem," on average. All other students were in schools with **Minor Problems**.



^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 School Discipline Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ACBG12A	-0.23828	-2.20334	-0.52956	2.73290	1.27	0.11
ACBG12B	0.33084	-1.25408	-0.65783	1.91191	1.27	0.10
ACBG12C	0.71870	-2.37570	-0.27686	2.65256	1.01	0.08
ACBG12D	-0.39091	-1.40774	-0.74035	2.14809	1.09	0.10
ACBG12E	0.64841	-1.87833	-0.41473	2.29306	0.89	0.06
ACBG12F	-0.25801	-0.33865	-0.82887	1.16752	0.80	0.04
ACBG12G	-0.56751	0.41446	-1.23699	0.82253	0.88	0.04
ACBG12H	0.25786	-1.41208	-0.65737	2.06945	1.00	0.07
ACBG12I	0.16616	-1.51422	-0.77306	2.28728	0.86	0.05
ACBG12J	-0.66726	0.19066	-0.94141	0.75075	0.88	0.05

Scale Transformation Constants for the PIRLS 2021 School Discipline Scale

Scale Transformation Constants

A = 7.915470

B = 0.937182

Transformed Scale Score = 7.915470 + 0.937182 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the
PIRLS 2021 School Discipline Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	3.78572	
1	4.85879	
2	5.37081	
3	5.71319	
4	5.97355	
5	6.18536	
6	6.36642	
7	6.52697	
8	6.67362	
9	6.81100	
10	6.94115	
11	7.07032	
12	7.19881	
13	7.32885	
14	7.46268	
15	7.60267	7.7
16	7.75156	
17	7.91145	
18	8.08628	
19	8.27854	
20	8.49279	
21	8.73047	
22	8.99347	
23	9.28160	
24	9.59393	
25	9.92826	9.9
26	10.28902	
27	10.68937	
28	11.16117	
29	11.79092	
30	12.96150	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 School Discipline Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ACBG12A	ACBG12B	ACBG12C	ACBG12D	ACBG12E	ACBG12F	ACBG12G	ACBG12H	ACBG12I	ACBG12J
Albania	0.97	77	0.79	0.84	0.86	0.84	0.86	0.94	0.94	0.91	0.86	0.91
Australia	0.88	50	0.66	0.70	0.72	0.63	0.80	0.69	0.62	0.71	0.77	0.70
Austria	0.89	51	0.58	0.66	0.72	0.64	0.76	0.76	0.71	0.76	0.82	0.68
Azerbaijan	0.97	80	0.70	0.81	0.90	0.77	0.94	0.97	0.95	0.94	0.93	0.97
Bahrain	0.96	74	0.69	0.65	0.77	0.91	0.90	0.94	0.95	0.92	0.89	0.93
Belgium (Flemish)	0.89	51	0.53	0.61	0.70	0.65	0.83	0.74	0.65	0.83	0.79	0.78
Belgium (French)	0.85	45	0.49	0.61	0.63	0.55	0.76	0.70	0.69	0.70	0.82	0.69
Brazil	0.84	45	0.51	0.56	0.64	0.67	0.74	0.83	0.72	0.67	0.72	0.56
Bulgaria	0.95	68	0.78	0.86	0.83	0.85	0.76	0.83	0.87	0.74	0.87	0.88
Chinese Taipei	0.91	57	0.54	0.58	0.73	0.77	0.82	0.83	0.78	0.86	0.79	0.75
Croatia	0.89	51	0.73	0.69	0.75	0.73	0.72	0.81	0.70	0.74	0.74	0.51
Cyprus	0.90	55	0.62	0.66	0.73	0.70	0.78	0.81	0.76	0.74	0.77	0.84
Czech Republic	0.86	47	0.53	0.62	0.49	0.71	0.61	0.78	0.79	0.75	0.77	0.74
Denmark	0.83	41	0.58	0.69	0.68	0.50	0.66	0.63	0.61	0.71	0.76	0.51
Egypt	0.95	68	0.72	0.70	0.80	0.83	0.88	0.86	0.88	0.85	0.88	0.86
England	0.86	48	0.62	0.60	0.73	0.65	0.74	0.74	0.67	0.76	0.75	0.65
Finland	0.86	47	0.51	0.53	0.74	0.60	0.75	0.80	0.70	0.74	0.71	0.68
France	0.86	45	0.50	0.60	0.72	0.62	0.80	0.68	0.66	0.80	0.78	0.50
Georgia	0.95	71	0.60	0.74	0.85	0.71	0.90	0.90	0.92	0.91	0.89	0.92
Germany	0.87	46	0.66	0.72	0.76	0.53	0.80	0.76	0.59	0.66	0.72	0.52
Hong Kong SAR	0.87	48	0.71	0.69	0.59	0.69	0.79	0.67	0.73	0.72	0.68	0.64
Hungary	0.89	52	0.59	0.72	0.70	0.61	0.77	0.80	0.76	0.76	0.82	0.65
Iran, Islamic Rep. of	0.93	62	0.62	0.67	0.80	0.81	0.83	0.83	0.85	0.87	0.81	0.75
Ireland	0.86	47	0.63	0.54	0.72	0.51	0.86	0.69	0.44	0.77	0.86	0.72
Israel	0.94	64	0.57	0.64	0.75	0.87	0.83	0.89	0.86	0.83	0.88	0.82
Italy	0.96	74	0.73	0.83	0.77	0.81	0.82	0.94	0.92	0.91	0.92	0.93
Jordan	0.94	66	0.55	0.69	0.80	0.85	0.87	0.85	0.88	0.86	0.87	0.83
Kazakhstan	0.97	80	0.77	0.90	0.89	0.67	0.92	0.96	0.96	0.96	0.95	0.93
Kosovo	0.95	71	0.73	0.75	0.77	0.85	0.85	0.91	0.90	0.87	0.88	0.86
Latvia	0.76	32	0.56	0.54	0.58	0.43	0.68	0.58	0.36	0.73	0.62	0.53
Lithuania	0.83	42	0.61	0.61	0.62	0.61	0.73	0.72	0.71	0.65	0.57	0.64
Macao SAR	0.96	73	0.73	0.88	0.81	0.86	0.87	0.81	0.91	0.87	0.85	0.93
Malta	0.85	47	0.47	0.47	0.72	0.72	0.80	0.71	0.69	0.60	0.83	0.75
Montenegro	0.94	67	0.74	0.65	0.72	0.84	0.80	0.94	0.88	0.90	0.90	0.75
Morocco	0.95	71	0.61	0.79	0.82	0.88	0.91	0.89	0.87	0.91	0.89	0.80
Netherlands	0.87	47	0.68	0.56	0.72	0.61	0.83	0.68	0.58	0.77	0.75	0.60
New Zealand	0.89	52	0.69	0.70	0.72	0.63	0.79	0.74	0.69	0.73	0.74	0.78
North Macedonia	0.91	61	0.57	0.72	0.77	0.83	0.86	0.83	0.78	0.81	0.82	0.77
Northern Ireland	0.84	45	0.36	0.48	0.54	0.73	0.78	0.78	0.73	0.72	0.73	0.72

