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English Learner Trajectories and Reclassification

Technical Appendices

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Appendix A. Methodology

We use a regression discontinuity design (RD) that exploits the rules both districts have established for reclassification of English Learners (ELs), as presented in Table 1. The assignment variables related to reclassification are California Standards Test (CST) scores and the overall and subtest scores on the California English Language Development Test (CELDT) and (in LAUSD) course marks. Subject to a number of conditions, an RD study will produce a consistent estimate of the causal effect.

Two questions must be addressed: What are the treatment and control groups, and is there a meaningful contrast between the experiences of the two groups? Students just below the cutoff point for reclassification remain in EL support (described in the main text), and serve as our control group. Students at or above the cutoff point are generally reclassified. The act of reclassification is meaningful. By definition, reclassified students will be treated like otherwise similar native English speakers. Thus, the treatment is the act of being reclassified and having English language development classes removed.

Conceptually, there are (at least) two ways to handle RD models with more than one forcing variable. The What Works Clearinghouse (U.S. Department of Education, 2014) recommends that RDs for a given outcome, but based on different forcing variables, should be treated separately. We adopt this approach in our main analysis.

Estimation Method

A simple intent-to-treat estimator tests for whether there is a discontinuity in the outcome at the cutoff value of the running variable. Specifically, for the subsample of students who were ever English Learners, let Y_{ist} denote the test score or other outcome of student i in school s . Year t is the year in which we observe a reclassification decision, but the outcome observed will be in a future school year. Let $Z_{i,t-1}$ be a vector of baseline characteristics representing a vector of background variables measured the year before the reclassification decision. Note that the vector Z is measured in period $t-1$ because, in the year of reclassification, reclassified students receive treatment for part of the school year before being reclassified. These will include time invariant demographic variables such as indicators for race/ethnicity, language spoken at home, and gender. But $Z_{i,t-1}$ will also include baseline student achievement characteristics. (In terms of statistical expectation, there should be no differences in baseline characteristics of those just above and below the cutoff of the forcing variable, although in finite samples differences will emerge. By controlling for these variables we increase precision.)

Consider the RD analysis based on the cutoff score of the ELA CST. The spring CST score is used to make a reclassification decision in the following school year. Thus, to be reclassified in year t , a necessary but not sufficient condition is that $CST_{i,t-1} \geq 0$ where we have rescaled the test score to equal 0 at the level required for reclassification in the given grade. In addition, the student must meet the other cutoffs imposed by the given district on the CELDT (and on course grades in LAUSD). The key regressor is a dummy variable $ABOVE_{it} = 1(CST_{i,t-1} \geq 0)$, (thus equaling 1/0 as the CST score is non-negative/negative). We estimate local linear models on either side of the cutoff or, equivalently, estimate the two models at the same time by interacting controls with the ABOVE dummy:

$$Y_{is,t+1} = \alpha + \beta CST_{i,t-1} + \delta ABOVE_{it} + \gamma ABOVE_{it} \cdot CST_{i,t-1} + Z_{i,t-1}' \Delta + \mu_{it} \quad (1)$$

Here, the key coefficient is δ . If it is not significantly different from zero, then we retain the null hypothesis of a zero causal impact of meeting the reclassification criterion on the outcome. (In the above model we assume a linear relation between the outcome and the running variable, $CST_{i,t-1}$, while allowing for different slopes on

either side of the cutoff. In the main models we assume a more flexible quadratic model, and for robustness we later use higher order polynomials in the running variable as well.) In later experiments, we use the CELDT overall performance level and the CELDT reading subtest as the running variable.

The intent-to-treat model in (1) estimates the causal effect of meeting the reclassification criterion, but does not tell us the impact of treatment on the treated, that is, the impact of actual reclassification. Because we will have a fuzzy regression discontinuity design, based on Hahn et al. (2001), we can estimate the causal effect of reclassification, using a Two Stage Least Squares (2SLS) strategy. This approach produces a causal estimate of the impact of reclassification, which can be interpreted as a weighted Local Average Treatment Effect (LATE). The coefficient of interest is a consistent estimate of the average causal effect of reclassification for ELs who were close to the cutpoint and who would comply with the reclassification policy.¹

Our instrument for reclassification is the dummy variable $ABOVE_{it}$. To perform 2SLS, in the first stage we model the actual reclassification decision as

$$R_{it} = a + b ABOVE_{it} + Z_{i,t-1}'\Gamma + \epsilon_{it} \quad (2)$$

where Γ is a vector of coefficients, a and b are coefficients, and ϵ_{it} is an error term. In the second stage, we model an outcome such as ELA achievement the year after the reclassification decision, but replace actual reclassification with predicted reclassification \hat{R}_{it} . We estimate local linear models on either side of the cutoff or, equivalently, estimate the two models at the same time by interacting controls with the ABOVE dummy:

$$Y_{is,t+1} = \theta + \mu CST_{i,t-1} + Z_{i,t-1}'\Lambda + \pi \hat{R}_{it} + \rho ABOVE_{it} \cdot CST_{i,t-1} + \xi_{it} \quad (3)$$

Here, the key coefficient is π . If it is not significantly different from zero, then we retain the null hypothesis of a zero causal impact of reclassification on test scores. We cluster the standard errors at the student level.

Establishing the Validity of the Regression Discontinuity Approach

We showed in Figure 4 that in the case of the CST requirement, indeed, there is reason to expect the reclassification criteria are implemented by school districts in such a way as to simulate an experiment with a treatment and control group. We include all students who have met all reclassification criteria except (perhaps) the CST. For example, in the case of LAUSD in 2003-05, we include ELs who met the CELDT OPL cutoff, scored at least intermediate on all CELDT subtests, and earned at least course marks of “C” in ELA and math. Then we plot the probability of being reclassified by CST score. (The CST has been rescaled to zero to signify the cutpoint score of 300); Appendix B, Table 1A and 1B demonstrate the difference in reclassification probabilities for the CST requirement across our grade levels and during the two reclassification eras. They range from 0.49 to 0.92 in LAUSD and 0.39 to 0.78 in SDUSD.

In LAUSD, after 2006-07, there was much more fidelity to the district’s reclassification policy than in the earlier years of that decade. Our earlier research examining how EL students were assigned to English Language Development courses found that LAUSD has been moving in the direction of greater automation which coincided with increases in correct course placement. We know similar automation was undertaken for reclassification decisions, which may explain why the later years see sharper discontinuities (e.g., the probability of reclassification increased to 0.8 or higher for those just above the cutpoint in era 2).

¹ Despite having a fuzzy RD because not all students are reclassified when they should be, we obtain consistent estimates under certain conditions (Angrist et al., 1996). The fact that not all students comply does not raise concerns of bias, but it does raise concerns about external validity (applicability to non-compliers), an issue that also exists in Randomized Control Trials.

We performed similar analyses for the various cutoffs on the CELDT test (on the Overall Proficiency Level and the subtests, the most daunting of which appears to be the reading subtest). Our tests to ensure that the CELDT overall proficiency level and CELDT reading subtests also demonstrated discontinuities and are available from the authors upon request. However, we found adequate sample sizes to conduct these CELDT experiments for only some grades and years.

Tests for Manipulation of the Running Variable(s)

To have institutional integrity, the running variables such as the CST ELA score cannot be easily manipulated by teachers or other school officials who may take a personal interest in either reclassifying or not reclassifying a given student. Both the CST ELA and math tests are statewide assessments and are scored outside of the given school district, which makes it unlikely that the scores could be manipulated locally. The same is true of the CELDT.²

However, it is also useful to check for discontinuities in the density of the running variable at the cutoff point (McCrary, 2008). It is not required that the distribution be continuous at the cutoff to have a valid RD design (Imbens and Lemieux, 2008), but it increases confidence that no manipulation occurred. We expect to see no discontinuity in the frequency of students above versus below the cutpoint. Appendix B, Tables 2A and 2B show results for this test for the sample used to model the impact of reclassification on CST ELA scores the year after reclassification. They also show the same for the sample used to model the impact of graduation on time.³ The coefficient on ABOVE is not significantly different from zero in either subsample, or for any of the three grade spans. Appendix B, Figures 1A and 1B give one example from each district, showing the distribution of students versus the running variable for elementary grades in the more recent (“new”) eras in either district.

A related check for manipulation of the running variable involves testing for a discontinuity in one or more baseline characteristics at the cutoff value of the running variable. It is not appropriate to use the year of the reclassification decision as the source for baseline data because reclassification can occur part way through the year, and thus all outcomes in that year are potentially endogenous should that student be transitioned out of English language development courses during that year.

While not strictly required for the RD design to be valid, a finding that there is not any discontinuous jump in the mean value of each background variable at the CST cutoff would provide reassurance that the treatment and control groups are similar. Appendix B, Tables 3A and 3B show the coefficient on ABOVE in models where the dependent variable is one of a number of student background characteristics. For SDUSD, the discontinuity variable is almost always statistically insignificant, with three exceptions (out of 53 tests). All three were from the second CELDT era. For elementary school students, those at or above the CST cutpoint were significantly more likely to be observed in an earlier year and an earlier grade, but the differences were small (0.3 year, 0.1 grade level difference). For high school students, those at or above the CST cutpoint exhibited a drop in CELDT overall proficiency level of 7 points. (All students in the CST experiment had to meet the CELDT Early Advanced score corresponding to Early Advanced. In grades 9-12, this minimum score ranged from 579 to 591, so the discontinuity represents roughly a 1 percent drop from the minimum needed to meet the CELDT requirements.)

² The annual CELDT, which is what we use, is scored off site. A student’s answers to the speaking subtest are recorded by the examiner, but are scored off-site by the test vendor. (CDE 2007)

³ This second set of checks using graduation on time is really a test not just for manipulation of the CST test scores, but of differential attrition in the 1 to nine years between the reclassification decision and when students are expected to be in grade 12.

