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The Effects of English Learner Classification on High School Graduation and College Attendance

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Descriptive evidence shows that English learners (ELs) have lower high school graduation and 4-year-college attendance rates than monolingual and fluent English users. Applying the regression discontinuity design to rich administrative data from a large district in California, this study identifies the first causal effects of initial EL classification on high school graduation and college enrollment. I also report the effects of maintaining EL status, or not reclassifying, after testing in each grade between third and eighth grades. I find no statistically significant impact of initial EL classification on high school graduation or college enrollment. Reclassification just before school transition (fifth and eighth grades) significantly affected the probabilities of on-time graduation and, conditional on college attendance, starting at a 4-year university and starting full-time.

Keywords: *English learners, high school graduation, college attendance*

More than 4.8 million English learners (ELs) are enrolled in U.S. public elementary and secondary schools (ED Data Express, 2018). Only 67% of ELs graduate from high school on time, and fewer than 20% attend 4-year colleges after graduation (ED Data Express, 2018; Kanno & Cromley, 2013). Factors contributing to their underachievement warrant scholarly attention.

Federal and state laws require school districts to provide equitable education opportunities to all students, which includes identifying ELs and offering them language support (*Castañeda v. Pickard*, 1981; *Lau v. Nichols*, 1974). Determining need and eligibility for language services begins when students enter the public school system. Students from homes where English is not the primary language are required to take English proficiency tests (Abedi, 2008; Linquanti & Cook, 2015). Students who score above the proficiency threshold on the initial assessments are classified as initially fluent English proficient (IFEP). IFEP students, or IFEPs, do not receive language support and are placed in classrooms in which the language of instruction is only English. Students who score below the proficiency threshold are classified as EL and become eligible for language services, such as English language development (ELD) classes and sheltered academic content instruction. Once classified as EL, students retake the English proficiency test annually until they meet the criteria to be reclassified fluent English proficient (RFEP). No longer eligible for language support, RFEP students, or RFEPs, are placed alongside native users of English in English-only classrooms. In other words, initial EL classification gives students eligibility for language services; reclassification takes it away.

Language services are intended to help ELs gain English language proficiency and develop competencies in academic subjects in a supportive environment. Naturally, we might expect that students who need language support would tend to perform better with the services than without them. Likewise, we might be concerned that RFEPs could perform worse if they are reclassified prematurely and language support is removed too soon (Robinson, 2011; Robinson-Cimpian & Thompson, 2016). However, extant research shows that EL classification and the accompanying services can have unintended consequences. ELD courses often take up two or more class periods per day, crowding out math, science, and other content courses (Lillie, Markos, Arias, & Wiley, 2012). EL status prevents students from entering high-track classes when the high-track teachers lack EL certifications (Umansky, 2016b). The EL label can also cause teachers, counselors, and even the students themselves to lower expectations for academic achievement (Dabach, 2014; Kanno & Kangas, 2014; Umansky, 2016b). Reclassification, on the other hand, is associated with more access to content and higher academic performance (Kieffer & Thompson, 2018; Saunders & Marcelletti, 2013; Thompson, 2017b). Taken together, prior research suggests that inequities exist in the quality of education experienced by current ELs and non-ELs and that these inequities explain achievement gaps in middle and early high school (Umansky, 2016a). But there is limited evidence for the effect of EL classification on high school completion and college attendance.

This paper examines the extent to which EL classification affects high school graduation and college attendance. My research questions are as follows:

1. What is the causal impact of initial EL classification on students' high school graduation and college attendance?
2. What is the causal impact of maintaining EL status (i.e., failing to reclassify) after each grade between third and eighth grades on EL students' high school graduation and college attendance?

Applying a regression discontinuity (RD) design to data from a large, urban school district in California, I compare the outcomes of students with similar background characteristics who scored just above or just below the proficiency threshold on initial tests. By looking at students barely classified as EL or non-EL, I provide the first causal estimates of initial EL classification on high school graduation and college-going patterns. This study also expands the nascent causal literature on high school ELs in three ways.

First, in contrast to the existing RD studies on high school outcomes that focus almost exclusively on Spanish-speaking ELs (e.g., Shin, 2018), my sample includes a large number of students whose home languages include Mandarin, Cantonese, Vietnamese, and Tagalog as well as Spanish. Findings obtained using this sample are informative to districts and states that serve linguistically diverse student populations.

Second, I report initial effects for students entering in kindergarten and students entering in first grade or later. Previous papers report the effects of initial EL classification for only kindergarten-entry students (e.g., Shin, 2018). In addition to students who entered school at kindergarten, I provide information about a substantial number of students who enter school with EL status postkindergarten. The details of this study will be particularly valuable to states and districts with large numbers of students who do not necessarily start U.S. schooling at the kindergarten level, such as recent immigrants.

Third, in addition to the effects of initial EL classification, I also report the effects of maintaining EL status for students who retook the proficiency test at least once between third and eighth grades. By estimating the impact of entering as an EL and maintaining EL status at each grade level between third and eighth, this study provides new details on the timing of reclassification not seen in earlier RD studies that focused on high school graduation and college going.

I find that initial EL classification had little effect on high school graduation and college attendance. This is not surprising because for students who enter in kindergarten—almost half of ELs in my sample—high school graduation is an outcome measured 13 years after initial classification. A large portion of kindergarten-entry ELs reclassified and stopped receiving language service before or during middle school; naturally, one would expect their downstream outcomes to be similar to those of IFEPs. This finding confirms results from earlier studies showing that the impact of initial EL classification weakens as students move into later grades and out of EL status (Shin, 2018). However, maintaining EL status after fifth and eighth grades has significant effects on later outcomes. I discuss school transition and support from designated EL counselors as potential factors contributing to these effects.

EL Classification, Reclassification, and Academic Outcomes

Initial EL Classification

Several studies using the RD design have documented causal links between initial EL classification and students' academic outcomes up to 10th grade with mixed findings. In two related studies, Umansky (2016a, 2016b) examined the effect of initial EL classification on students' middle school course taking as well as math and English language arts (ELA) standardized test scores from second to 10th grade. She found negative effects of EL classification on both sets of outcomes. That is, compared to their peers who entered school with similar English proficiency, students who barely classified as ELs took significantly fewer rigorous academic courses. ELs in the English immersion program also lagged behind non-ELs on ELA and math achievement. Using data from a different school district in California, Shin (2018) found significant positive effects on ELA test scores in second through fourth grades and on math test scores in second grade but only weak impact on test scores and course grades in later grades.

Our current understanding concerning the relation between initial EL classification and late high school and college outcomes is mostly composed of evidence from qualitative and descriptive studies. An important body of qualitative research documents ELs' experiences with high school curricula, college access, and college transition (e.g., Harklau & McClanahan, 2012; Kanno & Grosik, 2012; Kanno & Kangas, 2014; Kanno & Varghese, 2010). EL status is associated with higher likelihood of placement in non-college-preparatory tracks in high school and lower likelihood of taking rigorous courses (Callahan, 2005; Callahan & Shifrer, 2016; Callahan, Wilkinson, & Muller 2010; Thompson, 2017b). Studies that leverage nationally representative survey data show that the college enrollment rate of ELs and young adults with limited English proficiency is less than half the rate of never-ELs and RFEPs, and ELs' bachelor's degree completion rate is as low as 12% (Kanno & Cromley, 2013; Klein, Bugarin, Beltranena, & McArthur, 2004). Once in college, ELs are much more likely to place into English and math remediation compared to fluent English users (Flores & Drake, 2014). Further, these studies suggest that tracking and socioeconomic factors among ELs can impede academic preparation, contributing to gaps in postsecondary access for ELs.

Unfortunately, time has already started to wear on the saliency of the corresponding data in these studies, and the associations reported have yet to be supported by causal evidence. Thus far, no study has examined the causal effect of initial classification on late high school outcomes, and the impact of EL status and language services on high school graduation and college attendance remains unknown. This paper addresses this gap in the intersecting literatures of ELs and college access. Leveraging data from a district that serves a diverse immigrant population, I estimate the causal impact of initial EL classification on high school graduation and college attendance.

The Effects of Reclassification

EL reclassification processes and criteria are constructed by policymakers and evolve over time. Consequently, a great deal of variation exists across states and school districts in their handling of EL students and the distribution of services, reflecting the breadth of opinion, decision making, and priorities of regional leadership and policymakers. States use different combinations of English proficiency and academic competency assessments to determine eligibility for reclassification (Linquanti, Cook, Bailey, & MacDonald, 2016). In California, for example, students must demonstrate English language proficiency and attain mid-basic-level achievement on the standardized ELA test in order to be eligible for reclassification. In certain local contexts, reclassification decisions are made in further consultations with parents, teachers, and other stakeholders. As a result, many students who meet test-based reclassification criteria are not reclassified (Estrada & Wang, 2018; Mavrogordato & White, 2017). Recent research has also uncovered a "reclassification window," observing that ELs who do not reclassify before the end of elementary school are very unlikely to ever reclassify (Thompson, 2017a).

The decisions that govern EL classification and reclassification are ultimately subject to human judgment and even human error. Policymakers set the cut scores that separate eligible and ineligible students. When assessments and cut scores used for reclassification are not well aligned with curriculum and instruction, ELs can be removed from language support too soon or too late, impeding their subsequent academic outcomes (Robinson, 2011; Robinson-Cimpian & Thompson, 2016).

Reclassification can affect students' academic outcomes in a number of ways. On the one hand, ELs who have been reclassified lose eligibility for language services. The removal of linguistic support could result in lower achievement if the students who met the reclassification eligibility requirements are not prepared for the demands of English-only classrooms. On the other hand, by removing the EL label, reclassification might afford students access to academic opportunities that are unavailable to ELs. For instance, RFEPs would be able to enroll in high-track courses taught by teachers who do not have certification to teach ELs. Thus, the direction in which reclassification might affect downstream performance is potentially ambiguous.

Applying the difference-in-RDs design to Latino/a student data in the Los Angeles Unified School District, Robinson-Cimpian and Thompson (2016) studied the effects of increasing the difficulty of attaining test-based EL reclassification eligibility on students' subsequent achievement and high school graduation. They found that raising the reclassification thresholds had positive effects on ELA achievement and increased the probability of graduation by 11 percentage points. This means that the criteria and, by extension, the timing of reclassification bear important implications on high-stakes outcomes.