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 School Discipline Scale**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			ACBG12A	ACBG12B	ACBG12C	ACBG12D	ACBG12E	ACBG12F	ACBG12G	ACBG12H	ACBG12I	ACBG12J
Norway (5)	0.84	42	0.52	0.54	0.67	0.61	0.71	0.70	0.56	0.72	0.68	0.71
Oman	0.97	79	0.77	0.84	0.84	0.92	0.92	0.94	0.94	0.94	0.87	0.93
Poland	0.84	42	0.54	0.59	0.71	0.63	0.78	0.73	0.58	0.71	0.72	0.45
Portugal	0.92	60	0.49	0.72	0.77	0.69	0.77	0.86	0.87	0.85	0.84	0.83
Qatar	0.94	67	0.63	0.67	0.70	0.88	0.88	0.91	0.84	0.86	0.87	0.87
Russian Federation	0.90	54	0.72	0.66	0.70	0.70	0.74	0.75	0.77	0.77	0.73	0.76
Saudi Arabia	0.98	83	0.73	0.85	0.90	0.92	0.96	0.95	0.97	0.96	0.94	0.93
Serbia	0.88	51	0.70	0.48	0.79	0.79	0.73	0.76	0.75	0.78	0.78	0.48
Singapore	0.86	47	0.64	0.57	0.62	0.66	0.79	0.75	0.69	0.72	0.73	0.63
Slovak Republic	0.88	50	0.75	0.71	0.68	0.70	0.77	0.76	0.76	0.68	0.64	0.63
Slovenia	0.90	54	0.71	0.65	0.73	0.71	0.75	0.83	0.80	0.76	0.68	0.70
South Africa	0.90	51	0.56	0.64	0.69	0.73	0.82	0.79	0.82	0.73	0.76	0.56
Spain	0.95	69	0.67	0.77	0.76	0.80	0.76	0.90	0.92	0.86	0.89	0.93
Sweden	0.81	37	0.59	0.63	0.62	0.45	0.70	0.64	0.43	0.61	0.69	0.65
Turkiye	0.97	81	0.76	0.79	0.90	0.90	0.92	0.94	0.96	0.95	0.92	0.93
United Arab Emirates	0.97	79	0.75	0.82	0.86	0.89	0.93	0.95	0.93	0.92	0.90	0.93
United States	0.86	46	0.58	0.61	0.83	0.46	0.85	0.52	0.69	0.74	0.78	0.62
Uzbekistan	0.99	88	0.87	0.94	0.96	0.82	0.95	0.97	0.97	0.98	0.97	0.97
Benchmarking Participants												
Alberta, Canada	0.86	46	0.65	0.62	0.71	0.63	0.77	0.67	0.61	0.74	0.74	0.64
British Columbia, Canada	0.89	52	0.56	0.62	0.71	0.68	0.86	0.80	0.67	0.72	0.77	0.76
Newfoundland & Labrador, Can.	0.82	40	0.47	0.52	0.77	0.42	0.74	0.71	0.55	0.69	0.68	0.67
Quebec, Canada	0.83	42	0.40	0.62	0.71	0.61	0.78	0.76	0.61	0.67	0.64	0.59
Moscow City, Russian Fed.	0.80	36	0.51	0.60	0.59	0.63	0.73	0.56	0.58	0.62	0.62	0.48
South Africa (6)	0.92	57	0.66	0.65	0.74	0.78	0.82	0.84	0.83	0.79	0.79	0.59
Abu Dhabi, UAE	0.96	73	0.70	0.74	0.84	0.83	0.90	0.94	0.90	0.89	0.89	0.91
Dubai, UAE	0.95	72	0.67	0.79	0.85	0.89	0.91	0.90	0.87	0.87	0.84	0.89

