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English Learners who Take the ACT with Testing Supports: An Examination of Performance, Demographics, and Contextual Factors

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Abstract

This study examined the performance of English learners (ELs) taking the ACT® test with testing supports, as compared to ELs and non-ELs taking the ACT without supports or accommodations. Contextual factors were also explored, including high school experiences and demographic characteristics such as low-income and first-generation college student status that may be associated with their scores. Results indicate that ELs tended to score substantially lower than non-ELs, and ELs who tested with supports tended to score lower than ELs who tested without supports. ELs in both groups, particularly those testing with supports, tended to take fewer core academic courses, fewer honors or AP courses, and had lower high school grades than non-ELs. ELs in both groups, particularly those testing with supports, were also more likely to be non-White, low income, and/or first-generation college students. Regression analyses found that demographic and contextual factors, along with limited English proficiency, played a substantial role in predicting the performance of ELs taking the ACT, both those testing with and without supports. It is important that ELs are provided with a rigorous education that includes instruction in both English language and core academic content to ensure that they have equitable opportunities and experiences as compared to their English proficient peers.

Keywords: English learners, accommodations, testing supports, standardized testing, college admissions testing

Introduction

Approximately five million students in the US are identified as English learners (ELs), and the percentage of ELs has increased in recent years from 8.1% in 2000 to 10.1% in 2017 (NCES, 2020). ELs are a diverse group of students, differing with respect to their native language, age or grade level at which they entered the US, levels of proficiency in their native language and in English, years of instruction and academic content learned in their native language and in English, and many other characteristics. English proficiency is also a moving target, such that students should be improving and eventually become English proficient, assuming that they are receiving appropriate instruction. These factors all contribute to difficulties in studying or making generalized conclusions about ELs as they are an immensely heterogeneous population.

ELs may receive various levels of modified instruction in which they are removed from mainstream classrooms for English instruction or are placed into less rigorous academic courses, limiting their opportunity to learn challenging content relative to their English-proficient peers (Callahan, 2005). ELs tend to be exposed to fewer core academic courses in high school, graduate at lower rates, and enroll in college at lower rates than their English-proficient peers (Callahan & Shifrer, 2016; Johnson, 2019; Sugarman, 2019). ELs also tend to perform at a much lower level on standardized tests, in part due to lower proficiency in English, which can impact their ability to demonstrate their true achievement level (Abedi, 2002; Sugarman, 2019). It is difficult to determine how much of ELs' lower performance is due to language difficulties and how much may be due to lower levels of academic proficiency, but it is likely that both are contributing factors (Callahan, 2005).

Historically, ELs were routinely excluded from standardized testing (Abedi, 2014; Heilig & Darling-Hammond, 2008) and from samples used to create norms for standardized tests (Abedi, 2002). However, beginning with the No Child Left Behind Act (NCLB; Public Law PL 107-110, the No Child Left Behind Act of 2001), the US Department of Education began requiring that ELs be included in standardized testing and that their performance be reported as a disaggregated subgroup, bringing attention to their lower performance and substantial achievement gaps compared to their English-proficient peers. Further, the reauthorization of NCLB as the Every Student Succeeds Act (ESSA) allows districts to use a "nationally recognized high school academic assessment" such as the ACT or SAT in lieu of a state assessment for accountability, requiring that English learners have an opportunity to participate in and benefit from the assessment (US Department of Education, 2016).

The ACT is a college readiness assessment used primarily for college admissions, course placement, scholarship eligibility, statewide assessment and accountability,

and to provide information to students about their relative strengths and areas for improvement (ACT, 2020). The ACT is comprised of four multiple-choice section tests: English, math, reading, and science, with an optional writing test. The four section tests are scaled from 1–36, and a Composite score, based on the average of the four section tests, is also reported on a 1–36 scale. Based on a national sample of data from 2018–2020 high school graduates, average ACT scores were 20.7 for the Composite, 20.1 in English, 20.4 in math, 21.2 in reading, and 20.6 in science (ACT, 2021).

Most students in the US take the ACT as part of either National or State and District testing. National testing refers to the traditional testing model in which students register to take the ACT at a test center and typically test on a Saturday. State and District testing refers to a testing model in which school districts or states provide in-school ACT testing, typically to all students in 11th grade in that state or district (ACT, 2019a). Because students choose to test on a national test date, these students are more likely to be higher achieving, college-bound students, whereas students testing as part of State and District testing include some students who otherwise would not have taken the ACT. As a result, average ACT scores for State and District testing tend to be slightly lower than average scores for National testing (Allen, 2015).

In the fall of 2017, ACT began providing testing supports (or accommodations) to eligible ELs in the US taking the ACT, including translated test instructions, word-to-word bilingual dictionaries (with no definitions), small group testing, and extra time. The goal of these supports is to remove construct-irrelevant variance and allow students with limited English proficiency to more accurately demonstrate their true achievement level. Students can request the supports when they register to take the ACT. ELs are eligible for testing supports if they attend school in the United States, US territories, or Puerto Rico and meet the criteria outlined in ESSA for being an EL, including limited English proficiency and receiving EL services in school. Once the request is made, students work with school officials to provide relevant documentation to establish their EL status and ensure that they meet the requirements for use of the supports. ACT reviews the request and decides whether the supports are approved for use when the students take the test. It is unknown what motivates some EL students to request the supports or why some EL students do not take advantage of that opportunity.

The purpose of this study is to examine the performance of ELs taking the ACT with testing supports as compared to ELs and non-ELs testing without supports and to gain a deeper understanding of the demographic and contextual factors that may influence their scores. Relationships between ACT scores and high school grades are also of interest since both are measures of academic performance, and it is expected that students with higher grades will earn higher ACT scores.

ELs face many barriers in addition to the challenges of learning both English and academic content, and it is important that they receive appropriate instruction and support in school so that they can become English proficient and become college and career ready by the time they graduate high school. A study of ELs in 1st through 9th grade found that it typically takes four to seven years for ELs to attain academic English proficiency (Hakuta, Butler, & Witt, 2000), which has implications for whether an EL has sufficient time to become English proficient by graduation, depending on their level of English proficiency when they enter high school. Most students take the ACT in 11th or 12th grade, at which point they are typically taking coursework that requires advanced subject-specific academic vocabulary. If ELs do not have sufficient academic English proficiency, they may struggle to learn academic content despite being exposed to it in the classroom (Herman & Abedi, 2004).

Research Questions

1. How does the performance of ELs testing with or without supports on the ACT compare to the performance of non-ELs?

2. How do ACT-tested ELs testing with or without supports compare demographically to ACT-tested non-ELs?

3. How do high school experiences of ACT-tested ELs testing with or without supports compare to non-ELs?

4. What is the relationship between high school grade point average (HSGPA) and ACT performance for ACT-tested ELs testing with or without supports compared to ACT-tested non-ELs?

5. How much do demographics, HSGPA, and high school experiences account for differences in the average ACT scores of ELs testing with or without supports relative to non-ELs?

Sample

The sample for this study includes students who took the ACT between September 2017 (when ACT first began offering supports to ELs) and July 2019 and received college-reportable scores.[1] Students' ACT test records were matched to ACT's Test Accessibility and Accommodations (TAA) System using student name, date of birth, ACT ID, and residential address. Students were identified as EL if they (a) indicated during test registration that they currently receive EL services at school, and/or (b) were found to have received EL testing supports in the TAA system.

Students were removed from the study sample if they did not test in the US, US territories, or Puerto Rico (2% of the sample); if they did not complete the full test and

receive a Composite score (less than 1%); or if they tested as part of State and District testing for which there were contract or state law restrictions on data use (15%). Students were also removed from the study sample if their accommodations were due to disabilities instead of or in addition to testing supports due to EL status (4%) or if EL status could not be determined because the student did not indicate their EL status when registering for the ACT (18%).[2]

For students who took the ACT more than once within the testing window and met the inclusion criteria (51% of the study sample), their first test event was retained to minimize the influence of practice effects. Students whose first test event was prior to the testing window (25%) were also removed from the sample to minimize practice effects. Table 1 contains the distribution of test groups in the study sample. Test group was defined as "EL with Supports" for students who had been approved to take the ACT with one or more testing supports for ELs, "EL, No Supports" for students who reported that they received EL services in school at the time they registered to take the ACT but did not receive testing supports or accommodations, and "Non-EL, No Supports" for students who reported that they did not receive EL services in school at the time they registered and did not receive testing supports or accommodations.

Table 1. Counts and Percentages of Students in Each Test Group

Test Group	Count	Percent
EL with Supports	15,137	0.7
EL, No Supports	214,252	9.5
Non-EL, No Supports	2,022,714	89.8
Total	2,252,103	100.0

Methods

Descriptive analyses including means and percentages were conducted to understand the characteristics of the sample (Research Questions 1–3). Correlation analyses were conducted to evaluate the relationship between HSGPA and ACT performance for each subject area and the Composite score (Research Question 4). A series of regression analyses were conducted to evaluate relationships amongst demographics, HSGPA, high school experiences, and ACT performance (Research Question 5). A separate set of models were estimated for each subject area and the Composite score. For each set of models, the first model only included test group, a second model added demographics, a third model added high school experiences and aspirations, and a fourth model added HSGPA. Several approaches were considered to account for missing data and ensure robustness of the results, including complete cases and multiple imputation.