For LAUSD, slightly more of these tests produce significant discontinuities than one would expect by chance. In LAUSD, there are no discontinuities observed in the numbers of students who are female or Spanish speakers just above and below the CST cutoff. However, there are a number of negative discontinuities observed just above and below the CST cutoff for the various CELDT subtests (especially the reading subtests), as well as with the overall score on the CELDT. Academic year and grade level are often statistically significant as well, as they sometimes are in SDUSD.

Overall, it appears that both districts have adhered to their stated reclassification policies quite closely, and that the fuzzy RD design is appropriate. However, in our analyses of impacts on outcomes, we control for the baseline characteristics to increase precision, and this seems warranted given the occasional difference in these variables on either side of the CST cutoff.

Another potential issue is whether the bandwidth influences the findings. Wider bandwidths will generate greater precision but potentially at the cost of greater bias. In results available from the authors we reproduced the results for the CST experiment that follows (which used a bandwidth of ± 50 scale score points), using bandwidths of ± 100 and ± 30 points. Results are broadly similar, although in a few cases with the smallest bandwidth results become statistically insignificant, even though the sign of the estimated impact does not change. We believe that this merely represents a loss of precision as we trim the sample. We performed similar bandwidth tests for the experiments based on the CELDT and again results were similar.

As mentioned in the main text, the LAUSD data do not distinguish between dropouts and students who leave for another school district. In the models of graduation on time, only students who appear in at least one 12th grade year are included in our analysis. In the SDUSD data, by contrast, we can distinguish between those who leave the district and those who drop out. We repeated all the SDUSD analyses of graduation on time, where in the main results we drop those who leave the district, and instead treated these students as not having graduated on time.

The results do not change markedly. Table 15 in Appendix B shows the original regression discontinuity results for era 2, for the CST experiment, separately for elementary, middle and high school. Adding those who left the district to enroll elsewhere into the data, and treating them as not having graduated on time, increases the sample size in the models meaningfully. Nonetheless the results are very similar. The biggest difference was for middle schools where the ITT estimate dropped by 0.036 and the TOT effect dropped by 0.053. In no case was there a change in statistical significance. For elementary and high school the results were the same to within 0.003 in all cases. The similarity in results may be because the key coefficient in RD analysis is the indicator for being at or above the CST cutpoint. There is no reason to think that those moving away were more likely to be just below versus just above the CST cutpoint, and so the estimate of the discontinuity should not be much affected.

Moderator Analysis

Perhaps even more policy-relevant than our main question of “Are ELs being reclassified at the right time?” is the question “Does the appropriate time of reclassification vary by characteristics of the student, school or neighborhood?” We test whether theoretically possible moderating factors are related in practice to heterogeneity in the effects of being reclassified. (Although studies have examined heterogeneity in the academic progress of ELs, we are asking a distinct and more novel question: Do appropriate reclassification criteria vary by subgroup?) Our research tests for heterogeneity along five dimensions:

- language spoken at home

- demographics of the student body, including concentrations of students by language, diversity of languages spoken at the school
- neighborhood characteristics (e.g. language, poverty, and nativity in the school catchment area) based on 2006-2016 zip code data estimates from the American Community Survey
- average teacher qualifications at a given school
- fidelity to the English Language Development courses specified in each district’s Master Plan for English Learners.

We model home language with a single dummy variable for whether the home language is Spanish, “SPANISH,” given the aforementioned strong majorities of ELs for whom Spanish is the home language. We modify equation (1) by adding a control for SPANISH, as well as an interaction of SPANISH with the indicator for being above the cutpoint:

$$Y_{is,t+1} = \alpha + \theta SPANISH_i + \beta CST_{i,t-1} + \delta ABOVE_{it} + \gamma ABOVE_{it} \cdot CST_{i,t-1} + \pi SPANISH_i \cdot ABOVE_{it} + Z_{i,t-1}'\Delta + \mu_{it} \quad (3)$$

The key coefficient here is π . If we retain the null that this coefficient is zero, then the causal impact of being above the cutpoint is the same between ELs who speak Spanish at home and ELs with other home languages.

The remaining moderators are tested using models similar to (3). We test for differential effects of reclassification related to concentrations of one’s own home language among students at the school. For example, for ELs who speak Spanish, the appropriate measure will be the percentage of students at the school with Spanish as a home language. We consider it a test of enclave effects: If a large fraction of *all* students speak a given language, it may reduce students’ incentive to master English.

Instead of all students, we can measure the percentage of students at the school who are currently ELs and have the same home language. This is a test of the idea that if one’s own language group comprises a major share of the ELs in the school, teachers may focus their energies on helping those in one’s language group.

Diversity of languages spoken captures a separate concept. If a large number of languages are spoken among ELs, it suggests that teachers may have relatively more difficulty teaching the EL students. We will use the Herfindahl concentration index to measure this language diversity. It is defined in terms of the squared shares of each language group j among ELs in a school:

$$H = \sum_{j=1}^n Share_j^2 \quad (4)$$

The value of our measure, known as a Herfindahl index, can be interpreted as the probability that any two ELs picked randomly at a given school would speak the same home language.

We measure average teacher qualifications at the school by determining the proportion of all teachers holding a Master’s degree or higher, and by mean years of teaching experience. The skill level of teachers could influence the causal impact of reclassification on the students’ performance. For instance, if more highly educated and experienced teachers are better at differentiating instruction, it could ease EL students’ transition into non-EL classrooms. Of course, these skill measures could also relate to the quality of instruction for ELs as well as reclassified students.

We run separate models for elementary, middle and high school. Finally, in painstaking detail, we have determined if English Learner students are assigned to appropriate English Language Development (ELD) coursework, determining if they are placed correctly, in classes that are more rigorous than recommended by district policy, less rigorous than recommended, or in no ELD course. We focus on the share of ELs at a school

who are not in any ELD course given evidence from these two districts that ELs tend to progress more slowly in schools where high shares of ELs do not take ELD courses (Hill, Betts, et al. 2019).

Appendix B: Supporting Tables and Figures

As noted in the main text, we adopted the following labeling of years in tables and figures and repeat that approach here: “2004-2005” means that the analysis was performed for the school years 2003-04 through 2004-05.

Tables 1A and 1B below establish that there is a significant jump in the share of students reclassified at the CST cutoff. (For all regression tables in the appendix, coefficients shaded green are positive and significant while those shaded red are negative and significant.)

TABLE 1A

LAUSD Size of Discontinuity in Reclassification Rates for CST Reclassification Criterion, Reclassification Era 1 and Era 2

Reclassification Rate Discontinuity by Outcome		CELDT Era 1			CELDT Era 2		
		g3-5	g6-8	g9-12	g3-5	g6-8	g9-12
CST ELA 1 Year Later	Coef.	0.492**	0.660**	0.551**	0.769**	0.905**	0.825**
	S.E.	(0.009)	(0.008)	(0.014)	(0.011)	(0.005)	(0.009)
CST ELA 2 Years Later	Coef.	0.513**	0.663**	0.522**	0.770**	0.901**	0.804**
	S.E.	(0.010)	(0.008)	(0.020)	(0.013)	(0.006)	(0.014)
CST Math 1 Year Later	Coef.	0.493**	0.612**		0.768**	0.859**	
	S.E.	(0.009)	(0.014)		(0.011)	(0.011)	
CST Math 2 Years Later	Coef.	0.512**			0.770**		
	S.E.	(0.010)			(0.013)		
Graduation on Time	Coef.	0.516**	0.668**	0.582**	0.891**	0.921**	0.869**
	S.E.	(0.012)	(0.010)	(0.012)	(0.010)	(0.006)	(0.007)

SOURCES: Authors' calculations.

NOTES: “CELDT Era 1” (2003-2006) is before the CELDT was rescaled and “CELDT Era 2” (2007-2012) is after the rescaling. Tables 1A and 1B show coefficients and standard errors for the “ABOVE” dummy variable in a model of whether students are reclassified. The running variable was fit with a second-order polynomial. * and ** indicate significance at the 5% and 1% levels respectively. In LAUSD, on-time graduation is calculated for students who persist to 12th grade and does not include dropouts. For all regression tables in the appendix, coefficients shaded green are positive and significant while those shaded red are negative and significant.

TABLE 1B

SDUSD Size of Discontinuity in Reclassification Rates for CST Reclassification Criterion, Reclassification Era 1 and Era 2

Reclassification Rate Discontinuity by Outcome		CELDT Era 1			CELDT Era 2		
		g3-5	g6-8	g9-12	g3-5	g6-8	g9-12
CST ELA 1 Year Later	Coef.	0.591**	0.653**	0.778**	0.484**	0.719**	0.700**
	S.E.	(0.032)	(0.026)	(0.039)	(0.028)	(0.021)	(0.038)
CST ELA 2 Years Later	Coef.	0.576**	0.651**	0.746**	0.539**	0.701**	0.730**
	S.E.	(0.034)	(0.028)	(0.053)	(0.031)	(0.024)	(0.061)
CST Math 1 Year Later	Coef.	0.592**	0.668**		0.486**	0.638**	
	S.E.	(0.032)	(0.053)		(0.028)	(0.040)	
CST Math 2 Years Later	Coef.	0.578**			0.548**		
	S.E.	(0.034)			(0.031)		
Graduation on Time	Coef.	0.592**	0.645**	0.763**	0.394**	0.729**	0.494**
	S.E.	(0.036)	(0.028)	(0.039)	(0.061)	(0.026)	(0.031)

SOURCES: Authors' calculations.