Relationship Between the PIRLS 2021 School Discipline Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.02	0.00	0.00
Australia	0.19	0.04	0.02
Austria	0.07	0.01	0.01
Azerbaijan	-0.04	0.00	0.02
Bahrain	0.07	0.01	0.01
Belgium (Flemish)	0.14	0.02	0.02
Belgium (French)	0.13	0.02	0.02
Brazil	0.14	0.02	0.01
Bulgaria	0.20	0.04	0.06
Chinese Taipei	0.06	0.00	0.01
Croatia	0.04	0.00	0.01
Cyprus	0.10	0.01	0.01
Czech Republic	0.11	0.01	0.01
Denmark	0.14	0.02	0.01
Egypt	0.05	0.00	0.02
England	0.16	0.03	0.02
Finland	0.11	0.01	0.01
France	0.19	0.04	0.03
Georgia	-0.01	0.00	0.00
Germany	0.19	0.03	0.03
Hong Kong SAR	0.11	0.01	0.01
Hungary	0.24	0.06	0.06
Iran, Islamic Rep. of	0.14	0.02	0.01
Ireland	0.24	0.06	0.04
Israel	0.13	0.02	0.01
Italy	0.11	0.01	0.01
Jordan	0.01	0.00	0.02
Kazakhstan	0.02	0.00	0.00
Kosovo	0.02	0.00	0.00
Latvia	0.02	0.00	0.00
Lithuania	-0.01	0.00	0.00
Macao SAR	0.13	0.02	0.01
Malta	0.07	0.00	0.01
Montenegro	0.04	0.00	0.01
Morocco	-0.05	0.00	0.00
Netherlands	0.13	0.02	0.00
New Zealand	0.29	0.08	0.06
North Macedonia	0.17	0.03	0.03
Northern Ireland	0.16	0.03	0.02
Norway (5)	0.08	0.01	0.00
Oman	0.08	0.01	0.01