Analyses were not disaggregated by specific test supports due to the majority of ELs testing with more than one support. Most ELs who tested with supports were approved for two or more supports (88%), and more than half (62%) were approved for three or four supports. The most common support was extra time; 99% of ELs who tested with supports were approved for extra time, and 80% of students were approved to use a word to word bilingual dictionary. Additional details about the numbers of supports and types of supports are presented in the Appendix, Table A1.

Results

Research Question 1: How does the performance of ELs testing with or without supports on the ACT compare to the performance of non-ELs?

Table 2 contains average ACT scores by test group. ELs who tested with supports had the lowest performance, and non-ELs who tested without supports had the highest performance. ELs who tested without supports likely had higher levels of English proficiency than those who tested with supports; while the ACT English test was not explicitly designed as an English language proficiency test, the lower English scores of ELs who tested with supports provides evidence that this is the case. Both EL test groups tended to have higher scores in math and science relative to English and reading, whereas non-ELs tended to have higher scores in reading. This is consistent with the literature (Abedi, 2001; Abedi, Leon, & Mirocha, 2003). Note that the scores cannot be directly compared across subject areas (i.e., a 15 in math and a 16 in reading does not mean that the student is demonstrating greater proficiency in reading compared to math), but we can compare relative performance across the test groups to understand their relative academic strengths and challenges. Differences in scores of ELs who tested with supports compared to non-ELs were largest in English (8.6) and reading (8.1) and smallest in math (5.3). Comparisons between ELs who tested without supports and non-ELs showed a similar pattern, but differences were smaller in magnitude. ELs who tested with supports also had lower standard deviations of scores, followed by ELs who tested without supports; non-ELs had the highest standard deviations of scores.

Table 2. Average ACT Scores and Standard Deviations (SD) by Test Group

	EL with Supports		EL, No Supports		Non-EL, No Supports	
Subject Area	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
English	12.4	3.6	16.1	5.4	21.0	6.5
Math	15.8	3.6	17.7	4.3	21.1	5.4
Reading	14.3	4.0	17.5	5.4	22.3	6.4
Science	15.0	3.9	17.8	4.6	21.5	5.3
Composite	14.5	3.1	17.4	4.4	21.6	5.3

To obtain a more complete representation of how students were performing beyond simple means and standard deviations, Figure 1 contains the distributions of ACT Composite scores by test group. Score distributions of ELs who tested with supports were highly skewed[3] ($\tilde{\mu}_3$ = 2.2) and centered around 12–14; score distributions of ELs who tested without supports were less skewed ($\tilde{\mu}_3$ = 1.0) and centered around 14–16. Score distributions for non-ELs were more symmetrically distributed ($\tilde{\mu}_3$ = 0.4) and centered around 19-21.

Figure 1. Distribution of ACT Composite Scores by Test Group

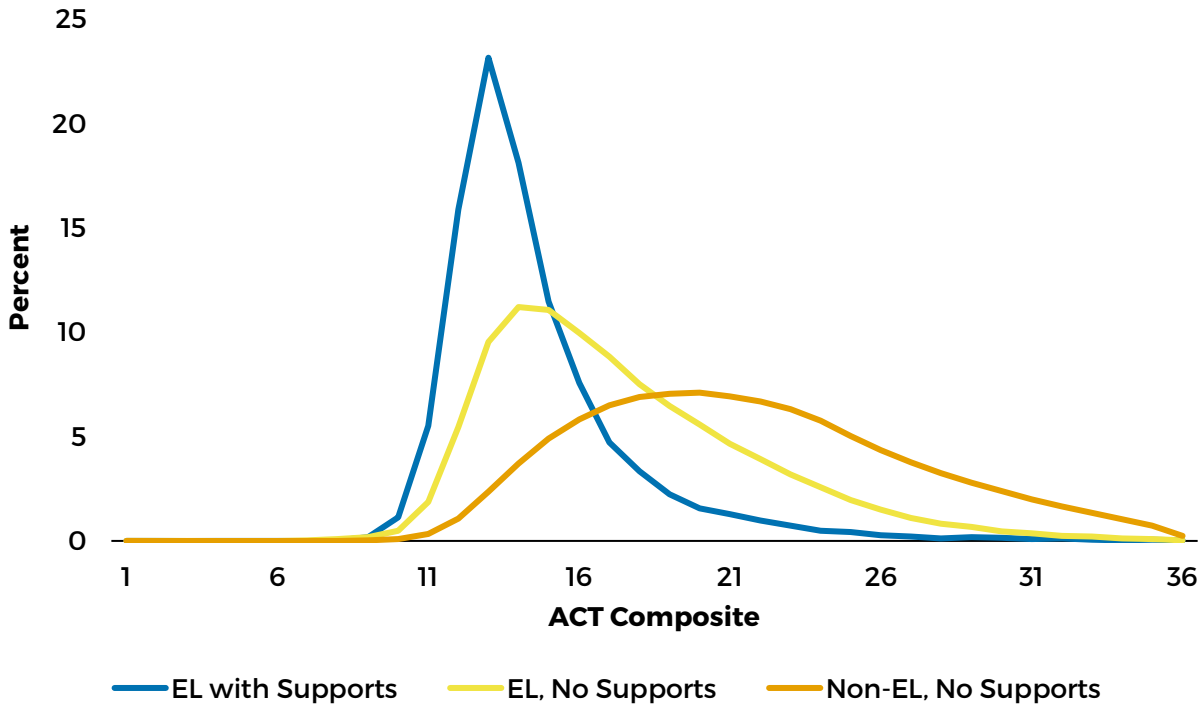


Table 3 contains the percentages of students meeting each of the ACT College and Career Readiness Benchmarks by test group. The Benchmarks are the scores at which a student has a 50% chance of earning a B or higher in a first-year, credit-bearing course at a typical college. As would be expected given the average ACT scores of each group (Table 2), ELs who tested with supports were much less likely to meet the Benchmark for each subject, followed by ELs without supports, then the Non-EL group. Across groups, the English Benchmark was the most likely to be met, and the Science Benchmark was the least likely to be met, which is consistent with previous research of national samples of ACT-tested high school graduates (ACT, 2019b).

Table 3. Percent of Students Meeting ACT Benchmarks by Test Group

Subject Area	ACT Benchmark	EL with Supports	EL, No Supports	Non-EL, No Supports
English	18	8	34	67
Math	22	7	19	44
Reading	22	6	21	52
Science	23	5	15	41

Research Question 2: How do ACT-tested ELs testing with or without supports compare demographically to ACT-tested non-ELs?

When students register to take the ACT, they are asked to provide information about themselves on a variety of topics, including race/ethnicity, gender, parent education and income, educational plans and aspirations, high school experiences and accomplishments, and high school coursework (courses taken, courses planned, and grades earned in courses taken).

Table 4 contains the percentages of students who did not provide information for the categories of registration information that are of interest in this paper, by test group. ELs who tested with supports were much less likely to have completed the registration information; this is important to keep in mind when interpreting the findings of this report as the students who completed the registration information may have systematically differed from those who did not complete the information.[4] Note that some questions also allowed for "I prefer not to respond" options; the percentages presented in Table 4 only include students who did not respond to the item(s) at all.

Table 4. Percentages of Missing Registration Category Responses by Test Group

Registration Category	EL with Supports	EL, No Supports	Non-EL, No Supports
Race/Ethnicity	10	2	1
Parent Income	67	22	23
Parent Education	56	8	7
Coursework/Grades	55	15	14
Semesters of Coursework	30	2	1
Honors/AP	79	40	32
Extracurricular Activities	72	22	18
Degree Aspirations	56	8	6

Table 5 contains testing and demographic information by test group. The percentages of students testing during National or State and District testing, by test group, help contextualize the findings in this report. ELs who tested with supports were more likely to have tested during State and District testing (54% State and District vs. 46% National) whereas non-ELs were much more likely to have tested during National testing (83% National vs. 17% State and District). This is due in part to how the test groups were defined. Students were more likely to provide a response to the EL status question when testing as part of National testing (91%) than as part of State and District testing (49%), meaning that more students who tested as part of State and District testing were removed from the study sample because their EL status could not be determined. It is also likely that more ELs tested during State and District testing because all students were tested, including those who may not have been planning to attend college.