NOTE: "CELDT Era 1" sample uses data from 2004-2005, meaning school years 2003-04 and 2004-05; "CELDT Era 2" uses data from 2007-2014. Tables 1A and 1B show coefficients and standard errors for the "ABOVE" dummy variable in a model of whether students are reclassified. The running variable was fit with a second-order polynomial. * and ** indicate significance at the 5% and 1% levels respectively. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

Recall that to be included in this experiment, a student must have met all but the CST requirement. For LAUSD, we find between 20 and 30 percent of all EL students are included in each CST experiment. As another point of context, for students who are not reclassified, we examine the percentage of students who meet none of the criteria for reclassification. In LAUSD, that ranges from 16 percent to 30 percent, depending on the reclassification era and the grade span.

Tables 2A and 2B show the coefficient indicating whether there is a discontinuity at the cutoff in the number of students. There are no discontinuities in the SDUSD data, as desired. For LAUSD, only for graduation on time in the old reclassification era and for middle school students is there a significant discontinuity (positive). LAUSD data cannot distinguish between students who drop out versus students who transfer to other districts. Therefore, LAUSD's on time graduation calculation is based on students who persist to 12th grade, and students who drop out before 12th grade are excluded from our sample.

TABLE 2A

LAUSD McCrary test for discontinuity in number of students in the sample just above CST reclassification cutpoint

Outcome		CELDT Era 1			CELDT Era 2		
		g3-5	g6-8	g9-12	g3-5	g6-8	g9-12
CST ELA 1 Year Later (low attrition)	Coef.	87.70	769.7	196.1	215.5	-350.3	259.0
	S.E.	(904.8)	(394.1)	(215.6)	(861.4)	(307.5)	(275.1)
Graduation on Time (high attrition)	Coef.	27.21	560.2	208.2	36.77	-235.9	193.6
	S.E.	(555.3)	(264.8)	(232.5)	(267.2)	(218.4)	(359.8)

SOURCES: Authors' calculations.

NOTES: * and ** indicate significance at the 5% and 1% levels respectively. See Tables 1A and 1B for the years used to model outcomes during CELDT eras 1 and 2 in the two districts. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

TABLE 2B

SDUSD McCrary test for discontinuity in number of students in the sample just above CST reclassification cutpoint

Outcome		CELDT Era 1			CELDT Era 2		
		g3-5	g6-8	g9-12	g3-5	g6-8	g9-12
CST ELA 1 Year Later (low attrition)	Coef.	31.67	70.14	2.715	-91.85	-145.4	7.058
	S.E.	(50.84)	(51.22)	(24.95)	(114.6)	(92.61)	(33.29)
Graduation on Time (high attrition)	Coef.	26.41	61.19	-1.539	3.964	-97.99	41.27
	S.E.	(42.46)	(44.93)	(25.63)	(34.25)	(56.34)	(67.49)

SOURCES: Authors' calculations.

NOTES: * and ** indicate significance at the 5% and 1% levels respectively. See Tables 1A and 1B for the years used to model outcomes during CELDT eras 1 and 2 in the two districts. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

Tables 3A and 3B test for discontinuities in background variables of students. In most cases no significant discontinuity arises, but there are some exceptions. For this reason, all outcomes regression models discussed in the main text and shown in the tables below condition on these baseline variables. The figures however do not control for background variables.

TABLE 3A

LAUSD Checks for discontinuities in background variables above the CST reclassification cutpoint

Baseline Variables		CELDT Era 1			CELDT Era 2		
		g3-5	g6-8	g9-12	g3-5	g6-8	g9-12
Spanish Home-Language	Coef.	-0.002	-0.001	-0.007	0.007	0.001	0.013
	S.E.	(0.007)	(0.007)	(0.012)	(0.006)	(0.006)	(0.009)
CELDT Listening Subscore	Coef.	1.841	0.779	2.684	-1.341	-9.243**	-4.878*
	S.E.	(1.536)	(1.390)	(1.749)	(1.537)	(1.578)	(2.161)
CELDT Reading Subscore	Coef.	0.877	-2.943**	0.655	-2.087*	-5.766**	-3.121*
	S.E.	(0.856)	(0.658)	(1.007)	(0.917)	(0.817)	(1.259)
CELDT Writing Subscore	Coef.	-0.430	-2.589**	0.517	-1.079	-4.405**	-2.130
	S.E.	(0.915)	(0.778)	(1.172)	(0.951)	(0.809)	(1.387)
CELDT Speaking Subscore*	Coef.				0.390	-2.741	1.215
	S.E.				(2.065)	(1.500)	(2.378)
CELDT Overall Score	Coef.	1.017	-0.989	1.619	-1.028	-5.535**	-2.250*
	S.E.	(0.833)	(0.758)	(0.992)	(0.730)	(0.658)	(0.989)
Math_Basic	Coef.	-0.017			-0.007		
	S.E.	(0.014)			(0.014)		
Math_Proficient	Coef.	-0.0307*			-0.023		
	S.E.	(0.016)			(0.016)		
Female	Coef.	0.028	-0.000	-0.011	-0.018	-0.002	0.007
	S.E.	(0.017)	(0.014)	(0.020)	(0.016)	(0.013)	(0.018)
Academic Year	Coef.	0.0425	0.0955**	0.124**	-0.046	0.298**	0.185**
	S.E.	(0.028)	(0.030)	(0.040)	(0.056)	(0.042)	(0.059)
Grade Level	Coef.	0.140**	-0.020	0.075**	-0.035	-0.187**	0.007
	S.E.	(0.022)	(0.023)	(0.020)	(0.021)	(0.021)	(0.019)

SOURCES: Authors' calculations.

NOTES: *Listening and Speaking are combined tests in CELDT Era 1; * and ** indicate significance at the 5% and 1% levels respectively. "CELDT Era 1" is 2003-2006; "CELDT Era 2" is 2007-2012. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

TABLE 3B

SDUSD Checks for discontinuities in background variables above the CST reclassification cutpoint

Baseline Variables		CELDT Era 1			CELDT Era 2		
		g3-5	g6-8	g9-12	g3-5	g6-8	g9-12
Spanish Home-Language	Coef.	0.0205	0.0147	-0.0709	-0.0359	0.00223	0.0304
	S.E.	-0.0411	-0.0325	-0.0503	-0.0298	-0.0267	-0.0485
CELDT Listening Subscore	Coef.	-8.689	-0.44	4.997	0.709	5.395	-6.343
	S.E.	-5.792	-3.517	-4.369	-2.991	-4.203	-6.322
CELDT Reading Subscore	Coef.	-1.891	2.193	3.367	1.491	-2.171	-6.248
	S.E.	-2.974	-1.839	-3.18	-1.866	-2.075	-4.025
CELDT Writing Subscore	Coef.	0.019	-1.486	0.279	-0.129	1.103	-6.362
	S.E.	-2.739	-2.165	-3.711	-1.746	-2.204	-4.305
CELDT Speaking Subscore*	Coef.				5.243	-2.596	-7.866
	S.E.				-3.395	-4.035	-7.363
CELDT Overall Score	Coef.	-4.81	-0.0393	3.412	1.804	0.405	-6.651*
	S.E.	-2.999	-1.881	-2.659	-1.346	-1.671	-2.89
Math_Basic	Coef.	0.0473					
	S.E.	-0.0554					
Math_Proficient	Coef.	-0.0106					
	S.E.	-0.0491					
Female	Coef.	0.0271	0.0546	0.0874	0.0625	-0.014	0.0109
	S.E.	-0.0575	-0.044	-0.0629	-0.0354	-0.0373	-0.0628
Academic Year	Coef.	-0.0763	-0.0028	0.114	-0.285*	0.219	0.00482
	S.E.	-0.0556	-0.0431	-0.0591	-0.118	-0.122	-0.211
Grade Level	Coef.	-0.0474	0.069	0.0946	-0.104*	0.0211	-0.111
	S.E.	-0.0652	-0.0669	-0.0636	-0.043	-0.0568	-0.0686

SOURCES: Authors' calculations.

NOTES: *Listening and Speaking are combined tests in CELDT Era 1, * and ** indicate significance at the 5% and 1% levels respectively. "CELDT Era 1" is 2004-2005; "CELDT Era 2 is 2007-2014". Coefficients shaded green are positive and significant while those shaded red are negative and significant.

Tables 4A and 4B provide summary statistics.

TABLE 4A

LAUSD Variable Summary Statistics for the Sample from the 2nd Order Polynomial, 50 Bandwidth, CST ELA experiment

Variable		Intent to Treat					
		CELDT Era 1			CELDT Era 2		
		g3-5	g6-8	g9-12	g3-5	g6-8	g9-12
Lag CST ELA*	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	318.634	303.874	294.734	320.831	301.872	295.819
	S.D.	21.120	24.028	23.140	20.052	23.848	23.594
CST ELA 1 year ahead	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	-0.199	-0.471	-0.579	-0.422	-0.766	-0.746
	S.D.	0.599	0.573	0.577	0.612	0.563	0.582
CST ELA 2 years ahead	# Obs	36,658	33,957	8,588	37,969	32,495	9,153
	Mean	-0.200	-0.445	-0.576	-0.440	-0.692	-0.733
	S.D.	0.617	0.589	0.612	0.619	0.589	0.601
CST math 1 year ahead	# Obs	40,094	13,743		48,296	13,005	
	Mean	-0.061	-0.334		-0.276	-0.516	
	S.D.	0.744	0.651		0.753	0.664	
CST math 2 years ahead	# Obs	36,510			37,919		
	Mean	-0.126			-0.312		
	S.D.	0.716			0.730		
Graduation on time	# Obs	22,851	24,136	12,957	12,799	22,864	14,944
	Mean	0.867	0.850	0.776	0.877	0.809	0.789
	S.D.	0.339	0.357	0.417	0.329	0.393	0.408
Reclassified	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	0.429	0.438	0.255	0.803	0.497	0.376
	S.D.	0.495	0.496	0.436	0.397	0.500	0.484
Spanish Home-Language	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	0.937	0.915	0.893	0.946	0.941	0.939
	S.D.	0.243	0.278	0.309	0.226	0.236	0.239
CELDT Listening Subscore	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	581.405	577.462	561.426	563.850	618.899	636.061
	S.D.	47.954	49.546	44.032	47.723	61.795	58.584
CELDT Reading Subscore	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	541.257	547.290	560.873	543.720	577.127	601.475
	S.D.	30.841	25.534	28.208	31.724	33.731	35.298
CELDT Writing Subscore	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	553.490	555.319	552.722	544.766	566.882	583.129
	S.D.	29.514	29.250	29.917	31.158	32.384	38.798
CELDT Speaking Subscore	# Obs				48361	41485	20622
	Mean				575.147	595.482	618.051
	S.D.				62.037	58.508	64.223

