

Students Confident in Physics Scale, Eighth Grade

The Students Confident in Physics (SCP) scale was created based on students’ degree of agreement with the eight statements described below.

Items in the TIMSS 2015 Students Confident in Physics Scale, Eighth Grade

		How much do you agree with these statements about physics?			
		Agree a lot	Agree a little	Disagree a little	Disagree a lot
T	BSBP36A	1) I usually do well in physics ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBP36B*	2) Physics is more difficult for me than for many of my classmates* ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBP36C*	3) Physics is not one of my strengths* ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBP36D	4) I learn things quickly in physics ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBP36E	5) I am good at working out difficult physics problems ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBP36F	6) My teacher tells me I am good at physics ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBP36G*	7) Physics is harder for me than any other subject* ----- ○ ——— ○ ——— ○ ——— ○			
T	BSBP36H*	8) Physics 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 Physics Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3	Infit
BSBP36A	-0.38641	-1.18505	-0.21963	1.40468	0.89
BSBP36B*	-0.06965	-1.03618	-0.08308	1.11926	1.03
BSBP36C*	0.18964	-1.07039	0.01690	1.05349	0.97
BSBP36D	-0.11066	-1.41785	0.00024	1.41761	0.89
BSBP36E	0.26746	-1.41522	0.14013	1.27509	1.00
BSBP36F	0.06832	-1.36952	0.01208	1.35744	1.00
BSBP36G*	0.11199	-0.95260	-0.05350	1.00610	1.07
BSBP36H*	-0.07069	-0.70594	-0.15808	0.86402	1.17

*Reverse coded

Scale Transformation Constants for the TIMSS 2015 Students Confident in Physics Scale, Eighth Grade

Scale Transformation Constants	
A = 9.354065	Transformed Scale Score = 9.354065 + 1.474407 • Logit Scale Score
B = 1.474407	

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 Physics Scale, Eighth Grade**

Raw Score	Transformed Scale Score	Cutpoint
0	3.48271	
1	5.17467	
2	6.00291	
3	6.57512	
4	7.02652	
5	7.40595	
6	7.73926	
7	8.04083	
8	8.32236	
9	8.58833	
10	8.84388	
11	9.09326	
12	9.33953	9.4
13	9.58774	
14	9.83945	
15	10.09876	
16	10.36970	
17	10.65709	
18	10.96483	
19	11.30549	
20	11.69268	11.6
21	12.15215	
22	12.73226	
23	13.56872	
24	15.26874	

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 Physics Scale, Eighth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item							
			BSBP36A	BSBP36B*	BSBP36C*	BSBP36D	BSBP36E	BSBP36F	BSBP36G*	BSBP36H*
Georgia	0.80	42	0.73	0.58	0.63	0.75	0.72	0.69	0.52	0.51
Hungary	0.90	58	0.83	0.72	0.78	0.83	0.74	0.77	0.72	0.67
Kazakhstan	0.86	51	0.76	0.69	0.73	0.76	0.75	0.76	0.63	0.62
Lebanon	0.72	35	0.78	0.35	0.27	0.81	0.78	0.81	0.26	0.18
Lithuania	0.86	52	0.82	0.70	0.71	0.80	0.76	0.74	0.65	0.53
Malta	0.89	57	0.78	0.73	0.76	0.79	0.78	0.74	0.72	0.73
Morocco	0.63	35	0.67	-0.43	-0.46	0.66	0.73	0.74	-0.49	-0.40
Russian Federation	0.89	56	0.79	0.73	0.82	0.82	0.77	0.76	0.67	0.62
Slovenia	0.91	60	0.82	0.74	0.81	0.83	0.80	0.74	0.74	0.72
Sweden	0.89	56	0.80	0.71	0.77	0.82	0.76	0.69	0.69	0.72

*Reverse coded

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

Relationship Between the TIMSS 2015 Students Confident in Physics Scale, Eighth 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)	
Georgia	0.26	0.07	0.09
Hungary	0.33	0.11	0.14
Kazakhstan	0.17	0.03	0.03
Lebanon	0.33	0.11	0.12
Lithuania	0.27	0.07	0.10
Malta	0.44	0.20	0.21
Morocco	0.31	0.10	0.09
Russian Federation	0.25	0.06	0.06
Slovenia	0.35	0.12	0.14
Sweden	0.34	0.11	0.13
International Median	0.32	0.10	0.11

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

