Supplementary Materials

Table S1: Modified prompts for the LCAS for mentored research students

During my research this semester, I was encouraged to …		
Collaboration	C1	discuss elements of my investigation with others in my lab
	C2	reflect on what I was learning
	C3	contribute my ideas and suggestions during lab discussions
	C4	help others collect or analyze data
	C5	provide constructive criticism to labmates and challenge each other's interpretations
	C6	share the problems I encountered during my investigation and seek input on how to address them
During my research this semester, I was expected to …		
Discovery & Relevance	DR1	generate novel results that are unknown to the PI and that could be of interest to the broader scientific community or others outside of the lab
	DR2	conduct an investigation to find something previously unknown to myself, others in the lab, and the PI
	DR3	formulate my own research questions or hypothesis to guide an investigation
	DR4	develop new arguments based on data
	DR5	explain how my work has resulted in new scientific knowledge
During my research this semester, I was expected to …		
Iteration	I1	revise or repeat work to account for errors or fix problems
	I2	change the methods of the investigation if it was not unfolding as predicted
	I3	share and compare data with others in the lab
	I4	collect and analyze additional data to address new questions or further test hypotheses that arose during the investigation
	I5	revise or repeat analyses based on feedback
	I6	revise drafts of papers or presentations about my investigation based on feedback