This study interrogates the effect of EL reclassification on high school graduation and college attendance. Only one previous study has estimated the effects of reclassification on late high school outcomes and college attendance, finding that exiting EL status after 10th grade has a positive impact on ACT scores (Carlson & Knowles, 2016). However, the end of 10th grade may be too late for policy interventions that center on EL status. A large fraction of ELs who enter in elementary school have reclassified before high school. In addition, a mature body of course-taking research shows that eighth-grade achievement explains a large part of high school curriculum access (e.g., Conger, Long, & Iatarola, 2009). Academic credit completion gaps between current ELs and non-ELs develop in the first two semesters of high school and grow larger with time (Johnson, 2019). If interventions are necessary, we need to identify suitable points in earlier grades for their implementation. This study addresses this gap in the literature by estimating the effects of maintaining EL status after each grade between third and eighth.

Data

This study uses administrative data from a large, urban school district in California. The data contain three sets of variables: demographics, academic outcomes, and English proficiency test information. Students' demographic information includes sex, ethnicity, home language, date of birth, father's education level, mother's education level, and special education indicator. Outcome variables include indicators for graduating from high school on time (within 4 years), graduating within 5 years, and college attendance obtained by matching district records with National Student Clearinghouse (NSC) data.

The English proficiency test used for EL classification is the California English Language Development Test (CELDT). There are two types of CELDT administrations, initial and annual. The initial test is given to student whose home language is not English upon district entry. The annual test is given each fall to ELs who have not previously been reclassified. A student can therefore have scores from multiple CELDT administrations. For this study, initial and annual test data and subsequent academic outcomes are examined separately. The CELDT tests proficiency in speaking and listening for students in kindergarten and first grade and speaking, listening, reading, and writing for students in second through 12th grades. Students receive a scale score and a corresponding placement score (1 = beginning, 2 = early intermediate, 3 = intermediate, 4 = early advanced, 5 = advanced) for each of the language domains and overall proficiency. Students who score a 4 or above overall and 3 or above in each domain are classified (or reclassified) as fluent and placed in English-only classes for the subsequent year. Others who miss the overall cut score or any of the domain cut scores are classified as EL. I observe the test date, grade level, scale scores, and placement scores for students who took the CELDT during any grade in school years 2001–2002 to 2015–2016.

Whereas the CELDT is the only test used for initial EL placement, the annual assessment process for EL exit also includes the ELA section of the California Standardized Test (CST-ELA). To be reclassified, students must attain the mid-basic level (scale score 325). I observe the test date, grade level, scale scores, and placement scores for students who took CST-ELA in school years 2001–2002 to 2012–2013.

TABLE 1

Sample by Test Year, Grade, and High School Graduation Year

Test year	Test grades	Expected high school graduation years
Initial test sample		
2001	K	2014
2002	K, 1	2014, 2015
2003	K, 1, 2	2014, 2015, 2016
2004	1, 2, 3	2014, 2015, 2016
2005	2, 3, 4	2014, 2015, 2016
2006	3, 4, 5	2014, 2015, 2016
2007	4, 5, 6	2014, 2015, 2016
2008	5, 6, 7	2014, 2015, 2016
2009	6, 7, 8	2014, 2015, 2016
2010	7, 8, 9	2014, 2015, 2016
2011	8, 9, 10	2014, 2015, 2016
2012	9, 10, 11	2014, 2015, 2016
Annual test sample		
2003	3–7	2009–2013
2004	3–8	2009–2014
2005	3–8	2010–2015
2006	3–8	2011–2016
2007	4–8	2012–2016
2008	5–8	2013–2016
2009	6, 7, 8	2014, 2015, 2016
2010	7, 8	2015, 2016
2011	8	2016

Note. K = kindergarten.

Analytic Samples

I use two overlapping samples in my analyses. The students' test-taking years, grade levels, and expected graduation cohorts are shown in Table 1. The initial test sample includes 5,791 students who entered the district at any grade level between 2001–2002 and 2015–2016 and were expected to graduate in 2014, 2015, and 2016. The most recent college enrollment data were collected in fall 2017. The three graduating cohorts in my initial test sample were thus 3 years, 2 years, and 1 year out of high school. In other words, even students who delayed graduation until summer 2017 had a chance to enroll in college and be counted in each of the college attendance outcomes described below. Table 2, Panels A and B, presents the summary statistics for the initial sample. About 48% of the students in the sample were female, 46% were Chinese users, 28% were Spanish users, and 1% were identified for special education. Just under 43% of all test takers entered the district in kindergarten, 16% between first and third grades, 11% in fourth or fifth grade, 16% in sixth to eighth grades, and 15% in high school.

The annual test sample includes 12,998 students in cohorts expected to graduate from high school between 2008–2009 and 2015–2016. These students took the annual CELDT and the CST-ELA at least once between third and eighth grades. The most recent graduating cohort was expected to be 1 year out of high school when the last round of 5-year graduation and college enrollment data was gathered in fall 2017. Table 2, Panel C, presents the summary statistics for the annual sample. About 47% of the students in the sample identified as female, 47% as Chinese users, 30% as Spanish users, and 12% were identified for special education. Table 2, Panel D, shows the number of students who took the CELDT in each grade level. Students stop taking the CELDT after they reclassify, so fewer middle school students take the test than elementary school students. Just under 4,900 students took the CELDT in eighth grade. I present estimates for third-through-eighth-grade test takers but highlight eighth-grade results, as eighth grade is a critical juncture at which high school academic trajectories are determined for many students. Of the students who took the annual test in eighth grade, 79.1% initially classified in fourth grade or earlier, and 20.9% were new immigrants who had lived in the United States for 3 years or less prior to eighth grade.

Outcomes

I examine two sets of outcomes: high school graduation and college attendance. For high school graduation, I use indicators for 4-year and 5-year graduation. The four college

TABLE 2
Sample Summary Statistics

Initial CELDT sample			Annual CELDT sample		
	N	Mean		*N*	Mean
Panel A: Demographics			Panel C: Demographics		
Female	5,791	.478	Female	12,998	.466
Chinese (home language)	5,791	.460	Chinese (home language)	12,998	.470
Spanish	5,791	.279	Spanish	12,998	.304
Chinese (ethnicity)	5,791	.480	Chinese (ethnicity)	12,998	.488
Hispanic	5,791	.302	Hispanic	12,998	.336
SPED	5,791	.011	SPED	12,998	.123
CELDT test age (years)	5,791	8.648	First CELDT test age (years)	12,998	9.727
Mother HS grad	5,791	.343	Mother HS grad	12,998	.203
Father HS grad	5,791	.329	Father HS grad	12,998	.189
Panel B: CELDT test grade level (grade of entry)			Panel D: Annual CELDT/CST test grade level (test grade)		
K	2,486	42.93	3	6,819	
1	279	4.82	4	6,847	
2	327	5.65	5	6,989	
3	298	5.15	6	5,691	
4	309	5.34	7	5,224	
5	310	5.35	8	4,891	
6	313	5.40			
7	315	5.44			
8	296	5.11			
9	754	13.02			
10	91	1.57			
11	13	0.22			
Total	5,791	100.00			

Note. CELDT = California English Language Development Test; CST = California Standardized Test; HS grad = high school graduate; SPED = special education.

attendance outcomes are (a) ever attended college after high school graduation; and conditional on ever attending: (b) immediately attended college (in the fall after high school graduation); (c) started college in a 4-year institution; and (d) enrolled at 75% or higher intensity ("full-time") during the first college academic session. Having ever attended college after high school (within 1 to 3 years of expected graduation) serves as a general measure of postsecondary access, and the three conditional measures are strong predictors of degree attainment (Kanno & Cromley, 2013). Although college completion data are not yet available for the cohorts in my sample, these three indicators provide useful information about students' likelihood of finishing college.

The district in this study permitted an NSC data match only for high school graduates and a small number of nongraduate completers. Therefore, college attendance outcomes are available for 78% of the sample. NSC data include enrollment dates and intensity and degree completion in colleges across the nation. As of 2017, the data system covered 96.8% of enrollment in all Title IV degree-granting institutions and 99.4% in public institutions (NSC, 2018). Matching between K–12 administrative data and NSC may be imperfect due to issues such as misspellings of students' names and privacy-related data suppression (Dynarski, Hemelt, & Hyman, 2015). Of the students in the sample whose records were submitted for matching, 99.9% were matched. I test for balance of mismatching at the EL classification and reclassification thresholds and then, to account for mismatch, perform two sets of analyses on college outcomes. First, I impute a value of 0 for students who did not graduate and were not matched to enrollment data because very few high school dropouts, even those who eventually earn GEDs, pursue or complete postsecondary education (Heckman, Humphries, & Mader, 2010; Ryder, 2011). This serves as a lower bound for college enrollment. Second, I run the analysis on the subset of students who graduated from high school as a robustness check. These estimates provide a contrast for college going between ELs and non-ELs who completed their secondary education in the district, which is potentially cleaner than the contrast between all ELs and non-ELs.

Research Design

Simple comparisons of high school graduation and college enrollment rates between ELs and non-ELs may not capture the true impact of EL classification because students classified as ELs and non-ELs may differ systematically in terms of English proficiency, academic motivation, and socioeconomic background. To identify the causal effects of classification, I use an RD design with the test score as the running variable. This approach relies on the assumption that the potential outcomes are a continuous function of the test scores (Lee & Lemieux, 2010). In an experimental design, students would randomly be assigned as either EL or non-EL, and their downstream outcomes would be compared to determine the effect of classification. The RD design mimics random assignment by limiting analyses to students with scores close to the classification threshold. Test scores measure not only a student's true proficiency but also a random component created by any number of idiosyncratic elements. A student who scores just above the classification threshold could potentially have the same true English proficiency as one who scores just below it. Differences in test scores would then be due to some random condition, such as the weather or a student's health or energy level on the day of the test. Despite having the same true English proficiency, one student might be classified as EL whereas the other is not. Because of this random component in testing and its importance in cut score situations, students are said to be as good as randomly assigned just around the preset cut score that separates ELs from non-ELs.

EL classification in the district is determined using a combination of the overall CELDT score, the individual domain scores for the initial test, and an additional CST-ELA score for the annual test. Thus, I use each student's lowest centered score to form a binding RD (Papay, Willett, & Murnane, 2011; Porter, Reardon, Unlu, Bloom, & Cimpian, 2017; Reardon & Robinson, 2012). Because estimates obtained with this approach may be sensitive to scaling, I use standardized scores to minimize potential bias. Following Umansky (2016b), I standardize scale scores using the state standard deviation for each test-year-and-grade-level combination.