Table 5. Demographic Characteristics by Test Group (Percentages)

	EL with Supports	EL, No Supports	Non-EL, No Supports
Test Type			
National	46	60	83
State and District	54	40	17
Grade Level Tested			
11th Grade	71	65	62
12th Grade	26	26	27
Other/Missing	3	9	12
Race/Ethnicity			
Black/African American	15	22	12
American Indian/Alaska Native	0	2	1
White	5	44	60
Hispanic/Latino	60	22	17
Asian	19	5	6
Native Hawaiian/Pacific Islander	1	1	0
Two or More Races	0	4	5
Income			
Less than $24,000	47	26	12
$24,000–$36,000	25	18	11
$36,000–$50,000	11	12	11
$50,000–$60,000	6	8	8
$60,000–$80,000	4	10	11
$80,000–$100,000	2	8	12
$100,000–$120,000	2	6	10
$120,000–$150,000	1	4	8
More than $150,000	2	7	16
First-Generation College Student	58	34	18

Because large differences were found in the percentages of missing registration data by test group (Table 4) and in the percentages of students testing in a National versus State and District context by test group (Table 5), the prevalence of missing data in the student registration information was compared for the three test groups by National versus State and District testing conditions (see Appendix Table A2). While there were some differences in the patterns of missing data (i.e., ELs who tested with supports were somewhat more likely to omit information during State and District testing, and ELs who tested without supports and non-ELs were somewhat more likely to omit information during National testing), in general, ELs who tested with supports had more missing data regardless of testing context. It was hypothesized that the larger percentages of missing information for ELs who tested with supports could have been due to educators in the State and District testing context choosing not to have ELs testing with supports complete the registration information, but because this pattern was found across testing contexts, the data suggests that this did not play a large role in the response rate discrepancies.

Table 5 also contains the percentages of students who tested in 11th grade, 12th grade, or other, by test group. Most students tested in 11th or 12th grade, whereas a small percentage of students tested in earlier grades or after high school graduation. ELs who tested with supports were somewhat more likely to have tested in 11th grade (71%) compared to ELs who tested without supports (65%) or non-ELs (62%). These results are unsurprising given that higher percentages of ELs who tested with supports did so through State and District testing.

Demographic characteristics provide important context for analyses comparing ELs to non-ELs, as it is well known that factors such as race/ethnicity and income are related to availability and quality of educational experiences and opportunities and therefore are related to academic performance as measured by test scores. Table 5 contains the self-reported race/ethnicity of students by test group. Larger proportions of Hispanic/Latino and Asian students were in the ELs who tested with supports group, whereas larger proportions of White students were non-ELs.

Table 5 also contains parent income by test group, defined as the combined income of their parents before taxes. Again, these percentages were calculated based on non-missing responses; the missing rates for this question was 67% for ELs who tested with supports, 22% for ELs who tested without supports, and 23% of non-ELs. Both EL groups tended to report lower income than non-ELs, and ELs who tested with supports tended to report the lowest income, with 73% reporting parent income of $36,000 or less, compared to 44% of ELs who tested without supports and 23% of non-ELs.

Lastly, Table 5 contains the percentages of first-generation college students by test group, based on non-missing responses. First-generation college students are defined

as neither parent having any college experience (i.e. non-degree completion would count as "some college experience"). ELs were more likely to be first generation college students than non-ELs, particularly ELs who tested with supports, who were 3.2 times more likely to be first generation college students than non-ELs.

Research Question 3: How do high school experiences of ACT-tested ELs testing with or without supports compare to ACT-tested non-ELs?

ELs' high school experiences and access to educational opportunities provide important context for interpreting their performance on the ACT. ACT has long advocated that students take a core curriculum, defined as a minimum of four years of English and three years each of math, science, and social studies. Research has shown that students who take a core curriculum earn higher ACT scores, enroll in college at higher rates, earn higher grades in college, and are less likely to need remedial courses in college than students who take less than the core (ACT, 2006). Based on information about high school coursework taken or planned provided by students at registration, ELs who tested with supports were much less likely to report taking or planning to take a core curriculum by the time they graduate high school (52%) compared to ELs who tested without supports (67%) and non-ELs (78%).

Table 6 contains the percentages of students who reported having taken or planning to take specific high school courses by test group (conditioned on providing a response to account for the disproportionate higher non-response rates of ELs who tested with supports). With a small number of exceptions, ELs who tested with supports were less likely to have taken or planned to take many of the courses than students in the other test groups. This is likely due in part to ELs taking English language courses during one or more class periods each day, which limits their access to other courses (Callahan & Shifrer, 2016; Johnson, 2019). Unfortunately, some of the largest gaps in course taking between ELs who tested with supports and non-ELs who tested without supports were in core academic courses including trigonometry (12% point gap, meaning the percentage of ELs who tested with supports took trigonometry was 12 percentage points lower than non-ELs), calculus (13% point gap), other advanced math (18% point gap), and chemistry (15% point gap).

Table 6. Percentages of Students Taking or Planning to Take High School Courses by Test Group

High School Course	EL with Supports	EL, No Supports	Non-EL, No Supports
English, Grade 9	92	99	100
English, Grade 10	95	99	100
English, Grade 11	97	99	99
English, Grade 12	94	97	98
Other English	35	29	24
Algebra 1	95	98	99
Algebra 2	87	95	98
Geometry	92	96	98
Trigonometry	40	47	53
Calculus	39	45	52
Other Advanced Math	51	63	70
Computer Science	31	26	25
General Science	85	87	83
Biology	97	99	99
Chemistry	77	87	92
Physics	60	63	66
US History	97	99	99
World History	90	94	94
Other History	44	38	38
American Government	85	86	88
Economics	69	65	67
Geography	51	55	49
Psychology	37	44	47
Spanish	68	78	76
French	28	19	16
German	16	8	6
Other Language	32	18	16
Art	74	66	60
Music	43	44	43
Drama	28	25	20

Interestingly, there were a few courses that ELs who tested with supports were more likely to have reported taking or planning to take, including “other English courses,” where ELs could expect to improve their English proficiency. Computer science, other history, economics, French, German, other language, art, and drama also had higher percentages of ELs who tested with supports taking these courses compared to the other two test groups.

Table 7 contains the average number of years of coursework students expected to have taken by the time they graduate high school by subject. For the four core subjects (English, math, social sciences, and natural sciences), ELs in both groups anticipated taking fewer years of coursework than non-ELs, and ELs who tested with supports anticipated taking the fewest years of core coursework. ELs who tested with supports were slightly more likely to anticipate taking coursework in a language other than Spanish, German, or French as compared to the other two test groups. While not available in the data, it would be interesting to know whether the language taken was their native language or another language.

Table 7. Average Years of Coursework by Test Group

	EL with Supports		EL, No Supports		Non-EL, No Supports	
Subject Area	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
English	3.0	1.2	3.2	1.0	3.3	0.9
Math	3.0	1.1	3.2	1.0	3.4	0.8
Social Sciences	2.6	1.2	2.9	1.0	3.1	0.9
Natural Sciences	2.6	1.2	2.9	1.0	3.1	0.9
Spanish	1.3	1.4	1.4	1.2	1.7	1.3
German	0.2	0.6	0.1	0.5	0.1	0.5
French	0.3	0.9	0.3	0.8	0.3	0.9
Other Language	0.5	1.2	0.3	0.8	0.3	0.9

Table 8 contains the percentages of students who reported participating in Advanced Placement (AP), accelerated, or honors courses by subject and test group. Again, these percentages are based on non-missing responses; large percentages of students did not complete these sections, particularly ELs who tested with supports (Table 4). ELs in both groups, particularly ELs who tested with supports, were much less likely to have taken AP/honors courses, with the exception of foreign languages. The largest gaps in AP/honors course taking between ELs who tested with supports and non-ELs were in English (41%) and reading (35%).

Table 8. Participation in AP/Honors Courses and Extracurricular Activities by Test Group

	EL with Supports	EL, No Supports	Non-EL, No Supports
AP/Honors Subject			
English	30	52	71
Math	39	45	62
Social Sciences	29	45	64
Natural Sciences	31	43	62
Foreign Language	33	24	29
Extracurricular Activity			
Instrumental Music	20	25	26
Vocal Music	17	19	17
Student Government	16	15	16
Publications	11	13	12
Debate	10	9	8
Dramatics/Theater	15	18	18
Religious Organizations	12	18	24
Racial/Ethnic Organizations	13	6	6
Varsity Athletics	35	54	57
Political Organizations	6	5	4
Radio/TV	7	5	3
Social Clubs	16	15	12
Community Service	38	45	57

Table 8 also contains percentages of students reporting participation in high school extracurricular activities by test group. In general, there were not large discrepancies in participation by test group, with a few exceptions. ELs who tested with supports were less likely to participate in religious organizations, varsity athletics, or community service, and more likely to participate in racial or ethnic organizations.

Table 9 contains the educational aspirations of students by test group. Educational aspirations are defined as the highest level of education that students expect to complete. ELs in both groups had only slightly lower degree aspirations as compared to non-ELs, with roughly half of students wanting to earn a bachelor's degree and another fifth wanting to earn a doctorate or professional degree. Again, these percentages are based on non-missing responses; 56% of responses of ELs who tested with supports were missing degree aspiration information compared to 8% and 6% for ELs testing without supports and non-ELs, respectively.

Table 9. Distribution of Educational Aspirations by Test Group

Educational Aspirations	EL with Supports	EL, No Supports	Non-EL, No Supports
Business/Tech/Certificate	7	4	1
Associate Degree	13	10	4
Bachelor's Degree	46	53	49
1-2 Years Graduate Study	8	9	20
Doctorate/Professional Degree	19	19	25
Other	8	4	1

Research Question 4: What is the relationship between high school grades (HSGPA) and ACT performance for ACT-tested ELs testing with or without supports compared to non-ELs?

