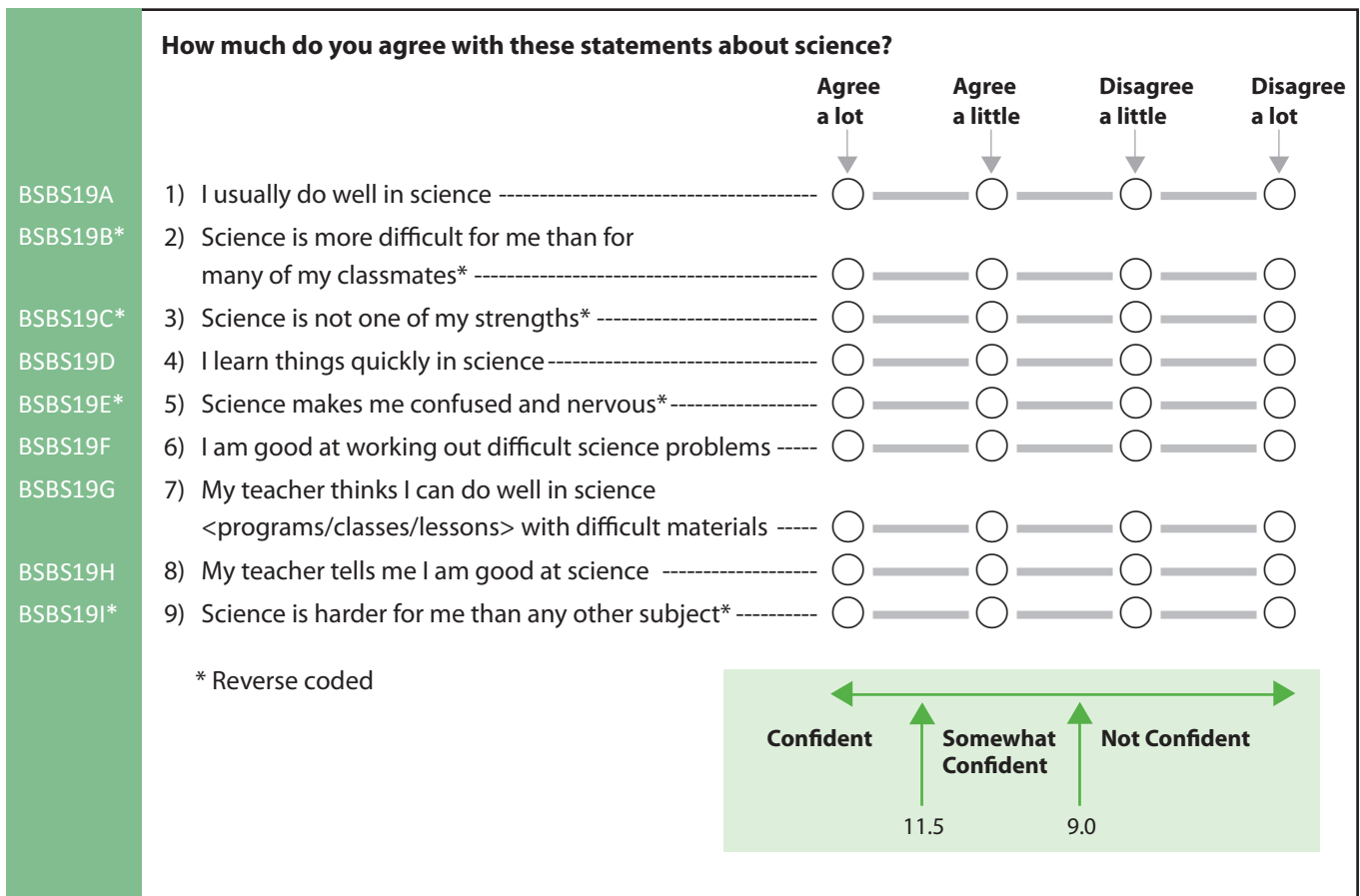


# TIMSS 2011

## The TIMSS 2011 Students Confident in Science Scale, Eighth Grade

The Students Confident in Science (SCS) scale was created based on students' degree of agreement to the nine statements described below. See [Creating and Interpreting TIMSS and PIRLS 2011 Context Questionnaire Scales](#) for more information on how the scales were formed.

Exhibit 1: Items in the TIMSS 2011 Students Confident in Science Scale, Eighth Grade



**Exhibit 2: Item Parameters for the TIMSS 2011 Students Confident in Science Scale, Eighth Grade**

Item	delta	tau_1	tau_2	tau_3
BSBS19A	-1.09627	-1.13815	-0.30626	1.44441
BSBS19B*	-0.63620	-1.33832	0.23181	1.10651
BSBS19C*	-0.29060	-1.20860	0.29343	0.91517
BSBS19D	-0.89723	-1.39683	0.00899	1.38784
BSBS19E*	-0.81136	-1.05658	0.07397	0.98261
BSBS19F	-0.26819	-1.42751	-0.03386	1.46137
BSBS19G	-0.59943	-1.22047	-0.04850	1.26897
BSBS19H	-0.49743	-1.12881	-0.01620	1.14501
BSBS19I*	-0.63757	-0.93087	0.11634	0.81453

