

Students Confident in Science Scale, Fourth Grade

The Students Confident in Science (SCS) scale was created based on students’ degree of agreement with the seven statements described below.

Items in the TIMSS 2015 Students Confident in Science Scale, Fourth Grade

		How much do you agree with these statements about science?			
		Agree a lot	Agree a little	Disagree a little	Disagree a lot
T	ASBS06A	1) I usually do well in science -----○-----○-----○-----○			
T	ASBS06B*	2) Science is harder for me than for many of my classmates* -----○-----○-----○-----○			
T	ASBS06C*	3) I am just not good at science* -----○-----○-----○-----○			
T	ASBS06D	4) I learn things quickly in science -----○-----○-----○-----○			
	ASBS06E	5) My teacher tells me I am good at science -----○-----○-----○-----○			
T	ASBS06F*	6) Science is harder for me than any other subject* -----○-----○-----○-----○			
	ASBS06G*	7) Science makes me confused* -----○-----○-----○-----○			
		* Reverse coded			

T Trend item—item was included in the same scale in TIMSS 2011 and was used for linking the TIMSS 2011 and TIMSS 2015 scales.

Item Parameters for the TIMSS 2015 Students Confident in Science Scale, Fourth Grade

Item	delta	tau_1	tau_2	tau_3	Infit
ASBS06A	-0.39055	-0.49625	-0.66696	1.16321	1.02
ASBS06B*	0.20690	-0.51673	0.11786	0.39887	0.99
ASBS06C*	0.09646	-0.33652	0.05023	0.28629	0.95
ASBS06D	-0.24028	-0.68647	-0.30807	0.99454	1.03
ASBS06E	0.14669	-0.81490	-0.26498	1.07988	1.27
ASBS06F*	0.12712	-0.23193	0.04516	0.18677	0.93
ASBS06G*	0.05366	-0.19671	0.12470	0.07201	0.99

*Reverse coded

Scale Transformation Constants for the TIMSS 2015 Students Confident in Science Scale, Fourth Grade

Scale Transformation Constants	
A = 8.285794	Transformed Scale Score = 8.285794 + 1.489538 • Logit Scale Score
B = 1.489538	

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2015

**Equivalence Table of Raw and Transformed Scale Scores for the TIMSS
2015 Students Confident in Science Scale, Fourth Grade**

Raw Score	Transformed Scale Score	Cutpoint
0	3.59707	
1	5.10277	
2	5.80866	
3	6.29097	
4	6.67014	
5	6.98812	
6	7.26571	
7	7.51852	
8	7.75142	
9	7.97047	
10	8.18083	8.2
11	8.38716	
12	8.59408	
13	8.80664	
14	9.03080	
15	9.27412	
16	9.54624	
17	9.85727	
18	10.24189	10.2
19	10.75225	
20	11.53013	
21	13.20458	