Table 10 contains the percentages of students reporting HSGPA by test group and test type. Students report this information at the time they register for the ACT by selecting from a list of courses, indicating whether each course was taken, planned, or not planned, and providing grades earned (A, B, C, D, or F) for courses taken. An unweighted GPA on a 4.0 scale is calculated based on these responses; this is the HSGPA reported in Table 10. While there may be concerns that self-report may not be as accurate as official transcripts, previous research has found that self-reported grades on the ACT are highly accurate (Sanchez & Buddin, 2015). Overall, ELs who tested with supports were less likely to report grades (45%), whereas ELs who tested without supports and non-ELs reported grades at similar rates (85% and 86%, respectively). ELs who tested with supports as part of State and District testing were the least likely to report their grades (33%).

Table 10. Number and Percent of Students Reporting HS Grades by Test Group and Test Type

	EL with Supports	EL, No Supports	Non-EL, No Supports	Overall
National	4,117 (59%)	111,596 (86%)	1,440,814 (86%)	1,556,527 (86%)
State and District	2,691 (33%)	69,676 (82%)	297,715 (86%)	370,082 (84%)
Total	6,808 (45%)	181,272 (85%)	1,738,529 (86%)	1,926,609 (86%)

Table 11 contains the average ACT Composite scores of students by test group and whether they reported their grades. Across the three groups, students who reported their grades tended to be somewhat higher performing than those who did not report their grades.

Table 11. Average ACT Composite of Students by Test Group and Reporting of Grades

	EL with Supports	EL, No Supports	Non-EL, No Supports
Reported Grades	15.1	17.6	21.8
Did Not Report Grades	14.0	16.3	20.8

Table 12 contains students' average self-reported HSGPA by test group and subject area. Consistent with overall ACT performance, ELs who tested with supports reported the lowest HSGPA, on average, and non-ELs had the highest HSGPA. In contrast to ACT section test scores (Table 2), where ELs in both groups scored substantially lower in English relative to the other subject areas, students in all three test groups tended to have higher average HSGPA in English and social studies courses. In contrast to the variability of students' average ACT scores (Table 2), ELs who tested with supports had higher variability (SD) of HSGPA compared to the other test groups, followed by ELs who tested without supports; non-ELs had the lowest variability of HSGPA.

Table 12. Average Self-Reported HSGPA by Test Group and Subject Area

	EL with Supports		EL, No Supports		Non-EL, No Supports	
Subject Area	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
English	3.04	0.82	3.18	0.74	3.49	0.62
Math	2.92	0.93	3.03	0.83	3.34	0.70
Social Sciences	3.04	0.82	3.27	0.74	3.54	0.59
Science	2.95	0.86	3.12	0.77	3.42	0.64
Overall	2.99	0.71	3.15	0.65	3.44	0.55

Figure 2 displays the distribution of self-reported HSGPA by test group. Non-ELs were much more likely to earn a HSGPA of 3.8–4.0, whereas ELs in both groups were more likely to earn a GPA in the 2.0–3.0 range. In fact, 19% of non-ELs reported a HSGPA of 4.0, compared to 9% of ELs who tested without supports and 8% of ELs who tested with supports. Of note is the negative skew of the distribution of HSGPA relative to the distribution of ACT scores seen in Figure 1, which has been found in other research (ACT, 2012). Contrary to the results for the ACT Composite, the skew for HSGPA was more pronounced for non-ELs ($\tilde{\mu}_3$ = -1.2) as compared to ELs who tested with ($\tilde{\mu}_3$ = -0.6) or without ($\tilde{\mu}_3$ = -0.8) supports.

Figure 2. Distribution of HSGPA by Test Group

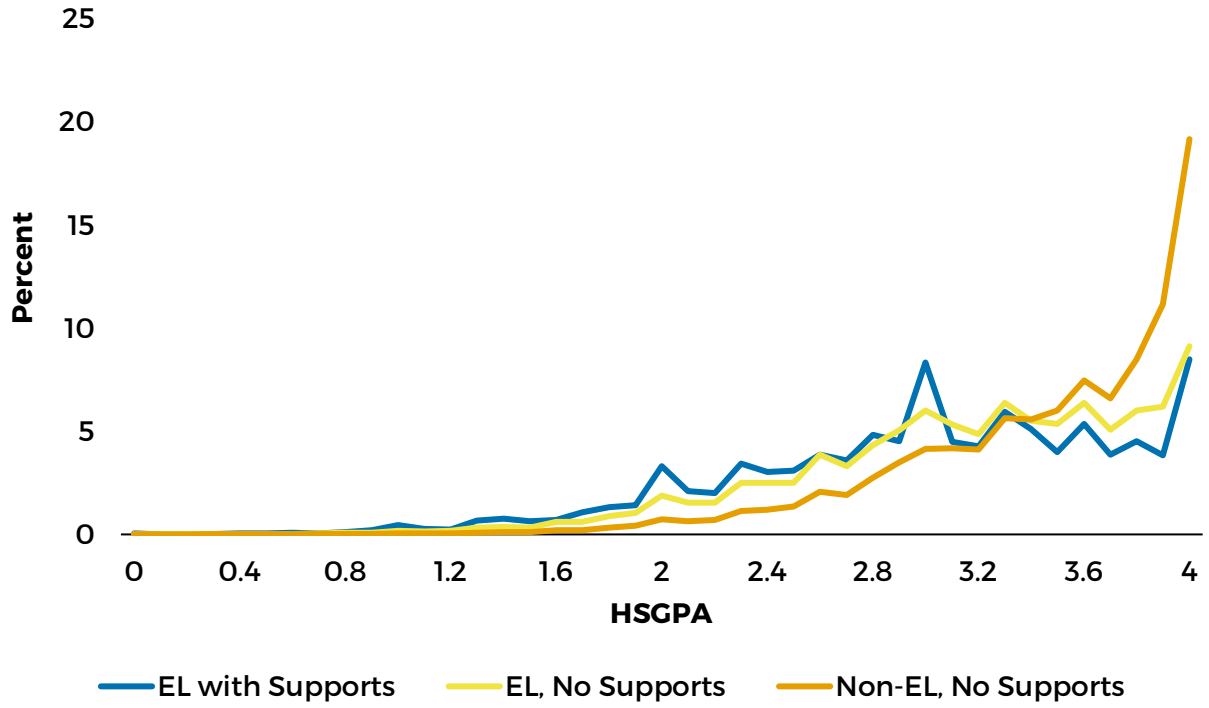


Table 13 contains correlations between ACT scores and HSGPA by test group. Correlations between subject-area specific HSGPA and overall HSGPA were high for all three test groups (ranging from r = 0.83 to 0.87); therefore, only overall HSGPA is presented.[5] Correlations between ACT scores and HSGPA were lowest for ELs who tested with supports. This is likely due to differences in the ACT score distributions across test groups; ELs who tested with supports had the smallest variability in scores, followed by ELs who tested without supports, and non-ELs had the largest variability in scores. Despite these differences, moderately-sized correlations were still found for ELs who tested with supports. While the differences in score distributions make comparisons across test groups problematic, comparisons within test group across subject area can provide information about the relative strength of relationships between HSGPA and ACT section test scores. Correlations between ACT scores and HSGPA were more variable across subject for ELs who tested with supports, ranging from 0.27 (reading) to 0.35 (math), whereas correlations for the other two test groups were more similar across subject areas, ranging from 0.43 (reading) to 0.46 (English and math) for ELs who tested without supports and ranging from 0.46 (reading) to 0.51 (math) for non-ELs.

Table 13. Correlations between ACT Subject Scores and Overall HSGPA by Test Group

	ACT Subject Area				
	English	Math	Reading	Science	Composite
EL with Supports	0.31	0.35	0.27	0.31	0.37
EL, No Supports	0.46	0.46	0.43	0.45	0.50
Non-EL, No Supports	0.50	0.51	0.46	0.49	0.54

Note: All correlations were significant at $p < 0.0001$.

Research Question 5: How do demographics, HSGPA, and high school experiences of ACT-tested ELs relate to their performance on the ACT?

Due to the large amount of missing data in the covariates, particularly for ELs who tested with supports, multiple approaches were considered to answer this research question. It is likely that the data were not missing at random, and there could be different underlying mechanisms for missing data across the three groups. Regression analyses using only complete cases were compared to a multiple imputation approach, and results were highly similar; regression estimates were largely in the same direction and statistically significant, and the same conclusions would be drawn regardless of model used. Therefore, results are presented for the complete cases approach, and the possibility of bias in the estimates should be noted as a limitation when interpreting the findings.

Table 14 contains the regression results for four models predicting ACT Composite score. The first model only includes dummy variables for the test groups; the second model adds demographics variables (race/ethnicity, low income, and first-generation college student indicator); the third model adds students' high school experiences (semesters of coursework taken by subject area and honors/AP coursework taken by subject area)[6] and college aspirations; and the fourth model adds students' self-reported HSGPA. R-square estimates from each model are also reported. The reference groups are non-EL for test group, White for race/ethnicity, and less than a bachelor's degree for college aspirations. The sample size was 2,252,103 for the first and second models, 1,147,011 (51% of the total sample) for the third model, and 1,051,504 (47% of the total sample) for the fourth model. Models were also examined using only the subset of students included in the fourth model; minimal differences in the beta estimates were found, providing further evidence that the findings were robust to missing data.