CELDT Overall Score	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	564.026	564.015	558.736	556.492	589.226	609.307
	S.D.	27.589	27.559	25.920	25.017	26.474	27.771
Math Basic (Proficiency)	# Obs	40,141			48,361		
	Mean	0.862			0.878		
	S.D.	0.345			0.328		
Math Proficient	# Obs	40,141			48,361		
	Mean	0.510			0.546		
	S.D.	0.500			0.498		
Female	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	0.544	0.557	0.519	0.515	0.494	0.421
	S.D.	0.498	0.497	0.500	0.500	0.500	0.494
Academic Year (Spring)	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	2005.074	2004.763	2004.817	2009.158	2009.063	2009.249
	S.D.	0.868	1.035	0.996	1.705	1.655	1.618
Grade Level	# Obs	40,141	37,577	16,769	48,361	41,485	20,622
	Mean	4.298	6.956	9.395	4.242	7.035	9.382
	S.D.	0.728	0.829	0.496	0.752	0.816	0.501

SOURCES: Authors' calculations.

NOTES: *'Lagcstela' values are raw CST-ELA scores from the previous academic year; the various "1/2 year(s) ahead" variable values are conversions of raw CST scores into z-scores of that grade/year score distribution.

TABLE 4B

SDUSD Variable Summary Statistics for the Sample from the 2nd Order Polynomial, 50 Bandwidth, CST ELA experiment

Variable		Intent to Treat					
		CELDT Era 1			CELDT Era 2		
		g3-5	g6-8	g9-12	g3-5	g6-8	g9-12
Lag CST ELA	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	318.336	303.414	294.571	328.275	315.021	308.220
	S.D.	21.238	23.062	22.033	17.579	22.311	23.636
CST ELA 1 year ahead	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	-0.141	-0.434	-0.651	-0.168	-0.530	-0.630
	S.D.	0.585	0.582	0.560	0.596	0.576	0.611
CST ELA 2 years ahead	# Obs	3,123	3,486	838	2,721	5,026	712
	Mean	-0.137	-0.443	-0.618	-0.138	-0.491	-0.557
	S.D.	0.611	0.600	0.598	0.606	0.601	0.622
CST math 1 year ahead	# Obs	3,412	1,059		3,735	2,052	
	Mean	-0.097	-0.219		-0.158	-0.311	
	S.D.	0.713	0.722		0.734	0.659	
CST math 2 years ahead	# Obs	3,114			2,663		
	Mean	-0.083			-0.089		
	S.D.	0.724			0.708		
Graduation on time	# Obs	2,595	3,309	1,384	893	4,118	1,750
	Mean	0.756	0.648	0.611	0.853	0.789	0.725
	S.D.	0.430	0.478	0.488	0.354	0.408	0.447
Reclassified	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	0.521	0.420	0.318	0.462	0.568	0.456
	S.D.	0.500	0.494	0.466	0.499	0.495	0.498
Spanish Home-Language	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	0.818	0.837	0.827	0.760	0.821	0.812
	S.D.	0.386	0.369	0.378	0.427	0.383	0.391
CELDT Listening Subscore	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	571.362	560.584	549.286	574.421	633.206	662.786
	S.D.	48.355	42.450	35.534	42.205	57.695	48.442
CELDT Reading Subscore	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	544.500	548.212	561.727	563.969	591.867	623.542
	S.D.	28.140	23.597	24.937	28.830	29.910	33.450
CELDT Writing Subscore	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	553.016	555.810	553.547	563.146	578.771	596.373
	S.D.	24.926	26.119	28.604	25.641	30.487	34.947
CELDT Speaking Subscore	# Obs				3,740	6,540	1,931
	Mean				548.212	585.831	607.986
	S.D.				48.957	53.702	56.872
CELDT Overall Score	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	559.705	555.922	553.083	562.059	597.038	622.295

	S.D.	25.977	23.272	21.370	19.652	23.974	22.816
Math Basic (Proficiency)	# Obs	3,414					
	Mean	0.745					
	S.D.	0.436					
Math Proficient	# Obs	3,414					
	Mean	0.384					
	S.D.	0.486					
Female	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	0.512	0.476	0.472	0.505	0.480	0.387
	S.D.	0.500	0.499	0.499	0.500	0.500	0.487
Academic Year (Spring)	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	2004.511	2004.531	2004.718	2009.717	2009.592	2009.606
	S.D.	0.500	0.499	0.450	1.685	1.615	1.651
Grade Level	# Obs	3,414	3,903	1,513	3,740	6,540	1,931
	Mean	4.452	7.086	9.354	4.400	6.985	9.484
	S.D.	0.644	0.788	0.503	0.620	0.791	0.517

SOURCES: Authors' calculations.

NOTES: *'Lagcstela' values are raw CST-ELA scores from the previous academic year; the various "1/2 year(s) ahead" variable values are conversions of raw CST scores into z-scores of that grade/year score distribution.

Table 5A

LAUSD Robustness of the Estimates to the Order of Polynomials in the Running Variable CST Used, Bandwidth of 50

Outcome/Model		Intent to Treat				Treatment on Treated				
		4th	3rd	2nd	1st	4th	3rd	2nd	1st	
CST ELA 1 Year Later	CELDT Era 1 ('03-'06)	Elm	-0.0388	-0.0332	-0.0286	-0.0221*	-0.0855	-0.0726	-0.0605	-0.0459*
			(0.0289)	(0.022)	(0.0162)	(0.0111)	(0.0638)	(0.0481)	(0.0343)	(0.0232)
		MS	0.0032	0.0068	0.0085	0.0167	0.0048	0.0103	0.0130	0.0251
			(0.0252)	(0.0185)	(0.0134)	(0.00902)	(0.0381)	(0.0283)	(0.0205)	(0.0135)
	CELDT Era 2 ('07-'12)	HS	0.0099	0.0052	0.0033	0.0067	0.0185	0.0094	0.0062	0.0122
			(0.0331)	(0.026)	(0.0196)	(0.0136)	(0.0616)	(0.0471)	(0.0362)	(0.0248)
		Elm	-0.0825**	-0.0818**	-0.0742**	-0.0389**	-0.113**	-0.110**	-0.0962**	-0.0498**
			(0.0292)	(0.0229)	(0.0172)	(0.0119)	(0.0406)	(0.031)	(0.0224)	(0.0153)
CST ELA 2 Years Later	CELDT Era 1 ('03-'06)	MS	0.0023	-0.0150	0.0112	0.0066	0.0026	-0.0166	0.0124	0.0073
			(0.0204)	(0.0162)	(0.0124)	(0.00864)	(0.0227)	(0.0179)	(0.0137)	(0.00955)
		HS	0.0345	0.0344	0.0145	0.0199	0.0424	0.0421	0.0175	0.0239
			(0.0341)	(0.0261)	(0.0194)	(0.0134)	(0.0419)	(0.0319)	(0.0235)	(0.016)
	CELDT Era 2 ('07-'12)	Elm	-0.0164	-0.0221	-0.0357*	-0.0160	-0.0345	-0.0462	-0.0720*	-0.0320
			(0.0317)	(0.024)	(0.0177)	(0.0122)	(0.0668)	(0.0501)	(0.0357)	(0.0244)
		MS	0.0013	-0.0188	-0.0271	-0.0024	0.0020	-0.0286	-0.0412	-0.0037
			(0.0278)	(0.0206)	(0.0149)	(0.01)	(0.0422)	(0.0314)	(0.0227)	(0.015)
CELDT Era 2 ('07-'12)	HS	-0.0229	-0.0125	-0.0209	-0.0107	-0.0443	-0.0234	-0.0408	-0.0202	
		(0.0486)	(0.0384)	(0.0291)	(0.0203)	(0.0942)	(0.0719)	(0.0567)	(0.0384)	
	Elm	-0.0120	-0.0046	0.0025	-0.0014	-0.0165	-0.0062	0.0032	-0.0017	
		(0.0348)	(0.0271)	(0.0202)	(0.014)	(0.048)	(0.0362)	(0.0262)	(0.0177)	
CELDT Era 2 ('07-'12)	MS	-0.0349	-0.0216	0.0013	-0.0081	-0.0391	-0.0240	0.0014	-0.0090	
		(0.0252)	(0.02)	(0.0153)	(0.0106)	(0.0282)	(0.0222)	(0.017)	(0.0118)	
	HS	0.0638	0.0289	-0.0245	-0.0112	0.0803	0.0365	-0.0305	-0.0139	
		(0.0524)	(0.0403)	(0.0303)	(0.0211)	(0.0657)	(0.0508)	(0.0377)	(0.026)	
CST Math 1 Year Later	CELDT Era 1 ('03-'06)	Elm	-0.0023	-0.0002	0.0105	-0.0271*	-0.0052	-0.0004	0.0222	-0.0563*
			(0.0349)	(0.0262)	(0.0194)	(0.0134)	(0.0768)	(0.0572)	(0.0409)	(0.0278)
		MS	0.0883	0.0341	0.0243	0.0218	0.1430	0.0566	0.0399	0.0346