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2015



Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS 2015 Students Confident in Science Scale, Fourth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item						
			ASB506A	ASB506B*	ASB506C*	ASB506D	ASB506E	ASB506F*	ASB506G*
Australia	0.84	51	0.72	0.77	0.79	0.71	0.50	0.75	0.73
Bahrain	0.72	39	0.08	0.81	0.79	0.35	0.26	0.85	0.76
Belgium (Flemish)	0.85	52	0.77	0.75	0.80	0.67	0.54	0.78	0.73
Bulgaria	0.82	48	0.60	0.76	0.77	0.64	0.53	0.77	0.75
Canada	0.83	51	0.70	0.78	0.77	0.71	0.45	0.79	0.74
Chile	0.76	42	0.51	0.74	0.72	0.53	0.31	0.79	0.77
Chinese Taipei	0.83	50	0.68	0.75	0.68	0.71	0.55	0.78	0.78
Croatia	0.87	57	0.75	0.79	0.75	0.74	0.66	0.81	0.77
Cyprus	0.85	52	0.73	0.72	0.75	0.72	0.65	0.72	0.75
Czech Republic	0.87	57	0.75	0.76	0.81	0.75	0.62	0.81	0.74
Denmark	0.86	55	0.78	0.73	0.79	0.79	0.61	0.75	0.73
England	0.85	54	0.75	0.77	0.82	0.73	0.46	0.79	0.76
Finland	0.82	49	0.76	0.76	0.81	0.75	0.53	0.76	0.47
France	0.85	54	0.75	0.72	0.76	0.74	0.58	0.78	0.78
Georgia	0.74	40	0.29	0.80	0.80	0.31	0.21	0.82	0.78
Germany	0.84	52	0.69	0.77	0.78	0.71	0.56	0.79	0.72
Hong Kong SAR	0.81	47	0.65	0.72	0.81	0.65	0.49	0.79	0.65
Hungary	0.86	55	0.77	0.77	0.80	0.72	0.68	0.78	0.66
Indonesia	0.73	39	0.29	0.77	0.78	0.38	0.21	0.79	0.78
Iran, Islamic Rep. of	0.76	41	0.32	0.69	0.80	0.44	0.36	0.83	0.80
Ireland	0.82	49	0.71	0.77	0.77	0.69	0.38	0.77	0.73
Italy	0.78	44	0.67	0.68	0.57	0.70	0.57	0.75	0.68
Japan	0.83	51	0.70	0.73	0.83	0.70	0.46	0.77	0.74
Jordan	0.72	40	-0.02	0.82	0.82	0.21	0.22	0.85	0.80
Kazakhstan	0.82	48	0.60	0.76	0.76	0.63	0.58	0.77	0.71
Korea, Rep. of	0.86	55	0.80	0.77	0.80	0.69	0.57	0.78	0.76
Kuwait	0.72	39	0.17	0.78	0.76	0.40	0.34	0.81	0.75
Lithuania	0.81	48	0.69	0.75	0.79	0.60	0.51	0.78	0.66
Morocco	0.72	37	0.31	0.75	0.75	0.40	0.30	0.77	0.74
Netherlands	0.84	52	0.70	0.75	0.80	0.67	0.44	0.79	0.81
New Zealand	0.77	43	0.63	0.69	0.75	0.61	0.41	0.75	0.69
Northern Ireland	0.84	52	0.71	0.73	0.80	0.72	0.47	0.79	0.75
Norway (5)	0.82	48	0.72	0.75	0.75	0.71	0.49	0.74	0.67
Oman	0.70	37	0.11	0.78	0.72	0.33	0.25	0.82	0.77
Poland	0.83	50	0.72	0.77	0.66	0.73	0.58	0.76	0.72
Portugal	0.76	42	0.64	0.65	0.73	0.67	0.54	0.59	0.72
Qatar	0.77	43	0.30	0.82	0.77	0.42	0.37	0.84	0.78
Russian Federation	0.87	57	0.73	0.79	0.82	0.76	0.63	0.79	0.76
Saudi Arabia	0.72	40	0.00	0.81	0.81	0.24	0.20	0.85	0.80
Serbia	0.82	49	0.63	0.74	0.75	0.65	0.59	0.76	0.74
Singapore	0.86	55	0.74	0.80	0.79	0.70	0.55	0.80	0.75
Slovak Republic	0.85	53	0.73	0.73	0.79	0.71	0.57	0.79	0.74
Slovenia	0.86	54	0.74	0.75	0.73	0.73	0.64	0.79	0.74
South Africa (5)	-	-	-	-	-	-	-	-	-
Spain	0.82	49	0.67	0.75	0.75	0.64	0.58	0.76	0.72
Sweden	0.81	48	0.69	0.71	0.76	0.71	0.47	0.77	0.70
Turkey	0.77	43	0.50	0.75	0.79	0.49	0.41	0.79	0.73
United Arab Emirates	0.77	42	0.39	0.77	0.75	0.50	0.40	0.81	0.74
United States	0.82	49	0.67	0.78	0.77	0.64	0.43	0.80	0.74
Benchmarking Participants									
Buenos Aires, Argentina	0.74	40	0.54	0.70	0.74	0.50	0.38	0.72	0.73
Ontario, Canada	0.84	52	0.70	0.79	0.80	0.69	0.44	0.80	0.75
Quebec, Canada	0.83	50	0.74	0.75	0.70	0.75	0.47	0.78	0.73
Norway (4)	0.81	48	0.70	0.74	0.75	0.71	0.51	0.74	0.65
Abu Dhabi, UAE	0.74	40	0.27	0.78	0.76	0.41	0.33	0.82	0.75
Dubai, UAE	0.81	47	0.58	0.78	0.75	0.60	0.50	0.79	0.73
Florida, US	0.84	52	0.67	0.77	0.79	0.68	0.49	0.80	0.77

