The Ameliorating Effects of High Socioeconomic Status: A Secondary Analysis

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Abstract

A secondary analysis of previously published data shows that high-socioeconomic status (SES) English language learners (ELLs) outperform low-SES fluent English speakers on tests of math, and they do about as well on tests of reading. Thus, for ELLs, SES can offset the effects of language proficiency on standardized tests of math and reading. This result suggests that we can improve the performance of all ELLs by providing aspects of high SES known to impact school performance. This can be done by improving the print environment and providing bilingual education.

Introduction

It is well established that, in general, students with high socioeconomic status (SES) outperform low-SES students in school (White, 1982; Lytton & Pyryt, 1998; MacSwan, 2000) and that fluent English proficient (FEP) students outperform English language learners (ELLs) (Abedi, 2004). We have noticed an interesting phenomenon in several very different sets of data: In each case, high-SES children classified as ELLs do nearly as well on measures of math and reading as low-SES children classified as FEP students, and in some cases they actually do better. These results suggest that high SES offsets ELL status and that "English fluency" does not guarantee successful performance on standardized tests. We present here the relevant details of each of the studies, then discuss the practical and theoretical implications of these findings.

The Data

Brown (2001)

Our original observation was from the dissertation research of C. L. Brown (2001). Brown's goal was to examine the contribution of language proficiency to the performance of third graders on the mathematics portion of the Maryland School Performance Assessment Program (MSPAP), which appeared to require substantial competence in written English. Brown's subjects were selected from 65,536 third graders in Maryland who were not receiving special education services and had complete test scores for the reading, writing, language usage, and math sections of the MSPAP. In addition, subjects were further categorized by free and reduced meals (FARMs) status and language proficiency. ELLs were identified by the school districts as receiving English as a Second Language services.

The data produced the expected advantage of high-SES students (those not receiving FARMs) outperforming low-SES students and FEP students outperforming ELLs, but we were surprised to discover that high-SES ELLs outperformed low-SES FEP students, as shown in Table 1. Even more surprising was the finding that high-SES ELLs outperformed low-SES FEP students on reading comprehension, although the difference between the two groups was not as large as it was for math.[1]

Table 1

Comparison of High-Socioeconomic Status (SES) English Language Learners (ELLs) and Low-SES Fluent English Proficient (FEP) Students: Grade 3

Subject	High-SES ELLs		Low-SES FEPs		Effect size
	M	*SD*	*M*	*SD*	
Math	517.29	44.82	496.27	43.8	0.47
Reading	514.85	42.52	504.1	41.78	0.26

Note. Data from Brown (2001). Effect size = (mean of high-SES ELLs – mean of low-SES FEP students) / pooled SD. A positive effect size indicates that high-SES ELLs performed better. For high-SES ELLs, $n = 232$; for low-SES FEP students, $n = 260$.

This remarkable demonstration of the power of SES led to the examination of other studies that included SES but were not intended to specifically compare high-SES ELLs and low-SES FEP students. Our study is thus a secondary analysis, an examination of previously published data intended to test a new hypothesis: SES can offset the effects of language proficiency on performance on tests of reading and math.

Including Brown's (2001) research, we were able to find a total of five studies in which English-language status and SES were considered as factors of test performance (Cobo-Lewis, Pearson, Eilers, & Umbel, 2002; Abedi, 2003; So & Chan, 1983; Cummins, 1984, Chapter 5). Two studies were excluded from the analysis because it was not clear that the language-minority students in the study were in fact limited in English proficiency. One group in So and Chan's research was categorized as "other language dominant bilingual" because these students reported using a language other than English at home as well as outside the home. In Cummins's study, information is provided only on whether English was the student's first language. We cannot, of course, assume their limited English proficient status based only on this information; many of those who speak other languages or whose first language is not English are very proficient in English and are often English dominant. In fact, children of immigrants who were born in the United States, even if they speak the heritage language, often become English dominant in a short time (Portes & Rumbaut, 2001). The analysis was thus based on the work of Brown, Cobo-Lewis et al., and Abedi (2003). Having presented the relevant details of Brown's research above, we present our secondary analysis of the other two studies below.

Cobo-Lewis, Pearson, Eilers, & Umbel (2002)

Cobo-Lewis et al. (2002) reported on the impact of bilingual education on Spanish-speaking children born in the United States, in the Miami area. Their study included a comparison group of FEP children who were not enrolled in bilingual programs and also controlled for SES (represented by parental education). Regarding the groups that concern us in this analysis, the fathers of low-SES FEP children reported an average of 12 years of education, and the fathers of high-SES ELLs reported 2 to 3 years more. Schools doing bilingual education and schools doing immersion were matched for percentage of children with limited English proficiency, classroom size, teacher experience, ethnic mix, and schoolwide achievement scores (additional details on SES and other variables can be found in Oller & Eilers, 2003, a collection of studies, including Cobo-Lewis et.al., dealing with different aspects of the Miami bilingual education study).

