Accounting for the Performance of Students With Disabilities on Statewide Assessments

Kimber W. Malmgren, *University of Wisconsin–Madison*
Margaret J. McLaughlin, *University of Maryland*
Victor Nolet, *Western Washington University*

The current study investigates school-level factors that affect the performance of students with disabilities on statewide assessments. Data were collected as part of a larger study examining the effects of education policy reform on students with disabilities. Statewide assessment data for students with disabilities from 2 school districts within 1 state were analyzed. Assessment results in reading and math in 3rd, 5th, and 8th grades across 2 school years were analyzed using a series of hierarchical linear regressions. Of the variables considered, only the performance of schools' general education students on the assessments added any predictive value to the regression model after accounting for school demographic indicators.

The passage in 2002 of the No Child Left Behind Act (NCLBA) signaled a new era in accountability for students with disabilities. While the 1997 amendments to the Individuals with Disabilities Education Act (IDEA, 2001) required that students with disabilities participate in state and local assessments and that results be reported, the IDEA did not require that the results be factored into accountability indexes (McLaughlin & Thurlow, 2003). Even after passage of the 1997 amendments, state policies regarding the performance of students with disabilities were either dismissive (e.g., assessment exemptions were permitted) or undermining (e.g., scores were not included in accountability indexes because of the use of accommodations or alternate assessments; Elliott, Erickson, Thurlow, & Shriner, 2000; Thurlow, Lazarus, Thompson, & Robey, 2002). The NCLBA has reinforced the necessity of including all students in state assessments and created the mandate for universal accountability. The act and accompanying regulations require states to have a single accountability system that is based on challenging content and achievement standards in reading, language arts, and science in Grades 3 through 8. In addition, states must have an assessment that is aligned with the grade-level standards, and the results of those assessments must be reported in terms of the proportion of students who performed at basic, proficient, and advanced levels. Results must also be disaggregated and reported by specific subgroups of students, including five major racial and ethnic groups, poverty, English language learners (ELL), and disability. As part of the accountability requirements of the NCLBA, states must establish annual performance objectives for each subgroup of students that enable all students to reach the state standard of *proficiency* or *advanced* on the state assessments within 12 years. The annual progress objectives, referred to as Adequate Yearly Progress (AYP), require increased percentages of students within each subgroup to meet the *proficient* level. Failure to make AYP for any one subgroup can result in a school's facing a series of consequences (McLaughlin & Thurlow, 2003). As the requirements of the NCLBA are being implemented in school districts across the United States, the performance and progress of the subgroup of students with disabilities appears to be one of the most problematic ("Quality Counts," 2004).

In the 2002–2003 academic year, states reported varying levels of proficiency on assessments in reading and math for students with disabilities in the various grade levels with one common theme: Many were well below the initial performance objectives that had been set for them. In Washington State, for example, only 25% of the fourth-grade students met the criteria for proficiency on the math assessment, and 31% met the criteria for proficiency on the reading assessment. In Maryland, only 23% of third-grade students with disabilities met the criteria for proficiency on the reading assessment. In Wisconsin, only 31% of the eighth-grade students with disabilities met the criteria for proficiency on the math assessment. In addition, during that same school year, about a third of the schools in Maryland that failed to meet the AYP goals did so solely because of the performance of students with disabilities.

Performance deficits are only one of several challenges associated with including students with disabilities in the NCLBA. One of the more difficult issues concerns how to consider assessment accommodations within calculations of AYP. While some states have adopted very permissive ac-

Address: Kimber W. Malmgren, University of Wisconsin, Rehab Psych and Special Ed Dept., 432 N. Murray St., Madison, WI 53706

commodation policies that allow individual students with disabilities to have any of a number of accommodations without affecting their scores, other states invalidate or automatically count as *basic* the scores of students who receive certain assessment accommodations. Another factor that contributes to the complexity of the issues surrounding students with disabilities pertains to alternate assessments and the recently released regulation concerning students with the most significant cognitive disabilities. States and local districts may now count as *proficient* up to 1% of the scores of students who are held to alternative achievement standards (typically through the use of an alternative assessment). Obvious from these examples is the unique complexity of including students with disabilities in the type of assessment-based accountability defined by the NCLBA.