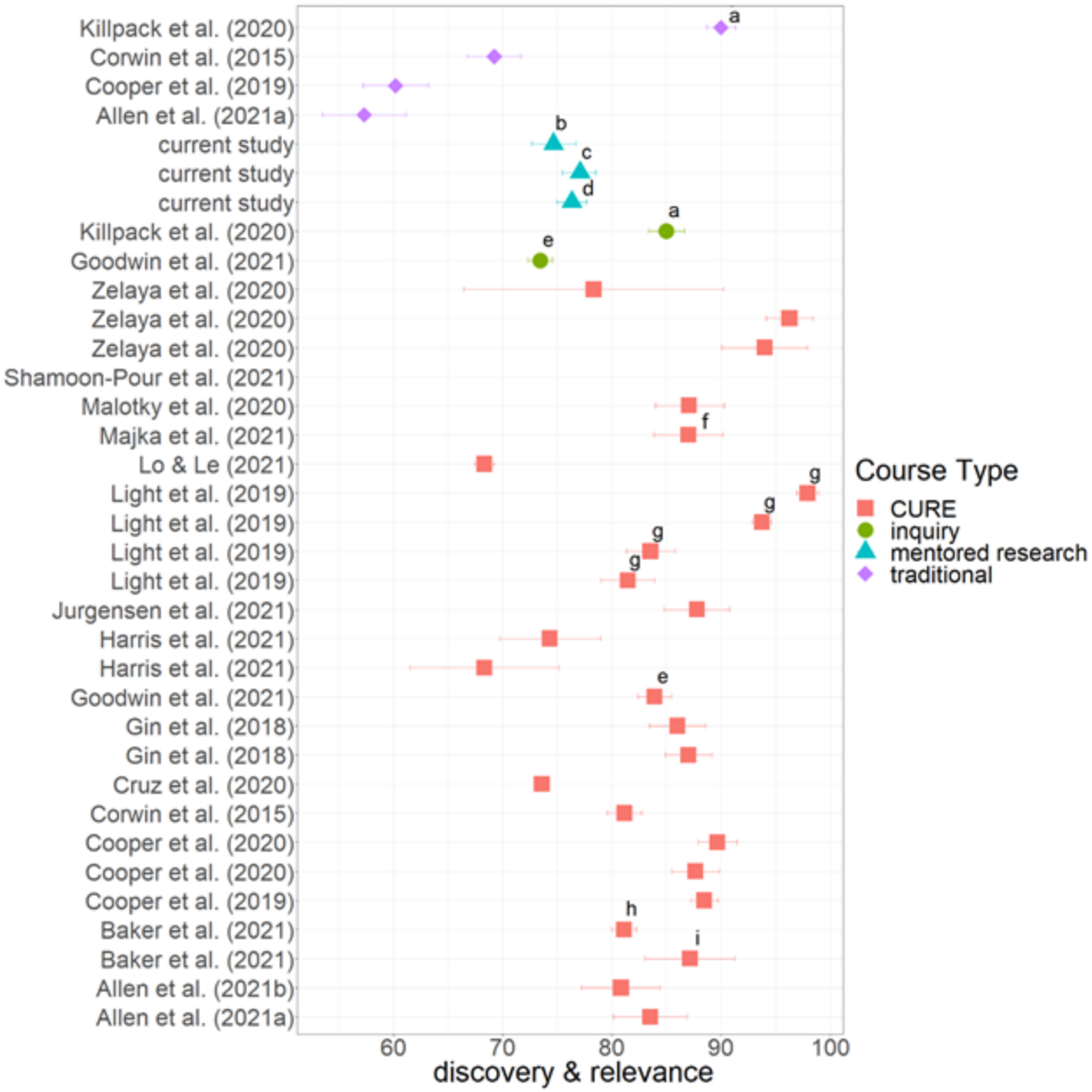

Figure S1: Variation among laboratory course types in "discovery and relevance" scores. The construct scores were scaled to a percentage of the total possible score. Values represent means and standard errors. Letters near points refer to the following: a, 4-point scale for discovery and iteration; b, students in the current study who are working in their current research lab for the first semester; c. students in the current study who are working on their current research project for the first semester; d. all students in the current study; e. 5-point collaboration scale, dropped item I1 from iteration scale and item D3 from discovery scale; f. 5-point scale for all scales, dropped item D1 from discovery scale; g. standard error estimated from the range and the sample size following (1); h. summary statistics provided by author, 5-point collaboration scale; i. summary statistics provided by author.