I use the following general model to estimate the effect of classification on downstream outcomes:

$$Y_i = \alpha + \beta_0 EL_i + f\left(S_i\right) + \varepsilon_i ,$$

where EL_i is an indicator for scoring below the cutoff for student i, β_0 is the coefficient of interest that estimates the impact of being classified as EL, and $f(S_i)$ is a function used to flexibly model S_i, the centered placement score. Y_i is an indicator for each outcome. Because my outcomes are binary, I estimate linear probability and logit models and compare the results. In linear probability models with a subsample of test scores from a single grade level (e.g., third-grade reclassification), I include test-year fixed effects in the model (not shown in the equation). In analyses with pooled data from multiple grade levels (e.g., initial classification), I include test-year and grade-level fixed effects. I exclude fixed effects from logit models because for some of the cohort-and-test-year combinations there is insufficient corresponding outcome variation (e.g., all students in a cohort graduated in 5 years or less). I report heteroscedasticity-robust Huber-White standard errors.

There is imperfect compliance to classification by CELDT score. A small group of students who scored below at least one threshold was classified as non-EL, and another group of students who scored above all the thresholds was classified as EL. I therefore estimate fuzzy RD models, given a strong first-stage showing that scoring below the CELDT score did significantly induce EL classification (see the Appendix). In the Findings section, I report reduced form estimates that are analogous to intent-to-treat effects.

Comparing estimates from several model specifications, I chose a model with linear spline, which fits the data better than higher-order polynomials according to likelihood ratio tests. Results from quadratic models are qualitatively similar to linear models and are reported in the online Appendix. For initial classification, the Calonico, Cattaneo, and Titiunik (2014; hereafter CCT) bandwidth selection procedure yields an optimal bandwidth of 0.5 standard deviations around the cut scores for all of the outcomes, and the Imbens and Kalyanaraman (2012; hereafter IK) procedure yields 0.5 standard deviations for college attendance and 0.75 standard deviations for high school graduation. For annual reclassification, the CCT and IK optimal bandwidths were both 0.5. I report estimates obtained using these optimal bandwidths as the main result and include estimates from using multiple larger and smaller ones, including the full sample, in the Appendix.

The validity of the RD design depends on the assumption that students just above and just below the cut scores do not systematically differ in their unobservable characteristics that could also influence the outcomes. I test this assumption by checking for score density balance and covariate balance around the cut score (McCrary, 2008). The density test provides an indication for whether the value of the running variable has been manipulated or that students sorted around the cut score. Balance in observed covariates across the cut score provides evidence that students just above the cut score are similar to students just below in unobservable ways. Test score densities and student covariates are balanced (see the Appendix).

Findings

Research Question 1

Research Question 1 asked, "What is the causal impact of initial EL classification upon U.S. school entry on students' high school graduation and college attendance?" Scatterplots

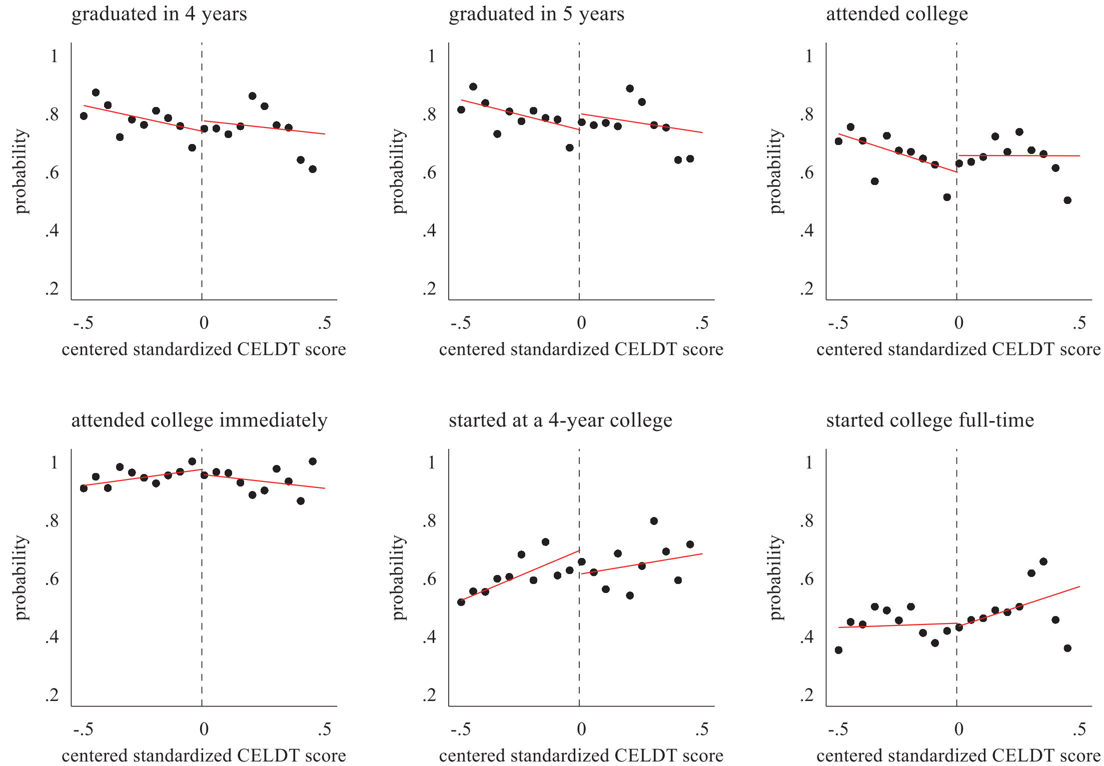


FIGURE 1. *Binding initial California English Language Development Test score and high school graduation and college attendance (optimal bandwidth, 0.5 standard deviations).*

for the CCT optimal bandwidth (0.5 standard deviations around the cut score) are shown in Figure 1. Linear probability and odds ratio estimates for the CCT and IK optimal bandwidths are presented in Table 3. I focus on the CCT optimal bandwidth (0.5 standard deviations) in the rest of this section. Linear probability findings for the optimal bandwidth are highlighted below for brevity and ease of interpretation.

High school graduation. Initial EL classification upon district entry had little impact on 4-year and 5-year high school graduation. As shown in Table 3, Panel A, initial EL classification increased the probability of 4-year graduation by 1.0 percentage points, which is not statistically significant (column 1). Estimates for other bandwidths are slightly larger but within the confidence interval of the optimal bandwidth estimate. For 5-year graduation, the effect is −1.2 percentage points and nonsignificant (Table 3, Panel B, column 1). The other bandwidths yield small positive estimates that are also indistinguishable from zero. Initial EL classification has effects on students who entered the district in kindergarten that are larger in magnitude compared to the whole sample but still not statistically significant (Appendix Table A5). Kindergarten-entry students who were initially classified as EL were 5.3 and 3.7 percentage points more likely than IFEPs to graduate in 4 and 5 years, respectively, but both are imprecisely estimated (Table A5, Panels A and B, column 2). Estimates are statistically similar across bandwidths.

College attendance. For the whole sample, the impact of initial EL classification on ever attending college within 1, 2, and 3 years after expected high school graduation was small and not statistically significant (Table 3, Panel C). Conditional on attending college, the effects of initial EL classification on immediately enrolling in the fall after high school graduation and initially enrolling full-time (3.4 and 2.4 percentage points, respectively) are also indistinguishable from zero (Table 3, Panels D and F). The conditional estimate on starting at a 4-year college is marginally significant and only for the optimal bandwidth (Table 3, Panel E, column 1).

The effect of initial EL classification on college attendance for students who enter the district in kindergarten was imprecisely estimated (Appendix Table A5, Panels C–F). Kindergarten-entry ELs were 3.4 percentage points more likely to enroll in college compared to IFEPs and, conditional on enrollment, approximately 5 percentage points more likely to enroll immediately and full-time. Estimates for the other bandwidths are similar. For starting at a 4-year college, initial EL classification had a statistically significant impact of 14.0 percentage points, but this estimate should be

TABLE 3

Effects of Initial English Learner (EL) Classification on High School Graduation and College Attendance (Optimal Bandwidths)

	Bandwidth = 0.50 *SD*		Bandwidth = 0.75 *SD*	
Variable	(1) Linear probability	(2) Odds ratio	(3) Linear probability	(4) Odds ratio
High school graduation				
A: 4-year graduation				
EL	0.010	1.104	0.049	1.396
	(0.038)	(0.282)	(0.031)	(0.287)
IFEP mean	0.756		0.765	
Observations	1,689	1,689	2,496	2,496
B: 5-year graduation				
EL	−0.012	0.957	0.035	1.263
	(0.038)	(0.248)	(0.030)	(0.264)
IFEP mean	0.772		0.780	
Observations	1,689	1,689	2,496	2,496
College attendance				
C: Ever attended college				
EL	−0.021	0.901	0.018	1.088
	(0.043)	(0.198)	(0.035)	(0.195)
IFEP mean	0.654		0.665	
Observations	1,689	1,689	2,496	2,496
D: Immediately attended				
EL	0.034	2.190	0.015	1.356
	(0.026)	(1.329)	(0.021)	(0.563)
IFEP mean	0.936		0.930	
Observations	1,119	1,119	1,676	1,676
E: Started at 4-year				
EL	0.098*	1.582*	0.044	1.224
	(0.058)	(0.432)	(0.046)	(0.266)
IFEP mean	0.640		0.656	
Observations	1,119	1,119	1,676	1,676
F: Started full-time				
EL	0.024	1.120	-0.009	0.951
	(0.059)	(0.288)	(0.047)	(0.197)
IFEP mean	0.486		0.487	
Observations	1,119	1,119	1,676	1,676

Note. Robust standard errors in parentheses. Linear probability model includes student covariates and test-year and test-grade fixed effects. IFEP (non-EL) means are represented as probabilities. Calonico, Cattaneo, and Titiunik (2014) optimal bandwidth was 0.50 standard deviations for all outcomes. Imbens and Kalyanaraman (2012) optimal bandwidth was 0.75 standard deviations for graduation and 0.50 standard deviations for college attendance. Immediately attended, started at a 4-year, and started full-time are estimated conditional on ever attended college. IFEP = initially fluent English proficient.
* $p < .1$. ** $p < .05$. *** $p < .01$.

interpreted with caution as it is unique to the optimal bandwidth.

