

Students Value Physics Scale

The Students Value Physics (SVP) scale was created based on students' degree of agreement with the nine statements described below.

Items in the TIMSS Advanced 2015 Students Value Physics Scale

		How much do you agree with these statements about the physics you are studying?			
		Agree a lot	Agree a little	Disagree a little	Disagree a lot
PSBP21A	1) Learning physics will help me get ahead in the world-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PSBP21B	2) It is important to do well in my physics class -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PSBP21C*	3) The physics I am studying is not useful for my future* -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PSBP21D	4) My parents are pleased that I am taking physics -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PSBP21E	5) Doing well in physics will help me get into the university of my choice ----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PSBP21F*	6) Learning physics does not seem to be a worthwhile exercise*-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PSBP21G	7) My parents think that it is important that I do well in my physics class -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PSBP21H	8) I like telling people I am studying physics -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PSBP21 I	9) Learning physics will give me more job opportunities -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Reverse coded					

Item Parameters for the TIMSS Advanced 2015 Students Value Physics Scale, Physics

Item	delta	tau_1	tau_2	tau_3	Infit
PSBP21A	0.12198	-1.22089	-0.28221	1.50310	0.91
PSBP21B	-0.11136	-1.22137	-0.16984	1.39121	1.07
PSBP21C*	0.21349	-0.87936	-0.23886	1.11822	1.30
PSBP21D	-0.34054	-1.18074	-0.59829	1.77903	1.02
PSBP21E	0.03096	-0.41265	-0.17841	0.59106	0.97
PSBP21F*	-0.16915	-0.85167	-0.33674	1.18841	1.43
PSBP21G	-0.43055	-0.94318	-0.50789	1.45107	1.05
PSBP21H	0.64924	-1.21577	-0.07682	1.29259	1.16
PSBP21I	0.03593	-0.88494	-0.30990	1.19484	0.88

*Reverse coded

Scale Transformation Constants for the TIMSS Advanced 2015 Students Value Physics Scale, Physics

Scale Transformation Constants

$$A = 8.418724$$

$$B = 1.650896$$

$$\text{Transformed Scale Score} = 8.418724 + 1.650896 \cdot \text{Logit Scale Score}$$

Equivalence Table of the Raw Score and the Transformed Scale Score for the TIMSS Advanced 2015 Students Value Physics Scale, Physics

Raw Score	Transformed Scale Score	Cutpoint
0	1.91155	
1	3.71438	
2	4.57065	
3	5.15343	
4	5.60982	
5	5.99212	
6	6.32606	
7	6.63211	
8	6.91547	
9	7.18258	
10	7.43842	
11	7.68700	
12	7.93169	
13	8.17550	8.2
14	8.42143	
15	8.67212	
16	8.93095	
17	9.20112	
18	9.48621	
19	9.78912	
20	10.11722	
21	10.47668	
22	10.87750	
23	11.33535	11.3
24	11.87577	
25	12.55759	
26	13.52803	
27	15.46562	

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

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Cronbach's Alpha Reliability Coefficient and Principal Components Analysis of the Items in the TIMSS Advanced 2015 Students Value Physics Scale, Physics

Country	Cronbach's Alpha Reliability Coefficient	Percent of Variance Explained	Component Loadings for Each Item									
			PSBP21A	PSBP21B	PSBP21C*	PSBP21D	PSBP21E	PSBP21F*	PSBP21G	PSBP21H	PSBP21I	
France	0.83	43	0.70	0.57	0.69	0.58	0.75	0.67	0.52	0.61	0.77	
Italy	0.85	46	0.79	0.73	0.58	0.61	0.70	0.68	0.57	0.63	0.77	
Lebanon	0.73	36	0.58	0.70	0.31	0.66	0.69	0.20	0.67	0.59	0.74	
Norway	0.77	37	0.75	0.70	0.49	0.63	0.65	0.69	0.46	0.46	0.56	
Portugal	0.83	43	0.76	0.67	0.63	0.63	0.64	0.65	0.60	0.57	0.73	
Russian Federation	0.86	51	0.76	0.79	0.42	0.80	0.82	0.43	0.79	0.61	0.83	
Slovenia	0.63	29	0.68	0.44	0.20	0.67	0.45	-0.02	0.67	0.57	0.73	
Sweden	0.79	38	0.75	0.57	0.66	0.59	0.62	0.67	0.49	0.48	0.66	
United States	0.85	45	0.78	0.69	0.64	0.69	0.67	0.62	0.52	0.62	0.79	
International Avg.	0.79	41	0.73	0.65	0.51	0.65	0.67	0.51	0.59	0.57	0.73	

*Reverse coded

Relationship Between the TIMSS Advanced 2015 Students Value Physics Scale, and TIMSS Advanced 2015 Physics Achievement

Country	Pearson's Correlation with Physics Achievement		Variance in Physics Achievement Accounted for by Difference Between Regions of the Scale (η^2)
	(r)	(r ²)	
France	0.38	0.14	0.10
Italy	0.28	0.08	0.07
Lebanon	0.19	0.04	0.03
Norway	0.28	0.08	0.08
Portugal	0.30	0.09	0.08
Russian Federation	0.31	0.10	0.10
Slovenia	0.22	0.05	0.03
Sweden	0.26	0.07	0.06
United States	0.33	0.11	0.10
International Median	0.28	0.08	0.08

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