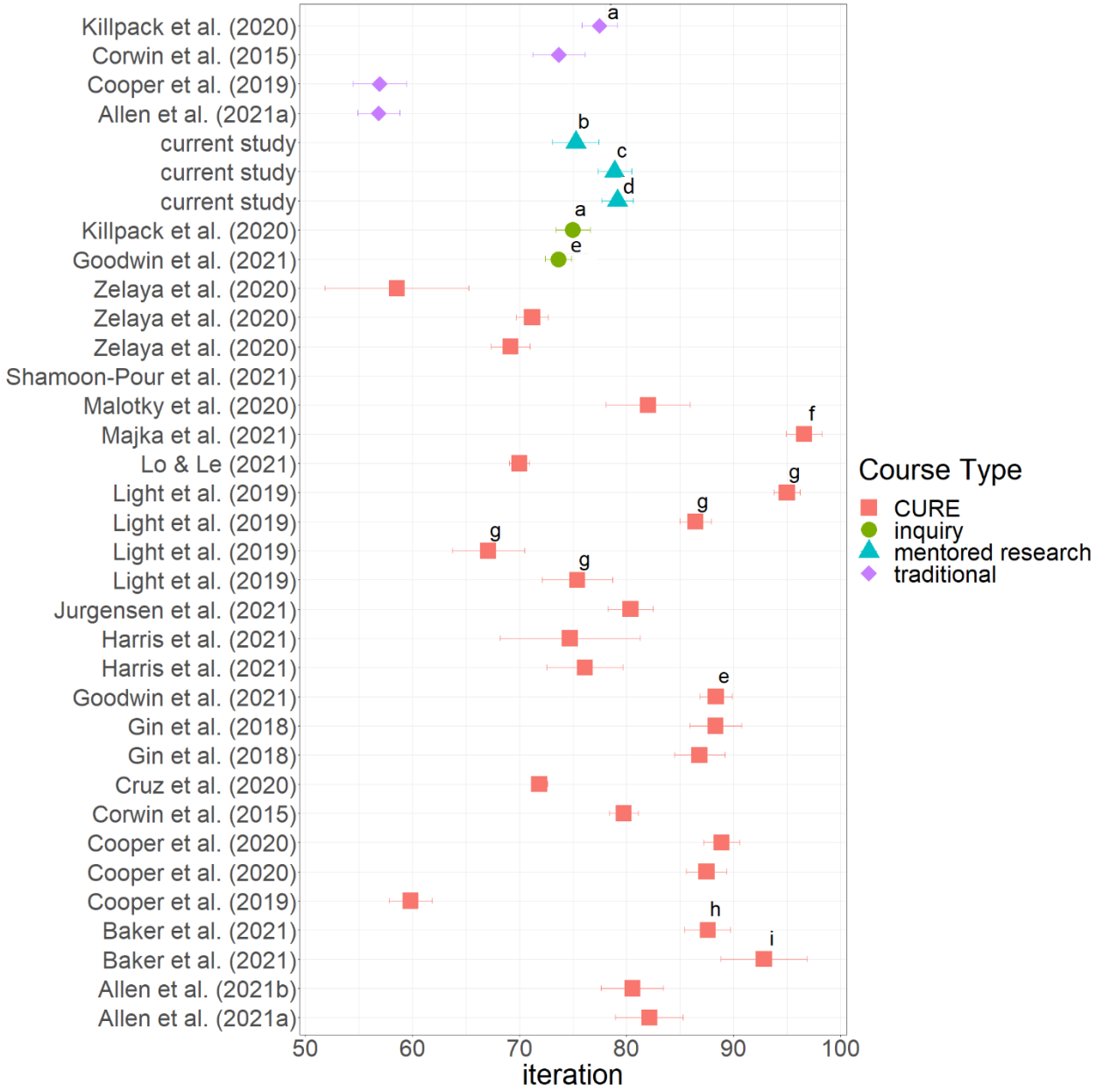

Figure S2: Variation among laboratory course types in "iteration" scores. The construct scores were scaled to a percentage of the total possible score. Values represent means and standard errors. Data point labels are the same as in Figure 2.