As summarized in Table 14, ACT Composite scores were strongly related to test group (EL status), demographics, experiences, aspirations, and HSGPA. Based on EL status alone, we would expect average ACT Composite scores to be 7.13 points lower for

students who tested with supports and 4.20 points lower for ELs who tested without supports, as compared to non-ELs who tested without supports. Taking into account demographics, the predicted differences in Composite scores dropped to 6.3 and 3.02 points—a reduction of 12% and 28%, respectively. Once high school experiences, aspirations, and HSGPA were taken into account, the predicted differences were 3.09 and 1.83 points—a reduction of 57% and 56%, respectively. Accounting for student experiences and HSGPA also reduced the magnitude of the impact of demographics on predicted Composite score, as can be seen by comparing beta estimates across the models.

Similar results were found when comparing models that predict specific subject area scores using the same sets of covariates, presented in Tables 15 through 18. Demographics, experiences, aspirations, and HSGPA accounted for smaller percent changes in predicted scores in English (49% and 56%) and reading (54% and 52%), respectively, for ELs who tested with and without supports. This finding is not surprising given that English proficiency would have a larger impact on these subject areas. The largest reduction in predicted scores was found in math, where the full model reduced the beta estimates by 72% and 61%, respectively, for ELs who tested with and without supports. In other words, when taking into account student demographics, experiences, and HSGPA, ELs who tested with supports would only be expected to score 1.52 points lower in math than non-ELs (vs. 5.34 without accounting for the covariates), and ELs who tested without supports would only be expected to score 1.33 point lower in math than non-ELs (vs. 3.41 when not accounting for the covariates). Interestingly, semesters taken of math coursework was more highly related to higher scores across all subject areas than semesters of coursework taken in other subject areas (i.e., an additional semester taken of math predicted higher English scores than an additional semester taken of English).

Figure 3 summarizes the unadjusted (Model 1) and adjusted (Model 4) mean differences in ACT scores. Comparing non-ELs to ELs with supports, unadjusted mean differences ranged from 5.3 (math) to 8.6 (English), whereas adjusted mean differences ranged from 1.5 (math) to 4.4 (English). Comparing non-ELs to ELs without supports, unadjusted mean differences ranged from 3.4 (math) to 4.9 (English), whereas adjusted mean differences ranged from 1.3 (math) to 2.3 (reading).

Table 14. Regression Models Predicting ACT Composite Score

Variable	Model 1		Model 2		Model 3		Model 4	
	Beta	SE	Beta	SE	Beta	SE	Beta	SE
Intercept	21.63	0.00	22.87	0.00	16.40	0.07	7.38	0.07
EL, with Supports	-7.13	0.04	-6.30	0.04	-3.27	0.13	-3.09	0.13
EL, no Supports	-4.20	0.01	-3.02	0.01	-1.94	0.02	-1.83	0.02
Black			-3.83	0.01	-3.59	0.01	-2.71	0.01
American Indian			-3.52	0.04	-2.70	0.06	-2.26	0.06
Hispanic			-1.56	0.01	-1.64	0.01	-1.20	0.01
Asian			3.00	0.01	1.43	0.01	1.48	0.01
Pacific Islander			-2.20	0.06	-1.41	0.09	-1.14	0.09
Multiple Race/Ethnicities			-0.41	0.02	-0.29	0.02	-0.03^{ns}	0.02
Missing Race/Ethnicity			-0.16	0.02	0.19	0.02	0.32	0.02
Low Income (< $36,000)			-1.81	0.01	-1.30	0.01	-1.13	0.01
Income Missing			0.38	0.01	0.59	0.01	0.52	0.01
First Generation College Student			-2.37	0.01	-1.58	0.01	-1.41	0.01
Parent Education Missing			-0.80	0.01	0.10	0.02	0.06**	0.02
Semesters HS English					-0.31	0.01	-0.32	0.01
Semesters HS Math					1.50	0.01	1.19	0.01
Semesters HS Science					0.14	0.01	0.05	0.01
Semesters HS Social Studies					-0.59	0.01	-0.60	0.01
Semesters HS Foreign Language					-0.21	0.01	-0.11	0.01
Semesters HS Arts					-0.01^{ns}	0.01	-0.02	0.01
Honors/AP English					0.69	0.01	0.47	0.01
Honors/AP Math					1.45	0.01	1.00	0.01
Honors/AP Social Studies					0.95	0.01	0.96	0.01
Honors/AP Science					0.92	0.01	0.75	0.01
Honors/AP Foreign Language					0.91	0.01	0.87	0.01
Aspirations: Bachelor's					1.24	0.04	0.75	0.04
Aspirations: 1-2 Years Graduate Study					2.65	0.04	1.92	0.04
Aspirations: Doctorate					2.50	0.04	1.63	0.04
Aspirations: Other					1.01	0.06	0.67	0.06
Aspirations: Missing					2.77	0.05	2.15	0.05
HSGPA							3.22	0.01
R-Square	0.06		0.24		0.36		0.41	

Note: All estimates are significant at p < 0.0001 except where ns (p > 0.05) or asterisked. * p < 0.05. ** p < 0.01. *** p < 0.001.

Table 15. Regression Models Predicting ACT English Score

Variable	Model 1		Model 2		Model 3		Model 4	
	Beta	SE	Beta	SE	Beta	SE	Beta	SE
Intercept	21.03	0.00	22.43	0.01	14.83	0.08	4.34	0.10
EL, with Supports	-8.58	0.05	-7.63	0.05	-4.57	0.16	-4.35	0.17
EL, no Supports	-4.90	0.01	-3.54	0.01	-2.30	0.02	-2.17	0.02
Black			-4.19	0.01	-3.86	0.02	-2.83	0.02
American Indian			-4.30	0.04	-3.39	0.07	-2.88	0.07
Hispanic			-1.85	0.01	-1.93	0.01	-1.42	0.02
Asian			3.19	0.02	1.61	0.02	1.67	0.02
Pacific Islander			-2.43	0.08	-1.44	0.11	-1.11	0.11
Multiple Race/Ethnicities			-0.43	0.02	-0.30	0.02	0.01^{ns}	0.02
Missing Race/Ethnicity			-0.09	0.02	0.35	0.03	0.52	0.03
Low Income (< $36,000)			-2.02	0.01	-1.54	0.02	-1.34	0.02
Income Missing			0.56	0.01	0.83	0.01	0.74	0.01
First Generation College Student			-2.86	0.01	-2.03	0.02	-1.83	0.02
Parent Education Missing			-0.94	0.02	0.09***	0.03	0.05^{ns}	0.03
Semesters HS English					-0.09	0.02	-0.11	0.02
Semesters HS Math					1.41	0.01	1.05	0.01
Semesters HS Science					0.04	0.01	-0.06	0.01
Semesters HS Social Studies					-0.64	0.01	-0.65	0.01
Semesters HS Foreign Language					-0.20	0.01	-0.08	0.01
Semesters HS Arts					0.26	0.01	0.24	0.01
Honors/AP English					1.38	0.01	1.13	0.01
Honors/AP Math					1.14	0.01	0.63	0.01
Honors/AP Social Studies					1.18	0.01	1.19	0.01
Honors/AP Science					0.86	0.01	0.66	0.01
Honors/AP Foreign Language					1.29	0.01	1.23	0.01
Aspirations: Bachelor's					1.48	0.05	0.90	0.05
Aspirations: 1-2 Years Graduate Study					3.20	0.05	2.35	0.05
Aspirations: Doctorate					3.02	0.05	2.00	0.05
Aspirations: Other					1.27	0.07	0.86	0.07
Aspirations: Missing					3.35	0.06	2.63	0.06
HSGPA							3.75	0.01
R-Square	0.06		0.21		0.30		0.35	

Note: All estimates are significant at p < 0.0001 except where ns (p > 0.05) or asterisked. * p < 0.05. ** p < 0.01. *** p < 0.001.