Initial EL classification had effects on high school graduates that are similar in magnitude and statistical significance as it did on the whole sample (Appendix Table A6). ELs were no more likely to ever attend college compared to IFEPs. ELs who did attend college were about 3 percentage points more likely to enroll immediately and full-time, but these are imprecisely estimated. At the optimal bandwidth, the conditional estimate for starting at a 4-year college is 10.0 percentage points and marginally significant.

Research Question 2

Research Question 2 asked, "What is the causal impact of maintaining EL status after each grade between third and eighth grades on EL students' high school graduation and college attendance?"

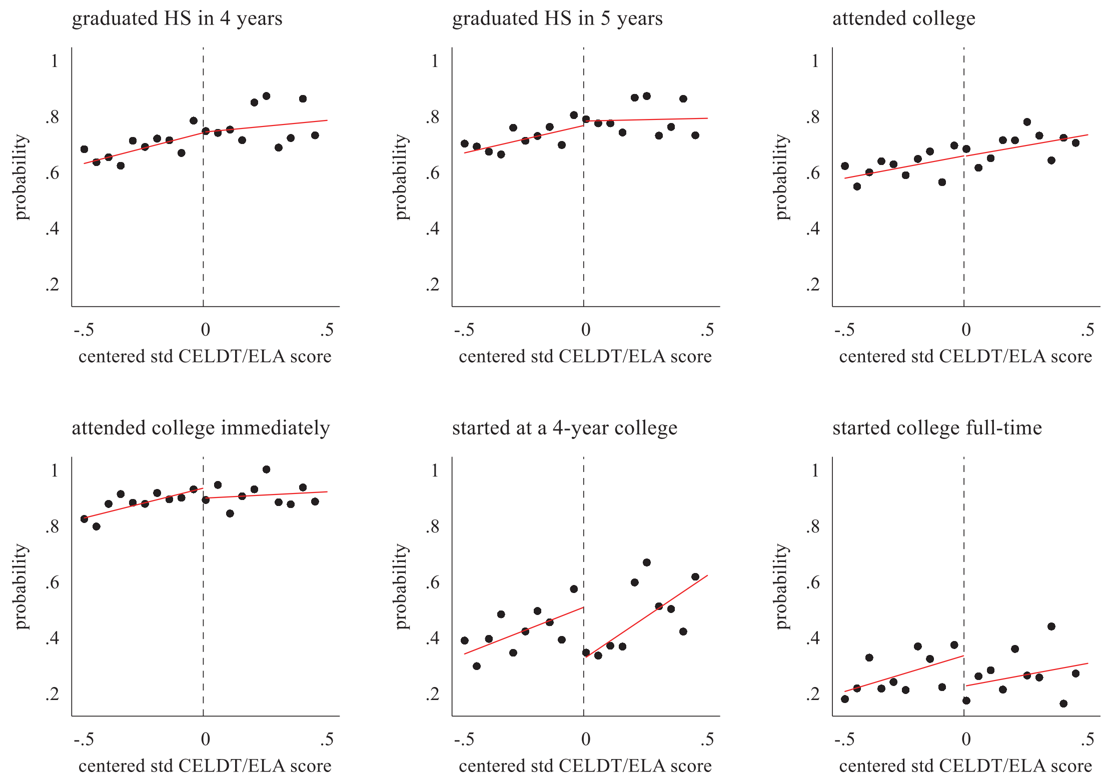


FIGURE 2. *Binding annual California English Language Development Test/California Standardized Test English Language Arts score in eighth grade and high school graduation and college attendance (optimal bandwidth, 0.5 standard deviations).*

Figure 2 shows the scatter plots for eighth-grade test scores and graduation and college attendance outcomes for the optimal bandwidth of 0.5 standard deviations. Figure 3 presents the point estimates and confidence intervals for the impact of maintaining EL status after each grade between third and eighth grades.

High school graduation. The impact of maintaining EL status after eighth grade is small and not statistically significant (Table 4, Panels A and B). This is consistent across bandwidths between 0.25 standard deviations and 1.00 standard deviations (Appendix Table A4). At the optimal bandwidth of 0.50 standard deviations, the estimate for maintaining EL status is −1.8 percentage points for 4-year graduation and −2.5 percentage points for 5-year graduation (Table 4, column 1). Neither estimate is statistically significant. Estimates for the effect of maintaining EL status on high school graduation for students due for reclassification in third, fourth, sixth, and seventh grades are small and not statistically significant (Table 5, Panels A and B, columns 1, 2, 4, 5). Maintaining EL status after fifth grade had a larger, negative impact: 6.6 percentage points for 4-year graduation and 5.2 percentage points for 5-year graduation, which are significant at the 0.05 and 0.10 levels, respectively (Table 5, Panels A and B, column 3). However, estimated fifth-grade reclassification effects are not robust to using a quadratic model (shown in online Appendix Table OA6 and illustrated in Figure 4).

College attendance. For ELs who took the annual test in eighth grade, maintaining EL status had no significant impact on attending college, either immediately or within a few years of high school graduation (Table 4, Panels C and D, column 1). However, among those who did go to college, students who maintained EL status beyond eighth grade were 16.3 percentage points more likely to start college at a 4-year university. They were also 10.6 percentage points more likely to enroll full-time in their first college term (Table 4, Panels E and F, column 1). These estimates are statistically significant and robust to both changing the bandwidths, restricting the sample to high school graduates, and using a quadratic model (Table 4, Panels C and D; Appendix Table A7; online Appendix Figures OA4 and OA5).

Maintaining EL status had small and nonsignificant effects on the college attendance outcomes of students who took the annual test in third through seventh grades, with one exception. Conditional on attending college within a few years of high school graduation, maintaining EL status as a result of fourth-grade test scores had a positive and significant effect on going to college immediately after high school (4.1 percentage points; Table 5, Panel D, column 2). Other estimates are indistinguishable from zero.

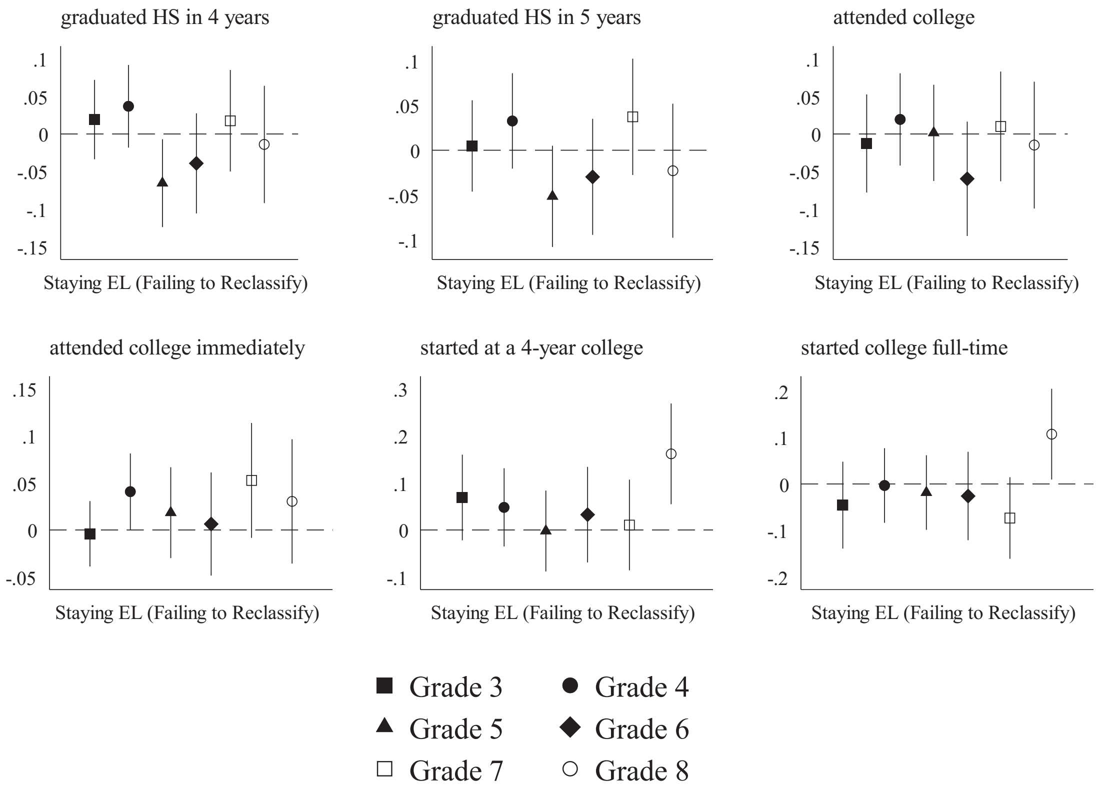


FIGURE 3. *Linear probability estimates of effects of maintaining English learner Status by test grade level (optimal bandwidth, 0.5 standard deviations).*

Taken together, these results suggest that initial EL classification made a limited difference on students' high school completion and college attendance, but reclassification does bear some implications on these downstream outcomes. Although the estimated effects for other grade levels are small and not statistically significant, maintaining EL status after fifth grade leads to a significant reduction in the probability of graduation from high school on time. However, students who maintain EL status after the eighth grade test but eventually enroll in college are more likely to start at a 4-year school and attend full-time during their first college session.

Discussion

My initial EL classification findings are consistent with the weaker effects of initial classification that Shin (2018) identified with regard to academic outcomes in middle and high school. Adding to Shin, however, I also report similar results for the pooled sample of all students entering between kindergarten and 11th grade. Expanding the 10th-grade reclassification findings from Carlson and Knowles (2016), I present the effects of maintaining EL status after annual tests in third through eighth grades. In contrast to their finding of positive reclassification effects, however, my estimates are mostly small and not statistically significant.

There are a few potential explanations for the limited impact of initial EL classification and early-grade reclassification on end-of-high-school outcomes. First, EL services may not have been necessary. The students in my RD samples scored close to the EL classification or reclassification threshold, which means they had high English language proficiency among ELs. These students may not have needed any language support. This could explain why having been assigned to or having maintained EL status neither helped nor harmed their downstream academic outcomes.

