

Students Confident in Chemistry Scale, Eighth Grade

The Students Confident in Chemistry (SCC) scale was created based on students' degree of agreement with the eight statements described below.

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

		How much do you agree with these statements about chemistry?				
		Agree a lot	Agree a little	Disagree a little	Disagree a lot	
T	BSBC32A	1) I usually do well in chemistry -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	BSBC32B*	2) Chemistry is more difficult for me than for many of my classmates* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	BSBC32C*	3) Chemistry is not one of my strengths* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	BSBC32D	4) I learn things quickly in chemistry -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	BSBC32E	5) I am good at working out difficult chemistry problems --	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	BSBC32F	6) My teacher tells me I am good at chemistry -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	BSBC32G*	7) Chemistry is harder for me than any other subject* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T	BSBC32H*	8) Chemistry makes me confused* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 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 Chemistry Scale, Eighth Grade

Item	delta	tau_1	tau_2	tau_3	Infit
BSBC32A	-0.43252	-1.24702	-0.21914	1.46616	0.88
BSBC32B*	-0.07136	-1.07970	-0.06435	1.14405	1.02
BSBC32C*	0.20772	-1.09748	0.01172	1.08576	0.98
BSBC32D	-0.09316	-1.42123	0.01572	1.40551	0.87
BSBC32E	0.29153	-1.42513	0.11128	1.31385	1.00
BSBC32F	0.08171	-1.42824	0.02111	1.40713	1.01
BSBC32G*	0.11166	-0.94209	-0.08266	1.02475	1.07
BSBC32H*	-0.09558	-0.71550	-0.16147	0.87697	1.20

*Reverse coded

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

Scale Transformation Constants	
A = 9.428069	Transformed Scale Score = 9.428069 + 1.394223 • Logit Scale Score
B = 1.394223	

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 Chemistry Scale, Eighth Grade**

Raw Score	Transformed Scale Score	Cutpoint
0	3.83109	
1	5.43486	
2	6.22207	
3	6.76721	
4	7.19805	
5	7.56067	
6	7.87953	
7	8.16824	
8	8.43786	
9	8.69269	
10	8.93765	
11	9.17680	
12	9.41304	9.5
13	9.65127	
14	9.89290	
15	10.14184	
16	10.40188	
17	10.67761	
18	10.97271	
19	11.29909	
20	11.66958	11.6
21	12.10853	
22	12.66162	
23	13.45723	
24	15.06951	

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 Chemistry Scale, Eighth Grade

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item							
			BS8C32A	BS8C32B*	BS8C32C*	BS8C32D	BS8C32E	BS8C32F	BS8C32G*	BS8C32H*
Georgia	0.81	43	0.70	0.61	0.69	0.75	0.69	0.65	0.57	0.54
Hungary	0.89	57	0.82	0.68	0.79	0.81	0.76	0.78	0.71	0.67
Kazakhstan	0.87	54	0.78	0.72	0.73	0.79	0.77	0.76	0.65	0.64
Lebanon	0.74	37	0.72	0.53	0.44	0.76	0.69	0.76	0.46	0.31
Lithuania	0.87	53	0.82	0.69	0.74	0.80	0.77	0.73	0.67	0.58
Malta	0.92	65	0.82	0.80	0.83	0.82	0.81	0.78	0.79	0.78
Morocco	0.63	35	0.69	-0.38	-0.42	0.72	0.77	0.77	-0.43	-0.35
Russian Federation	0.91	60	0.80	0.76	0.82	0.84	0.80	0.79	0.71	0.67
Slovenia	0.92	63	0.82	0.78	0.80	0.85	0.79	0.76	0.78	0.75
Sweden	0.89	56	0.79	0.71	0.78	0.81	0.77	0.67	0.71	0.71

*Reverse coded

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

Relationship Between the TIMSS 2015 Students Confident in Chemistry 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	0.34	0.11	0.14
Hungary	0.23	0.05	0.08
Kazakhstan	0.19	0.04	0.04
Lebanon	0.31	0.10	0.10
Lithuania	0.24	0.06	0.08
Malta	0.34	0.12	0.15
Morocco	0.31	0.10	0.09
Russian Federation	0.20	0.04	0.05
Slovenia	0.39	0.15	0.16
Sweden	0.31	0.10	0.11
International Median	0.31	0.10	0.10

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