Table 2, from Cobo-Lewis et al. (2002), compares two groups of high-SES ELLs (one group in a bilingual program, the other in an English-immersion program) with low-SES FEP students at three grade levels on tests of English

Table 2

Comparison of High-Socioeconomic Status (SES) English Language Learners (ELLs) and Low-SES Fluent English Proficient (FEP) Students: Kindergarten, Grade 2, and Grade 5

	ELLs in bilingual education		**ELLs in English immersion**		**All FEPs**		**ELLs in bilingual education vs. FEPs**	**ELLs in English immersion vs. FEPs**
	M	*SD*	*M*	*SD*	*M*	*SD*	Effect size	Effect size
Vocabulary								
Kindergarten	68	17	74	21	86	18	-1.02	-0.62
Grade 2	82	18	81	15	95	13	-0.87	-1.01
Grade 5	89	9	88	17	90	12	-0.09	-0.14
Reading								
Kindergarten	100	13	100	13	95	12	0.4	0.4
Grade 2	103	14	102	10	103	17	0	-0.07
Grade 5	98	9	101	13	101	9	-0.33	0

Note. From Cobo-Lewis, Pearson, Eilers, & Umbel (2002), Table 4.2. Effect size = (mean of bilingual education students – mean of FEP students) / pooled SD and (mean of students in English immersion – mean of FEP students) / pooled SD. Positive effect sizes indicate that ELLs performed better; negative effect sizes indicate better performance by FEP students. In bilingual education, $n = 29$ (kindergarten); 24 (Grade 2); 29 (Grade 5); in English immersion, $n = 28$ (kindergarten); 30 (Grade 2); 28 (Grade 5) for FEP students, $n = 38$ (kindergarten); 47 (Grade 2); 37 (Grade 5).

vocabulary (Peabody Picture Vocabulary Test) and English reading comprehension (Woodcock Passage Comprehension Test). Children were selected from 10 elementary schools, matched for demographic variables. The ELL group consisted of Spanish-speaking students who reported that they came from a home in which only Spanish was spoken. For vocabulary, low-SES FEP students were well ahead of the ELLs in kindergarten and Grade 2, but the groups were very similar at Grade 5. In reading comprehension, the ELLs actually did better in kindergarten and remained close to the FEP students at other grade levels. (Note that on the test of reading comprehension, low-SES FEP students outperformed high-SES ELLs enrolled in bilingual education.

The effect size was, however, a modest -0.33 and is exaggerated by the somewhat smaller standard deviation for these groups as compared to others in this study. There was, in addition, no difference between low-SES FEP children and high-SES ELLs in English immersion.)

Abedi (2003)

Abedi (2003) examined the test scores of all Grade 9 students in an entire state who took the Stanford Achievement Test, Ninth Edition (SAT–9), for math and English reading (Abedi does not mention which state it was).

Table 3 compares high-SES ELLs with low-SES FEP students. Abedi (2003) used two measures of SES: FARMs status and parental education. In Table 3, we defined high SES as not being eligible for FARMs and having parents with the highest level of education: those with graduate school experience. We defined low SES as eligibility for FARMs and having parents who did not graduate from high school. Thus, we deliberately chose extreme groups, more

Table 3

Comparison of SAT–9 Scores for High-Socioeconomic Status (SES) English Language Learners (ELLs) and Low-SES fluent English Proficient (FEP) Students: Grade 9

Subject	ELLs		FEPs		Effect size
	M	*SD*	*M*	*SD*	
Reading	31.16	12.4	34.73	14.55	-0.25
Math	49.59	21.77	43.97	15.58	0.38

Note. Data from Abedi (2003). Effect size = (mean of high-SES ELLs – mean of low-SES FEP students) / pooled SD. Positive effect sizes indicate that ELLs performed better; negative effect sizes indicate better performance by FEP students. For high-SES ELLs, reading n = 958 and math n = 988; for low-SES FEP students, reading n = 9,909 and math n = 10,110.

distinct than the groups compared in Cobo-Lewis et al. (2002). High-SES ELLs outperformed low-SES FEP students in math, as was the case in Brown's (2001) data (in which $d = 0.47$), but FEP students did somewhat better in English reading, although their advantage was small ($d = -0.26$ in Brown).

Summary

In all three studies, high-SES ELLs did well. In mathematics, they outperformed low-SES FEP students in both Brown's (2001) and Abedi's (2003) studies. In reading comprehension, considered the most demanding of literacy tests, ELLs performed better in some cases (Brown; Cobo-Lewis et al., 2002, kindergarten), equal in other cases, and slightly worse in others (Abedi, 2003).