Due to this uniqueness, the Educational Policy Reform Research Institute (EPRRI) was established in 2000 and funded by the U.S. Department of Education to investigate the impact of educational accountability reforms on students with disabilities and the programs and systems that serve them. The impact and interpretation of the NCLBA has become an important area of investigation. The EPRRI's overall program of research includes both qualitative and quantitative investigations at the state, district, and building levels and is focused on documenting performance trends among students with disabilities as well as identifying factors that affect that performance. The analyses reported here pertain to one research question: What building-level factors account for the performance of students with disabilities on statewide assessments? In this study, we set out to examine the effect of various school-level factors on the achievement of students with disabilities on statewide assessments at the building level. In framing our analyses, we chose to examine three types of school-level variables: demographic characteristics, school characteristics, and special education characteristics. In our conceptualization of factors to consider, school-level demographic characteristics (e.g., overall socioeconomic status of the school population, percentage of students who qualify as ELL) were included because they have been shown to influence student achievement above and beyond individual student characteristics (e.g., Caldas & Bankston, 1997; Ma & Klinger, 2000). In addition to school-level demographic characteristics, other school characteristics have also been shown to affect or predict student achievement at the building level. School size, for example, has been repeatedly linked to overall student achievement (e.g., Alspaugh & Gao, 2003; Borland & Howsen, 2003; Driscoll, Halcoussis, & Svorny, 2003; Ho & Willms, 1996). In addition, the level of preparation of the teaching staff (e.g., Darling-Hammond, 1997), level of parental participation (e.g., Goldring & Shapira, 1996), and levels of school funding (e.g., Namboodiri, Corwin, & Dorsten, 1993) have also all been linked to student achievement at the building level. Heretofore, these relationships have remained largely unexplored for students with disabilities.

Because our interest was in examining factors associated with the performance of students with disabilities, we also considered a set of school-level special education variables. Our consideration of school-level special education factors was guided by our identification of school-level variables that are linked theoretically to achievement in ways that also apply to the subset of students receiving special education services. For example, the concept of economies of scale has been applied to education for decades (Driscoll et al., 2003); the observed relationships between school size and student achievement are based on this notion. The same notion could be applied to the delivery of special education services. Therefore, we hypothesized that schools with a larger special education population might have a larger special education staff, be more efficient, and ultimately be more effective academically.

In addition to theoretically derived special education factors, we also felt it important to consider factors emerging as problems as school personnel began to grapple with the logistics of moving students with disabilities squarely into the school accountability arena. For example, the number of students with disabilities being exempted from participation in state assessments was considered an extremely important variable in our initial discussions with state and local education agency (LEA) directors of special education from our participating states, as well as our discussions with federal Department of Education staff and nationally known experts in the legal aspects of assessing students with disabilities and in Title I research. It is important to recognize, however, that these initial discussions occurred prior to the full implementation of the NCLBA, which holds schools accountable for assessment participation as well as for the performance of students with disabilities.

We acknowledge that additional variables likely related to performance on assessments at the building level (e.g., percentage of students in various categories of disability, data reflecting percentage of time students with disabilities spend in general education, indicators of school climate and teacher quality) were not included in our analyses. These additional variables were not available in disaggregated form at the school level when the data for these analyses were collected. As schools struggle to increase the percentage of their students with disabilities who reach proficiency on their state assessments, understanding the variables linked to exemplary performance may influence the current policy debates regarding whether these students should be included in the same accountability system as other students and may allow education professionals to direct their attention and resources to those elements of schools that are most likely to have an impact. At the same time, exposing elements commonly believed to affect student performance but that in actuality have little impact on the performance of students with disabilities is also a positive outcome in that it forces schools and districts to recognize that the performance of students with disabilities is not

simply or completely a reflection of each individual child's disability.

Method

The EPRRI conducts its research in four states: California, Maryland, New York, and Texas. These four states were purposely selected for their demographic diversity and their history of implementing standards-based reform. In addition, all four states maintained comprehensive databases on students with disabilities and their participation in and performance on state assessments. Within each state, EPRRI staff and the state director of special education identified and secured the participation of two school districts. As a group, the school districts were selected to vary across several key accountability features, including high-stakes versus low-stakes accountability consequences, recentness of reforms, stability versus instability of reform efforts, participation of students with disabilities in all accountability reports, and use of alternate assessments. However, a key criterion was that the districts have an efficient and comprehensive data system that would permit analysis of school-level variables related to students with disabilities. Again, it is important to note that since the inception of the study, it is likely that all LEAs in these four states have increased their reporting capabilities in response to NCLBA requirements.