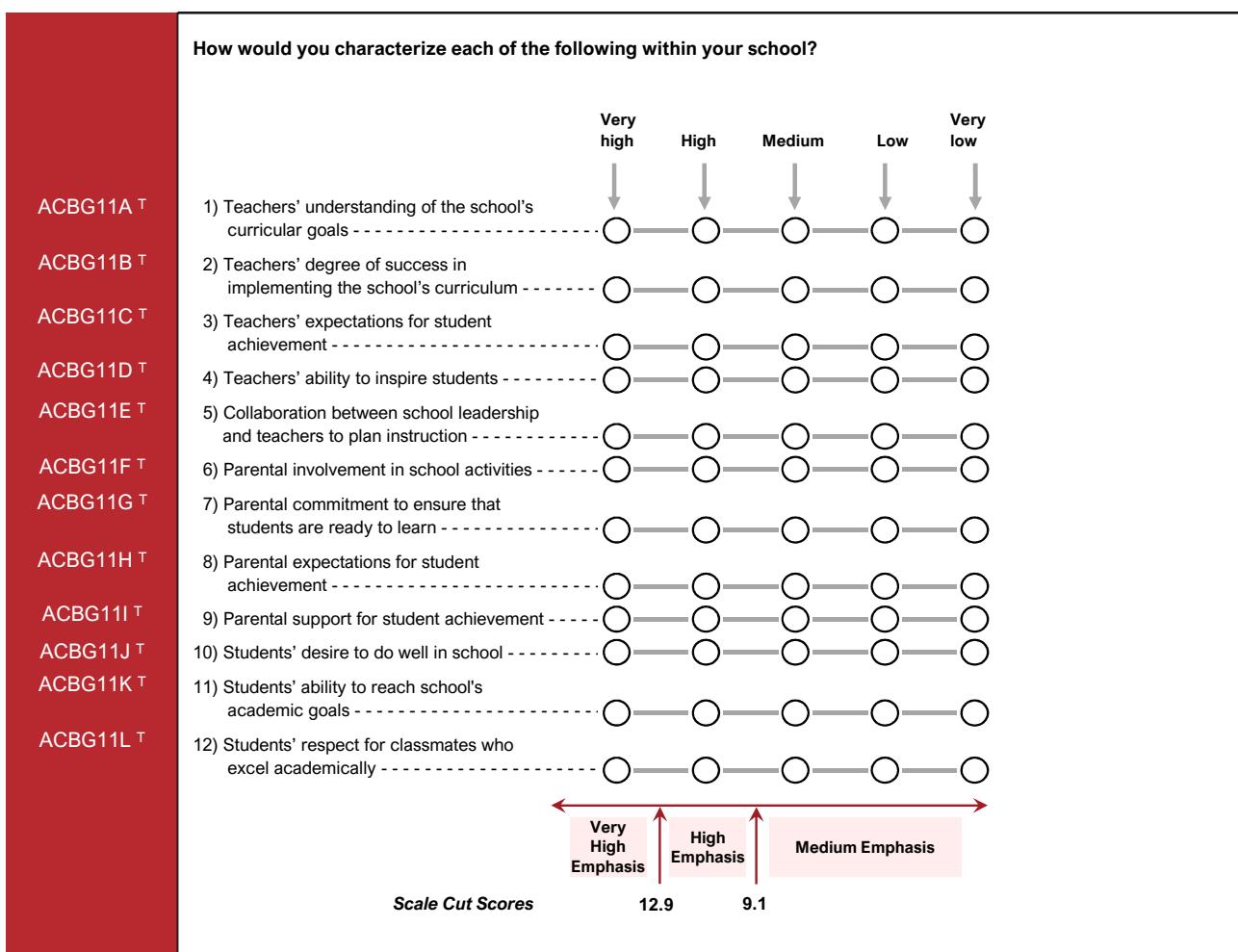
Relationship Between the PIRLS 2021 School Discipline Scale and PIRLS 2021 Achievement

Country	Pearson's Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Poland	0.00	0.00	0.00
Portugal	0.08	0.01	0.01
Qatar	0.03	0.00	0.00
Russian Federation	-0.01	0.00	0.01
Saudi Arabia	0.11	0.01	0.02
Serbia	0.11	0.01	0.01
Singapore	0.06	0.00	0.00
Slovak Republic	0.15	0.02	0.02
Slovenia	0.01	0.00	0.00
South Africa	0.36	0.13	0.10
Spain	0.13	0.02	0.01
Sweden	0.11	0.01	0.01
Turkiye	0.08	0.01	0.01
United Arab Emirates	0.24	0.06	0.06
United States	0.34	0.12	0.11
Uzbekistan	-0.02	0.00	0.00
International Median	0.11	0.01	0.01
Benchmarking Participants			
Alberta, Canada	0.15	0.02	0.02
British Columbia, Canada	0.16	0.03	0.02
Newfoundland & Labrador, Can.	0.08	0.01	0.01
Quebec, Canada	0.11	0.01	0.01
Moscow City, Russian Fed.	0.04	0.00	0.00
South Africa (6)	0.27	0.07	0.05
Abu Dhabi, UAE	0.33	0.11	0.13
Dubai, UAE	0.25	0.06	0.04