The impact of SES can be demonstrated statistically by comparing the effect sizes for the high-SES ELL–low-SES FEP comparisons with the effect sizes resulting from comparing ELL and FEP students, regardless of SES.

Overall, for tests of reading, the mean effect size for ELL–FEP comparisons, regardless of SES (the third column in Table 4), was -0.665, while the mean effect size for high-SES ELLs versus low-SES FEP students (Column 4 in Table 4) was 0.052, suggesting that on the average, SES levels the playing field, offsetting the effect of language.

For each comparison, the effect size for high-SES ELLs versus low-SES FEP students is larger than the overall ELL–FEP effect size (for all studies and all measures, $t = 5.328$, $df = 9$; $p = .0007$; for reading only, $t = 4.12$, $df = 8$; $p = .006$, paired t tests).[2] In other words, the advantage of FEP students over ELLs is reduced in all cases.

Another way of showing the effect of SES is to show the difference between the effect size for the high-SES ELLs versus low-SES FEP students and the overall ELL–FEP effect size. Table 4 includes this comparison in the fifth column. For example, in the Brown (2001) study, FEP students as a group scored about a half of a standard deviation higher than ELLs in reading ($d = -0.39$; the minus sign indicates that the FEP students performed better). But when we compare high-SES ELLs to low-SES FEP students, the ELLs do better, scoring about a quarter of a standard deviation higher ($d = 0.26$). Thus, the SES factor changes the effect size nearly two thirds of a standard deviation ($0.26 - (-0.39) = 0.65$).

Inspection of Column 5 in Table 4 confirms that SES offsets the effect of language in all studies. There is surprisingly little variation in the effect sizes in Column 3: The range for reading comprehension is from 0.44 to 0.96, and for math the effect is nearly the same in both studies.[3] The effect of SES was larger for math than for reading, but the difference did not reach accepted levels of statistical significance ($t = 1.64$, $df = 7$, $p = .15$).

Table 4

Summary of Studies of English Language Learners (ELLs) and Fluent English Proficient (FEP) Students

Subject	Study		Effect size		
Reading			**All ELLs vs. all FEPs**	**High-socio-economic status (SES) ELLs vs. low-SES FEPs**	**Difference (impact of SES)**
	Brown (2001)		-0.39	0.26	0.65
	Cobo-Lewis et al. (2002)				
	Kinder-garten	Bilingual education ELLs vs. FEPs	-0.18	0.4	0.58
		English-immersion ELLs vs. FEPs	-0.04	0.4	0.44
	Grade 2	Bilingual education ELLs vs. FEPs	-.082	0	0.82
		English-immersion ELLs vs. FEPs	-1.03	-0.07	0.96
	Grade 5	Bilingual education ELLs vs. FEPs	-1.0	-0.33	0.67
		English-immersion ELLs vs. FEPs	-0.66	0	0.66
		Abedi (2003)	-1.2	-0.25	0.95
Math		Brown (2001)	-0.53	0.47	1.0
		Abedi (2003)	-0.79	0.38	1.17

Note. Positive effect sizes indicate that ELLs performed better; negative effect sizes indicate better performance by FEP students. Sample size for all ELLs and all FEP students: Brown, ELLs = 492; FEP students = 492; Cobo-Lewis et. al, K, ELLs = 131, FEP students = 81; Grade 2, ELLs = 177, FEP students = 79; Grade 5, ELLs = 123, FEP students = 88; Abedi, reading: ELLs = 42,844; FEP students = 205,318; Abedi, math: ELLs = 44,284; FEP students = 206,988.

These consistent results were obtained despite the fact that slightly different measures of SES were used in different studies. Although different measures of SES are usually correlated with each other, they also make independent contributions to school achievement and have different effects at different ages. For example, both poverty and parental education are strong predictors of achievement in the early years of schooling (Hill & O'Neill, 1994), but poverty appears to have its greatest impact on school performance when measured in the early years (Duncan & Brooks-Gunn, 2001), which is consistent with our examination of Brown's (2001) results for third graders. Parental education continues to have a strong influence when measured in students' high school years (Peters & Mullis, 1997), consistent with our re-analysis of Abedi's (2003) results.

Discussion

The English-First Myth

There is a commonsense idea that language-minority children simply need to first learn English; then they will do well in school. This was, in fact, the logic behind initiatives such as California's Proposition 227, which called for an intensive English experience before children studied academics. Our results, however, show that this is a myth, that English fluency—even if it could be developed with an intensive course focusing only on English—is no guarantee of school success. Low-SES FEP students (the great majority of whom are undoubtedly monolingual English speakers) score, on the average, the same as high-SES ELLs in English reading. Interestingly, this means that these "fluent English proficient" children, as a group, do not do well enough on tests of English reading to be classified as FEP. It is, of course, possible that the higher scoring ELL students in these studies were not really ELLs, that is, they were misclassified. This is possible but highly unlikely: Although information on classification criteria for ELL status were not available, the same relationship was found in three independent studies, and in all cases the higher performing ELLs were of high SES.