			(0.0526)	(0.0400)	(0.0298)	(0.0206)	(0.085)	(0.0664)	(0.049)	(0.0327)
		HS								
	CELDT Era 2 ('07-'12)	Elm	-0.0790*	-0.0658*	-0.0247	-0.0580**	-0.109*	-0.0883*	-0.0320	-0.0744**
			(0.0343)	(0.0269)	(0.0203)	(0.014)	(0.0475)	(0.0362)	(0.0264)	(0.0179)
		MS	-0.0057	-0.0110	0.0077	0.0066	-0.0065	-0.0125	0.0089	0.0077
			(0.0500)	(0.0387)	(0.0291)	(0.0204)	(0.0574)	(0.0442)	(0.0338)	(0.0238)
		HS								
CST Math 2 Years Later	CELDT Era 1 ('03-'06)	Elm	0.0339	0.0251	0.0237	-0.0064	0.0713	0.0523	0.0478	-0.0129
			(0.0364)	(0.0273)	(0.0201)	(0.0138)	(0.0766)	(0.0569)	(0.0404)	(0.0277)
		MS								
		HS								
	CELDT Era 2 ('07-'12)	Elm	-0.0260	-0.0127	-0.0027	-0.0278	-0.0359	-0.0170	-0.0036	-0.0353
			(0.0396)	(0.0305)	(0.0227)	(0.0155)	(0.0547)	(0.0407)	(0.0293)	(0.0196)
		MS								
HS										
Graduation on Time	CELDT Era 1 ('03-'06)	Elm	-0.0530	-0.0405	-0.0315*	-0.0192	-0.1070	-0.0805	-0.0625*	-0.0384
			(0.0273)	(0.0209)	(0.0157)	(0.011)	(0.0551)	(0.0415)	(0.0312)	(0.0221)
		MS	0.0155	0.0087	0.0148	0.0186*	0.0235	0.0131	0.0224	0.0273*
			(0.0242)	(0.018)	(0.013)	(0.00877)	(0.0367)	(0.0271)	(0.0196)	(0.0129)
		HS	-0.0628**	-0.0365*	-0.0319*	-0.0049	-0.110**	-0.0619*	-0.0549*	-0.0085
		(0.0235)	(0.0182)	(0.0136)	(0.0094)	(0.0413)	(0.0309)	(0.0235)	(0.0162)	
	CELDT Era 2 ('07-'12)	Elm	-0.0230	-0.0177	-0.0044	0.0045	-0.0255	-0.0196	-0.0049	0.0051
			(0.0385)	(0.0297)	(0.0219)	(0.0151)	(0.0427)	(0.0328)	(0.0243)	(0.0171)
		MS	-0.0068	-0.0021	-0.0035	-0.0110	-0.0075	-0.0023	-0.0038	-0.0119
			(0.022)	(0.0177)	(0.0136)	(0.00932)	(0.0241)	(0.0193)	(0.0148)	(0.0101)

	HS	-0.0275	-0.0053	0.0090	0.0029	-0.0317	-0.0062	0.0103	0.0033
		(0.0208)	(0.0161)	(0.0119)	(0.0082)	(0.0241)	(0.0186)	(0.0137)	(0.0093)

SOURCES: Authors' estimations.

NOTES: Model of CST Math 1 Year Later for middle school students is only for students whose reclassification decision was in grade 6. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

TABLE 5B

SDUSD Robustness of the Estimates to the Order of Polynomials in the Running Variable CST Used, Bandwidth of 50

Outcome/Model			Intent to Treat				Treatment on Treated			
			4th	3rd	2nd	1st	4th	3rd	2nd	1st
CST ELA 1 Year Later	CELDT Era 1 ('04-'05)	Elm	-0.0332	-0.0250	-0.0034	-0.0304	-0.0569	-0.0434	-0.00571	-0.0510
			(0.0993)	(0.0725)	(0.0526)	(0.0358)	(0.170)	(0.125)	(0.0879)	(0.0599)
		MS	0.0383	-0.00883	-0.033	-0.0026	0.0621	-0.0139	-0.0507	-0.0038
			(0.0766)	(0.0567)	(0.0418)	(0.0287)	(0.124)	(0.0893)	(0.0638)	(0.0427)
	HS	-0.0624	-0.171*	-0.138*	-0.0794	-0.0837	-0.216*	-0.177*	-0.102	
		(0.110)	(0.0869)	(0.0668)	(0.0458)	(0.146)	(0.108)	(0.0849)	(0.0587)	
	CELDT Era 2 ('07-'14)	Elm	0.0415	-	-0.0087	-0.0113	0.0896	-0.00040	-0.0174	-0.0195
			(0.0648)	(0.0491)	(0.0362)	(0.0244)	(0.140)	(0.108)	(0.0727)	(0.0422)
MS		-0.0674	0.0183	-0.0185	-0.0320	-0.0978	0.0255	-0.0263	-0.0484	
		(0.0670)	(0.0536)	(0.0400)	(0.0271)	(0.0969)	(0.0743)	(0.0566)	(0.0408)	
HS	-0.101	0.0800	-0.0557	-0.0481	-0.158	0.123	-0.0794	-0.0691		
	(0.122)	(0.0896)	(0.0663)	(0.0468)	(0.189)	(0.137)	(0.0945)	(0.0670)		
CST ELA 2 Years Later	CELDT Era 1 ('04-'05)	Elm	-0.120	-0.0947	-0.124*	-0.0744	-0.219	-0.171	-0.214*	-0.127
			(0.104)	(0.0786)	(0.0582)	(0.0404)	(0.191)	(0.144)	(0.102)	(0.0690)
		MS	0.0729	0.0157	-0.0649	-0.0320	0.121	0.0252	-0.0995	-0.0482
			(0.0901)	(0.0662)	(0.0484)	(0.0324)	(0.149)	(0.106)	(0.0743)	(0.0488)
	HS	0.327*	0.265*	0.129	0.134*	0.464*	0.346*	0.171	0.178*	
		(0.146)	(0.114)	(0.0877)	(0.0632)	(0.218)	(0.154)	(0.117)	(0.0843)	
	CELDT Era 2 ('07-'14)	Elm	-0.0102	-0.0206	-0.0453	-0.0432	-0.0186	-0.0393	-0.0827	-0.0711
			(0.0780)	(0.0590)	(0.0435)	(0.0290)	(0.142)	(0.112)	(0.0793)	(0.0477)
MS		0.273**	0.170**	0.114*	0.00717	0.409**	0.238**	0.167*	0.0113	
		(0.0760)	(0.0606)	(0.0466)	(0.0326)	(0.115)	(0.0851)	(0.0684)	(0.0513)	
HS	-0.227	-0.0434	-0.0515	-0.0988	-0.355	-0.0659	-0.0710	-0.143		
	(0.198)	(0.160)	(0.118)	(0.0791)	(0.305)	(0.239)	(0.161)	(0.113)		
CST Math 1 Year Later	CELDT Era 1 ('04-'05)	Elm	0.0181	0.0848	0.0302	-0.0306	0.0310	0.147	0.0505	-0.0512
			(0.123)	(0.0889)	(0.0644)	(0.0444)	(0.209)	(0.153)	(0.107)	(0.0743)

	MS	0.143	0.0116	-0.0267	0.0418	0.211	0.0164	-0.0396	0.0598	
		(0.176)	(0.141)	(0.110)	(0.0784)	(0.254)	(0.197)	(0.163)	(0.112)	
	HS									
	CELDT Era 2 ('07-'14)	Elm	-0.0689	-0.119	-0.0712	-0.0368	-0.149	-0.262	-0.142	-0.0637
			(0.0814)	(0.0636)	(0.0474)	(0.0321)	(0.176)	(0.141)	(0.0948)	(0.0556)
MS		-0.397*	-0.265	-0.0709	-0.0857	-0.501*	-0.346	-0.106	-0.151	
		(0.189)	(0.145)	(0.106)	(0.0676)	(0.241)	(0.189)	(0.158)	(0.119)	
HS										
CST Math 2 Years Later	Elm	-0.0902	-0.0162	-0.0651	-0.0327	-0.165	-0.0293	-0.112	-0.0558	
		(0.123)	(0.0900)	(0.0660)	(0.0463)	(0.226)	(0.163)	(0.114)	(0.0789)	
	MS									
	HS									
	CELDT Era 2 ('07-'14)	Elm	-0.0892	-0.0956	-0.0460	-0.0489	-0.162	-0.180	-0.0828	-0.0802
			(0.107)	(0.0796)	(0.0570)	(0.0380)	(0.194)	(0.150)	(0.102)	(0.0621)
MS										
HS										
Graduation on Time	CELDT Era 1 ('04-'05)	Elm	-0.00236	0.0940	0.0666	0.0499	-	0.167	0.113	0.0841
			(0.106)	(0.0790)	(0.0582)	(0.0396)	(0.184)	(0.143)	(0.0991)	(0.0669)
		MS	-0.0964	0.0318	-0.0398	-0.0132	-0.163	0.0513	-0.0615	-0.0201
			(0.0850)	(0.0623)	(0.0454)	(0.0302)	(0.144)	(0.100)	(0.0701)	(0.0459)
	HS	0.145	0.0709	0.0657	0.0426	0.196	0.0908	0.0858	0.0553	
		(0.102)	(0.0799)	(0.0605)	(0.0412)	(0.137)	(0.102)	(0.0787)	(0.0533)	
	CELDT Era 2 ('07-'14)	Elm	0.142	0.103	0.0289	0.0153	0.291	0.242	0.0721	0.0335
			(0.112)	(0.0795)	(0.0550)	(0.0353)	(0.238)	(0.193)	(0.137)	(0.0768)

		MS	0.00220	0.0225	-0.00984	-0.00789	0.00318	0.0312	-0.0138	-0.0121
			(0.0659)	(0.0522)	(0.0393)	(0.0268)	(0.0953)	(0.0718)	(0.0552)	(0.0408)
		HS	0.0476	0.0267	0.00961	-0.00643	0.108	0.0558	0.0189	-0.0119
			(0.0543)	(0.0416)	(0.0309)	(0.0207)	(0.123)	(0.0865)	(0.0607)	(0.0384)

SOURCES: Authors' estimations

NOTES: Model of CST Math 1 Year Later for middle school students is only for students whose reclassification decision was in grade 6. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

Tables 6, 7A and 7B show similar results for the various experiments using the CELDT overall proficiency level and the CELDT Reading Level as RD experiments.