Second, EL status changes over time, and in turn, so do the education services associated with it. About half of the ELs in my initial sample were reclassified before sixth grade. After reclassification, these RFEPs take general education classes alongside never-ELs and are no longer restricted in their course selection due to EL status. Prior research demonstrates that whereas ELs may be subject to leveled and exclusionary tracking practices, RFEPs are not. In fact, even compared to never-ELs, RFEPs in the district were higher achieving and more likely to enroll in advanced academic content courses in high school. A similar pattern has been observed in other contexts (Kieffer & Thompson, 2018). Given that RFEPs compose a large portion of the ever-ELs in my sample, it is

TABLE 4
Effects of Maintaining English Learner (EL) Status After Eighth-Grade Test on High School Graduation and College Attendance (Optimal Bandwidth)

	Bandwidth = 0.50 *SD*	
Variable	(1) Linear probability	(2) Odds ratio
High school graduation		
A: 4-year graduation		
EL	−0.018	0.933
	(0.039)	(0.211)
RFEP mean	0.759	
Observations	1,876	1,876
B: 5-year graduation		
EL	−0.025	0.859
	(0.038)	(0.200)
RFEP mean	0.785	
Observations	1,876	1,876
College attendance		
C: Ever attended college		
EL	−0.013	0.940
	(0.043)	(0.199)
RFEP mean	0.688	
Observations	1,876	1,876
D: Immediately attended		
EL	0.034	1.453
	(0.034)	(0.594)
RFEP mean	0.907	
Observations	1,201	1,201
E: Started at 4-year		
EL	0.163***	2.106***
	(0.055)	(0.532)
RFEP mean	0.452	
Observations	1,201	1,201
F: Started full-time		
EL	0.106**	1.719**
	(0.050)	(0.457)
RFEP mean	0.259	
Observations	1,201	1,201

Note. Robust standard errors in parentheses. Linear probability model includes student covariates and test-year and test-grade fixed effects. RFEP (non-EL) means are represented as probabilities. Calonico, Cattaneo, and Titiunik (2014) and Imbens and Kalyanaraman (2012) optimal bandwidths were 0.50 standard deviations for all outcomes. Immediately attended, started at 4-year, and started full-time are estimated conditional on ever attended college. RFEP = reclassified fluent English proficient.
**p* < .1. ***p* < .05. ****p* < .01.

not surprising that graduation and college enrollment are, on average, similar for ever-ELs and IFEPs. The academic achievement of the RFEPs is bringing up the average for ever-ELs as a group. This would explain the positive, albeit small and nonsignificant, point estimates for the effects of initial EL classification on high school graduation and college attendance across several bandwidths. Due to the limitation of a sample that includes only three graduating cohorts, a few of the moderate-sized estimates, especially for the kindergarten-entry subsample, were imprecisely estimated.

Third, the effect of EL reclassification may be strong in school transition grades but weak in others. It is possible that transitioning to RFEP status within the continuum of elementary, middle, or high school has little impact on student achievement, but reclassification at the cusp of middle or high school entry has a profound effect on EL students' academic outcomes. My reclassification results show that students reclassifying in third, fourth, sixth, and seventh grades experience limited impact on their downstream outcomes. This could be because school-level factors play a large role in shaping the quality of curriculum and instruction across classrooms. Important determinants of achievement, such as financial resources, infrastructure, and teacher quality, are likely similar within school in these earlier grades. However, there is evidence suggesting that reclassification in fifth grade improves the probability of on-time graduation. This is consistent with Umansky (2016a), who found a significant EL disadvantage in access to middle school (sixth-to-eighth-grade) courses. ELs who do not reclassify before middle school entry face leveled and exclusionary tracking. These tracking practices would then contribute to lower high school achievement and lower probability of on-time graduation.

The positive effect of fifth-grade reclassification also echoes findings from prior research suggesting that elementary-to-middle-school transition poses a challenge for less academically prepared students and affects high school graduation rates (Bedard & Do, 2005; Schwerdt & West, 2013). About three quarters of the students in the district transition to middle schools after fifth grade. EL curricula and services can differ substantially between elementary and middle schools even in the same district. Thus, students who shared the same services in fifth grade would have different outcomes if RFEPs' transition to middle school English-only classes was systematically smoother than ELs' transition to middle school ELD and sheltered content classes.

To promote access to a rigorous curriculum in later grades, districts and schools should monitor ELs' transition from elementary to middle school. Curriculum experts need to make sure that fifth- and sixth-grade content and materials are well aligned, in terms of both EL services and academic subjects. Policymakers should also interrogate tracking practices in middle schools to ensure that ELs have access to high-quality academic content instruction. It should be noted that simply detracking schools by placing all students on the same track (or the high track) is not always a feasible or effective approach (Thompson, 2017b). Some ELs may not be linguistically or academically prepared to engage with

TABLE 5

Effects of Maintaining English Learner Status on High School Graduation and College Attendance, Third- to Seventh-Grade Tests (Optimum Bandwidth = 0.50 Standard Deviations)

	(1)	(2)	(3)	(4)	(5)
Variable	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
High school graduation					
A: 4-year graduation	[0.901]	[0.845]	[0.821]	[0.792]	[0.759]
Linear probability	0.019	0.037	−0.065**	−0.039	0.018
	(0.027)	(0.028)	(0.030)	(0.034)	(0.034)
Odds ratio	1.225	1.306	0.658**	0.731	1.103
	(0.335)	(0.266)	(0.126)	(0.167)	(0.218)
B: 5-year graduation	[0.906]	[0.860]	[0.835]	[0.804]	[0.779]
Linear probability	0.005	0.033	−0.052*	−0.030	0.037
	(0.026)	(0.027)	(0.029)	(0.033)	(0.033)
Odds ratio	1.050	1.294	0.701*	0.784	1.256
	(0.293)	(0.273)	(0.139)	(0.182)	(0.258)
College attendance					
C: Ever attended college	[0.823]	[0.781]	[0.744]	[0.720]	[0.693]
Linear probability	−0.013	0.019	0.002	−0.059	0.010
	(0.033)	(0.031)	(0.033)	(0.039)	(0.037)
Odds ratio	0.935	1.130	1.003	0.716	1.078
	(0.213)	(0.205)	(0.173)	(0.147)	(0.202)
Observations	2,120	2,742	2,794	1,977	2,186
D: Immediately attended	[0.963]	[0.945]	[0.917]	[0.923]	[0.882]
Linear probability	−0.004	0.041**	0.018	0.006	0.053*
	(0.018)	(0.021)	(0.025)	(0.028)	(0.031)
Odds ratio	0.776	2.240**	1.221	1.133	1.706
	(0.422)	(0.885)	(0.385)	(0.430)	(0.602)
E: Started at 4-year	[0.678]	[0.602]	[0.549]	[0.550]	[0.457]
Linear probability	0.069	0.048	−0.002	0.033	0.011
	(0.046)	(0.042)	(0.044)	(0.052)	(0.049)
Odds ratio	1.403	1.239	0.993	1.146	0.995
	(0.302)	(0.229)	(0.185)	(0.258)	(0.217)
F: Started full-time	[0.554]	[0.437]	[0.376]	[0.361]	[0.281]
Linear probability	−0.045	−0.003	−0.018	−0.026	−0.073
	(0.048)	(0.041)	(0.041)	(0.048)	(0.045)
Odds ratio	0.836	0.972	0.938	0.925	0.669*
	(0.170)	(0.187)	(0.188)	(0.214)	(0.160)
Observations	1,640	1,996	1,944	1,334	1,450

Note. Robust standard errors in parentheses. Linear probability model includes student covariates and test-year fixed effects. RFEP mean in brackets. Immediately attended, started at 4-year, and started full-time are estimated conditional on ever attended college. RFEP = reclassified fluent English proficient.
**p* < .1. ***p* < .05. ****p* < .01.

lessons and materials designed for native or fluent English users. Instead, steps should be taken toward providing all students with exposure to rich academic content and scaffolded instruction. This may require extending instruction time for ELs by leveraging after-school and summer programs.

The finding that eighth grade reclassification affects college choice and enrollment intensity is worth further exploration. Previous research shows that ELs who have not reclassified before high school have much lower rates of college enrollment than never-ELs and RFEPs, and those who do pursue higher education tend to choose 2-year colleges (e.g., Callahan & Humphries, 2016; Kanno & Cromley, 2013). My causal estimates reflect the opposite: Students who barely miss the reclassification threshold in eighth grade but eventually enroll in college are significantly more likely to choose 4-year universities and start college full-time. This group of ELs in my sample had a slightly lower cumulative grade point average (–0.13 points) and probability of taking core academic courses

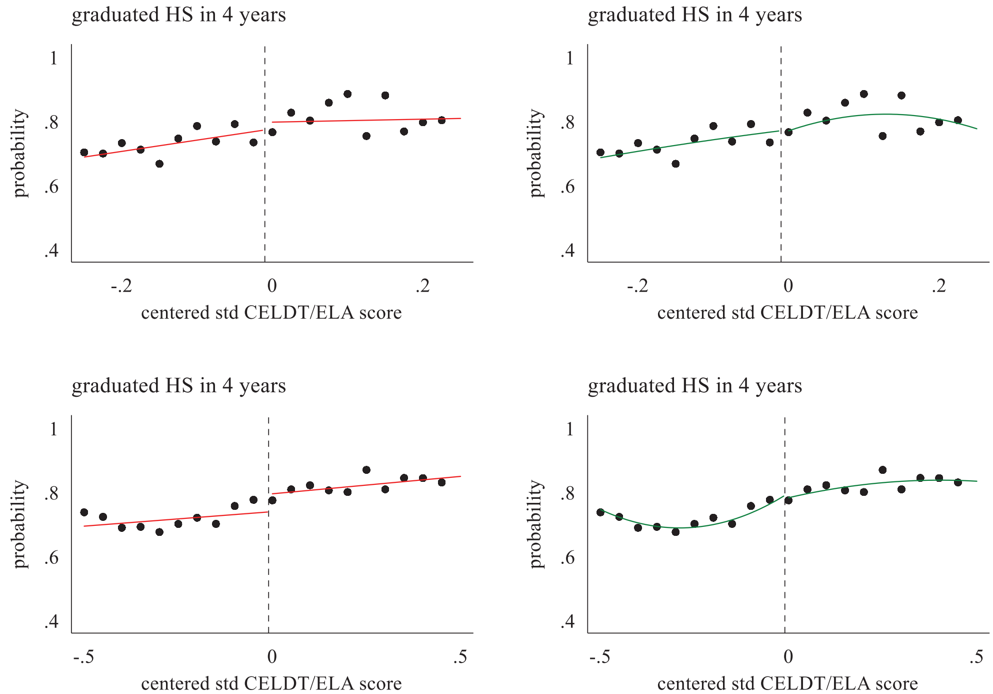


FIGURE 4. *Binding annual California English Language Development Test/California Standardized Test English Language Arts score in fifth grade and high school graduation (bandwidths 0.25 and 0.5 standard deviations).*

(–0.15 courses per subject) in high school than RFEPs. But they were just as likely as RFEPs to take advanced science courses, such as chemistry or physics. Because their eighth-grade English proficiency levels were high, they were more likely to be academically ready for high school than other ELs. According to district administrators, almost all high schools in the district have a full-time EL coordinator who provides ELs with a range of academic support services, including linguistically accessible college advising. For example, EL coordinators visit ELD classes to give presentations on the college application procedure and help individual ELs prepare their materials. Because only current ELs are eligible for these services, students who maintained EL status after eighth grade by falling just short of the cut score may have been well positioned to benefit from their EL coordinator's support. Conversely, EL students who barely made the cut score and were reclassified after eighth grade may have missed an opportunity. Unfortunately, interactions with EL coordinators were not captured in the administrative data. Qualitative inquiry would provide valuable insight on the role EL coordinators play in supporting access to 4-year colleges.