In this study, we chose to analyze the data from the participating school districts in one state (i.e., Maryland). We felt it was important to analyze data from one state for our initial analyses because the participating states varied in terms of their assessments, their assessment grades, their accommodation and participation policies, and even the ways in which they categorized their low-income students. We felt it was important to maintain this consistency in our initial tests and intend to replicate these analyses with the other participating states. In addition, the Maryland data set was complete, provided us with enough range in performance data to reliably analyze variance, and represented large numbers of students with disabilities in grades ranging from lower elementary to middle school. The two participating Maryland districts reflect demographic diversity—within as well as between the two districts—and include students with disabilities who are also members of minority and culturally and linguistically different groups.

Sample School Districts and Schools

The school districts ranged in size from 27,528 (District 1) to 134,180 (District 2) students in the 2000–2001 school year. The percentage of students qualifying for free or reduced-price meals in the 2000–2001 school year was 23% in District 1 and 8% in District 2. The mean percentage of non-White students at the school level was 51% in District 1 and 4.4% in District 2. The mean percentage of students identified for special education services at the building level was 10.9% in District 1 and 13.5% in District 2. Quantitative data were collected for every school in District 1 and for a subset (i.e., 33%) of randomly selected schools in District 2. This sampling strategy was adopted because of the particularly large size of District 2.

Data Sources

As part of the EPRRI's goal of documenting impacts of accountability, school-level demographic and reading and math performance data were collected within the eight study districts over 3 years at every testing grade in elementary and middle schools. Data were collected over the years of 1999–2000, 2000–2001, and 2001–2002. Students with disabilities attending special schools or in nonpublic settings were not included in the database unless the student's participation and performance were reported with the home school and included in their accountability system.

Data were initially retrieved by EPRRI staff from publicly reported data sources (e.g., state and LEA Web sites). Data entry was carried out by graduate students employed by the EPRRI. The data were double-checked for entry errors by EPRRI staff. Subsequent to the data entry reliability checks, all data imported from the public sources were summarized and shared with state and local district stakeholders. As missing and erroneous data were identified by these stakeholders and by EPRRI researchers, custom reports documenting the performance of students with disabilities on the various indicators were generated by the local districts for the EPRRI's use and analysis.

Demographic data were collected at the state and LEA levels via Web site searches, on-site interviews, phone interviews, and e-mail communication. School-level data collected by EPRRI staff within each of the eight LEAs included in the overall research project included percentage of students receiving special education services, number of students by ethnicity, number of students by gender, number of students by grade, percentage of students receiving free or reduced-price meals, percentage of students qualifying as ELL, total number of students enrolled, performance of general education and special education students on statewide assessments, number of students exempted from testing by grade, number of students receiving accommodations on the statewide assessments by grade, and graduation rates for high schools.

Although the percentage of students receiving free or reduced-price meals at a school is an admittedly crude proxy for socioeconomic status, we utilize this percentage as our measure of *low SES* (a General School factor) in our analysis and the discussion of results that follows.

Analyses

A series of hierarchical linear regressions was conducted to determine which building-level factors predicted the perfor-

mance of students with disabilities on statewide assessments, above and beyond the other predictors. Analyses were conducted initially with data available for the statewide reading and math assessments in the testing grades in Maryland for the 1999–2000 and 2000–2001 school years. In the regressions, the performance of students with disabilities (at the various grade levels and in the two content areas of interest) was utilized as the dependent variable. Performance was operationalized as the percentage of students meeting the criteria for proficiency as defined by the state. Separate regression analyses were conducted for third-, fifth-, and eighth-grade data across the two school years in the two content areas of interest. This resulted in a total of 12 separate sets of regressions using 12 separate measures of performance (of students with disabilities) as criterion variables.

A set of seven school-level predictor variables representing school demographics, general school factors, and special education factors was chosen for these analyses. The predictors that were ultimately selected and entered into the regression analyses included (a) percentage of students with disabilities not tested or exempted from the individual content area assessments (Special Education factor); (b) percentage of students without disabilities who met proficiency for that test (General School factor); (c) school's total enrollment (General School factor); (d) percentage of students at the school qualifying for free or reduced-price meals (School Demographic); (e) percentage of minority students at the school (School Demographic); and (f) percentage of students receiving special education services enrolled at the school (Special Education factor). A seventh predictor variable, percentage of students identified as ELL at the school (School Demographic), was entered in the analyses of 2000–2001 school year performance data. Data reflecting the percentage of students identified as ELL in the 1999–2000 school year were incomplete for one of the grade levels of interest, so this variable was not included. The performance of general education students was identified as a general school factor and included as a predictor to investigate the presumed independence of these two groups of students. Obviously, in most analyses of school-level factors influencing achievement, the performance of the general education population is used as the outcome variable and therefore not as a predictor. Given our interest in factors affecting achievement of students receiving special education services, it was deemed important to consider the general culture of performance at the school in our analyses.