\*Reverse coded

**Exhibit 3: Scale Transformation Constants**

Scale Transformation Constants

$$A = 9.96314$$

$$B = 1.43299$$

$$\text{Transformed Scale Score} = 9.96314 + 1.43299 \cdot \text{Logit Scale Score}$$

**Exhibit 4: Equivalence Table of the Raw Score and the Transformed Scale Score**

Raw Score	Transformed Scale Score	Cutpoint	Raw Score	Transformed Scale Score	Cutpoint
0	3.09503		14	9.17827	
1	4.73717		15	9.39956	
2	5.54017		16	9.62110	
3	6.09537		17	9.84751	
4	6.53296		18	10.08173	
5	6.89986		19	10.32740	
6	7.22358		20	10.58920	
7	7.51546		21	10.87142	
8	7.78509		22	11.18528	
9	8.03830		23	11.54467	11.5
10	8.27929		24	11.97494	
11	8.51130		25	12.52422	
12	8.73696		26	13.32445	
13	8.95858	9.0	27	14.96733	

**Exhibit 5: Cronbach Alpha Reliability Coefficient and Principal Component Analysis of the Items in the TIMSS 2011 Students Confident in Science Scale, Eighth Grade**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item								
			BSBS19A	BSBS19B*	BSBS19C*	BSBS19D	BSBS19E*	BSBS19F	BSBS19G	BSBS19H	BSBS19I*
Australia	0.90	55	0.81	0.70	0.78	0.82	0.66	0.78	0.72	0.69	0.71
Bahrain	0.81	40	0.64	0.61	0.55	0.74	0.57	0.67	0.66	0.68	0.57
Chile	0.84	46	0.79	0.57	0.57	0.81	0.58	0.76	0.68	0.69	0.60
Chinese Taipei	0.92	62	0.85	0.78	0.81	0.84	0.66	0.82	0.76	0.82	0.76
England	0.90	55	0.80	0.71	0.82	0.81	0.67	0.79	0.71	0.65	0.70
Ghana	0.76	34	0.61	0.62	0.58	0.60	0.60	0.53	0.54	0.61	0.59
Hong Kong SAR	0.87	50	0.78	0.70	0.72	0.77	0.60	0.73	0.68	0.69	0.68
Iran, Islamic Rep. of	0.84	46	0.72	0.64	0.58	0.74	0.66	0.70	0.66	0.74	0.63
Israel	0.88	52	0.81	0.68	0.71	0.78	0.66	0.76	0.71	0.73	0.66
Italy	0.88	52	0.79	0.68	0.75	0.81	0.69	0.69	0.64	0.72	0.69
Japan	0.88	52	0.78	0.67	0.78	0.77	0.61	0.79	0.71	0.71	0.67
Jordan	0.77	36	0.55	0.55	0.46	0.67	0.52	0.69	0.68	0.72	0.52
Korea, Rep. of	0.91	58	0.85	0.76	0.82	0.77	0.59	0.81	0.74	0.77	0.73
Malaysia	0.78	38	0.75	0.32	0.46	0.73	0.50	0.77	0.73	0.72	0.35
New Zealand	0.88	53	0.80	0.67	0.75	0.80	0.64	0.76	0.73	0.69	0.68
Norway	0.89	54	0.79	0.67	0.77	0.80	0.65	0.78	0.72	0.72	0.68
Oman	0.75	34	0.49	0.64	0.51	0.65	0.60	0.55	0.58	0.56	0.65
Palestinian Nat'l Auth.	0.79	38	0.65	0.54	0.52	0.72	0.54	0.69	0.64	0.67	0.53
Qatar	0.83	43	0.66	0.62	0.54	0.77	0.58	0.70	0.68	0.74	0.59
Saudi Arabia	0.80	39	0.58	0.62	0.49	0.73	0.59	0.65	0.66	0.68	0.61
Singapore	0.91	58	0.83	0.74	0.79	0.81	0.68	0.79	0.74	0.73	0.74
Thailand	0.79	38	0.73	0.43	0.57	0.75	0.44	0.71	0.68	0.73	0.41
Tunisia	0.77	36	0.46	0.58	0.55	0.69	0.56	0.68	0.64	0.68	0.54
Turkey	0.85	46	0.76	0.61	0.68	0.75	0.58	0.72	0.67	0.73	0.61
United Arab Emirates	0.83	43	0.64	0.64	0.60	0.74	0.61	0.69	0.66	0.68	0.64
United States	0.89	53	0.77	0.72	0.76	0.80	0.68	0.75	0.69	0.67	0.71
<b>Ninth Grade Participants</b>											
Botswana	0.78	37	0.70	0.52	0.48	0.68	0.52	0.65	0.61	0.69	0.56
Honduras	0.76	37	0.75	0.28	0.24	0.80	0.40	0.79	0.73	0.77	0.33
South Africa	0.77	36	0.69	0.48	0.53	0.70	0.52	0.67	0.63	0.66	0.49
<b>Benchmarking Participants</b>											
Alberta, Canada	0.89	55	0.78	0.74	0.78	0.81	0.70	0.76	0.69	0.65	0.74
Ontario, Canada	0.90	57	0.82	0.74	0.80	0.81	0.69	0.80	0.70	0.69	0.73
Quebec, Canada	0.89	53	0.79	0.73	0.80	0.81	0.63	0.78	0.64	0.66	0.71
Abu Dhabi, UAE	0.82	42	0.63	0.62	0.56	0.73	0.58	0.69	0.68	0.69	0.61
Dubai, UAE	0.86	47	0.70	0.67	0.64	0.76	0.64	0.72	0.67	0.68	0.68
Alabama, US	0.88	52	0.76	0.68	0.74	0.81	0.70	0.72	0.67	0.67	0.71