Table 16. Regression Models Predicting ACT Math Score

Variable	Model 1		Model 2		Model 3		Model 4	
	Beta	SE	Beta	SE	Beta	SE	Beta	SE
Intercept	21.13	0.00	22.17	0.00	16.12	0.07	7.70	0.08
EL, with Supports	-5.34	0.04	-4.80	0.04	-1.70	0.13	-1.52	0.13
EL, no Supports	-3.41	0.01	-2.31	0.01	-1.44	0.02	-1.33	0.02
Black			-3.50	0.01	-3.35	0.01	-2.54	0.01
American Indian			-3.10	0.04	-2.45	0.06	-2.04	0.06
Hispanic			-1.31	0.01	-1.40	0.01	-0.98	0.01
Asian			4.02	0.01	2.25	0.02	2.30	0.02
Pacific Islander			-1.75	0.06	-1.03	0.09	-0.78	0.09
Multiple Race/Ethnicities			-0.46	0.02	-0.32	0.02	-0.07***	0.02
Missing Race/Ethnicity			0.06	0.02	0.33	0.02	0.47	0.02
Low Income (< $36,000)			-1.81	0.01	-1.28	0.01	-1.11	0.01
Income Missing			0.36	0.01	0.55	0.01	0.48	0.01
First Generation College Student			-2.10	0.01	-1.33	0.01	-1.17	0.01
Parent Education Missing			-0.69	0.01	0.12	0.02	0.08***	0.02
Semesters HS English					-0.69	0.01	-0.69	0.01
Semesters HS Math					2.04	0.01	1.76	0.01
Semesters HS Science					0.27	0.01	0.19	0.01
Semesters HS Social Studies					-0.74	0.01	-0.76	0.01
Semesters HS Foreign Language					-0.26	0.01	-0.17	0.01
Semesters HS Arts					-0.27	0.01	-0.28	0.01
Honors/AP English					-0.24	0.01	-0.44	0.01
Honors/AP Math					2.35	0.01	1.93	0.01
Honors/AP Social Studies					0.54	0.01	0.56	0.01
Honors/AP Science					0.94	0.01	0.78	0.01
Honors/AP Foreign Language					0.80	0.01	0.76	0.01
Aspirations: Bachelor's					1.11	0.04	0.65	0.04
Aspirations: 1-2 Years Graduate Study					2.40	0.04	1.71	0.04
Aspirations: Doctorate					2.08	0.04	1.27	0.04
Aspirations: Other					0.91	0.06	0.58	0.06
Aspirations: Missing					2.44	0.05	1.87	0.05
HSGPA							3.00	0.01
R-Square	0.04		0.21		0.39		0.43	

Note: All estimates are significant at $p < 0.0001$ except where ns ($p > 0.05$) or asterisked. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Table 17. Regression Models Predicting ACT Reading Score

Variable	Model 1		Model 2		Model 3		Model 4	
	Beta	SE	Beta	SE	Beta	SE	Beta	SE
Intercept	22.34	0.00	23.65	0.01	16.87	0.09	7.44	0.10
EL, with Supports	-8.08	0.05	-7.12	0.05	-3.87	0.17	-3.72	0.18
EL, no Supports	-4.79	0.01	-3.59	0.01	-2.42	0.02	-2.30	0.02
Black			-3.98	0.01	-3.75	0.02	-2.83	0.02
American Indian			-3.58	0.04	-2.72	0.08	-2.27	0.08
Hispanic			-1.55	0.01	-1.69	0.02	-1.24	0.02
Asian			2.22	0.02	0.73	0.02	0.78	0.02
Pacific Islander			-2.46	0.08	-1.76	0.11	-1.47	0.12
Multiple Race/Ethnicities			-0.28	0.02	-0.21	0.02	0.06*	0.03
Missing Race/Ethnicity			-0.27	0.02	0.06*	0.03	0.19	0.03
Low Income (< $36,000)			-1.74	0.01	-1.25	0.02	-1.07	0.02
Income Missing			0.34	0.01	0.55	0.01	0.48	0.01
First Generation College Student			-2.47	0.01	-1.66	0.02	-1.49	0.02
Parent Education Missing			-0.83	0.02	0.09**	0.03	0.04^{ns}	0.03
Semesters HS English					-0.02^{ns}	0.02	-0.03^{ns}	0.02
Semesters HS Math					1.08	0.01	0.76	0.01
Semesters HS Science					0.01^{ns}	0.01	-0.08	0.01
Semesters HS Social Studies					-0.42	0.01	-0.43	0.01
Semesters HS Foreign Language					-0.14	0.01	-0.04**	0.01
Semesters HS Arts					0.13	0.01	0.12	0.01
Honors/AP English					1.40	0.01	1.17	0.01
Honors/AP Math					0.85	0.01	0.39	0.01
Honors/AP Social Studies					1.36	0.01	1.37	0.01
Honors/AP Science					0.83	0.01	0.65	0.01
Honors/AP Foreign Language					0.89	0.01	0.85	0.01
Aspirations: Bachelor's					1.27	0.05	0.76	0.05
Aspirations: 1-2 Years Graduate Study					2.78	0.05	2.03	0.05
Aspirations: Doctorate					2.74	0.05	1.84	0.05
Aspirations: Other					1.10	0.07	0.76	0.08
Aspirations: Missing					2.89	0.06	2.23	0.07
HSGPA							3.35	0.01
R-Square	0.06		0.17		0.23		0.27	

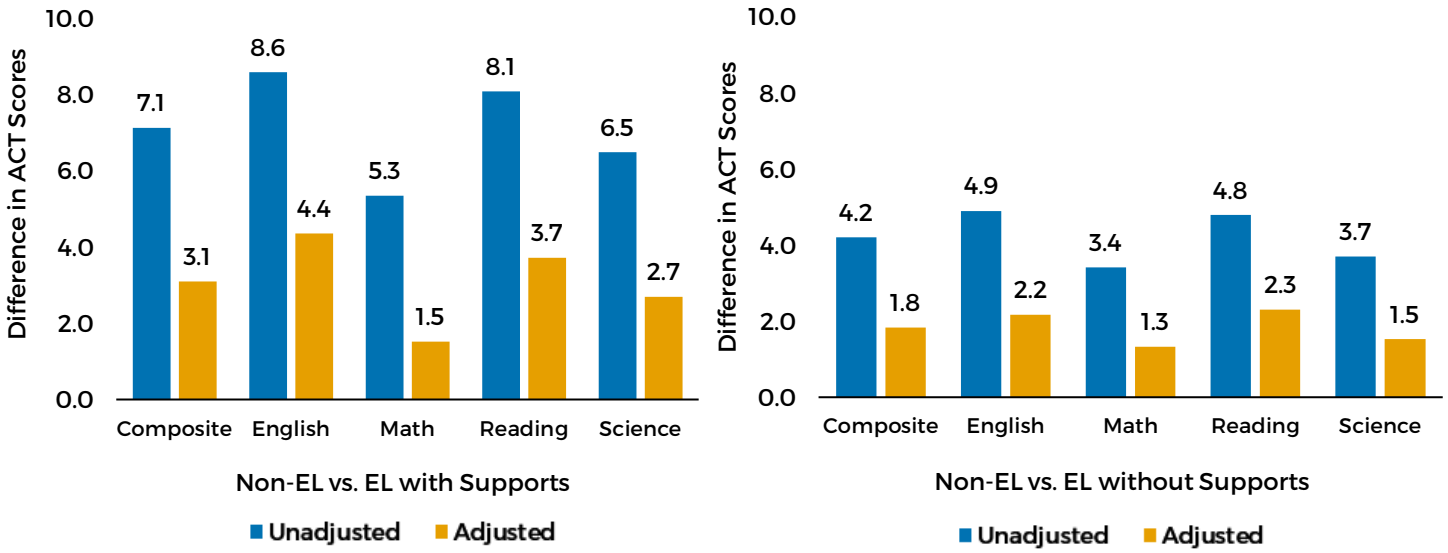
Note: All estimates are significant at $p < 0.0001$ except where ns ($p > 0.05$) or asterisked. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Table 18. Regression Models Predicting ACT Science Score

Variable	Model 1		Model 2		Model 3		Model 4	
	Beta	SE	Beta	SE	Beta	SE	Beta	SE
Intercept	21.53	0.00	22.73	0.00	17.27	0.07	9.57	0.08
EL, with Supports	-6.48	0.04	-5.61	0.04	-2.90	0.13	-2.70	0.14
EL, no Supports	-3.70	0.01	-2.62	0.01	-1.61	0.02	-1.52	0.02
Black			-3.67	0.01	-3.39	0.01	-2.64	0.02
American Indian			-3.10	0.04	-2.27	0.06	-1.91	0.06
Hispanic			-1.52	0.01	-1.56	0.01	-1.18	0.01
Asian			2.58	0.01	1.10	0.02	1.15	0.02
Pacific Islander			-2.18	0.06	-1.44	0.09	-1.23	0.09
Multiple Race/Ethnicities			-0.47	0.02	-0.34	0.02	-0.12	0.02
Missing Race/Ethnicity			-0.34	0.02	0.00[ns]	0.02	0.11	0.02
Low Income (< $36,000)			-1.67	0.01	-1.14	0.01	-0.99	0.01
Income Missing			0.23	0.01	0.44	0.01	0.39	0.01
First Generation College Student			-2.06	0.01	-1.29	0.01	-1.15	0.01
Parent Education Missing			-0.73	0.01	0.10	0.02	0.08**	0.02
Semesters HS English					-0.44	0.01	-0.45	0.01
Semesters HS Math					1.46	0.01	1.19	0.01
Semesters HS Science					0.23	0.01	0.16	0.01
Semesters HS Social Studies					-0.55	0.01	-0.57	0.01
Semesters HS Foreign Language					-0.23	0.01	-0.15	0.01
Semesters HS Arts					-0.16	0.01	-0.17	0.01
Honors/AP English					0.20	0.01	0.01[ns]	0.01
Honors/AP Math					1.45	0.01	1.06	0.01
Honors/AP Social Studies					0.70	0.01	0.71	0.01
Honors/AP Science					1.04	0.01	0.90	0.01
Honors/AP Foreign Language					0.67	0.01	0.63	0.01
Aspirations: Bachelor's					1.10	0.04	0.68	0.04
Aspirations: 1-2 Years Graduate Study					2.23	0.04	1.60	0.04
Aspirations: Doctorate					2.18	0.04	1.43	0.04
Aspirations: Other					0.81	0.06	0.52	0.06
Aspirations: Missing					2.38	0.05	1.87	0.05
HSGPA							2.76	0.01
R-Square	0.05		0.20		0.29		0.34	