School Emphasis on Academic Success – Principals' Reports

About the Scale¹

Students were scored according to their principals' responses characterizing twelve aspects on the *School Emphasis on Academic Success* scale. Cut scores divide the scale into three categories. Students in schools with a **Very High Emphasis** on academic success had a score at or above the cut score corresponding to their principals characterizing six of the twelve aspects as "very high" and the other six as "high," on average. Students in schools with a **Medium Emphasis** on academic success had a score at or below the cut score corresponding to their principals characterizing six of the twelve aspects as "medium" and the other six as "high," on average. All other students attended schools with a **High Emphasis** on academic success.



¹ For the purpose of scaling, categories in which there were very few respondents were combined. The categories "Low" and "Very Low" were combined for all variables. Scale statistics reflect analysis of the items following collapsing.

^T Trend item—item was included in the same scale in PIRLS 2016 and was used for linking the PIRLS 2016 and PIRLS 2021 scales.

Item Parameters for the PIRLS 2021 School Emphasis on Academic Success – Principals’ Reports Scale

Item	delta	tau_1	tau_2	tau_3	Infit	Q-Index
ACBG11A	-1.08487	-2.86877	-0.17533	3.04410	1.10	0.15
ACBG11B	-0.85214	-3.47904	-0.01647	3.49551	0.93	0.12
ACBG11C	-0.64834	-3.30328	-0.11113	3.41441	0.99	0.14
ACBG11D	-0.82106	-3.41834	-0.01811	3.43645	1.05	0.13
ACBG11E	-0.87430	-2.36794	-0.28810	2.65604	1.19	0.16
ACBG11F	1.13582	-2.52956	0.03476	2.49480	1.10	0.13
ACBG11G	1.29985	-2.79990	0.10292	2.69698	0.86	0.08
ACBG11H	0.01651	-2.62667	-0.17545	2.80212	1.15	0.13
ACBG11I	1.20369	-3.00189	0.17225	2.82964	0.85	0.09
ACBG11J	0.11323	-3.49329	0.11348	3.37981	0.90	0.11
ACBG11K	0.67654	-3.90677	0.16814	3.73863	0.88	0.10
ACBG11L	-0.16493	-3.13229	-0.12203	3.25432	1.06	0.15

Scale Transformation Constants for the PIRLS 2021 School Emphasis on Academic Success – Principals’ Reports Scale

Scale Transformation Constants

A = 9.088617

B = 1.189351

Transformed Scale Score = 9.088617 + 1.189351 • Logit Scale Score

**Equivalence Table of the Raw Score and Transformed Scale Scores for the PIRLS
2021 School Emphasis on Academic Success – Principals’ Reports Scale**

Raw Score	Transformed Scale Score	Cutpoint
0	1.12058	
1	2.57153	
2	3.33227	
3	3.89458	
4	4.36672	
5	4.78802	
6	5.17901	
7	5.55043	
8	5.90757	
9	6.25375	
10	6.58953	
11	6.91586	
12	7.23401	
13	7.54580	
14	7.85350	
15	8.15958	
16	8.46634	
17	8.77560	
18	9.08841	9.1
19	9.40492	
20	9.72437	
21	10.04545	
22	10.36678	
23	10.68733	
24	11.00684	
25	11.32571	
26	11.64465	
27	11.96624	
28	12.29284	
29	12.62811	
30	12.97735	12.9
31	13.34892	
32	13.75269	
33	14.21150	
34	14.76695	
35	15.52295	
36	16.97388	

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
PIRLS 2021 School Emphasis on Academic Success – Principals' Reports Scale**

