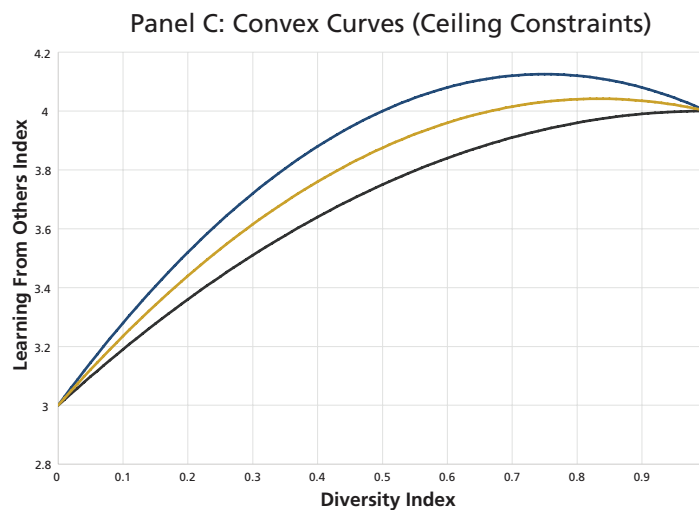
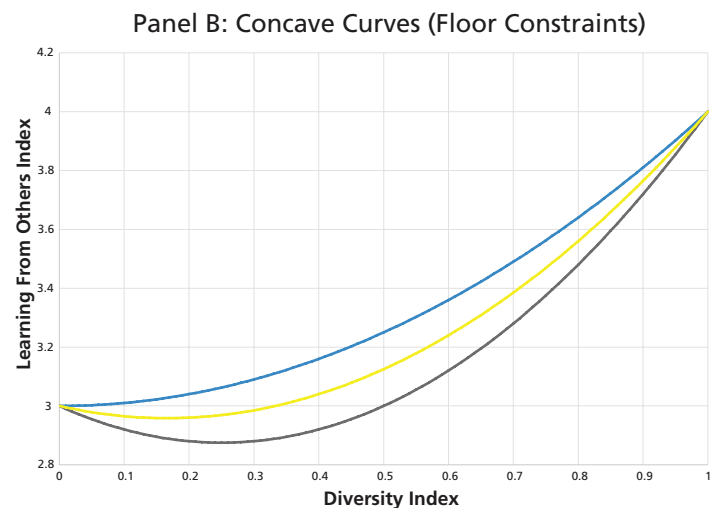
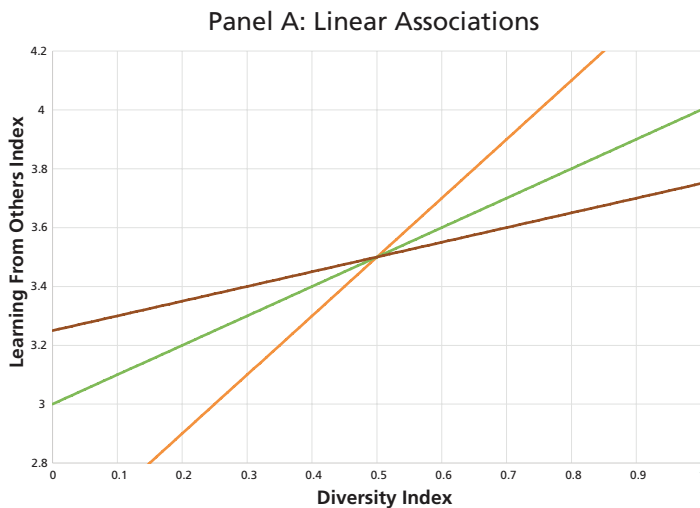


### The Relationship between Racial and Ethnic Diversity in a Class and Students' Perceptions of Having Learned from Others

#### Supplemental Material

#### Supplemental Figure: Types of Positive Associations between Diversity and Student Self-perception of Having Learned from Others



## References

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## Additional Data Notes

We use data from the AAMC's Student Record System (SRS) and the Medical Student Graduate Questionnaire (GQ) on students graduating from fully accredited U.S. medical schools. The dependent variable in our analysis is the level of agreement with two statements about having learned from dissimilar others that students within a graduating class within a school report. Since the two GQ prompts that are components of the dependent variable changed during the revision of the GQ between 2009 and 2010, we restricted our observations only to the years following the GQ revision. The most recent year that data for this analysis were available, at the time of the analysis, was 2012; therefore, observations are for the graduating classes of 2010, 2011, and 2012.