The independent (predictor) variables were entered in the regression equations in blocks. Each of the predictors was initially entered in the first position, and then, in a second set of regressions, in the last position so that we could determine how much variance in the dependent variable could be accounted for by each independent variable of interest after controlling for the others.

Results

Descriptive summary statistics were generated for all continuous variables of interest and are reported in Tables 1 though 4. Data in these tables were generated from each school's December 1 count data. The total enrollment at the sample elementary schools was approximately 540 on average in each data collection year. The mean percentage of students receiv-

TABLE 1. Summary Descriptive Statistics for Variables Entered Into the Analyses of Elementary School Performance

School characteristic	*n*	*M*	Minimum	Maximum	*SD*
Total enrollment					
1999–2000	61	540.0	298.0	807	123.8
2000–2001	61	542.9	271.0	820	126.5
Special education (%)					
1999–2000	61	11.3	3.3	33.6	4.7
2000–2001	61	11.8	3.3	33.9	4.6
Low SES (%)					
1999–2000	61	18.7	1.2	70.7	16.0
2000–2001	61	18.4	1.4	66.7	15.5
Minority (%)					
1999–2000	61	31.0	1.5	90.6	27.1
2000–2001	61	32.4	1.3	92.2	27.8
ELL (%)					
1999–2000	50	4.9	0.0	24.3	5.3
2000–2001	57	5.1	0.0	27.7	5.9

Note. Low SES = students receiving free or reduced-price meals; Special education = students receiving special education services; ELL = students qualified as English language learners.

TABLE 2. Summary Descriptive Statistics for Variables Entered Into the Analyses of Middle School Performance

School characteristic	*n*	*M*	Minimum	Maximum	*SD*
Total enrollment					
1999–2000	19	814.5	509	1,192	208.3
2000–2001	20	809.6	526	1,244	181.2
Special education (%)					
1999–2000	19	12.8	7.6	19.2	3.6
2000–2001	20	13.8	9.5	18.3	2.8
Low SES (%)					
1999–2000	19	21.3	3.5	54.4	15.6
2000–2001	20	18.0	2.8	54.0	14.2
Minority (%)					
1999–2000	19	34.8	2.3	76.8	29.2
2000–2001	20	32.8	2.1	79.3	29.3
ELL (%)					
1999–2000	14	3.6	0.0	10.2	3.4
2000–2001	20	2.7	0.0	11.2	3.4

Note. Low SES = students receiving free or reduced-price meals; Special education = students receiving special education services; ELL = students qualified as English language learners.

ing special education services in both school years was approximately 11%, which is similar to the national average for children aged 6 to 17 years (U.S. Department of Education, 2002). As can be seen in Tables 1 and 2, however, the range of proportions in enrollment varied greatly, with some schools reporting as few as 3% of their enrollment receiving special education services, and others reporting over 33%. Whereas the percentage of students receiving services as ELL in our sample schools was relatively low (mean of 5% or lower for elementary schools and mean of 2.8% for middle schools), the percentage of students coded as minority students was higher (i.e., 31%–35% for all sample schools) and much more variable (i.e., ranging from just over 1% to over 90%). The percentage of students receiving free or reduced-price meals at the sample schools ranged from just over 1% up to 70.7% in one school in 1999–2000, with a mean in both data collection years of approximately 18%.

Results of the regression analyses conducted with the 1999–2000 school year data are summarized in Table 5. Results of the regression analyses conducted with the 2000–2001 data are reported in Table 6. The predictor variables identified and entered into the analyses accounted for significant amounts of the variance in the criterion variables in all cases. In the analyses of the 1999–2000 data, the predictors combined accounted for 51% of the variance in the variable indicating the performance of third-grade students with disabilities, and 39% of the variance in the performance of the same students on the math assessment. For the fifth-grade participants, the set of predictor variables accounted for less of the variance in the reading performance of students with disabilities (i.e., 26%) but a higher percentage of the variance in math performance (i.e., 47%). In the analyses of the 2000–2001 data, the combined predictors accounted for 33% of the variance in the percentage of students with disabilities scoring proficient on the third-grade reading assessment, 51% for third-grade math, 26% for fifth-grade reading, and 33% for fifth-grade math. Between 59% and 64% of the variance in the performance of the eighth-grade participants was explained by the set of predictor variables in both reading and math in both data collection years.