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item											
			ACBG11A	ACBG11B	ACBG11C	ACBG11D	ACBG11E	ACBG11F	ACBG11G	ACBG11H	ACBG11I	ACBG11J	ACBG11K	ACBG11L
Albania	0.87	42	0.59	0.73	0.59	0.65	0.52	0.60	0.73	0.70	0.75	0.65	0.67	0.55
Australia	0.91	52	0.68	0.73	0.76	0.67	0.60	0.62	0.79	0.76	0.77	0.78	0.77	0.71
Austria	0.83	37	0.50	0.59	0.57	0.48	0.52	0.70	0.76	0.56	0.71	0.59	0.68	0.53
Azerbaijan	0.88	45	0.68	0.78	0.70	0.71	0.55	0.53	0.71	0.71	0.72	0.71	0.72	0.45
Bahrain	0.92	56	0.70	0.74	0.76	0.76	0.74	0.78	0.76	0.72	0.78	0.81	0.75	0.65
Belgium (Flemish)	0.84	37	0.44	0.64	0.61	0.56	0.60	0.59	0.64	0.60	0.68	0.72	0.66	0.53
Belgium (French)	0.87	43	0.43	0.64	0.61	0.67	0.47	0.73	0.81	0.53	0.83	0.65	0.74	0.60
Brazil	0.91	51	0.68	0.71	0.62	0.70	0.62	0.78	0.78	0.77	0.79	0.77	0.73	0.59
Bulgaria	0.92	54	0.55	0.68	0.75	0.68	0.56	0.71	0.83	0.72	0.82	0.84	0.83	0.74
Chinese Taipei	0.92	53	0.72	0.58	0.78	0.76	0.68	0.65	0.75	0.71	0.78	0.77	0.80	0.75
Croatia	0.87	43	0.63	0.64	0.63	0.65	0.64	0.66	0.73	0.52	0.74	0.71	0.66	0.58
Cyprus	0.90	48	0.48	0.73	0.72	0.49	0.52	0.53	0.81	0.79	0.81	0.82	0.79	0.69
Czech Republic	0.84	37	0.49	0.66	0.49	0.61	0.50	0.62	0.74	0.63	0.71	0.68	0.63	0.41
Denmark	0.91	50	0.61	0.63	0.70	0.68	0.53	0.68	0.78	0.74	0.80	0.78	0.82	0.68
Egypt	0.90	47	0.66	0.70	0.59	0.63	0.60	0.63	0.79	0.75	0.75	0.71	0.75	0.66
England	0.90	48	0.59	0.67	0.67	0.56	0.64	0.76	0.80	0.76	0.80	0.69	0.73	0.61
Finland	0.88	43	0.42	0.59	0.75	0.62	0.61	0.65	0.73	0.69	0.76	0.73	0.67	0.62
France	0.84	37	0.36	0.51	0.43	0.49	0.47	0.73	0.81	0.56	0.79	0.67	0.78	0.48
Georgia	0.89	46	0.68	0.71	0.62	0.74	0.64	0.73	0.78	0.53	0.78	0.68	0.62	0.54
Germany	0.86	40	0.52	0.59	0.69	0.47	0.45	0.67	0.80	0.64	0.72	0.58	0.75	0.58
Hong Kong SAR	0.91	52	0.71	0.70	0.77	0.72	0.60	0.73	0.82	0.66	0.80	0.76	0.78	0.53
Hungary	0.86	41	0.27	0.49	0.43	0.51	0.28	0.72	0.82	0.77	0.82	0.74	0.74	0.70
Iran, Islamic Rep. of	0.91	50	0.65	0.71	0.67	0.66	0.62	0.75	0.75	0.65	0.76	0.74	0.75	0.72
Ireland	0.93	55	0.68	0.74	0.80	0.55	0.60	0.73	0.79	0.82	0.79	0.81	0.83	0.70
Israel	0.89	45	0.66	0.65	0.68	0.66	0.63	0.65	0.73	0.71	0.75	0.74	0.63	0.53
Italy	0.84	37	0.56	0.63	0.54	0.65	0.61	0.53	0.69	0.61	0.64	0.61	0.59	0.60
Jordan	0.93	56	0.71	0.71	0.72	0.68	0.60	0.76	0.81	0.79	0.80	0.81	0.83	0.77
Kazakhstan	0.91	51	0.69	0.61	0.73	0.64	0.68	0.73	0.78	0.73	0.77	0.73	0.78	0.68
Kosovo	0.90	48	0.59	0.69	0.71	0.74	0.74	0.65	0.71	0.72	0.73	0.64	0.71	0.71
Latvia	0.85	39	0.69	0.70	0.48	0.69	0.71	0.65	0.68	0.35	0.68	0.56	0.65	0.55
Lithuania	0.87	42	0.55	0.70	0.70	0.73	0.74	0.54	0.70	0.60	0.67	0.61	0.67	0.53
Macao SAR	0.92	55	0.78	0.81	0.75	0.70	0.76	0.67	0.76	0.82	0.69	0.78	0.65	0.72
Malta	0.85	39	0.57	0.69	0.69	0.43	0.46	0.42	0.71	0.76	0.76	0.74	0.58	0.50
Montenegro	0.85	39	0.62	0.67	0.63	0.69	0.66	0.78	0.65	0.10	0.70	0.61	0.62	0.55
Morocco	0.88	44	0.69	0.72	0.44	0.68	0.66	0.66	0.77	0.61	0.72	0.71	0.75	0.49
Netherlands	0.86	40	0.63	0.68	0.63	0.58	0.62	0.66	0.68	0.60	0.70	0.65	0.58	0.51
New Zealand	0.92	55	0.54	0.69	0.73	0.70	0.61	0.70	0.83	0.80	0.83	0.82	0.83	0.74
North Macedonia	0.92	52	0.60	0.74	0.74	0.80	0.62	0.71	0.82	0.55	0.83	0.73	0.82	0.65
Northern Ireland	0.89	46	0.59	0.66	0.76	0.64	0.60	0.72	0.75	0.76	0.76	0.66	0.65	0.51

**Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the
 PIRLS 2021 School Emphasis on Academic Success – Principals' Reports Scale**

Country	Cronbach Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item											
			ACBG11A	ACBG11B	ACBG11C	ACBG11D	ACBG11E	ACBG11F	ACBG11G	ACBG11H	ACBG11I	ACBG11J	ACBG11K	ACBG11L
Norway (5)	0.86	39	0.62	0.69	0.64	0.64	0.66	0.60	0.69	0.56	0.63	0.60	0.67	0.48
Oman	0.90	49	0.49	0.59	0.67	0.67	0.68	0.72	0.77	0.79	0.82	0.75	0.70	0.69
Poland	0.90	49	0.61	0.74	0.65	0.75	0.66	0.61	0.77	0.63	0.76	0.80	0.77	0.61
Portugal	0.91	50	0.66	0.70	0.78	0.73	0.64	0.73	0.74	0.79	0.69	0.69	0.73	0.62
Qatar	0.90	49	0.59	0.66	0.77	0.72	0.64	0.71	0.79	0.69	0.73	0.76	0.74	0.58
Russian Federation	0.88	43	0.68	0.70	0.69	0.76	0.69	0.64	0.69	0.34	0.73	0.62	0.70	0.53
Saudi Arabia	0.90	51	0.67	0.66	0.69	0.66	0.67	0.74	0.71	0.51	0.82	0.81	0.80	0.73
Serbia	0.87	43	0.69	0.77	0.59	0.74	0.58	0.68	0.73	0.34	0.70	0.68	0.63	0.65
Singapore	0.91	51	0.61	0.63	0.75	0.70	0.53	0.72	0.82	0.80	0.82	0.81	0.77	0.53
Slovak Republic	0.87	42	0.47	0.66	0.59	0.56	0.43	0.68	0.80	0.67	0.72	0.76	0.76	0.57
Slovenia	0.84	38	0.77	0.78	0.67	0.77	0.69	0.33	0.60	0.27	0.50	0.70	0.44	0.62
South Africa	0.89	47	0.65	0.64	0.70	0.68	0.68	0.65	0.75	0.54	0.74	0.71	0.76	0.68
Spain	0.89	46	0.60	0.69	0.70	0.55	0.50	0.73	0.81	0.78	0.79	0.67	0.71	0.58
Sweden	0.90	49	0.67	0.74	0.74	0.57	0.52	0.68	0.75	0.82	0.77	0.71	0.77	0.58
Turkiye	0.91	50	0.64	0.74	0.70	0.63	0.54	0.76	0.84	0.67	0.82	0.69	0.76	0.65
United Arab Emirates	0.94	60	0.79	0.82	0.81	0.78	0.74	0.70	0.78	0.70	0.79	0.78	0.83	0.74
United States	0.93	58	0.68	0.77	0.74	0.79	0.67	0.84	0.87	0.83	0.81	0.61	0.83	0.69
Uzbekistan	0.91	50	0.72	0.70	0.74	0.66	0.60	0.73	0.67	0.78	0.79	0.70	0.72	0.62
Benchmarking Participants														
Alberta, Canada	0.88	44	0.45	0.52	0.62	0.65	0.65	0.72	0.73	0.71	0.69	0.73	0.70	0.69
British Columbia, Canada	0.89	47	0.65	0.73	0.71	0.64	0.55	0.70	0.76	0.73	0.73	0.62	0.76	0.60
Newfoundland & Labrador, Can	0.88	46	0.52	0.52	0.69	0.67	0.56	0.55	0.72	0.78	0.79	0.78	0.73	0.73
Quebec, Canada	0.86	40	0.50	0.64	0.58	0.62	0.53	0.62	0.77	0.68	0.82	0.69	0.58	0.52
Moscow City, Russian Fed.	0.87	41	0.72	0.70	0.66	0.70	0.62	0.57	0.63	0.52	0.69	0.66	0.71	0.49
South Africa (6)	0.91	50	0.60	0.56	0.69	0.70	0.73	0.69	0.83	0.68	0.82	0.72	0.76	0.68
Abu Dhabi, UAE	0.94	61	0.78	0.83	0.78	0.79	0.74	0.73	0.79	0.71	0.78	0.82	0.84	0.77
Dubai, UAE	0.95	64	0.78	0.87	0.85	0.80	0.75	0.72	0.84	0.78	0.85	0.80	0.83	0.74