What we do know from previous research is that school environments that support college access promote college attendance. High schools across the nation have recently adopted the goal of "college for all" by taking steps toward building a strong college-going culture (Farmer-Hinton, 2011; Holland & Farmer-Hinton, 2009; Knight-Manuel et al., 2019). Schools and districts that want to increase EL college enrollment should design or adapt college preparation activities to target ELs. In the past decade, the district in my study has been expanding access to college and career readiness curriculum and programming, such as adding a required college-and-career-readiness course for all high school students, including ELs. As a result, ELs in the district now receive more college information and preparatory support than ever before. Some high schools in the district serving large EL populations have college-going rates as high as 80%. When reforms and interventions are effectively implemented at the school level, they are likely to affect ELs as well as non-ELs.

Concluding Remarks

This study provides the first causal estimates for the effects of initial EL classification on high school graduation and college enrollment. In addition, this study is the first to analyze the causal effects of reclassification in third through eighth grades on long run outcomes. Consistent with prior research (Shin, 2018), I find little impact of initial classification on downstream outcomes but significant effects for reclassification in eighth grade.

Using data from an urban school district, this study aims not only to address the research questions at hand but also to prompt new directions for research and expand the discussion on EL college access and success. A few limitations warrant caution when interpreting the findings. First, the RD design obtains causal estimates using data for students whose test scores are close to the EL classification and reclassification thresholds. The findings therefore speak only to ELs with relatively high levels of English proficiency. Second, the sample comes from a rather unique policy context. The district and the state of California both have a long history of receiving and serving immigrant students. A similar study conducted in new destination states and districts may yield different results. For example, in the absence of full-time high school EL coordinators, one may see a null or negative effect for maintaining EL status at the end of eighth grade. Additionally, the sample includes (a) a large group of ELs who primarily use Chinese and other Asian languages at home and (b) a substantial number of recent immigrants. The results may not generalize well to schools and districts in which ELs are mostly U.S. born or more linguistically homogenous. Third, the data contained information only for a few graduation cohorts of students, who have both taken the CELDT and moved through high school. Some of the results may have been imprecisely estimated because of this.

Because only a few cohorts of CELDT takers are expected to have graduated from high school, longer-term college and career outcomes are not yet available for an RD study that leverages CELDT scores as the running variable. As more data become available, future research should investigate the relation between EL status and college completion. Is there an association between the number of years a student spends as an EL and how long he or she stays in college? To what extent are ELs developing the academic and nonacademic skills needed to complete a college degree? To what extent are reclassified ELs "re-becoming ESL" (English as a second language) upon entering college due to placement into English language requirements or remediation (Marshall, 2010; see also Kanno & Varghese, 2010)? Further inquiry into related questions will shed light on how K–12 policy and services can better support students with special academic and linguistic needs in achieving success in college and their careers.

More and better data are crucial to understanding the factors driving EL college and career outcomes. Currently, the only quantitative evidence is from older survey data and studies focusing on a single state or district (e.g., Carlson & Knowles, 2016; Kanno & Cromley, 2013). Among the secondary school data collected by the states and the federal government, only a few coarse measures, such as attainment of English and academic subject proficiency and high school graduation rate, are reported separately for ELs (also referred to as those with limited English proficiency, or LEP). Data on ELs enrolled in postsecondary education are even scarcer because data systems such as the Integrated Postsecondary Education Data System do not disaggregate data by K–12 EL status. As a result, we lack basic information about ELs at the state or national level, such as the number of ever-ELs and the number of never-reclassified ELs who go to college. At the local level, collaboration between K–12 school districts and higher education institutions would facilitate data collection and analysis for the purpose of designing and evaluating programs that support EL college persistence. To enable more robust research and policy discussions on college and career readiness for all, strong partnerships among policymakers, practitioners, and researchers are indispensable.

Appendix

TABLE A1
Baseline Covariate Balance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Female	Chinese (language)	Spanish	Chinese (ethnicity)	Hispanic	SPED	Mother HS grad	Father HS grad	Test age (days)
Panel A: Initial CELDT									
BW = 0.50 SD									
EL	0.062	−0.029	0.103**	−0.063	0.069	0.010	0.037	−0.026	0.506
	(0.048)	(0.046)	(0.043)	(0.047)	(0.044)	(0.013)	(0.056)	(0.057)	(15.982)
Observations	1,689	1,689	1,689	1,689	1,689	1,689	816	745	1,689
R^2	0.019	0.059	0.019	0.053	0.018	0.110	0.039	0.048	0.985
Adjusted R^2	0.009	0.048	0.009	0.042	0.008	0.100	0.018	0.026	0.984
BW = 1.00 SD									
EL	−0.030	−0.002	0.045	−0.002	0.021	0.003	0.003	−0.013	1.016
	(0.035)	(0.034)	(0.031)	(0.034)	(0.031)	(0.009)	(0.040)	(0.041)	(11.851)
Observations	3,139	3,139	3,139	3,139	3,139	3,139	1,497	1,378	3,139

(continued)

TABLE A1 (CONTINUED)

	(1) Female	(2) Chinese (language)	(3) Spanish	(4) Chinese (ethnicity)	(5) Hispanic	(6) SPED	(7) Mother HS grad	(8) Father HS grad	(9) Test age (days)
R^2	0.008	0.053	0.022	0.032	0.015	0.080	0.028	0.037	0.986
Adjusted R^2	0.002	0.048	0.016	0.027	0.010	0.075	0.017	0.025	0.986
Panel B: Annual CELDT									
BW = 0.50 SD									
EL	0.026	0.071	0.011	0.061	0.004	−0.015	0.026	0.016	10.489
	(0.046)	(0.045)	(0.046)	(0.044)	(0.044)	(0.029)	(0.031)	(0.031)	(15.630)
Observations	1,876	1,876	1,876	1,876	1,876	1,876	1,876	1,876	1,876
R^2	0.005	0.021	0.023	0.036	0.044	0.023	0.237	0.217	0.086
Adjusted R^2	−0.005	0.011	0.013	0.027	0.035	0.014	0.229	0.209	0.077
BW = 1.00 SD									
EL	0.061*	0.033	0.029	0.020	0.037	0.004	−0.011	−0.001	4.560
	(0.035)	(0.035)	(0.035)	(0.034)	(0.034)	(0.022)	(0.023)	(0.023)	(11.566)
Observations	3,295	3,295	3,295	3,295	3,295	3,295	3,295	3,295	3,295
R^2	0.007	0.016	0.020	0.032	0.047	0.025	0.224	0.202	0.102
Adjusted R^2	0.001	0.010	0.014	0.027	0.041	0.019	0.219	0.198	0.097

Note. Robust standard errors in parentheses. BW = bandwidth; CELDT = California English Language Development Test; EL = English learner; HS grad = high school graduate; SPED = special education.
*$p < .1$. **$p < .05$. ***$p < .01$.

TABLE A2
First Stage: Binding Score Below Cut Score and Actual English Learner Classification

Variable	BW 0.25 *SD*	BW 0.50 *SD*	BW 0.75 *SD*	BW 1.00 *SD*	Full sample
Initial CELDT					
Below cut score	0.514***	0.544***	0.554***	0.554***	0.583***
	(0.052)	(0.034)	(0.028)	(0.025)	(0.021)
R^2	0.502	0.529	0.573	0.605	0.556
Adjusted R^2	0.476	0.517	0.565	0.599	0.552
F statistic	96.444	250.896	396.408	505.677	769.641
F statistic *p* value	0.000	0.000	0.000	0.000	0.000
Observations	878	1,689	2,496	3,139	5,791
Annual CELDT/CST-ELA					
Below cut score	0.234***	0.240***	0.233***	0.233***	0.299***
	(0.057)	(0.041)	(0.035)	(0.031)	(0.026)
R^2	0.154	0.169	0.190	0.213	0.245
Adjusted R^2	0.126	0.154	0.180	0.205	0.240
F statistic	16.604	34.100	45.739	55.143	132.424
F statistic *p* value	0.000	0.000	0.000	0.000	0.000
Observations	981	1,876	2,669	3,295	4,883

Note. Robust standard errors in parentheses. Model includes student covariates and cohort and test-year fixed effects. BW = bandwidth; CELDT = California English Language Development Test; CST-ELA = California Standardized Test English Language Arts.
*$p < .1$. **$p < .05$. ***$p < .01$.