## Additional Measurement Notes

The calculation of the diversity index for race/ethnicity is based on five broad race/ethnic categories—white, Asian, African-American/black, Hispanic, and “other.” The following rules were first applied to assigning a race/ethnic identity to individual students.

1. All those who identify as Hispanic, regardless of race response, are Hispanic.
2. All those who identify as non-Hispanic and a single race are placed into a single race category (i.e., Asian, black, Native American, or white).
3. All those who identify as non-Hispanic or have missing Hispanic information, have missing race, reported as Native American or Pacific Islander, reported multiple races, or reported “race – other” are placed into the “other” category.

With information on each student's racial/ethnic classification within a graduating cohort, we calculated a diversity score for that cohort by applying an index of dissimilarity that summarizes the “evenness” across groups within a population. Scores represent the probability that a randomly selected pair from the same

cohort will be different with respect to racial/ethnic classification.

The diversity index is measured as  $D=1-\sum(n_j/N)^2$ , where  $n_j$  is the number of individuals in subgroup  $j$  (e.g., Hispanic students) for a medical school's graduating cohort, and  $N$  is the total number of students in that medical school's graduating cohort. The use of this measure to measure diversity traces back at least to the 1940s, wherein ecologists sought to measure species diversity within an ecosystem. This measure has been applied to studies of the relationship between race/ethnic diversity and student learning in higher education since the late 1990s.

## Additional Analysis Notes

In Figure 1 of the AIB, we plot best fit curves for the association between the two variables. A formal test of the shape of the association can be established by comparing two statistical models of the relationship through ordinary least squares regression (OLS): one with a first ordered term for the independent variable (diversity) and one with both a first order and second order term (or squared term) for the independent variable. The first model captures a linear (non-curved) association between the two variables. The second model captures a potential curved association between the two variables. In Model 2, the regression coefficient for the second ordered term (or squared term) determines the shape of the curve. However, if this regression coefficient is not significant, than one does not have sufficient evidence to conclude that the association ought to be interpreted as curved, but instead would be understood as linear.

Thus we estimate the two OLS regression models for each of the three years of data. We present findings in the following Table (see below), which provides regression coefficients and accompanying t-statistics that indicate significance levels of associations. For each year, Model 1, which casts the relationship between diversity and student self-perception of having learned from dissimilar others as linear, includes a strong, significant coefficient for the first ordered term for diversity. In this linear model, in each year, the effect of diversity on student self-perception of having learned from others is strong, positive, and highly significant. While Model 1 provides consistent findings for all three years,

Model 2 does not provide consistent findings. For 2010 and 2011, the second ordered term for diversity (“diversity squared”) is not significant. These coefficients should capture the size and the direction of the curves that fit the relationship between diversity and student self-perception of learning from others for each year. Since these coefficients are not significant, we do not assume any curve captures the association better than a straight line. For 2012, the situation is quite different.

In 2012, the second ordered term is significant, providing evidence that a curve better captures the association than a straight line.

The Table also presents the R-squared statistic (also known as “the explained variance”) for each model, for each year. The R-squared statistic quantifies how much a (set of) independent variable(s) in a model (in this case the racial/ethnic diversity index) improves the capacity to predict values on the dependent

variable in a model (in this case the index of student reports of learning from dissimilar others). The R-squared statistics in the Table reveal that in 2010, knowledge of a medical school’s graduating class’s level of diversity improves the capacity to predict the students’ self-reported perceptions of having learned from others by 49 percent; in 2011, by 57 percent; in 2012, by 46 percent.

**Supplemental Table: Model Summaries for OLS Regression that Estimates the Association between Institution Cohort Diversity and Aggregated Student Self-perceptions of Having Learned from Dissimilar Others. Regression Coefficients (and t-statistics).**

	2010		2011		2012	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Diversity	2.41**	0.64	2.56**	2.82*	2.68**	-1.46
	(10.68)	(0.46)	(12.51)	(2.60)	(9.76)	(0.74)
Diversity Squared		1.88		-0.29		4.20*
		(1.31)		(0.25)		(2.11)
R-Squared	0.49	0.49	0.57	0.57	0.45	0.47

\* p < 0.05  
 \*\* P < 0.01

1 Multiple-race individuals are those who responded to two or more race (sub) categories across one of the five broad race categories listed above. Thus, students who, for example, identified as both Korean and Japanese are categorized as “Asian,” while a student who identified as Korean and white are categorized as “multiple race.”  
 2 Simpson EH. Measurement of diversity. *Nature*. 1949;163(688).  
 3 Chang MJ. Does racial diversity matter?: The educational impact of a racially diverse undergraduate population. *Journal of College Student Development*. 1998;40(4): 377-395.