Relationship Between the PIRLS 2021 School Emphasis on Academic Success – Principals’ Reports Scale and PIRLS 2021 Achievement

Country	Pearson’s Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Albania	0.21	0.04	0.05
Australia	0.21	0.05	0.03
Austria	0.15	0.02	0.02
Azerbaijan	-0.04	0.00	0.00
Bahrain	0.15	0.02	0.01
Belgium (Flemish)	0.13	0.02	0.02
Belgium (French)	0.22	0.05	0.03
Brazil	0.23	0.05	0.05
Bulgaria	0.34	0.12	0.08
Chinese Taipei	0.14	0.02	0.02
Croatia	0.01	0.00	0.00
Cyprus	0.20	0.04	0.04
Czech Republic	0.15	0.02	0.03
Denmark	0.17	0.03	0.02
Egypt	0.18	0.03	0.01
England	0.15	0.02	0.03
Finland	0.15	0.02	0.01
France	0.17	0.03	0.03
Georgia	0.07	0.00	0.00
Germany	0.24	0.06	0.04
Hong Kong SAR	0.12	0.01	0.01
Hungary	0.28	0.08	0.04
Iran, Islamic Rep. of	0.16	0.03	0.02
Ireland	0.18	0.03	0.03
Israel	0.08	0.01	0.01
Italy	0.06	0.00	0.01
Jordan	0.18	0.03	0.04
Kazakhstan	0.03	0.00	0.00
Kosovo	0.10	0.01	0.01
Latvia	0.06	0.00	0.02
Lithuania	0.07	0.01	0.01
Macao SAR	0.20	0.04	0.03
Malta	0.17	0.03	0.03
Montenegro	0.05	0.00	0.00
Morocco	0.16	0.03	0.02
Netherlands	0.14	0.02	0.01
New Zealand	0.28	0.08	0.07
North Macedonia	0.14	0.02	0.01
Northern Ireland	0.20	0.04	0.03
Norway (5)	0.09	0.01	0.02

Relationship Between the PIRLS 2021 School Emphasis on Academic Success – Principals’ Reports Scale and PIRLS 2021 Achievement

Country	Pearson’s Correlation with Reading Achievement		Variance in Reading Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	r	r^2	
Oman	0.11	0.01	0.01
Poland	0.10	0.01	0.01
Portugal	0.22	0.05	0.03
Qatar	0.17	0.03	0.03
Russian Federation	0.14	0.02	0.01
Saudi Arabia	0.15	0.02	0.01
Serbia	0.17	0.03	0.02
Singapore	0.19	0.04	0.03
Slovak Republic	0.20	0.04	0.03
Slovenia	0.04	0.00	0.00
South Africa	0.29	0.08	0.05
Spain	0.12	0.01	0.01
Sweden	0.25	0.06	0.04
Turkiye	0.29	0.08	0.09
United Arab Emirates	0.34	0.12	0.10
United States	0.29	0.09	0.08
Uzbekistan	0.08	0.01	0.00
International Median	0.16	0.03	0.02
Benchmarking Participants			
Alberta, Canada	0.12	0.02	0.01
British Columbia, Canada	0.24	0.06	0.04
Newfoundland & Labrador, Can.	0.18	0.03	0.04
Quebec, Canada	0.17	0.03	0.02
Moscow City, Russian Fed.	0.07	0.00	0.00
South Africa (6)	0.18	0.03	0.02
Abu Dhabi, UAE	0.39	0.15	0.14
Dubai, UAE	0.25	0.06	0.09