Simple Model Regression Analyses

In the simple model regression analyses, the percentage of students receiving free or reduced-price meals at the school predicted a significant amount of the variance in the performance of students with disabilities in 8 of the 12 analyses. The percentage of students receiving free or reduced-price meals (referred to in the tables as "Low SES") accounted for a significant amount of the variance in the performance of the third-grade students with disabilities in reading and in math in both the 1999–2000 and 2000–2001 school years (see Tables 5 and 6). This same predictor variable also accounted for a significant amount of the variance in the performance of fifth-grade students with disabilities in reading in 1999–2000 and in math in both 1999–2000 and 2000–2001. However, with regard to the performance of the eighth-grade students with disabilities, low SES accounted for a significant amount of variance in only one content area (i.e., math) in one data collection year. When all other predictor variables were controlled for, the contribution of the variable capturing SES to

TABLE 3. Performance Summaries for Sample Elementary Schools

Grade	*n*	*M*	Minimum	Maximum	*SD*
Grade 3 Reading					
Gen. Ed. proficient (%)					
1999–2000	61	48.5	21.1	78.3	11.9
2000–2001	61	41.8	18.5	66.2	11.1
Spec. Ed. proficient (%)					
1999–2000	49	32.5		85.7	20.4
2000–2001	44	26.6		80.0	18.7
Grade 3 Math					
Gen. Ed. proficient (%)					
1999–2000	61	52.2	23.6	93.3	15.8
2000–2001	61	48.5	24.6	84.5	13.9
Spec. Ed. proficient (%)					
1999–2000	56	42.8	9.1	100.0	22.4
2000–2001	54	25.9		90.0	20.2
Grade 5 Reading					
Gen. Ed. proficient (%)					
1999–2000	61	55.8	25.0	83.0	13.7
2000–2001	61	53.5	28.1	91.1	14.3
Spec. Ed. proficient (%)					
1999–2000	58	32.6		77.8	18.6
2000–2001	52	25.2		80.0	17.6
Grade 5 Math					
Gen. Ed. proficient (%)					
1999–2000	61	64.6	23.7	100.0	17.9
2000–2001	61	58.7	20.9	100.0	18.0
Spec. Ed. proficient (%)					
1999–2000	60	38.1	.0	85.7	19.1
2000–2001	59	23.4	.0	55.6	15.3

Note. Gen. Ed. = students receiving general education services; Spec. Ed. = students receiving special education services.

the explanation of variance in the performance outcomes for students with disabilities became negligible in all but one case. When "% Low SES" was entered in the last position, it accounted for a significant amount of additional variance in only 1 out of 12 outcome variables: third-grade reading performance in the 1999–2000 school year.

The percentage of students in general education who met the criteria for *proficient* on the statewide assessments (referred to in the tables as "Gen. Ed. proficient") was the only predictor variable that was more consistent in predicting a significant amount of the variance in the performance of students with disabilities in the simple model analyses. In all 12 sets of analyses, the percentage of general education students meeting the criteria for *proficient* was statistically significant as an explanatory variable.

The percentage of non-White students at each school was significant in predicting variance in the simple model in 4 of the 12 outcome variables (i.e., third-grade math in both 1999–2000 and 2000–2001, fifth-grade reading in the 1999–2000 school year, and eighth-grade math in 2000–2001). The only other predictor variables that reached significance in the simple model were the percentage of special education students considered exempt and the percentage of students receiving special education services at the school. The variable capturing the percentage of special education students considered exempt accounted for a significant amount of the variance in the performance of the third-grade students with disabilities in the 2000–2001 reading assessment only. The percentage of students receiving special education services at the school level was a significant predictor in the analysis of the performance data for the fifth-grade students with disabilities on the 1999–2000 math assessment. No other predictor variables reached significance in the simple model regressions.

