Supplemental Material

CBE—Life Sciences Education

Weston *et al.*

Appendix 1

Table 6 Standardized factor loadings, mean and standard deviations for five-factor model

Factor	Item	Question	Standardized Factor loading	Mean	SD
Thinking and Working Like a Scientist	Q1	Analyzing data for patterns.	.50	3.4	1.2
	Q2	Figuring out the next step in a research project.	.60	3.8	1.0
	Q3	Problem-solving in general.	.56	3.7	.9
	Q4	Formulating a research question that could be answered with data.	.59	3.4	1.1
	Q5	Identifying limitations of research methods and designs.	.48	3.8	1.0
	Q6	Understanding the theory and concepts guiding my research project.	.55	4.1	1.0
	Q7	Understanding the connections among scientific disciplines.	.56	3.5	1.1
	Q8	Understanding the relevance of research to my coursework.	.52	3.5	1.1
Personal and Professional Gains	Q9	Confidence in my ability to do research.	.63	3.8	1.0
	Q10	Comfort in working collaboratively with others.	.61	3.6	1.1
	Q11	Confidence in my ability to do well in future science courses.	.60	3.5	1.1
	Q12	Ability to work independently.	.50	3.8	1.1
	Q13	Understanding what everyday research work is like.	.52	4.2	1.0
	Q14	Taking greater care in conducting procedures in the lab or field.	.56	3.8	1.1
	Q15	Developing patience with the slow pace of research.	.49	3.6	1.1
Skills	Q16	Writing scientific reports or papers.	.47	3.0	1.2
	Q17	Making oral presentations.	.62	3.5	1.1
	Q18	Defending an argument when asked questions.	.56	3.0	1.1
	Q19	Explaining my project to people outside my field.	.59	3.8	1.0
	Q20	Preparing a scientific poster.	.45	3.6	1.4
	Q21	Keeping a detailed lab notebook.	.44	3.0	1.2
	Q22	Conducting observations in the lab or field.	.53	3.3	1.1
	Q25	Understanding journal articles.	.59	2.6	1.3
	Q26	Conducting database or internet searches.	.44	2.5	1.2
	Q27	Managing my time.	.46	3.1	1.1

(Table 6 cont.)

Factor	Item	Question	St. Factor loading	Mean	SD
Attitudes and Behaviors	Q28	Engage in real-world science research	.59	4.3	.9
	Q29	Feel like a scientist.	.68	4.0	1.0
	Q30	Think creatively about the project.	.62	3.7	1.0
	Q31	Try out new ideas or procedures on your own.	.40	3.2	1.4
	Q32	Feel responsible for the project.	.54	4.1	1.1
	Q33	Work extra hours because you were excited about the research.	.54	3.4	1.3
	Q35	Feel a part of a scientific community.	.52	3.7	1.3
Satisfaction	Q36	My working relationship with my research mentor	.57	4.1	1.1
	Q37	My working relationship with research group members.	.55	4.1	1.1
	Q38	The amount of time I spent doing meaningful research.	.69	3.9	.9
	Q39	The amount of time I spent with my research mentor.	.59	3.7	1.1
	Q40	The research experience overall.	.85	4.2	.8

Note: Based on first sample n = 506. Ratings from 1 – 5.

Note: Q23, Q24, Q34 left out of analysis due to large amount of missing data from "non-applicable" option.

Note: Standardized factor loadings Q1 – Q35 from four factor model, Q36 – Q40 from 5 factor model.