Why Does High SES Have Such a Payoff?

High SES has obvious advantages that apply to language-majority as well as language-minority students, such as material advantages, and differences in school quality and orientation (Anyon, 1980). We focus here on those aspects of SES that are of particular relevance to language-minority children.

First, children who come to the United States with a high-SES background have typically had age-appropriate education in their primary language, which

includes prior knowledge that can contribute to academic learning in a second language. Abedi's (2003) study, which deals with Grade 9 students, confirmed the importance of age-appropriate education in the primary language.

Second, higher SES often means having caregivers who are more educated and who are thus better prepared to help with schoolwork (which often occurs in the primary language, as we discuss below).

Third, higher SES means living in a richer print environment, with more books in the home (Feitelson & Goldstein, 1986), and more access to books in the neighborhood (Neuman & Celano, 2001). More access to books means more reading (Krashen, 1993), and more reading means better literacy development. More reading also means more knowledge: knowledge of the world as well as specific subject-matter knowledge (Krashen, 2003).

For high-SES ELLs, parental help with schoolwork and recreational reading in the country of origin typically take place in the first language. These experiences in the first language provide the same kind of benefits as bilingual education does: providing background knowledge and literacy development (Krashen, 1996). Bilingual education thus might be of great help to ELLs who lack this background by providing these experiences through the first language in the form of subject-matter teaching and literacy development in the first language.

Some evidence supporting this interpretation comes from Cobo-Lewis et al. (2002). Recall that in their study the effect of high SES emerged very early for ELL students on the test of reading comprehension, but it did not emerge for vocabulary until Grade 5 (see Table 2). This finding is consistent with the view that high-SES ELLs have had more experience in reading in their primary language; the contribution that first-language reading ability makes to second-language reading is more obvious on a test of reading, rather than on a test of vocabulary in isolation: A good reader in the first language can apply effective reading strategies and superior background information to a difficult text in a second language, but knowledge of individual vocabulary items emerges as a result of actual experience with the second language.

We would expect that the advantage for high-SES ELLs emerges as soon as a minimum threshold of English competence has been attained. In fact, as noted in the previous paragraph, in the Cobo-Lewis et al. (2002) data this threshold appeared to be present in kindergarten. Eventually, we would expect high-SES ELLs to match overall FEP students' means and even high-SES FEP students' means as they acquire more English and become FEP themselves. If this analysis is correct, it is good news. It suggests that SES per se is not a cause of poor academic performance. Rather, factors typically associated with SES are causative of lower school performance among low-SES students. The presence of reading materials, for example, is associated with higher SES, but reading materials contribute to literacy development regardless of the SES of

the reader. Even when SES is controlled, the relationship between access to reading and reading achievement remains positive (McQuillan, 1998; Peters & Mullis, 1997), as does the relationship between being read to and performance on tests of reading, math (Denton & West, 2002), and vocabulary (Hill & O'Neill, 1994).

Many of the factors associated with poverty are beyond our immediate control (e.g., diet, housing, low parental education), but if the analysis presented in this paper is correct, it suggests that schools can do something to level the playing field. We can improve the achievement of all students by providing a print-rich environment in school. Unfortunately, this obvious step has not been taken; those who live in low-SES neighborhoods tend to attend schools with inferior school libraries (Neuman & Celano, 2001). We can also provide education in the primary language to supply literacy and background knowledge, a suggestion that has been opposed despite consistent supporting evidence for its efficacy (Krashen, 1996). These efforts may not overcome all the ill effects of poverty, but they will help a great deal.

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Endnotes

[1] We include calculations of effect sizes *(d)* whenever possible. Effect sizes measure how much groups actually differ on a given variable, and are usually calculated by subtracting the mean of the comparison group from the mean of the experimental group and dividing this by the pooled standard deviation (Wolf, 1986). In current practice, an effect size of $d = 0.2$ is considered a small effect, $d = 0.5$ a medium effect, and $d = 0.8$ a large effect.

[2] Note, however, that the assumption of independent observations is violated in these calculations, as the same comparison group was used in different comparisons in Cobo-Lewis et al. (2002). Using only the immersion or bilingual education ELLs, however, does not significantly alter the results. In addition, no attempt was made to adjust means for sample size.

[3] The set of effect sizes for reading comes very close to meeting the criteria for homogeneity (chi square = 17.32, $.01 < p < .05$) (see Wolf, 1986, controlling for sample size). This is remarkable, considering the different measures used.