TABLE 4. Performance Summaries for Sample Middle Schools

Grade 8	*n*	*M*	Minimum	Maximum	*SD*
		Reading			
Gen. ed. proficient (%)					
1999–2000	18	33.8	18.8	56.0	9.7
2000–2001	20	31.7	13.7	56.5	10.3
Spec. ed. proficient (%)					
1999–2000	18	8.7	0	22.7	5.4
2000–2001	20	8.0	0	24.0	6.8
		Math			
Gen. ed. proficient (%)					
1999–2000	18	71.2	51.1	91.4	10.6
2000–2001	20	66.4	40.5	92.0	11.9
Spec. ed. proficient (%)					
1999–2000	18	29.9	12.5	60.0	13.5
2000–2001	20	20.6	0	48.6	12.5

Note. Gen. ed. = students receiving general education services; Spec. ed. = students receiving special education services.

Hierarchical Regression Analyses

In the full model analyses, when the contribution of each predictor was examined after controlling for all other predictors, the percentage of students receiving free or reduced-price meals was significant for only 1 out of the 12 outcome variables (see Tables 5 and 6). The percentage of minority students at the schools accounted for a significant amount of variance in 2 out of the 12 outcome variables (i.e., third-grade reading in 1999–2000 and third-grade math in 2000–2001). The percentage of students with disabilities served at the building level and the percentage of students with disabilities whose scores were considered exempt accounted for a significant amount of the variance in the performance of third-grade students with disabilities in math in 2000–2001, even though those two predictors had not been significant in the simple model.

The variable capturing the performance of general education students (i.e., Gen Ed. proficient) on the same tests reflected in the outcome variable of interest was the only variable that was significant in a large majority of analyses, across all three grades and both subject areas.

While the changes in R^2 ranged from modest (i.e., .070 for fifth-grade math in the 2000–2001 school year) to marked (i.e., .490 in eighth-grade reading in the 1999–2000 school year), the value of the general education performance variable was statistically significant in the complex model in 10 out of 12 cases. The only discrepant finding was in the analyses of the 2000–2001 eighth-grade performance data, where none of the predictors—including the performance of the general education students—was determined to add unique explanatory power once the other predictors had been entered into the equation as a control.

Discussion

Implications

In our analyses, the single most consistently significant predictor variable across LEAs, grade levels, and content areas was the performance of the general education students. This finding is striking because it suggests a school effect, whereby schools that show good results for students without disabilities also show good results for students with disabilities. When considering the achievement of students receiving special education services, the ownership of those students' performance is typically considered to be the domain of special educators. The success of students with disabilities, as well as their difficulties, is usually linked to special education variables such as the qualifications of the special education teaching staff or the model of special education service delivery embraced by the particular school. Viewing the achievement of students with disabilities as the result of general schoolwide variables shifts the "ownership" of special education students' success to a broader set of educators. This finding of a relationship between the performance of students with disabilities on statewide assessments and that of their general education peers merits further exploration and is the focus of ongoing research by EPRRI researchers.

An additional noteworthy finding was the lack of significance of certain predictors once other predictors were controlled for. Specifically, the percentage of students qualifying for free and reduced-price meals at each school was, in all cases but one, nonsignificant when other demographic and performance variables were accounted for. This was startling, given the strong association between a whole host of variables

TABLE 5. Results of Regression Analyses of the Performance of Third-, Fifth-, and Eighth-Grade Students with Disabilities on Maryland Statewide Assessment, 1999–2000 School Year

	Reading									Math								
	Grade 3			Grade 5			Grade 8			Grade 3			Grade 5			Grade 8		
Predictors	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2
Low SES (%)	48	.136**	.072*	57	.067*	.000	17	.014	.000	55	.199**	.003	59	.179**	.000	17	.152	.000
Minority (%)	48	.025	.064*	57	.077*	.010	17	.000	.002	55	.088*	.000	59	.056	.002	17	.015	.009
Spec. ed. (%)	48	.008	.009	57	.001	.006	17	.024	.012	55	.003	.000	59	.078*	.039	17	.072	.014
Enrollment (total)	48	.000	.021	57	.030	.038	17	.023	.155	55	.040	.002	59	.027	.000	17	.004	.010
Gen. ed. prof. (%)	48	.414**	.227**	57	.126**	.089*	17	.328**	.490**	55	.381**	.152**	59	.426**	.146**	17	.404**	.196*
Spec. ed. exempt (%)	48	.027	.007	57	.030	.053	17	.015	.076	55	.000	.001	59	.006	.005	17	.117	.034

Note. Low SES = students receiving free or reduced-price meals; Spec. ed. = students receiving special education services; Gen. ed. prof. = students in general education whose scores were at the proficient level or above; exempt = scores were not included in the accountability index.
*$p \leq .05$. **$p \leq .01$.