TABLE 6

LAUSD Robustness of the Estimates to the Order of Polynomials in the Running Variable CELDT OPL, whole level as bandwidth

Outcome/Model			Intent to Treat				Treatment on Treated			
			4th	3rd	2nd	1st	4th	3rd	2nd	1st
CST ELA 1 Year Later	CELDT Era 1 (‘03-‘06)	Elm	0.0008	0.0083	-0.0048	0.0027	0.0027	0.0250	-0.0146	0.0076
			(0.0278)	(0.0218)	(0.0165)	(0.0114)	(0.0879)	(0.0652)	(0.0499)	(0.0327)
		MS	-0.0222	-0.0132	0.0020	-0.0067	-0.0440	-0.0274	0.0043	-0.0138
			(0.0467)	(0.0366)	(0.0282)	(0.0193)	(0.0924)	(0.0760)	(0.0588)	(0.0398)
		HS	0.0428	-0.0013	0.0440	-0.0140	0.0857	-0.0027	0.0926	-0.0313
			(0.1050)	(0.0799)	(0.0580)	(0.0396)	(0.2090)	(0.1650)	(0.1220)	(0.0883)
	CELDT Era 2 (‘07-‘12)	Elm	-0.0151	-0.0208	-0.0201	0.0112	-0.0182	-0.0249	-0.0238	0.0131
			(0.0191)	(0.0152)	(0.0116)	(0.0081)	(0.0230)	(0.0181)	(0.0137)	(0.0095)
		MS	-0.0817*	-0.0430	-0.0410*	-0.0382**	-0.128*	-0.0686	-0.0659*	-0.0620**
			(0.0320)	(0.0256)	(0.0195)	(0.0136)	(0.0510)	(0.0411)	(0.0316)	(0.0221)
HS	-0.0038	0.0064	-0.0151	-0.0099	-0.0048	0.0084	-0.0204	-0.0134		
	(0.0525)	(0.0423)	(0.0324)	(0.0225)	(0.0668)	(0.0553)	(0.0436)	(0.0305)		
CST ELA 2 Years Later	CELDT Era 1 (‘03-‘06)	Elm	-0.0266	-0.0066	-0.0052	0.0077	-0.0770	-0.0186	-0.0151	0.0214
			(0.0322)	(0.0251)	(0.0189)	(0.0128)	(0.0935)	(0.0712)	(0.0543)	(0.0356)
		MS	-0.0127	-0.0200	0.0284	0.0052	-0.0250	-0.0407	0.0586	0.0107
			(0.0479)	(0.0378)	(0.0291)	(0.0205)	(0.0941)	(0.0769)	(0.0597)	(0.0418)
		HS	0.0649	0.0842	0.0782	0.0672	0.1350	0.1770	0.1670	0.1610
			(0.1230)	(0.0988)	(0.0752)	(0.0527)	(0.2560)	(0.2090)	(0.1610)	(0.1260)
	CELDT Era 2 (‘07-‘12)	Elm	-0.0130	-0.0294	-0.0236	0.0012	-0.0157	-0.0352	-0.0279	0.0014
			(0.0229)	(0.0182)	(0.0139)	(0.0097)	(0.0276)	(0.0218)	(0.0165)	(0.0114)
		MS	-0.0384	-0.0392	-0.0359	-0.0375*	-0.0612	-0.0650	-0.0603	-0.0624*
			(0.0367)	(0.0297)	(0.0230)	(0.0162)	(0.0588)	(0.0495)	(0.0388)	(0.0272)
HS	-0.1090	-0.0051	0.0005	0.0007	-0.1440	-0.0065	0.0007	0.0010		

			(0.0857)	(0.0693)	(0.0527)	(0.0370)	(0.1140)	(0.0879)	(0.0712)	(0.0503)
CST Math 1 Year Later	CELDT Era 1 (‘03-‘06)	Elm	-0.0236	-0.0278	-0.0124	0.0059	-0.0707	-0.0811	-0.0367	0.0167
			(0.0378)	(0.0297)	(0.0222)	(0.0151)	(0.1130)	(0.0870)	(0.0657)	(0.0431)
		MS	0.0437	0.0150	0.0079	0.0083	0.0860	0.0315	0.0178	0.0183
			(0.0681)	(0.0539)	(0.0409)	(0.0283)	(0.1340)	(0.1130)	(0.0915)	(0.0625)
	HS									
	CELDT Era 2 (‘07-‘12)	Elm	0.0306	0.0220	0.0057	0.0281**	0.0367	0.0263	0.0068	0.0330**
			(0.0252)	(0.0201)	(0.0154)	(0.0107)	(0.0303)	(0.0240)	(0.0182)	(0.0125)
MS		-0.0999	-0.0422	-0.0246	-0.0483*	-0.1950	-0.0819	-0.0484	-0.0959*	
		(0.0596)	(0.0466)	(0.0353)	(0.0241)	(0.1190)	(0.0910)	(0.0696)	(0.0481)	
HS										
CST Math 2 Years Later	CELDT Era 1 (‘03-‘06)	Elm	-0.0174	-0.0175	-0.0040	0.0037	-0.0506	-0.0497	-0.0116	0.0103
			(0.0396)	(0.0309)	(0.0230)	(0.0158)	(0.1150)	(0.0876)	(0.0662)	(0.0440)
		MS								
	HS									
	CELDT Era 2 (‘07-‘12)	Elm	0.0146	0.0076	0.0123	0.0306*	0.0176	0.0090	0.0146	0.0357*
			(0.0295)	(0.0233)	(0.0177)	(0.0123)	(0.0356)	(0.0279)	(0.0209)	(0.0144)
MS										
HS										
Graduation on Time	CELDT Era 1 (‘03-‘06)	Elm	(0.0176)	(0.0024)	(0.0210)	(0.0199)	(0.0459)	(0.0063)	(0.0558)	(0.0516)
			-0.0247	-0.0193	-0.0147	-0.0103	-0.0646	-0.0502	-0.0390	-0.0267
		MS	(0.0270)	(0.0407)	(0.0245)	(0.0099)	(0.0526)	(0.0806)	(0.0507)	(0.0206)
			-0.0355	-0.0281	-0.0219	-0.0157	-0.0692	-0.0561	-0.0455	-0.0326
		HS	(0.1020)	(0.0414)	(0.0463)	(0.0473)	(0.2080)	(0.0862)	(0.0966)	(0.0966)
			-0.0667	-0.0514	-0.0374	-0.0260	-0.1360	-0.1060	-0.0777	-0.0531

	CELDT Era 2 (‘07-‘12)	Elm	0.0158	0.0165	0.0109	0.0176	0.0212	0.0223	0.0143	0.0226
			(0.0272)	(0.0218)	(0.0170)	(0.0122)	(0.0366)	(0.0295)	(0.0223)	(0.0156)
	MS	0.0188	0.0207	0.0075	-0.0044	0.0289	0.0326	0.0118	-0.0071	
		(0.0326)	(0.0263)	(0.0202)	(0.0143)	(0.0501)	(0.0414)	(0.0321)	(0.0229)	
	HS	0.0077	0.0209	0.0143	0.0114	0.0095	0.0263	0.0182	0.0144	
		(0.0318)	(0.0253)	(0.0193)	(0.0137)	(0.0391)	(0.0318)	(0.0246)	(0.0172)	

SOURCES: Authors’ estimations

NOTES: Model of CST Math 1 Year Later for middle school students is only for students whose reclassification decision was in grade 6. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

TABLE 7A

LAUSD Robustness of the Estimates to the Order of Polynomials in the Running Variable CELDT Reading Subtest, whole level as bandwidth