*Reverse coded

A dash (-) indicates comparable data not available.

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2015

Relationship Between the TIMSS 2015 Students Confident in Science Scale, Fourth Grade, and TIMSS 2015 Science Achievement

Country	Pearson's Correlation with Science Achievement		Variance in Science Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r^2)	
Australia	0.20	0.04	0.05
Bahrain	0.38	0.15	0.15
Belgium (Flemish)	0.25	0.06	0.08
Bulgaria	0.42	0.18	0.20
Canada	0.24	0.06	0.07
Chile	0.29	0.08	0.09
Chinese Taipei	0.31	0.10	0.10
Croatia	0.25	0.06	0.07
Cyprus	0.21	0.04	0.05
Czech Republic	0.20	0.04	0.06
Denmark	0.18	0.03	0.04
England	0.22	0.05	0.06
Finland	0.25	0.06	0.07
France	0.23	0.05	0.07
Georgia	0.29	0.09	0.10
Germany	0.24	0.06	0.06
Hong Kong SAR	0.30	0.09	0.11
Hungary	0.33	0.11	0.11
Indonesia	0.29	0.08	0.10
Iran, Islamic Rep. of	0.35	0.12	0.13
Ireland	0.23	0.05	0.07
Italy	0.20	0.04	0.05
Japan	0.22	0.05	0.05
Jordan	-	-	-
Kazakhstan	0.21	0.05	0.05
Korea, Rep. of	0.36	0.13	0.12
Kuwait	0.27	0.07	0.09
Lithuania	0.33	0.11	0.12
Morocco	0.35	0.12	0.13
Netherlands	0.28	0.08	0.09
New Zealand	0.26	0.07	0.08
Northern Ireland	0.18	0.03	0.05
Norway (5)	0.22	0.05	0.06
Oman	0.33	0.11	0.12
Poland	0.24	0.06	0.07
Portugal	0.26	0.07	0.08
Qatar	0.34	0.11	0.14
Russian Federation	0.20	0.04	0.04
Saudi Arabia	0.32	0.11	0.12
Serbia	0.27	0.07	0.08
Singapore	0.26	0.07	0.08
Slovak Republic	0.28	0.08	0.09
Slovenia	0.31	0.10	0.12
South Africa (5)	-	-	-
Spain	0.34	0.12	0.13
Sweden	0.22	0.05	0.06
Turkey	0.43	0.19	0.19
United Arab Emirates	0.37	0.14	0.15
United States	0.26	0.07	0.08
International Median	0.26	0.07	0.08
Benchmarking Participants			
Buenos Aires, Argentina	0.24	0.06	0.05
Ontario, Canada	0.23	0.05	0.06
Quebec, Canada	0.22	0.05	0.06
Norway (4)	0.24	0.06	0.07
Abu Dhabi, UAE	0.42	0.18	0.17
Dubai, UAE	0.28	0.08	0.10
Florida, US	0.27	0.07	0.08

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2015

A dash (-) indicates comparable data not available.