

On the Public-Private School Achievement Debate

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(PEPG 06-02, Executive Summary)

On July 14, 2006, the U. S. Department of Education's National Center for Education Statistics (NCES) released a study that compared the performance in reading and math of 4th and 8th graders attending private and public schools.¹ The study had been undertaken at the request of the NCES by the Educational Testing Service (ETS). Using information from a national sample of public and private school students collected in 2003 as part of the National Assessment of Educational Progress (NAEP), ETS compared the test scores of public school students with those of students in all private schools, taken together. Separately, it compared student performance in public schools with that in Catholic, Lutheran, and Evangelical Protestant schools.

According to the NCES study, students attending private schools performed better than students attending public schools. But after statistical adjustments were made for student characteristics, the private school advantage among 4th graders disappeared, giving way to a 4.5-point public school advantage in math and parity between the sectors in reading. After the same adjustments were made for 8th graders, private schools retained a 7-point advantage in reading but achieved only parity in math.

However, NCES's measures of student characteristics are flawed by inconsistent classification across the public and private sectors and by the inclusion of factors open to

¹ Braun, Henry, Frank Jenkins, and Wendy Grigg. 2006. "Comparing Private Schools and Public Schools Using Hierarchical Linear Modeling," U. S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, NCES 2006-461.

school influence. Using the same data but substituting better measures of student characteristics, we estimated three alternative models that identify a private school advantage in nearly all comparisons. According to the alternative models, in 8th-grade math, the private school advantage varies between 3 and 6.5 test points; in reading, it varies between 9 and 12.5 points. Among 4th graders in math, parity is observed in one model, but private schools outperform public schools by 2 and 3 points in the other two models; in 4th-grade reading, private schools have an advantage that ranges from 7 to 10 points. Except when parity is observed, all differences are statistically significant.

Similar results are found for Catholic and Lutheran schools taken separately, while Evangelical Protestant schools achieve parity with public schools in math and have an advantage in reading. The results generated by each model are provided in Ex. Sum. Table 1.

The results from our alternative models should not be understood as evidence that private schools outperform public schools. Without information on prior student achievement, one cannot make judgments about schools' efficacy in raising student test scores. Thus, NAEP data cannot be used to compare the performance of private and public schools.

Methodological Problems with the NCES Model

The NCES analysis is at serious risk of having produced biased estimates of the performance of public and private schools. The study's adjustment for student characteristics suffered from two sorts of problems: a) inconsistent classification of student characteristics across sectors, and b) inclusion of student characteristics open to school influence.

Classification bias

To avoid bias, classification must be consistent for both groups under study. The NCES study repeatedly violates this rule when it infers a student's background from his or her participation in federal programs intended to serve disadvantaged students. Public and private school officials have quite different obligations and incentives to classify students as participants in these federal programs: a) Title I programs for disadvantaged students; b) free and reduced-price lunch programs; c) programs for those classified as Limited English Proficient (LEP); and d) special education, as indicated by having an Individualized Education Program (IEP). By inferring student characteristics based on students' participation in these federal programs, NCES undercounted the incidence of disadvantage in the private sector and overcounted its incidence in the public sector.

For example, if a public school has a schoolwide Title I program, which is permitted if 40 percent of its students are eligible for free or reduced-price lunch, then every student at the school—regardless of poverty level—is said to be a recipient of Title I services. By contrast, private schools cannot directly receive Title I funds nor can they operate Title I programs. Instead, private schools must negotiate arrangements with local public school districts, which then provide Title I services to eligible students. Many private schools lack the administrative capacity to handle these complex negotiations or do not wish to make available services that they will not administer, making private school participation haphazard. In the 2003–04 school year, only 19 percent of private schools were reported by the U.S. Department of Education (DOE) to participate in Title I, compared to 54 percent of public schools.

Student characteristics open to school influence

Characteristics influenced by the school the students are attending will bias estimates if they are included in statistical adjustments for student background. Three variables open to school influence were included in the NCES analysis: a) the student's absenteeism rate; b) number of books in the student's home; and c) availability of a computer in the student's home. NCES assumed absenteeism to be solely a function of a student's background; yet, it is not unreasonable to believe that schools have an effect on students' attendance records. In the same way, school policies—school requirements, homework, and conferences with parents, for example—can affect what is available in students' homes.

Alternative Models

In order to check the sensitivity of NCES results to the particular methodology that was employed, we first replicated the results from the NCES study's primary model. With that accomplished, it was possible to identify the consequences of relaxing the questionable assumptions that underpinned the NCES model.

Ex. Sum Table 1 reports the results from the NCES model as well as those from the three alternative models that gradually exclude the NCES variables that suffered from the biases discussed above, replacing them with better measures of student characteristics. Alternative Model I substitutes parents' education and the location of the school (regionally and by urban, suburban, or rural area) for the Title I and Free Lunch variables in the NCES study. In addition, Model II replaces the LEP indicator with student reports of the frequency with which a language other than English is spoken at home and replaces the IEP indicator with teacher reports of whether the student had an

IEP because of a profound or moderate disability. Finally, Model III, while keeping the other improvements, eliminates the absenteeism, computer, and books-in-the-home variables, thereby avoiding the inclusion of student characteristics that can be influenced by the school. Some may think that Model III does not include sufficient indicators of the student's family background. Those for whom this is a concern should place greater weight on Model II.

Although the alternative models constitute an improvement on the NCES model, no conclusions should be drawn as to causal relationships from these or any other results based on NAEP test scores, because they are too fragile to be used for such purposes. Inferring causality from observations at one point in time is highly problematic, so much so that it is surprising that NCES commissioned a study to analyze the NAEP data set for this purpose. Our results are not offered as evidence that private schools outperform public schools but as a demonstration of the dependence of the NCES results on questionable analytic decisions.

**Ex. Sum. Table 1. Advantage of Private Schools Relative to Public Schools, as
Estimated from NAEP Data, 2003.**

	NCES	Model I	Model II	Model III
<i>(NAEP Test Score Points)</i>				
Overall Private Sector				
Grade 8				
Math	-0.2	3.1 ***	4.7 ***	6.5 ***
Reading	7.3 ***	9.2 ***	10.8 ***	12.5 ***
Grade 4				
Math	-4.5 ***	0.9	1.8 ***	3.4 ***
Reading	0.1	6.8 ***	8.3 ***	9.8 ***
Catholic				
Grade 8				
Math	0.8	3.4 ***	5.0 ***	6.7 ***
Reading	8.2 ***	9.1 ***	10.8 ***	12.4 ***
Grade 4				
Math	-4.3 ***	0.2	1.2	2.8 ***
Reading	1.5	7.1 ***	8.7 ***	10.0 ***
Lutheran				
Grade 8				
Math	4.9 ***	8.1 ***	9.6 ***	12.0 ***
Reading	7.2 ***	9.3 ***	10.8 ***	12.8 ***
Grade 4				
Math	-2.9 **	2.5	3.3 *	5.0 ***
Reading	-2.7	5.5 ***	6.6 ***	8.3 ***
Evangelical Protestant				
Grade 8				
Math	-7.6 ***	-2.4	-0.6	0.9
Reading	1.2	5.5 **	7.0 ***	8.6 ***

Note: Significance levels are as follows: 0.01 (***), 0.05 (**), and 0.1 (*).