TABLE A3

Effects of Initial EL Classification on High School Graduation and College Attendance (Bandwidths 0.25 SD, 1.00 SD, and Full Sample)

	Bandwidth = 0.25 *SD*		Bandwidth = 1.00 *SD*		Full sample	
Variable	(1) Linear probability	(2) Odds ratio	(3) Linear probability	(4) Odds ratio	(5) Linear probability	(6) Odds ratio
High school graduation						
A: 4-year graduation						
EL	0.037	1.256	0.055**	1.477**	0.038*	1.259
	(0.058)	(0.448)	(0.027)	(0.268)	(0.021)	(0.182)
IFEP mean	0.765		0.784		0.790	
Observations	878	878	3,139	3,139	5,791	5,791
B: 5-year graduation						
EL	0.020	1.150	0.043	1.342	0.037*	1.258
	(0.057)	(0.417)	(0.026)	(0.245)	(0.021)	(0.184)
IFEP mean	0.786		0.798		0.803	
Observations	878	878	3,139	3,139	5,791	5,791
College attendance						
C: Ever attended college						
EL	−0.040	0.835	0.033	1.183	0.027	1.141
	(0.064)	(0.260)	(0.031)	(0.187)	(0.024)	(0.145)
IFEP mean	0.652		0.689		0.692	
Observations	878	878	3,139	3,139	5,791	5,791
D: Immediately attended						
EL	0.007	1.244	0.013	1.262	0.019	1.442
	(0.039)	(1.500)	(0.018)	(0.437)	(0.015)	(0.378)
IFEP mean	0.940		0.934		0.938	
Observations	565	565	2,149	2,149	3,746	3,746
E: Started at 4-year						
EL	−0.004	0.956	0.019	1.109	−0.022	0.922
	(0.086)	(0.392)	(0.041)	(0.210)	(0.031)	(0.139)
IFEP mean	0.615		0.678		0.686	
Observations	565	565	2,149	2,149	3,746	3,746
F: Started full-time						
EL	−0.027	0.884	0.005	1.010	−0.048	0.816
	(0.090)	(0.357)	(0.042)	(0.184)	(0.032)	(0.119)
IFEP mean	0.459		0.508		0.519	
Observations	565	565	2,149	2,149	3,746	3,746

Note. Robust standard errors in parentheses. Linear probability model includes student covariates and test-year and test-grade fixed effects. IFEP (non-EL) means are represented as probabilities. Immediately attended, started at 4-year, and started full-time are estimated conditional on ever attended college. EL = English learner; IFEP = initially fluent English proficient.

**p* < .1. ***p* < .05. ****p* < .01.

TABLE A4

Effects of Maintaining English Learner Status After Eighth-Grade Test on High School Graduation and College Attendance (BWs 0.25 SD, 0.75 SD, 1.00 SD, and Full Sample)

Variable	(1) BW 0.25 *SD*	(2) BW 0.75 *SD*	(3) BW 1.00 *SD*	(4) Full sample
High school graduation				
A: 4-year graduation	[0.754]	[0.761]	[0.764]	[0.765]
Linear probability	0.014	−0.006	−0.004	−0.045*
	(0.054)	(0.033)	(0.030)	(0.024)
Odds ratio	1.125	0.971	0.974	0.763**
	(0.342)	(0.183)	(0.166)	(0.104)
B: 5-year graduation	[0.784]	[0.786]	[0.788]	[0.788]
Linear probability	0.011	−0.017	−0.012	−0.040*
	(0.052)	(0.032)	(0.029)	(0.023)
Odds ratio	1.044	0.892	0.913	0.753**
	(0.330)	(0.173)	(0.160)	(0.106)
College attendance				
C: Ever attended college	[0.669]	[0.694]	[0.695]	[0.694]
Linear probability	0.016	0.012	−0.001	−0.048*
	(0.060)	(0.036)	(0.033)	(0.026)
Linear probability	1.089	1.060	0.983	0.795*
	(0.312)	(0.189)	(0.159)	(0.105)
Observations	981	2,669	3,295	4,883
D: Immediately attended	[0.900]	[0.900]	[0.895]	[0.898]
Linear probability	0.053	−0.003	−0.008	−0.021
	(0.045)	(0.029)	(0.027)	(0.021)
Odds ratio	1.680	0.914	0.842	0.733
	(0.939)	(0.309)	(0.260)	(0.168)
E: Started at 4-year	[0.390]	[0.465]	[0.473]	[0.486]
Linear probability	0.226***	0.101**	0.070*	0.008
	(0.076)	(0.046)	(0.042)	(0.034)
Odds ratio	2.947***	1.599**	1.381*	1.038
	(1.049)	(0.340)	(0.270)	(0.168)
F: Started full-time	[0.249]	[0.273]	[0.279]	[0.291]
Linear probability	0.172**	0.096**	0.081**	0.048
	(0.070)	(0.042)	(0.038)	(0.030)
Odds ratio	2.669**	1.657**	1.494*	1.316
	(1.031)	(0.376)	(0.310)	(0.225)
Observations	634	1,639	1,962	2,636

Note. Robust standard errors in parentheses. Linear probability model includes student covariates and test-year and test-grade fixed effects. RFEP mean in brackets. Optimal bandwidth is 0.50 *SD*. Immediately attended, started at 4-year, and started full-time are estimated conditional on ever attended college. BW = bandwidth; RFEP = reclassified fluent English proficient.

* $p < .1$. ** $p < .05$. *** $p < .01$.

TABLE A5

Effects of Initial English Learner Classification on High School Graduation and College Attendance, Kindergarten Entry Subsample

Variable	(1) BW 0.25 *SD*	(2) BW 0.50 *SD*	(3) BW 0.75 *SD*	(4) BW 1.00 *SD*	(5) Full sample
High school graduation					
A: 4-year graduation	[0.806]	[0.808]	[0.818]	[0.824]	[0.826]
Linear probability	0.095	**0.053**	*0.071**	0.065*	0.040
	(0.074)	**(0.049)**	*(0.040)*	(0.035)	(0.029)
Odds ratio	1.896	**1.516**	*1.742**	1.674*	1.397
	(1.010)	**(0.563)**	*(0.532)*	(0.462)	(0.326)
B: 5-year graduation	[0.825]	[0.824]	[0.832]	[0.837]	[0.838]
Linear probability	0.073	**0.037**	*0.055*	0.047	0.032
	(0.072)	**(0.047)**	*(0.038)*	(0.034)	(0.028)
Odds ratio	1.741	**1.385**	*1.584*	1.492	1.332
	(0.959)	**(0.526)**	*(0.492)*	(0.416)	(0.310)
College attendance					
C: Ever attended college	[0.668]	[0.693]	[0.701]	[0.711]	[0.707]
Linear probability	0.023	**0.034**	0.037	0.041	0.039
	(0.086)	**(0.057)**	(0.047)	(0.042)	(0.035)
Odds ratio	1.100	**1.207**	1.231	1.289	1.265
	(0.480)	**(0.364)**	(0.313)	(0.295)	(0.245)
Observations	471	978	1,483	1,870	2,487
D: Immediately attended	[0.931]	[0.935]	[0.936]	[0.932]	[0.936]
Linear probability	0.012	**0.048**	*0.031*	0.015	0.029
	(0.053)	**(0.036)**	*(0.028)*	(0.026)	(0.021)
Odds ratio	1.750	**2.854**	*1.790*	1.324	1.816
	(2.090)	**(2.495)**	*(1.046)*	(0.706)	(0.738)
E: Started at 4-year	[0.628]	[0.664]	[0.673]	[0.677]	[0.679]
Linear probability	0.035	**0.149****	0.093	0.051	−0.003
	(0.106)	**(0.073)**	(0.060)	(0.053)	(0.042)
Odds ratio	1.135	**2.061***	1.527	1.267	0.980
	(0.672)	**(0.775)**	(0.451)	(0.332)	(0.203)
F: Started full-time	[0.483]	[0.507]	[0.522]	[0.526]	[0.525]
Linear probability	−0.087	**0.050**	0.073	0.056	−0.018
	(0.121)	**(0.080)**	(0.064)	(0.057)	(0.045)
Odds ratio	0.676	**1.240**	1.361	1.279	0.932
	(0.360)	**(0.427)**	(0.381)	(0.320)	(0.184)
Observations	318	689	1,055	1,338	1,730

Note. Robust standard errors in parentheses. Linear probability model includes student covariates and test-year fixed effects. IFEP mean in brackets. Calonico, Cattaneo, and Titiunik (2014) optimal bandwidth estimates in boldface. Imbens and Kalyanaraman (2012) optimal bandwidth estimates in italics. Immediately attended, started at 4-year, and started full-time are estimated conditional on ever attended college. BW = bandwidth; IFEP = initially fluent English proficient.
**p* < .1. ***p* < .05. ****p* < .01.

TABLE A6

Effects of Initial English Learner Classification on College Attendance, High School Graduate Subsample

Variable	BW 0.25 *SD*	BW 0.50 *SD*	BW 0.75 *SD*	BW 1.00 *SD*	Full sample
A: Ever attended college	[0.808]	[0.824]	[0.829]	[0.842]	[0.842]
Linear probability	−0.052	**–0.011**	−0.008	0.008	0.014
	(0.065)	**(0.043)**	(0.034)	(0.030)	(0.023)
Odds ratio	0.673	**0.944**	0.939	1.071	1.102
	(0.291)	**(0.281)**	(0.225)	(0.228)	(0.187)
Observations	688	1,337	1,988	2,528	4,461
B: Immediately attended	[0.950]	[0.946]	[0.943]	[0.945]	[0.947]
Linear probability	0.008	**0.033**	0.010	0.004	0.010
	(0.037)	**(0.025)**	(0.020)	(0.018)	(0.014)
Odds ratio	1.569	**2.244**	1.261	1.084	1.258
	(1.885)	**(1.400)**	(0.547)	(0.396)	(0.356)
C: Started at 4-year	[0.622]	[0.644]	[0.658]	[0.682]	[0.690]
Linear probability	0.006	**0.100***	0.045	0.020	−0.021
	(0.086)	**(0.058)**	(0.047)	(0.041)	(0.031)
Odds ratio	1.011	**1.604***	1.228	1.117	0.925
	(0.413)	**(0.442)**	(0.269)	(0.213)	(0.141)
D: Started full-time	[0.464]	[0.489]	[0.493]	[0.513]	[0.523]
Linear probability	−0.020	**0.027**	−0.004	0.006	−0.049
	(0.090)	**(0.059)**	(0.048)	(0.042)	(0.033)
Odds ratio	0.913	**1.138**	0.971	1.014	0.815
	(0.369)	**(0.294)**	(0.202)	(0.185)	(0.119)
Observations	556	1,102	1,654	2,122	3,700

Note. Robust standard errors in parentheses. Linear probability model includes student covariates and test year, and test grade fixed effects. IFEP mean in brackets. Calonico, Cattaneo, and Titiunik (2014) and Imbens and Kalyanaraman (2012) optimal bandwidth estimates in boldface. Immediately attended, started at 4-year, and started full-time are estimated conditional on ever attended college. BW = bandwidth; IFEP = initially fluent English proficient.
$^*p < .1$. $^{**}p < .05$. $^{***}p < .01$.