Note: All estimates are significant at $p < 0.0001$ except where ns ($p > 0.05$) or asterisked. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Figure 3. Unadjusted and Adjusted Mean ACT Score Differences by Test Group



Discussion

The purpose of this study was to investigate the performance of English Learners (ELs) taking the ACT, particularly the scores of ELs who tested with the testing supports that ACT began offering in the fall of 2017. Results of this study confirmed that the scores of ELs were substantially lower than those of non-ELs, particularly ELs who tested with supports. ELs who tested without supports appeared to have higher English proficiency than those who tested with supports, as evidenced by their higher ACT English scores. Due to the dramatic differences in both English scores and overall distributions of Composite scores, as well as differences in demographics and high school experiences, it appears that these are two separate populations of students. Because this study relied on operational data rather than random assignment, it is likely that there were systematic differences between ELs who tested with supports and ELs who tested without supports. Similar patterns of performance have been found in other studies comparing ELs testing with and without accommodations using intact groups (Abedi, Leon, & Mirocha, 2003; Kong, Powers, Starr, & Williams, 2012; Young, Cho, Ling, Cline, Steinberg, & Stone, 2008). Kong et. al (2012) found that ELs who tested with accommodations had fewer years of education in the US and lower English proficiency levels than ELs who tested without accommodations.

ELs in both groups tended to have higher ACT scores in math and science relative to English and reading, whereas non-ELs tended to have lower scores in math and science relative to English and reading. This is consistent with previous research. Several studies have found that ELs score lower than non-ELs across subject areas,

but the score gap tends to be narrower on assessments that are less linguistically complex (Abedi, 2001; Abedi, Leon, & Mirocha, 2003). The ACT English and reading tests are completely text-based, whereas the math and science tests contain text as well as equations, figures, tables, and other illustrations.

An additional focus of this paper was the demographic makeup of students across test groups, how their high school experiences and HSGPA may differ from those of non-ELs, and the impact of these factors on students' predicted ACT test scores. We indeed found that ELs, particularly ELs who tested with supports, were more demographically diverse than non-ELs: They were more likely to be non-White, low income, and first-generation college students. In terms of high school experiences, ELs who tested with supports were less likely to complete a core curriculum consisting of four years of English and three years each of math, social studies, and science, despite having similar postsecondary educational aspirations as their peers. In contrast, ELs who tested without supports largely had similar coursework taking patterns as non-ELs. ELs in both groups, particularly those who tested with supports, were also much less likely to have taken honors or AP coursework. ELs who tested with supports had lower HSGPAs than ELs who tested without supports, and non-ELs had the highest HSGPA. All of these factors are related to expected performance on the ACT, such that we would expect lower performance from students who take fewer core academic courses and have lower grades, regardless of their level of English proficiency.

ELs who tested with supports tended to have lower correlations between their ACT scores and HSGPAs than the two other groups. This can be explained in part by the lower variability in the ACT scores of ELs, especially those who tested with supports. ELs who tested with supports also had more variable correlations between ACT scores and HSGPA, with higher correlations in math and lower correlations in reading, whereas the other two test groups showed similar profiles but had less variability in correlations across subject areas. Students who have higher HSGPAs tend to score higher on the ACT, as both are measures of student academic performance. However, HSGPA may also be influenced by teachers' grading standards or other student attributes that are not directly related to academic knowledge, such as motivation or effort (ACT, 2020). ELs who tested with supports were also found to have taken fewer core academic courses and had lower HSGPAs compared to ELs who tested without supports and non-ELs. To the extent that student grades and ACT scores measure somewhat different constructs, the correlations will be attenuated. Correlations may also be attenuated due to measurement error. However, due to the large differences in score distributions across the three test groups, the extent to which the lower correlations for ELs who tested with supports may be related to measurement error is unclear, and additional research is needed to further explore this issue.

Regression analyses predicting ACT scores based on test group, demographics, high school experiences, and HSGPA showed that these factors played a considerable role in predicting the scores of students across the three groups, and that the predicted performance gaps for ELs in both groups compared to non-ELs were substantially reduced when these factors were taken into account. It is likely that there are many other factors that are related to the performance gaps but were unavailable for this study, such as educational experiences of ELs prior to entering the US, social emotional skills, school quality, or other variables that if captured would further reduce the adjusted mean differences found in this study.

An additional finding from this study was that the proportion of ELs who tested with supports was very small (less than 1% of the study sample) compared to the proportion of ELs who tested without supports (9.5% of the study sample). While the reasons for this are unknown, there are some potential explanations that should be further investigated. It is possible that students and educators were unaware of the existence of the supports, given that they were introduced relatively recently. There could also be language or information barriers hindering students' ability to request the supports, particularly since ELs are more likely to be low income, first-generation college students as compared to the general population, and thus may not have the same resources available when making decisions about their postsecondary plans. If eligible students are not making use of the supports, they may be missing out on an opportunity to more accurately demonstrate their true achievement level.

In summary, as the composition of students in the US changes over time, it is important that we measure, document, and understand issues related to demographics, resources, and access to rigorous coursework, in order to contextualize and interpret students' academic performance as measured by standardized assessments. Performance gaps for traditionally underserved populations have been documented across many assessments, and understanding these issues of differential access can help educators and policymakers understand, at least in part, why these gaps are occurring and suggest some ways in which to work towards narrowing them, such as ensuring that all students have access to high quality educational experiences and that students who may benefit from additional resources or assistance are identified and provided appropriate tools to help them succeed.

As the population of ELs grows, and as we continue to monitor their progress toward English proficiency and towards college and career readiness, it is important to understand the unique challenges that these students face. As prior research as well as the findings from this study have shown, ELs are much more likely to come from disadvantaged populations and are less likely to be exposed to a rigorous core curriculum or advanced or honors courses (Callahan, 2005; Callahan & Shifrer, 2016; Johnson, 2019; Sugarman, 2019). This introduces additional challenges on top of the

pressing need of these students to learn how to read, write, listen, and speak in English. Exposure to high quality academic content is important as well as becoming proficient in English; Callahan (2005) found that academic preparation was a stronger predictor of ELs' academic performance than English proficiency. Schools should not only focus on English language instruction but also on ensuring high expectations and access to rigorous academic content for ELs. To the extent that ELs may be receiving English language instruction while their English-proficient peers are learning academic content, ELs may fall behind academically compared to their peers. ELs face many barriers in their journey towards achieving college and career readiness, and the more we can understand about these challenges, the better prepared educators and policymakers can be to ensure that this population is receiving the support and instruction they need to be successful.

Limitations and Directions for Future Research

There are several limitations to this study. One limitation was that scores on assessments explicitly designed to measure the English language proficiency of ELs were unavailable. While the ACT English test does measure English proficiency, as a college readiness assessment, it may not be as sensitive for measuring English proficiency of ELs at very low levels and does not measure proficiency in the four domains typically measured by English language proficiency tests (reading, writing, listening, and speaking). ELs who tested without supports likely had a higher level of English proficiency than the ELs who tested with supports, which was supported by their higher scores in English on the ACT. It is also likely that both of the EL test groups were comprised of students with a wide range of English proficiency across the four domains of reading, writing, listening, and speaking, which was not examined in this study.

Most of the covariates used in this study were self-reported. HSGPA was self-reported, although previous ACT research has shown that it is highly accurate (and students are likely to be motivated to provide accurate responses as the instructions for this section of the ACT registration process indicate that "the information you give may be verified by college personnel"). The EL status indicator is also self-report, so there may be some students who were misclassified. Students were also excluded from the study due to missing responses and a "prefer not to respond" option, which may have had an impact on the representativeness of the remaining sample.

There was a large amount of missing registration data for ELs who tested with supports. While the reason for this is unknown, it is plausible that limited English proficiency could be interfering with their ability to understand and answer the questions being asked or slowing down the registration process to the extent that it becomes a burden and they begin to skip items. While missing data was addressed to some extent by comparing multiple modelling approaches and finding little

difference in the results, there is still a possibility of bias in the results. Future research is needed to replicate this research with other samples of students and to investigate why ELs who tested with supports had a disproportionate amount of missing responses.

ELs who tested with supports were identified by their records in ACT's accommodations system, which contains information entered by school officials on students' behalf. It is possible that there were inaccuracies in the database, meaning that there could be students who tested with testing supports but were erroneously included in one of the other two test groups. It is expected that these types of errors were infrequent and would have had a negligible impact on the findings.

While students were approved to use testing supports on the ACT, we do not have information about whether the supports were actually used. For example, a student might have been approved for the use of a word-to-word bilingual dictionary but might have forgotten to take it to the test center or brought it but did not use it. In addition, we do not know what types of supports students received in the classroom, the extent to which they attended mainstream or pull-out courses, or the rigor of courses taken aside from a general measure of whether they took honors or AP courses, all of which might impact their educational experiences and development as well as their HSGPA. If such information was available, we might have a better understanding of the differences among the test groups, which may account for some of the remaining test performance differences found in the regression analyses.

