

TIMSS 2011

The TIMSS 2011 Students Confident in Chemistry Scale, Eighth Grade

The Students Confident in Chemistry (SCC) scale was created based on students' degree of agreement to the nine statements described below. This scale was administered in countries where the sciences are taught as separate subjects. 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 Chemistry Scale, Eighth Grade

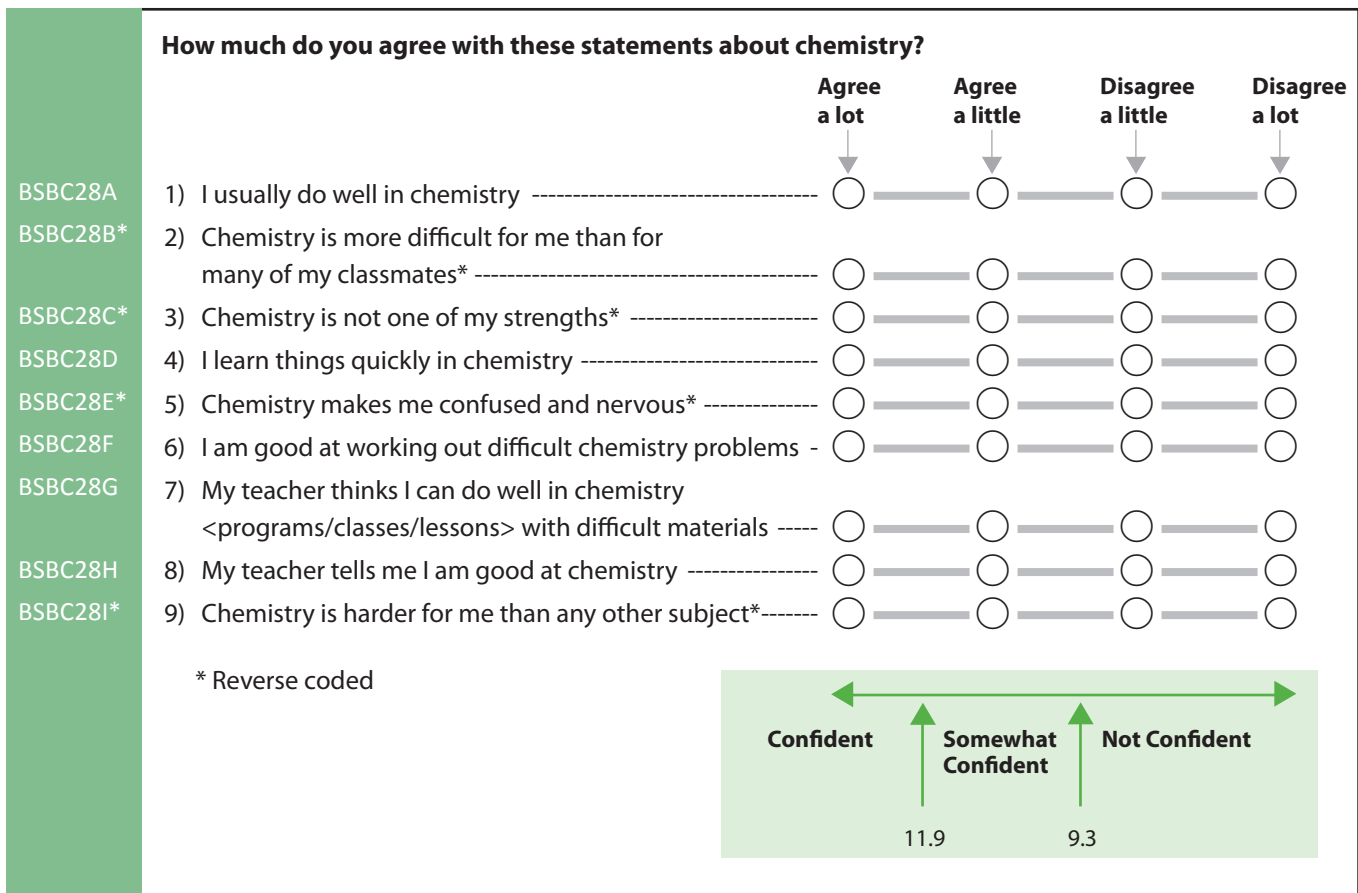


Exhibit 2: Item Parameters for the TIMSS 2011 Students Confident in Chemistry Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3
BSBC28A	-0.67905	-1.10137	-0.21833	1.31970
BSBC28B*	-0.48218	-1.05655	0.00829	1.04826
BSBC28C*	-0.09253	-1.14085	0.09605	1.04480
BSBC28D	-0.41846	-1.29094	0.01583	1.27511
BSBC28E*	-0.65303	-0.79244	-0.09030	0.88274
BSBC28F	0.01611	-1.29620	0.02835	1.26785
BSBC28G	-0.28580	-1.22059	-0.06589	1.28648
BSBC28H	-0.26874	-1.22266	-0.08015	1.30281
BSBC28I*	-0.32288	-0.81344	-0.01667	0.83011

