SEVT motivation survey

Expectancy, intrinsic value, utility value and cost for Biology, Chemistry, Physics and STEM

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The outcome measure assessed four beliefs from situated expectancy-value theory (SEVT): expectancy, intrinsic value, utility value and cost. Twelve items were each answered separately for **Biology**, **Chemistry**, **Physics** and **STEM** (48 responses per wave), at baseline (T1) and immediately after the intervention (T2).

Items

Code	Construct	Item stem (followed by Biology / Chemistry / Physics / STEM)	Source
sevt1_1	Expectancy	I know I can learn the material in:	Kosovich et al. (2015)
sevt1_2	Expectancy	I believe I can be successful in:	Kosovich et al. (2015)
sevt1_3	Expectancy	I am confident that I can understand the material in:	Kosovich et al. (2015)
sevt1_4	Intrinsic value	The following subject is fun for me:	Gaspard et al. (2015)
sevt1_5	Intrinsic value	I enjoy doing:	Gaspard et al. (2015)
sevt1_6	Intrinsic value	I think the following subject is interesting:	Gaspard et al. (2015)
sevt1_7	Utility value	I think the following subject is important:	Kosovich et al. (2015)
sevt1_8	Utility value	I value:	Kosovich et al. (2015)
sevt1_9	Utility value	I think the following subject is useful:	Kosovich et al. (2015)
sevt1_10	Cost	The following subject requires too much time:	Kosovich et al. (2015)
sevt1_11	Cost	I have to give up too much to do well in:	Kosovich et al. (2015)
sevt1_12	Cost (emotional)	The following subject is too stressful:	Flake et al. (2015)

Variable suffixes: `b` Biology, `c` Chemistry, `p` Physics, `s` STEM (e.g., `sevt1_1b`). T2 variables carry a `_v2` suffix in the REDCap project.

Response scale and administration

Response scale

1 Strongly Disagree · 2 Disagree · 3 Somewhat Disagree · 4 Neither Agree Nor Disagree · 5 Somewhat Agree · 6 Agree · 7 Strongly Agree

Administration

REDCap, in class. Each item stem was shown as a matrix with the four subjects as rows, grouped into four forms by construct (SEVT A expectancy, B intrinsic value, C utility value, D cost). All items required.

Scoring

- Each construct is indexed by its three items within a subject domain.
- Cost items are reverse-scored (8 – response) so that higher scores mean lower perceived cost (“low cost”) and higher scores indicate more adaptive motivation on all four constructs.
- The trial modelled each construct as a latent factor per domain and wave; scalar invariance held across T1–T2 and across gender.

Reliability (N = 855)

Domain	Exp. T1	Intr. T1	Util. T1	Cost T1	Exp. T2	Intr. T2	Util. T2	Cost T2
STEM overall	.939/.939	.960/.959	.929/.930	.840/.841	.950/.954	.961/.963	.938/.946	.889/.891
Biology	.944/.945	.955/.955	.928/.930	.833/.833	.950/.955	.967/.969	.951/.956	.905/.906
Chemistry	.942/.942	.958/.958	.926/.927	.838/.838	.953/.956	.960/.962	.945/.949	.903/.906
Physics	.935/.935	.947/.948	.914/.916	.842/.842	.949/.952	.953/.955	.935/.942	.894/.897

Values are Cronbach’s α / McDonald’s ω. Cost items were reverse-scored before analysis.

Sources

Flake, J. K., Barron, K. E., Hulleman, C., McCoach, B. D., & Welsh, M. E. (2015). Measuring cost: The forgotten component of expectancy-value theory. *Contemporary Educational Psychology, 41*, 232–244. Gaspard, H., et al. (2015). Fostering adolescents’ value beliefs for mathematics with a relevance intervention in the classroom. *Developmental Psychology, 51*(9), 1226–1240. Kosovich, J. J., Hulleman, C. S., Barron, K. E., & Getty, S. (2015). A practical measure of student motivation: Establishing validity evidence for the expectancy-value-cost scale in middle school. *The Journal of Early Adolescence, 35*(5–6), 790–816.
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