Outcome/Model			Intent to Treat				Treatment on Treated			
			4th	3rd	2nd	1st	4th	3rd	2nd	1st
CST ELA 1 Year Later	CELDT Era 1 ('03-'06)	Elm	-0.0687	-0.0518	0.00455	0.00367	-0.242	-0.148	0.0150	0.0116
			(0.0599)	(0.0402)	(0.0280)	(0.0188)	(0.213)	(0.115)	(0.0923)	(0.0598)
		MS	-0.111	-0.141	-0.133	-0.106	-0.146	-0.214	-0.270	-0.224
			(0.127)	(0.0972)	(0.0752)	(0.0557)	(0.171)	(0.153)	(0.162)	(0.123)
		HS	-0.927	-1.209**	-0.560	-0.514	-2.224	-1.727*	-1.124	-1.034
			(0.522)	(0.434)	(0.380)	(0.266)	(1.699)	(0.749)	(0.811)	(0.556)
	CELDT Era 2 ('07-'12)	Elm	0.0445	-0.0230	0.0214	-0.0344	0.0511	-0.0266	0.0249	-0.0393
			(0.0471)	(0.0380)	(0.0289)	(0.0202)	(0.0541)	(0.0441)	(0.0337)	(0.0231)
		MS	-0.0578	-0.0546	-0.0453	0.00203	-0.0777	-0.0696	-0.0593	0.00282
			(0.0957)	(0.0695)	(0.0511)	(0.0365)	(0.128)	(0.0882)	(0.0670)	(0.0508)
		HS	0.0328	-0.0267	0.00479	0.00952	0.0465	-0.0369	0.00620	0.0124
			(0.0867)	(0.0713)	(0.0559)	(0.0384)	(0.123)	(0.0985)	(0.0721)	(0.0500)
CST ELA 2 Years Later	CELDT Era 1 ('03-'06)	Elm	-0.00239	0.0350	0.0481	0.0104	-0.00861	0.100	0.156	0.0323
			(0.0663)	(0.0444)	(0.0306)	(0.0205)	(0.238)	(0.127)	(0.0992)	(0.0639)
		MS	-0.0540	-0.0699	-0.0726	-0.116	-0.0675	-0.101	-0.139	-0.258
			(0.148)	(0.109)	(0.0827)	(0.0608)	(0.186)	(0.160)	(0.162)	(0.143)
		HS	-0.239	-0.363	-0.0927	0.0690	-0.408	-0.704	-0.128	0.138
			(0.536)	(0.428)	(0.341)	(0.255)	(0.900)	(0.829)	(0.461)	(0.505)
	CELDT Era 2 ('07-'12)	Elm	0.114*	0.0567	0.0503	0.00197	0.129*	0.0655	0.0579	0.00226
			(0.0577)	(0.0470)	(0.0359)	(0.0251)	(0.0655)	(0.0542)	(0.0413)	(0.0287)
		MS	-0.138	-0.106	-0.113	-0.0598	-0.212	-0.145	-0.155	-0.0873
			(0.121)	(0.0864)	(0.0678)	(0.0486)	(0.185)	(0.118)	(0.0933)	(0.0711)
		HS	-0.00216	-0.00693	0.0346	0.0330	-0.00405	-0.0131	0.0515	0.0498
			(0.127)	(0.107)	(0.0846)	(0.0579)	(0.237)	(0.203)	(0.125)	(0.0870)
CST Math 1 Year Later	Elm	-0.0704	-0.111*	-0.0316	0.0109	-0.249	-0.317*	-0.104	0.0346	
		(0.0808)	(0.0546)	(0.0377)	(0.0252)	(0.287)	(0.157)	(0.124)	(0.0798)	

	CELDT Era 1 ('03-'06)	MS	0.144 (0.173)	-0.0940 (0.131)	0.0511 (0.0981)	-0.133 (0.0739)	0.198 (0.238)	-0.138 (0.194)	0.104 (0.198)	-0.291 (0.172)
		HS								
	CELDT Era 2 ('07-'12)	Elm	0.125* (0.0630)	-0.000379 (0.0515)	0.0159 (0.0395)	-0.00401 (0.0281)	0.143* (0.0722)	-0.000437 (0.0593)	0.0185 (0.0459)	-0.00457 (0.0320)
			MS	0.160 (0.195)	-0.0543 (0.135)	-0.0445 (0.0936)	-0.0417 (0.0640)	0.199 (0.251)	-0.0745 (0.185)	-0.0647 (0.136)
		HS								
CST Math 2 Years Later	CELDT Era 1 ('03-'06)	Elm	-0.0493 (0.0826)	-0.0633 (0.0564)	-0.00559 (0.0391)	0.00206 (0.0260)	-0.178 (0.300)	-0.183 (0.163)	-0.0182 (0.127)	0.00645 (0.0815)
		MS								
		HS								
	CELDT Era 2 ('07-'12)	Elm	0.0438 (0.0758)	-0.0117 (0.0611)	-0.0300 (0.0466)	0.00447 (0.0330)	0.0497 (0.0860)	-0.0135 (0.0706)	-0.0345 (0.0537)	0.00511 (0.0378)
		MS								
		HS								
Graduation on Time	CELDT Era 1 ('03-'06)	Elm	-0.0470 (0.0555)	-0.0340 (0.0369)	-0.00120 (0.0261)	-0.0195 (0.0175)	-0.183 (0.218)	-0.106 (0.115)	-0.00405 (0.0882)	-0.0585 (0.0528)
			MS	0.0445 (0.119)	-0.173* (0.0881)	-0.0241 (0.0635)	-0.0789 (0.0484)	0.0523 (0.139)	-0.254 (0.140)	-0.0461 (0.123)
		HS	-0.231 (0.347)	-0.473 (0.267)	-0.428* (0.198)	-0.168 (0.144)	-0.410 (0.612)	-1.015 (0.589)	-0.652* (0.296)	-0.362 (0.309)
	CELDT Era 2 ('07-'12)	Elm	-0.0408	0.0657	-0.0673	-0.0429	0.557	0.0789	-0.0869	-0.0515

		(0.127)	(0.0929)	(0.0631)	(0.0419)	(0.621)	(0.112)	(0.0817)	(0.0504)
MS		-0.00850	0.0483	0.135*	0.0484	-0.0113	0.0606	0.177*	0.0701
		(0.111)	(0.0827)	(0.0612)	(0.0440)	(0.147)	(0.104)	(0.0811)	(0.0639)
HS		-0.0559	-0.00553	-0.000462	0.0248	-0.0699	-0.00672	-0.000555	0.0304
		(0.0546)	(0.0435)	(0.0332)	(0.0239)	(0.0687)	(0.0529)	(0.0399)	(0.0292)

SOURCES: Authors' estimates.

NOTES: Model of CST Math 1 Year Later for middle schoolers is only for grade 6. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

TABLE 7B

SDUSD Robustness of the Estimates to the Order of Polynomials in the Running Variable CELDT Reading Subtest, whole level as bandwidth

Outcome/Model			Intent to Treat				Treatment on Treated			
			4th	3rd	2nd	1st	4th	3rd	2nd	1st
CST 1 Year Later	CELDT Era 2 ('07-'14)	Elm	-0.0896*	-0.0799**	-0.0352	0.00310	-0.271*	-0.232*	-0.109	0.00896
			(0.0378)	(0.0302)	(0.0231)	(0.0162)	(0.119)	(0.0900)	(0.0719)	(0.0468)
		MS	0.0441	-0.0115	-0.0154	-0.00876	0.197	-0.0490	-0.0568	-0.0323
			(0.0615)	(0.0472)	(0.0349)	(0.0233)	(0.277)	(0.201)	(0.129)	(0.0859)
		HS	-0.0655	0.0977	0.0429	0.0774	-0.386	0.319	0.147	0.304
			(0.146)	(0.0984)	(0.0679)	(0.0451)	(0.877)	(0.343)	(0.235)	(0.185)
CST 2 Years Later	CELDT Era 2 ('07-'14)	Elm	-0.00597	-0.0137	0.0417	0.0502*	-0.0185	-0.0413	0.132	0.146*
			(0.0451)	(0.0365)	(0.0281)	(0.0195)	(0.140)	(0.110)	(0.0896)	(0.0573)
		MS	-0.0499	-0.0842	-0.0198	-0.00237	-0.182	-0.306	-0.0673	-0.00811
			(0.0709)	(0.0550)	(0.0410)	(0.0284)	(0.264)	(0.211)	(0.140)	(0.0971)
		HS	-0.247	-0.302	-0.206	-0.0913	-0.602	-0.745	-0.526	-0.436
			(0.244)	(0.170)	(0.118)	(0.0801)	(0.591)	(0.447)	(0.306)	(0.392)
CST Math 1 Year Later	CELDT Era 2 ('07-'14)	Elm	-0.0602	-0.0575	-0.0202	0.00479	-0.182	-0.166	-0.0625	0.0138
			(0.0546)	(0.0431)	(0.0321)	(0.0227)	(0.166)	(0.126)	(0.0992)	(0.0654)
		MS	0.123	0.214*	0.0822	0.0639	0.532	0.895	0.338	0.245
			(0.132)	(0.0970)	(0.0697)	(0.0453)	(0.594)	(0.473)	(0.292)	(0.175)
		HS								

CST Math 2 Years Later	CELDT Era 2 ('07-'14)	Elm	-0.0447	-0.0613	-0.00948	0.0175	-0.139	-0.183	-0.0295	0.0505	
			(0.0654)	(0.0518)	(0.0393)	(0.0275)	(0.204)	(0.156)	(0.122)	(0.0796)	
		MS									
Graduation on Time	CELDT Era 2 ('07-'14)	Elm	0.116	0.0404	0.0557	0.0606*	0.264	0.106	0.187	0.192*	
			(0.0810)	(0.0562)	(0.0404)	(0.0248)	(0.199)	(0.150)	(0.140)	(0.0811)	
		MS	0.0292	-0.0374	-0.0167	0.0127	0.118	-0.144	-0.0646	0.0475	
			(0.0642)	(0.0493)	(0.0356)	(0.0239)	(0.259)	(0.193)	(0.137)	(0.0898)	
HS	0.00402	-0.0224	-0.00220	-0.0217	0.0166	-0.0843	-0.00836	-0.0867			
	(0.106)	(0.0644)	(0.0421)	(0.0267)	(0.435)	(0.244)	(0.160)	(0.108)			

SOURCES: Authors' estimations

NOTES: Model of CST Math 1 Year Later for middle schoolers is only for grade 6. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

Tables 8A and 8B below shows the relevant coefficients from a series of models of outcomes on the indicator for being above the CST ELA cutpoint, the listed moderator, and the interaction between the above indicator and the moderator. Thus each trio of coefficients in a column refers to a different model than the other trios of coefficients in the same column.

For LAUSD, there is a pattern where the indicator for being at or above the CST cutpoint is smaller (or more negative) when the student’s home language is Spanish, when there is greater language homogeneity among ELs at the school, or when Spanish is more predominant in the neighborhood of the school or in the neighborhoods from which a school’s students come.