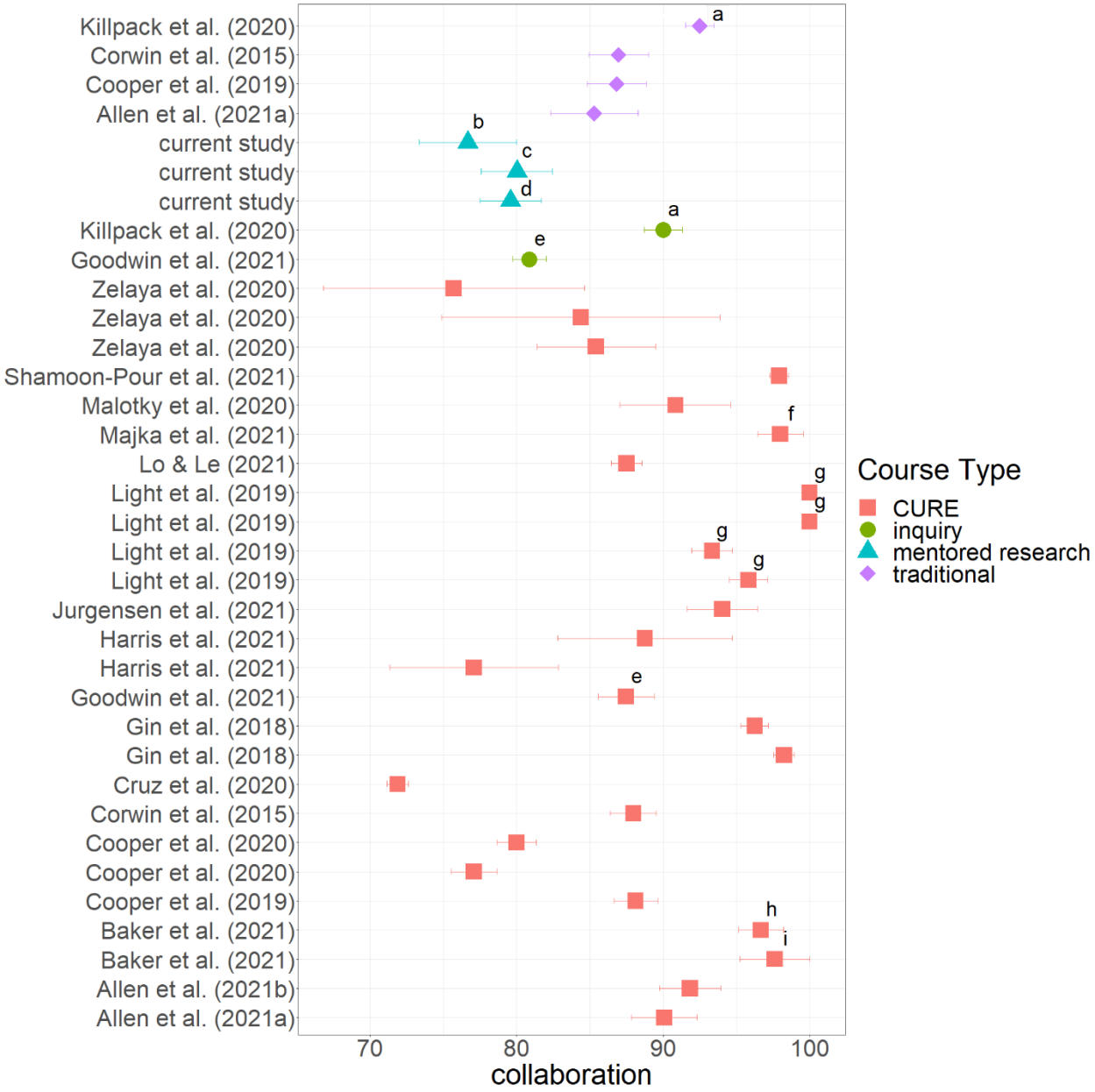

Figure S3: Variation among laboratory course types in "collaboration" scores. The construct scores were scaled to a percentage of the total possible score. Values represent means and standard errors. Data point labels are the same as in Figure 2.

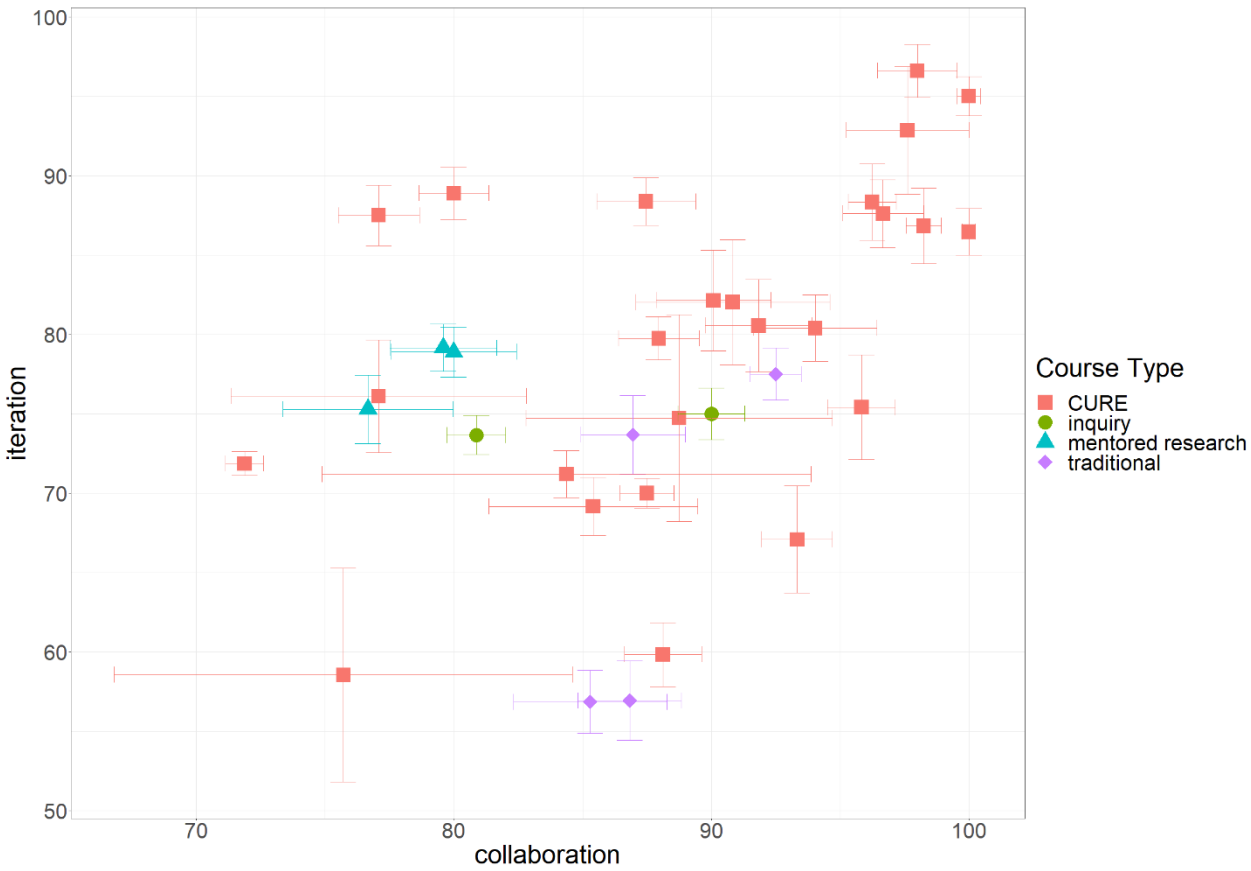

Figure S4: Bivariate plot of “iteration” and “collaboration” scores based on laboratory course type. The construct scores were scaled to a percentage of the total possible score. Values represent means and standard errors.