TABLE 6. Results of Regression Analyses of the Performance of Third-, Fifth-, and Eighth-Grade Students with Disabilities on Maryland Statewide Assessment, 2000–2001 School Year

	Reading									Math								
	Grade 3			Grade 5			Grade 8			Grade 3			Grade 5			Grade 8		
Predictors	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2	*df*	Initial R^2	Change in R^2
Low SES (%)	41	.116*	.013	47	.009	.004	18	.108	.076	51	.152**	.009	54	.142**	.000	18	.459**	.128
Minority (%)	41	.084	.026	47	.010	.019	18	.000	.035	51	.136**	.134**	54	.059	.009	18	.220*	.000
Spec. ed. (%)	41	.078	.033	47	.010	.015	18	.030	.009	51	.038	.064*	54	.042	.034	18	.003	.002
Enrollment (total)	41	.001	.002	47	.029	.010	18	.049	.003	51	.017	.033	54	.008	.020	18	.005	.000
Gen. ed. prof. (%)	41	.250**	.109*	47	.145**	.112*	18	.478**	.077	51	.208**	.071*	54	.212**	.070*	18	.428**	.001
Spec. ed. exempt (%)	41	.100*	.000	47	.004	.026	18	.000	.004	51	.066	.167**	54	.016	.046	18	.032	.001
ELL (%)	41	.048	.002	47	.003	.033	18	.006	.036	51	.042	.035	54	.040	.001	18	.228	.073

Note. Low SES = students receiving free or reduced-price meals; Spec. ed. = students receiving special education services; Gen. ed. prof. = students in general education whose scores were at the proficient level or above; exempt = scores were not included in the accountability index; ELL = students qualified as English language learners.
*$p \leq .05$. **$p \leq .01$.

tapping SES and the achievement of students in general. That this school-level variable was not particularly predictive of the performance of students with disabilities is heartening, because SES is not a variable that schools or LEAs have much direct control over.

With respect to special education variables, it was noteworthy that the proportion of students with disabilities within a school was not a significant predictor. This means that large populations of students with disabilities within a building did not have the effect of bringing down the level of performance of students with disabilities in that school, nor did they have the effect of raising the level of performance of students with disabilities by virtue of concentrated special education resources. Likewise, the other special education variable that was examined in this study, the percentage of students with disabilities exempted from specific tests, did not predict a significant amount of the variance in the performance of students with disabilities on those tests. That is, schools that tended to have exempted more students with disabilities from the assessments did not have higher performance among the students who did take the test. Because high rates of exemption were spread across schools and grade levels, and not confined to schools that housed special education centers, we do not believe that those schools with high exemption rates were simply the schools with the highest needs populations of special education students. This was notable, given current concerns about excluding the scores of some students with disabilities from accountability. We do not deny that decisions to exclude certain students' scores from accountability could conceivably affect a school's reported level of proficiency with regard to students with disabilities (especially in very small or rural schools where the population of students with disabilities is very small). However, because of our large sample size, we were able to control for varying rates of participation and verify that the percentage of students with disabilities participating in a specific assessment did not, in any case, predict level of proficiency for that subgroup of students.

The finding in the study reported here that schools appear to make a difference confirms one of the underlying assumptions of the new accountability system as formalized through the NCLBA; that is, student performance is cumulative and is influenced by the entire school (Goertz, 2001). Focusing accountability solely on individual children's performance can end up "blaming the victim" for failure as opposed to recognizing the responsibility and impact of all the faculty and staff in a school. Instead, educational results are "co-produced" (Goertz, 2001, p. 43) by students and teachers. Our findings support this concept, as they make evident the complex mix of factors that must be considered as states and school districts endeavor to improve the results for students with disabilities.

Limitations

We readily acknowledge some potentially significant limitations of this research. First, we used publicly reported school-level data. Through contact with state and LEA administrators, we made every effort to identify errors and to explain any anomalies in the data (e.g., exceptionally large numbers of specific groups of children, large fluctuations in participation rates or demographic characteristics from one year to the next). However, we did not collect the data at the school level.