This study provided an overview of ELs taking the ACT test with and without testing supports, including their academic performance, demographic characteristics, and educational experiences. Additional research is underway examining the impact of providing testing supports to ELs on their ACT scores. Future research will continue to investigate and document reliability, validity, and fairness of scores, including score gains of students who first tested without the supports and retested with supports. Additionally, a predictive validity study is also being planned to evaluate the relationship between ACT scores and college performance for ELs testing with supports and how those results compare to findings for non-ELs. Ultimately, the goal of the supports is to provide a more equitable testing experience for ELs taking the ACT, and additional research is needed to document the extent to which this goal is being achieved.

Notes

1. Students who test as part of State and District testing can receive accommodations or testing supports beyond what ACT approves, but the scores resulting from testing under non-standard conditions are not college reportable and were excluded from this study.

2. The "EL with Supports" test group included students who tested with supports regardless of whether they answered the question about receiving EL services, whereas the other two test groups required a response to the EL services question. This decision was made to maximize the sample size of the "EL with Supports" group, as a more stringent inclusion criteria would have substantially reduced the sample size. Results were compared across the two inclusion criteria and the findings were nearly identical; therefore, the larger sample was retained.
3. Skewness ($\tilde{\mu}_3$) is a measure of the symmetry of a distribution of data. Skewness of zero indicates a symmetric distribution, skewness above zero indicates positive skew (i.e., more observations are found at lower values and fewer observations are found at higher values), and skewness below zero indicates negative skew (i.e., more observations are found at higher values and fewer observations are found at lower values).
4. The percentages of students who were missing registration information was compared for ELs who tested with supports conditioned on whether they answered the question about receiving EL services. While excluding students who did not answer the EL services question would have lowered the percentages of missing data somewhat (and substantially decreased the sample size), the ELs who tested with supports group still had disproportionately higher percentages of missing data compared to the other two test groups.
5. Correlations between ACT scores and subject-specific HSPGA can be found in the Appendix, Table A3. Similar patterns were found regardless of whether ACT scores were correlated with subject-specific HSGPA or overall HSGPA.
6. Extracurricular activities were considered but not included in the models because their inclusion added a large number of variables to the models while having very little impact on the parameter estimates of other variables or the proportion of variance explained.

References

Abedi, J. (2001). *Assessment and accommodations for English language learners: Issues and recommendations* (CRESST, Policy Brief 4). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing.

Abedi, J. (2002). Standardized achievement tests and English language learners: Psychometric issues. *Educational Assessment*, *8*(3), 231–257.

Abedi, J. (2014). Adapting performance assessments for English language learners. In L. Darling-Hammond & F. Adamson (Eds.), *Beyond the bubble test: How performance assessments support 21st century learning* (pp. 185–205). San Francisco, CA: Jossey-Bass.

Abedi, J., Leon, S., & Mirocha, J. (2003). *Impact of student language background on content-based performance: Analyses of extant data* (CSE Tech. Rep. No. 603). Los Angeles, CA: University of California, National Center for Research on Evaluation, Standards, and Student Testing.

ACT. (2006). *Benefits of a high school core curriculum.* Iowa City, IA: ACT. Retrieved from https://www.act.org/content/dam/act/unsecured/documents/core_curriculum.pdf

ACT. (2012). *Enrollment management trends report 2012: A snapshot of the 2011 ACT-tested high school graduates.* Iowa City, IA: ACT. Retrieved from https://www.act.org/content/dam/act/unsecured/documents/EMTrendsReport2012.pdf.

ACT. (2019a). *The ACT*. ACT Knowledge Hub. https://success.act.org/s/topic/0TO1B000000UBWpWAO/the-act

ACT. (2019b). *The condition of college & career readiness 2019: National*. Iowa City, IA: ACT. Retrieved from

http://www.act.org/content/dam/act/unsecured/documents/cccr-2019/National-CCCR-2019.pdf.

ACT. (2020). *The ACT technical manual* (Version 2020.1). Iowa City, IA: ACT. Retrieved from http://www.act.org/content/dam/act/unsecured/documents/ACT_Technical_Manual.pdf.

ACT. (2021). *National norms for ACT test scores reported during the 2020-2021 reporting year*. Retrieved from https://www.act.org/content/dam/act/unsecured/documents/MultipleChoiceStemComposite.pdf

Allen, J. (2015). *Anticipated changes in ACT scores and participation rates with ACT statewide adoption*. Iowa City, IA: ACT. Retrieved from https://www.act.org/content/dam/act/unsecured/documents/Statewide-Adoption.pdf.

Callahan, R. M. (2005). Tracking and high school English learners: limiting opportunity to learn. *American Educational Research Journal, 42*(2), 305–328.

Callahan, R. M., & Shifrer, D. (2016). Equitable access for secondary English learner students: Course taking as evidence of EL program effectiveness. *Educational Administration Quarterly, 52*(3), 463–496. DOI: 10.1177/0013161X16648190

Hakuta, K., Butler, Y., & Witt, D. (2000). *How long does it take English learners to attain proficiency?* (Policy Report 2000-1). Berkley, CA: University of California: Linguistic Minority Research Institute.

Heilig, J. V., & Darling-Hammond, L. (2008). Accountability Texas-style: The progress and learning of urban minority students in a high-stakes testing context. *Educational Evaluation and Policy Analysis, 30*(2), 75–110.

Herman, J. L., & Abedi, J. (2004). *Issues in assessing English language learners' opportunity to learn mathematics* (CSE Report 633). Los Angeles, CA:

University of California, National Center for Research on Evaluation, Standards, and Student Testing.

Johnson, A. (2019). A matter of time: Variations in high school course-taking by years-as-EL subgroup. *Educational Evaluation and Policy Analysis, 41*(4), 461–482. DOI: 10.3102/0162373719867087.

Kong, J., Powers, S., Starr, L., & Williams, N. (2012, April 13–17). *Connecting English language learning and academic performance: A prediction study*. Presented at the American Educational Research Association Annual Meeting, Vancouver, British Columbia, Canada.

NCES. (2020). *The condition of education: English language learners in public schools*. Washington, DC: NCES. Retrieved from https://nces.ed.gov/programs/coe/indicator_cgf.asp.

Sugarman, J. (2019). *The unintended consequences for English learners of using the four-year graduation rate for school accountability*. Washington, DC: MPI National Center on Immigrant Integration Policy.

Sanchez, E., & Buddin, R. (2015). *How accurate are self-reported high school courses, course grades, and grade point average?* Iowa City, IA: ACT. Retrieved from http://www.act.org/content/dam/act/unsecured/documents/WP-2015-03.pdf

US Department of Education. (2016). *Non-regulatory guidance: English learners and Title III of the Elementary and Secondary Education Act (ESEA), as amended by the Every Student Succeeds Act (ESSA)*, Appendix A. Washington, DC: US Department of Education, Office of Elementary and Secondary Education. Retrieved from https://www2.ed.gov/policy/elsec/leg/essa/essatitleiiiguidenglishlearners92016.pdf.

Young, J. W., Cho, Y., Ling, G., Cline, F., Steinberg, J., & Stone, E. (2008). Validity and fairness of state standards-based assessments for English language learners. *Educational Assessment, 13*(2-3), 170–192.

Appendix

Table A1. Number and Types of EL Supports Approved for EL with Supports Test Group

	Count	Percent
Number of Supports		
1	1,714	11
2	3,965	26
3	4,909	32
4	4,549	30
Type of Support		
Translated Test Instructions	6,853	45
Word to Word Bilingual Dictionary	12,073	80
Extra Time	14,974	99
Small Group Testing	8.691	57

Note: Types of supports do not sum to 100% because most ELs testing with supports were approved for more than one support.

Table A2. Percentages of Missing Registration Category Responses by Test Group and Test Type

	EL with Supports		EL, No Supports		Non-EL, No Supports	
Registration Category	National	State/ District	National	State/ District	National	State/ District
Race/Ethnicity	0.1	19	0.0	5	0.0	5
Parent Income	62	71	27	13	25	14
Parent Education	42	67	10	4	8	3
Coursework/Grades	41	67	14	18	14	14
Semesters of Coursework	2	54	1	5	1	4
Honors/AP	85	74	54	19	35	16
Extracurricular Activities	72	73	27	15	19	13
Degree Aspirations	46	65	10	5	7	3

Table A3. Correlations between ACT Subject Scores and Subject-Specific HSGPA by Test Group

	ACT Subject Area				
	English	Math	Reading	Science	Composite
EL with Supports	0.25	0.38	0.23	0.26	0.37
EL, No Supports	0.41	0.44	0.36	0.39	0.50
Non-EL, No Supports	0.44	0.51	0.38	0.44	0.54

Note: All correlations were significant at $p < 0.0001$.

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Joann L. Moore is a senior research scientist in Applied Research at ACT specializing in prediction of secondary and postsecondary outcomes from academic and non-cognitive factors.

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