*Reverse coded

Exhibit 3: Scale Transformation Constants

Scale Transformation Constants

$$A = 9.93429$$

$$B = 1.51722$$

$$\text{Transformed Scale Score} = 9.93429 + 1.51722 \cdot \text{Logit Scale Score}$$

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	3.27904		14	9.48419	
1	4.99796		15	9.70856	
2	5.82870		16	9.93748	
3	6.39663		17	10.17321	
4	6.84030		18	10.41915	
5	7.21012		19	10.67884	
6	7.53229		20	10.95532	
7	7.82472		21	11.25704	
8	8.08987		22	11.59284	
9	8.34075		23	11.97788	11.9
10	8.57994		24	12.43710	
11	8.81105		25	13.02445	
12	9.03698		26	13.87595	
13	9.26187	9.3	27	15.61734	

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

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Factor Loadings for Each Item								
			BSBC28A	BSBC28B*	BSBC28C*	BSBC28D	BSBC28E*	BSBC28F	BSBC28G	BSBC28H	BSBC28I*
Armenia	0.79	42	0.86	0.28	0.10	0.82	0.27	0.85	0.80	0.87	0.20
Finland	0.93	64	0.88	0.74	0.82	0.85	0.65	0.84	0.83	0.83	0.71
Georgia	-	-	-	-	-	-	-	-	-	-	-
Hungary	0.90	56	0.85	0.62	0.76	0.81	0.58	0.80	0.81	0.82	0.62
Indonesia	0.78	37	0.77	0.38	0.43	0.76	0.46	0.67	0.72	0.78	0.28
Kazakhstan	0.88	53	0.79	0.65	0.74	0.81	0.51	0.82	0.78	0.83	0.53
Lebanon	0.79	39	0.73	0.50	0.44	0.76	0.46	0.69	0.67	0.76	0.47
Lithuania	0.89	53	0.82	0.66	0.64	0.82	0.59	0.81	0.80	0.76	0.62
Macedonia, Rep. of	0.79	41	0.85	0.19	0.18	0.84	0.25	0.83	0.81	0.87	0.21
Morocco	0.74	35	0.58	0.38	0.36	0.74	0.36	0.75	0.75	0.79	0.29
Romania	0.83	45	0.85	0.45	0.44	0.82	0.34	0.83	0.80	0.83	0.39
Russian Federation	0.90	56	0.81	0.70	0.78	0.84	0.56	0.83	0.73	0.82	0.62
Slovenia	0.91	58	0.83	0.73	0.74	0.84	0.70	0.74	0.75	0.83	0.70
Sweden	0.87	51	0.80	0.65	0.71	0.80	0.60	0.77	0.73	0.75	0.56
Syrian Arab Republic	0.72	33	0.58	0.38	0.23	0.75	0.37	0.76	0.70	0.78	0.27
Ukraine	0.91	59	0.84	0.69	0.64	0.84	0.63	0.83	0.83	0.86	0.68

A dash (-) indicates that the item was not administered or comparable data was not available.

*Reverse coded

Exhibit 6: Relationship Between the TIMSS 2011 Students Confident in Chemistry 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 (η^2)
	(r)	(r ²)	
Armenia	0.20	0.04	0.05
Finland	0.40	0.16	0.15
Georgia	-	-	-
Hungary	0.22	0.05	0.06
Indonesia	-0.14	0.02	0.03
Kazakhstan	0.22	0.05	0.04
Lebanon	0.32	0.10	0.09
Lithuania	0.25	0.06	0.07
Macedonia, Rep. of	0.26	0.07	0.09
Morocco	0.27	0.07	0.07
Romania	0.26	0.07	0.08
Russian Federation	0.25	0.06	0.07
Slovenia	0.37	0.14	0.13
Sweden	0.35	0.12	0.09
Syrian Arab Republic	0.19	0.04	0.03
Ukraine	0.25	0.06	0.07
International Median	0.25	0.06	0.07

A dash (-) indicates that the item was not administered or comparable data was not available.