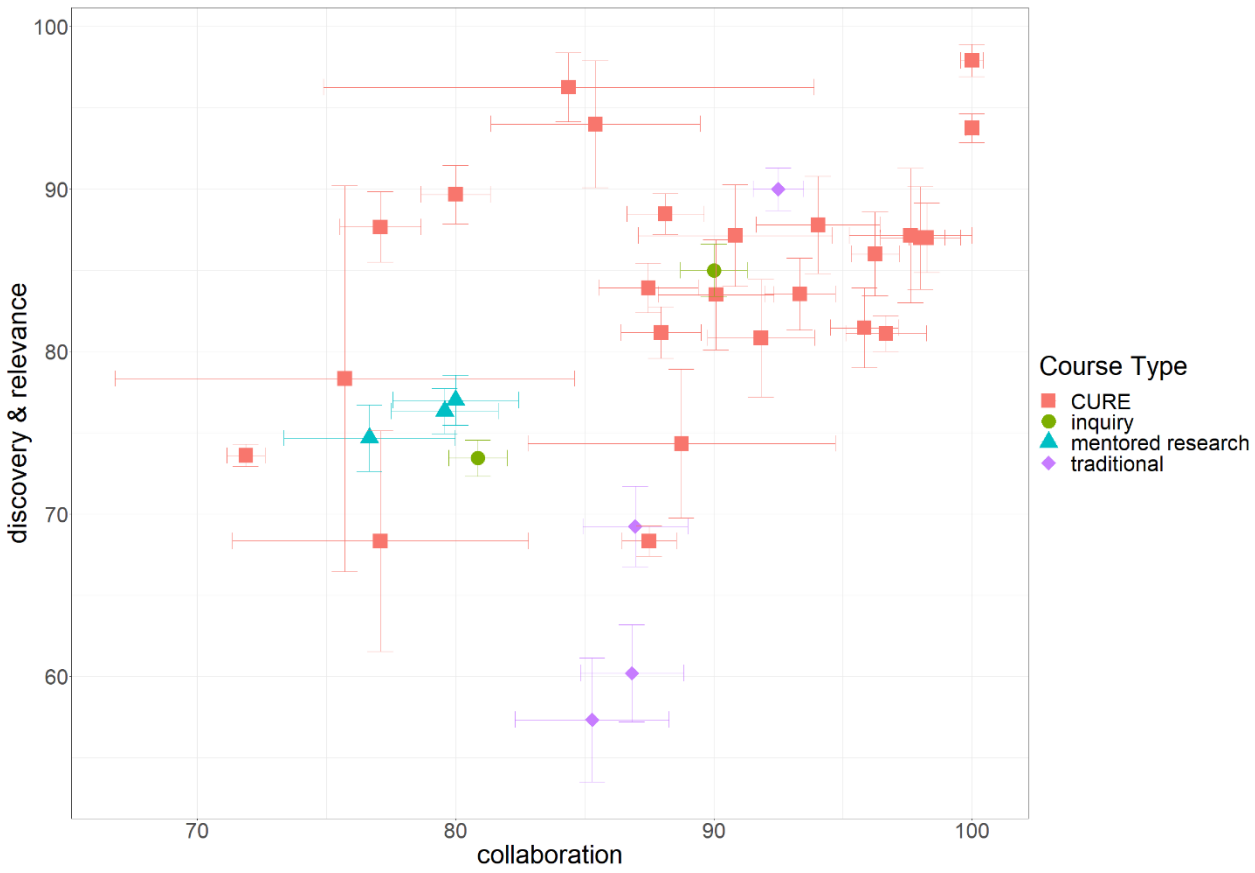

Figure S5: Bivariate plot of "discovery and relevance" and "collaboration" scores based on laboratory course type. The construct scores were scaled to a percentage of the total possible score. Values represent means and standard errors.

References

1. Hozo SP, Djulbegovic B, Hozo I. 2005. Estimating the mean and variance from the median, range, and the size of a sample. BMC Medical Research Methodology 5:13.