In addition, any time performance on statewide assessments is used as a criterion variable in large-scale analyses, a number of issues related to reporting of performance scores must be considered. For example, in many schools throughout the country, the actual number of students with disabilities in a given grade level is so small that performance scores are either not reported or must be treated with skepticism because of the variability inherent in the performance of small numbers of students. This is especially important when changes in performance trends are of interest, as changes that appear to be trends may be natural but misleading fluctuations in the data. In the case of the results presented here, the issue of low *n*s is not a pressing one, as the schools in our sample had fairly large enrollments of students with disabilities in the data collection years. For example, in the 1999–2000 school year, the mean enrollment for students with disabilities in the sample elementary schools was 14 for third grade and 18 for fifth grade, with a mode of 12 in both third and fifth grade. No school had fewer than 6 students with disabilities in a testing grade in either data collection year.

Another difficulty inherent in examining factors related to the performance of students with disabilities is the changing policy environment. In Maryland, for example, a new statewide assessment was adopted after the collection of the data presented here. The assessments included new accommodation requirements. Also, at the time of the study, the mandate for fully including 95% of students with disabilities in the assessment was not in force, nor was there a requirement to include scores from alternate assessments in accountability. Finally, we do not know why certain students' scores were not reported. For example, we do not know whether these scores were possibly invalidated because of the use of nonstandard accommodations. As all states are examining and altering assessment and accountability policies, for example, by changing the criteria for inclusion in alternate assessments and changing accommodations policies, what is referred to and reported as "performance" continues to be in flux.

AUTHORS' NOTE

1. This manuscript was produced under Cooperative Agreement H324P000004 from the Office of Special Education Programs, U.S. Department of Education. The views presented herein do not necessarily represent those of the U.S. Department of Education.

REFERENCES

Alspaugh, J. W., & Gao, R. (2003). *School size as a factor in elementary school achievement.* Columbia: University of Missouri. (ERIC Document Reproduction Service No. ED475062)

Borland, M. V., & Howsen, R. M. (2003). An examination of the effect of elementary school size on student academic achievement. *International Review of Education, 49,* 463–474.

Caldas, S. J., & Bankston, C., III. (1997). Effects of school population so-

cioeconomic status on individual academic achievement. *The Journal of Educational Research, 90,* 269–277.

Darling-Hammond, L. (1997). *Doing what matters most: Investing in quality teaching.* New York: National Commission on Teaching and America's Future.

Driscoll, D., Halcoussis, D., & Svorny, S. (2003). School district size and student performance. *Economics of Education Review, 22,* 193–201.

Elliott, J. L., Erickson, R., Thurlow, M., & Shriner, J. (2000). State-level accountability for the performance of students with disabilities: Five years of change? *The Journal of Special Education, 34,* 39–47.

Goertz, M. E. (2001). Standards-based accountability: Horse trade or horse whip? In S. Fuhrman (Ed.), *From the capitol to the classroom: Standards-based reform in the states* (One hundredth yearbook of the National Society of the Study of Education, pp. 39–59). Chicago: University of Chicago Press.

Goldring, E. B., & Shapira, R. (1996). Principals' survival with parental involvement. *School Effectiveness and School Improvement, 7,* 342–360.

Ho, S., & Willms, J. D. (1996). Effects of parental involvement on eighth-grade achievement. *Sociology of Education, 69,* 126–141.

Ma, X., & Klinger, D. A. (2000). Hierarchical linear modeling of student and school effects on academic achievement. *Canadian Journal of Education, 25*(1), 41–55.

McLaughlin, M. J., & Thurlow, M. (2003). Educational accountability and students with disabilities: Issues and challanges. *Educational Policy, 17,* 431–451.

Namboodiri, K., Corwin, R. G., & Dorsten, L. E. (1993). Analyzing distributions in school effects research: An empirical illustration. *Sociology of Education, 66,* 278–294.

The No Child Left Behind Act. (2001). Pub. L. No. 107-110, 115 Stat. 1425 (2002).

Quality counts: Special education in an era of standards. (2004, January 8). *Education Week, 23*(17).

Skrla, L., Scheurich, J. J., Johnson, J. F., & Koschoreck, J. W. (2001). Accountability for equity: Can state policy leverage social justice? *International Journal of Leadership in Education, 4,* 237–260.

Thurlow, M., Lazarus, S., Thompson, S., & Robey, J. (2002). *2001 state policies on assessment participation and accommodations* (Synthesis Report 46). Minneapolis: University of Minnesota, National Center on Educational Outcomes.

U.S. Department of Education. (2002). *Twenty-fourth annual report to Congress on the implementation of the Individuals with Disabilities Education Act*. Washington, DC: U.S. Government Printing Office.