TABLE A7

Effects of Maintaining English Learner Status After Eighth-Grade Test on College Attendance, High School Graduate Subsample

Variable	(1) BW 0.25 *SD*	(2) BW 0.50 *SD*	(3) BW 0.75 *SD*	(4) BW 1.00 *SD*	(5) Full sample
A: Ever attended college	[0.831]	[0.854]	[0.863]	[0.863]	[0.859]
Linear probability	0.013	0.013	0.037	0.014	−0.018
	(0.055)	(0.039)	(0.033)	(0.030)	(0.024)
Odds ratio	1.109	1.088	1.351	1.082	0.796
	(0.443)	(0.329)	(0.348)	(0.252)	(0.156)
Observations	752	1,400	1,942	2,339	3,248
B: Immediately attended	[0.902]	[0.908]	[0.900]	[0.895]	[0.898]
Linear probability	0.044	0.027	−0.010	−0.016	−0.023
	(0.045)	(0.034)	(0.029)	(0.027)	(0.020)
Odds ratio	1.496	1.329	0.839	0.779	0.707
	(0.848)	(0.552)	(0.286)	(0.242)	(0.163)
C: Started at 4-year	[0.387]	[0.450]	[0.462]	[0.471]	[0.484]
Linear probability	0.222***	0.167***	0.099**	0.068	0.012
	(0.076)	(0.055)	(0.046)	(0.042)	(0.034)
Odds ratio	2.931***	2.156***	1.587**	1.374	1.062
	(1.049)	(0.551)	(0.341)	(0.272)	(0.174)
D: Started full-time	[0.244]	[0.257]	[0.270]	[0.276]	[0.288]
Linear probability	0.165**	0.112**	0.096**	0.084**	0.052*
	(0.069)	(0.050)	(0.042)	(0.038)	(0.030)
Odds ratio	2.648**	1.783**	1.663**	1.521**	1.340*
	(1.029)	(0.478)	(0.381)	(0.319)	(0.232)
Observations	627	1,179	1,605	1,923	2,581

Note. Robust standard errors in parentheses. Linear probability model includes student covariates and test-year and test-grade fixed effects. RFEP mean in brackets. Optimal bandwidth is 0.50 *SD*. Immediately attended, started at 4-year, and started full-time are estimated conditional on ever attended college. BW = bandwidth; RFEP = reclassified fluent English proficient.
$^*p < .1$. $^{**}p < .05$. $^{***}p < .01$.

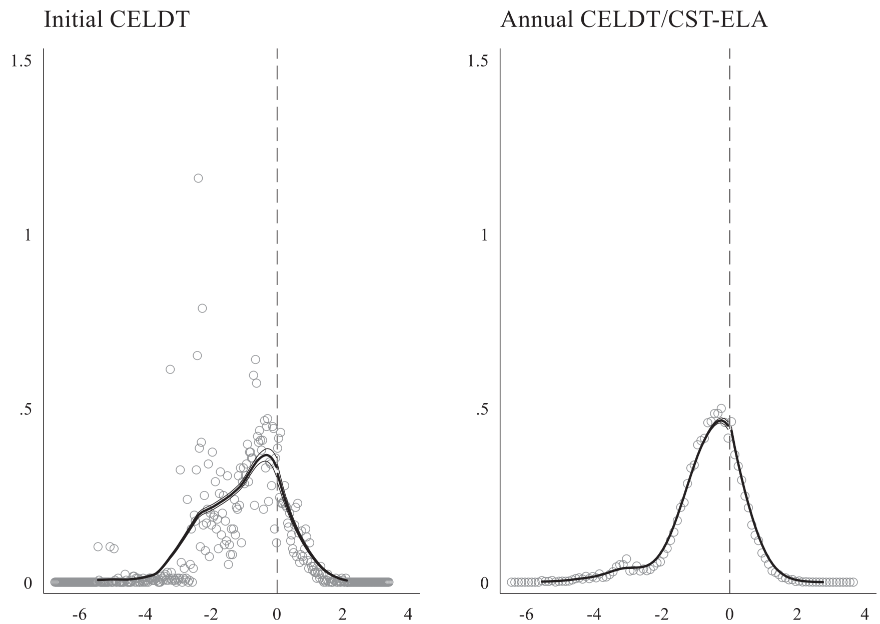


FIGURE A1. *McCrary density plots.*

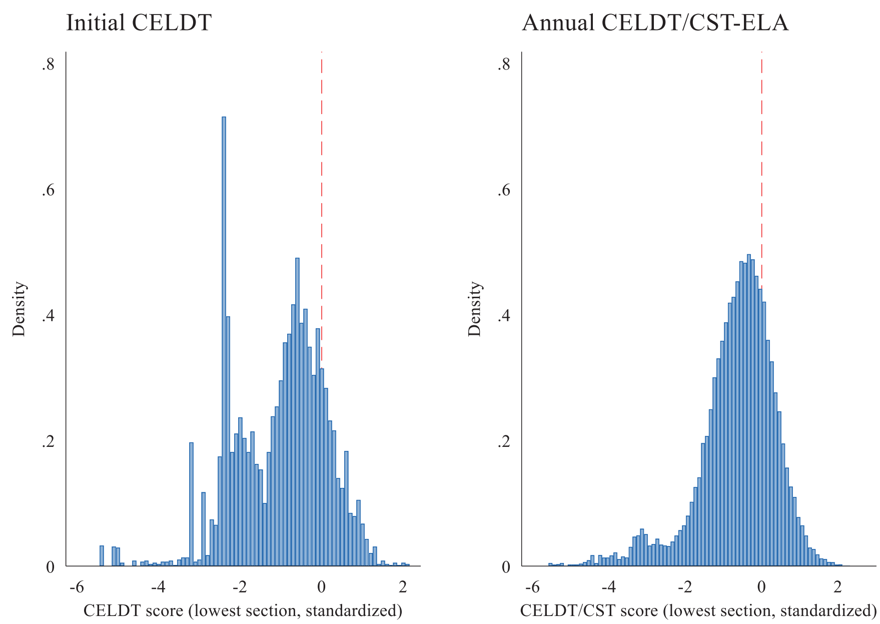
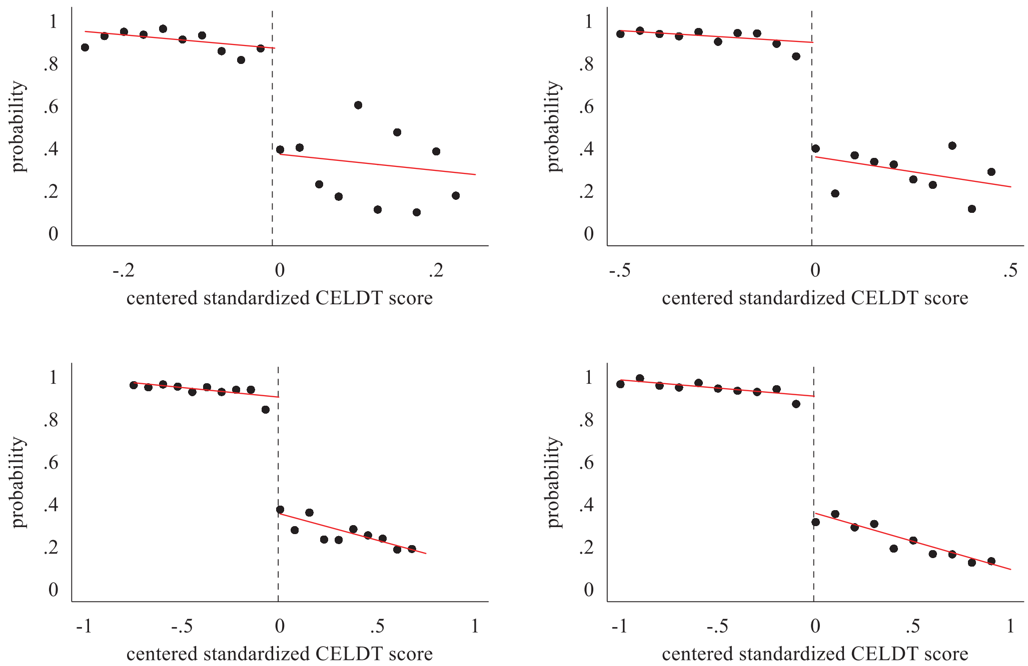


FIGURE A2. *Binding score distributions.*

Initial CELDT Score and EL Classification



Annual CELDT/CST and EL Classification

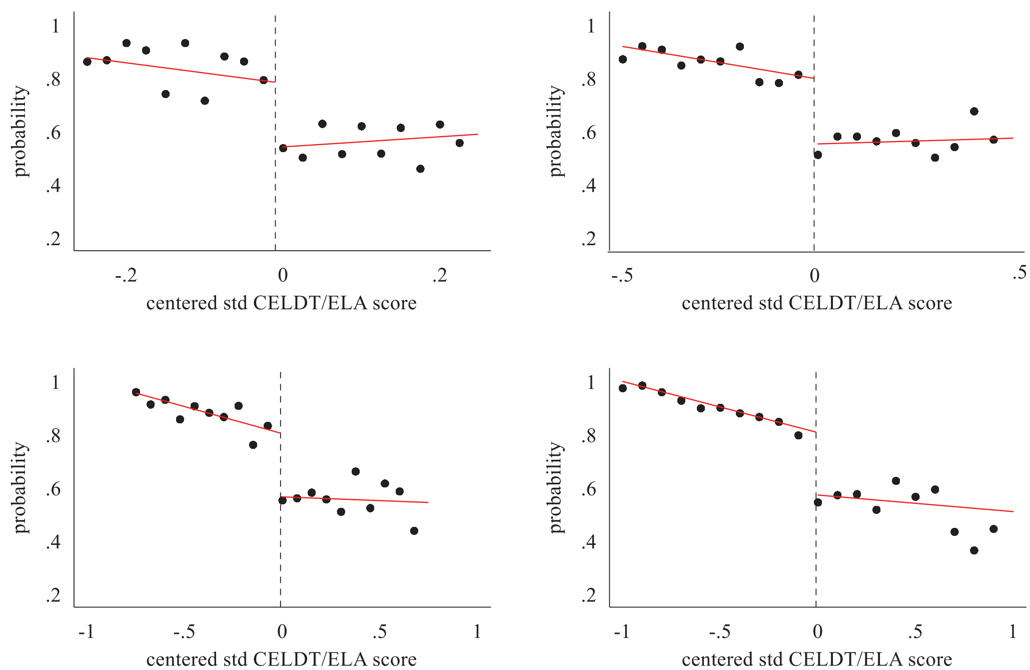


FIGURE A3. *First stage: Binding score and English learner classification.*

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