**Exhibit 5: Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2011 Students Confident in Science Scale, Eighth Grade (Continued)**

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item								
			BSBS19A	BSBS19B*	BSBS19C*	BSBS19D	BSBS19E*	BSBS19F	BSBS19G	BSBS19H	BSBS19I*
California, US	0.87	50	0.76	0.69	0.70	0.78	0.63	0.72	0.69	0.68	0.68
Colorado, US	0.90	56	0.78	0.74	0.77	0.80	0.72	0.77	0.73	0.67	0.73
Connecticut, US	0.90	56	0.77	0.73	0.77	0.81	0.68	0.77	0.73	0.72	0.73
Florida, US	0.88	53	0.77	0.73	0.76	0.79	0.71	0.74	0.65	0.65	0.73
Indiana, US	0.89	55	0.79	0.74	0.75	0.82	0.69	0.76	0.73	0.67	0.72
Massachusetts, US	0.90	56	0.79	0.78	0.78	0.82	0.68	0.77	0.71	0.67	0.74
Minnesota, US	0.91	57	0.78	0.76	0.81	0.82	0.69	0.78	0.73	0.67	0.76
North Carolina, US	0.90	57	0.79	0.75	0.79	0.83	0.70	0.77	0.72	0.67	0.76

\*Reverse coded

**Exhibit 6: Relationship Between the TIMSS 2011 Students Confident in Science Scale, Eighth Grade, and TIMSS 2011 Science Achievement**

Country	Pearson's Correlation with Science Achievement		Variance in Science Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
Australia	0.39	0.15	0.13
Bahrain	0.34	0.11	0.11
Chile	0.25	0.06	0.06
Chinese Taipei	0.39	0.15	0.15
England	0.32	0.10	0.10
Ghana	0.37	0.14	0.13
Hong Kong SAR	0.24	0.06	0.05
Iran, Islamic Rep. of	0.29	0.08	0.08
Israel	0.40	0.16	0.15
Italy	0.28	0.08	0.07
Japan	0.38	0.14	0.12
Jordan	0.38	0.15	0.13
Korea, Rep. of	0.48	0.23	0.25
Malaysia	0.22	0.05	0.05
New Zealand	0.33	0.11	0.09
Norway	0.38	0.15	0.13
Oman	0.43	0.19	0.16
Palestinian Nat'l Auth.	0.36	0.13	0.11
Qatar	0.41	0.17	0.16
Saudi Arabia	0.38	0.14	0.12
Singapore	0.26	0.07	0.06
Thailand	0.12	0.01	0.02
Tunisia	0.31	0.10	0.08

**Exhibit 6: Relationship Between the TIMSS 2011 Students Confident in Science Scale, Eighth Grade, and TIMSS 2011 Science Achievement (Continued)**

Country	Pearson's Correlation with Science Achievement		Variance in Science Achievement Accounted for by Difference Between Regions of the Scale ( $\eta^2$ )
	(r)	(r <sup>2</sup> )	
Turkey	0.40	0.16	0.15
United Arab Emirates	0.35	0.12	0.10
United States	0.35	0.12	0.11
<b>International Median</b>	<b>0.36</b>	<b>0.13</b>	<b>0.11</b>
<b>Ninth Grade Participants</b>			
Botswana	0.32	0.10	0.11
Honduras	0.23	0.05	0.04
South Africa	0.24	0.06	0.06
<b>Benchmarking Participants</b>			
Alberta, Canada	0.36	0.13	0.13
Ontario, Canada	0.37	0.14	0.12
Quebec, Canada	0.28	0.08	0.08
Abu Dhabi, UAE	0.35	0.12	0.10
Dubai, UAE	0.31	0.10	0.09
Alabama, US	0.25	0.06	0.05
California, US	0.37	0.14	0.12
Colorado, US	0.36	0.13	0.10
Connecticut, US	0.35	0.12	0.11
Florida, US	0.34	0.12	0.09
Indiana, US	0.35	0.12	0.12
Massachusetts, US	0.38	0.14	0.13
Minnesota, US	0.44	0.19	0.17
North Carolina, US	0.41	0.17	0.15