TABLE 8A

Estimates of the effect of moderator variables on CST ELA one year after reclassification, CST as running variable, each trio of coefficients is a uniquely estimated model, LAUSD, 2003-12

	2003-06			2007-12		
	Elementary	Middle School	High School	Elementary	Middle School	High School
above CST cutpoint	-0.0986** (0.0377)	0.0650** (0.0233)	0.0488 (0.0314)	-0.138** (0.0450)	0.120** (0.0289)	0.137** (0.0408)
Spanish * above	0.0734* (0.0355)	-0.163** (0.0169)	-0.205** (0.0195)	0.0664 (0.0428)	-0.114** (0.0272)	-0.131** (0.0375)
Spanish Home-Language	-0.280** (0.0339)	-0.0611** (0.0204)	-0.0508 (0.0270)	-0.327** (0.0416)	-0.177** (0.0241)	-0.163** (0.0298)
above CST cutpoint	0.00691 (0.0307)	0.0315 (0.0209)	-0.0180 (0.0303)	-0.113** (0.0306)	0.0396* (0.0190)	0.0431 (0.0282)
% EL * above	-0.0606 (0.0442)	-0.0547 (0.0380)	0.0621 (0.0674)	0.0791 (0.0511)	-0.0894* (0.0454)	-0.101 (0.0708)
% EL	-0.0144 (0.0408)	0.0366 (0.0299)	-0.132** (0.0433)	-0.0621 (0.0483)	-0.00563 (0.0370)	-0.00448 (0.0494)
above CST cutpoint	-0.0449 (0.0299)	0.0503* (0.0197)	0.0484 (0.0278)	-0.109** (0.0321)	0.0945** (0.0214)	0.115** (0.0317)
same language as all students*above	0.000222 (0.000337)	-0.000619** (0.000213)	-0.000716* (0.000303)	0.000490 (0.000378)	-0.00118** (0.000246)	-0.00147** (0.000359)
same language as all student	-0.000923** (0.000328)	0.000262 (0.000195)	-0.000434 (0.000254)	-0.00143** (0.000365)	-0.000178 (0.000212)	0.000989** (0.000288)

above CST cutpoint	-0.0995** (0.0381)	0.0677** (0.0236)	0.0650* (0.0317)	-0.136** (0.0431)	0.128** (0.0280)	0.152** (0.0401)
same language as EL students*above	0.000769* (0.000370)	-0.000673** (0.000218)	-0.000743* (0.000294)	0.000661 (0.000420)	-0.00128** (0.000274)	-0.00155** (0.000390)
same language as EL students	-0.00108** (0.000414)	-0.000369 (0.000340)	-0.00177** (0.000484)	-0.00239** (0.000446)	-0.00107** (0.000346)	0.00148** (0.000564)
above CST cutpoint				-0.146** (0.0556)	0.119** (0.0364)	0.228** (0.0574)
language homogeneity of ELs * above				0.0802 (0.0565)	-0.119** (0.0377)	-0.242** (0.0604)
language homogeneity of ELs				-0.258** (0.0542)	-0.0616* (0.0306)	0.197** (0.0404)
above CST cutpoint	-0.0151 (0.0257)	0.00972 (0.0247)	-0.0894 (0.0478)	-0.103** (0.0295)	0.0307 (0.0243)	-0.0134 (0.0401)
% teachers have MA * above	-0.0521 (0.0778)	-0.00686 (0.0780)	0.296* (0.139)	0.0849 (0.0730)	-0.0543 (0.0582)	0.0692 (0.0869)
% teachers have MA	0.0589 (0.0714)	0.259** (0.0608)	0.0531 (0.0879)	-0.0784 (0.0689)	0.0383 (0.0489)	-0.176** (0.0654)
above CST cutpoint	-0.0626 (0.0332)	-0.0706* (0.0291)	-0.0494 (0.0490)	0.00375 (0.0353)	0.0243 (0.0237)	-0.00692 (0.0360)
median years teaching experience * above	0.00290 (0.00249)	0.00814** (0.00265)	0.00468 (0.00400)	-0.00547* (0.00214)	-0.00116 (0.00177)	0.00177 (0.00255)
median years teaching experience	-0.00161 (0.00227)	-0.00456* (0.00207)	-0.00185 (0.00262)	0.00636** (0.00209)	-0.00108 (0.00157)	0.00138 (0.00185)
above CST cutpoint	-0.0293 (0.0164)	0.00551 (0.0193)	-0.00635 (0.0470)	-0.0740** (0.0175)	-0.0318 (0.0180)	0.0247 (0.0345)
% no ELD at school * above	0.0495 (0.142)	0.00856 (0.0382)	0.0218 (0.0957)	-0.00586 (0.145)	0.103** (0.0313)	-0.0275 (0.0757)
% no ELD at school	0.178 (0.134)	0.0138 (0.0291)	-0.0535 (0.0612)	0.199 (0.135)	-0.0738** (0.0243)	-0.0887 (0.0497)
above CST cutpoint	-0.00918 (0.0393)	0.0806* (0.0325)	0.0306 (0.0477)	-0.0672* (0.0280)	0.0564** (0.0176)	0.0843** (0.0266)

% home language Spanish school zip neighborhood * above	-0.0636 (0.0475)	-0.0663 (0.0360)	-0.0657 (0.0538)	-0.00589 (0.0327)	-0.0730** (0.0205)	-0.120** (0.0310)
% home language Spanish school zip neighborhood	0.0318 (0.0430)	-0.0667* (0.0286)	-0.0306 (0.0342)	-0.120** (0.0308)	-0.0530** (0.0159)	0.115** (0.0211)
above CST cutpoint	-0.00506 (0.0436)	0.102** (0.0385)	0.0608 (0.0577)	-0.0620* (0.0311)	0.0703** (0.0212)	0.111** (0.0321)
% home language Spanish home zip neighborhood * above	-0.0704 (0.0563)	-0.0979* (0.0489)	-0.110 (0.0724)	-0.0144 (0.0386)	-0.0929** (0.0274)	-0.156** (0.0408)
% home language Spanish home zip neighborhood	0.0373 (0.0510)	-0.0710 (0.0382)	0.0154 (0.0470)	-0.131** (0.0364)	-0.0827** (0.0211)	0.158** (0.0277)
above CST cutpoint	-0.00881 (0.0588)	0.130** (0.0477)	0.0560 (0.0915)	-0.0765 (0.0423)	0.0505 (0.0259)	0.0283 (0.0489)
% foreign-born in school zip neighborhood * above	-0.0914 (0.118)	-0.211* (0.0950)	-0.154 (0.199)	0.00913 (0.0849)	-0.0913 (0.0528)	-0.0341 (0.105)
% foreign-born in school zip neighborhood	-0.0434 (0.107)	-0.102 (0.0705)	0.100 (0.118)	-0.0677 (0.0801)	0.0372 (0.0411)	0.115 (0.0726)
above CST cutpoint	0.00458 (0.0750)	0.121 (0.0676)	-0.0347 (0.104)	-0.0877 (0.0522)	0.0542 (0.0358)	0.0260 (0.0582)
% foreign-born in home zip neighborhood * above	-0.124 (0.160)	-0.187 (0.145)	0.0602 (0.223)	0.0347 (0.110)	-0.0988 (0.0771)	-0.0277 (0.125)
% foreign-born in home zip neighborhood	-0.0191 (0.144)	-0.121 (0.106)	0.171 (0.137)	-0.0597 (0.104)	0.0329 (0.0598)	0.0778 (0.0878)
above CST cutpoint	-0.0339 (0.0457)	0.0970* (0.0385)	0.0240 (0.0583)	-0.0952** (0.0323)	0.0408* (0.0208)	0.0671* (0.0321)
% in poverty in school zip neighborhood * above	-0.0319 (0.0729)	-0.121 (0.0617)	-0.0694 (0.0963)	0.0443 (0.0509)	-0.0593 (0.0339)	-0.109* (0.0520)
% in poverty in school zip neighborhood	-0.0744 (0.0654)	-0.0844 (0.0485)	-0.0241 (0.0593)	-0.161** (0.0480)	-0.0539* (0.0265)	0.0623 (0.0351)

above CST cutpoint	-0.0483 (0.0531)	0.137** (0.0467)	0.0377 (0.0736)	-0.0905* (0.0372)	0.0462 (0.0255)	0.105** (0.0398)
% in poverty in home zip neighborhood*above	-0.00380 (0.0915)	-0.199* (0.0814)	-0.0942 (0.130)	0.0357 (0.0621)	-0.0691 (0.0442)	-0.182** (0.0693)
% in poverty in home zip neighborhood	-0.140 (0.0821)	-0.0758 (0.0631)	-0.00197 (0.0796)	-0.182** (0.0587)	-0.105** (0.0343)	0.131** (0.0470)

SOURCES: Authors' estimates.

NOTES: Each set of rows represents six different regressions. Coefficients and standard errors are reported for being just above the CST cutpoint, the moderator, and moderator * above. Other control variables used in the regressions reported in Table 5A are included for each regression. Regressions are Intent to treat, second order polynomial. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

TABLE 8B

Estimates of the effect of moderator variables on CST ELA one year after reclassification, CST as running variable, each trio of coefficients is a uniquely estimated model, SDUSD, 2004-14

	2004-05			2007-14		
	Elementary	Middle School	High School	Elementary	Middle School	High School
above CST cutpoint	0.0344 (0.0698)	-0.0496 (0.0558)	-0.101 (0.0942)	-0.0103 (0.0441)	-0.00848 (0.0519)	-0.0953 (0.0895)
Spanish * above	-0.0443 (0.0569)	0.0197 (0.0439)	-0.131** (0.0489)	0.00212 (0.0329)	-0.165** (0.0394)	-0.259** (0.0623)
Spanish Home-Language	-0.0763 (0.0516)	-0.137** (0.0340)	-0.0472 (0.0789)	-0.136** (0.0302)	-0.0120 (0.0427)	0.0492 (0.0722)
above CST cutpoint	-0.000210 (0.0717)	-0.0178 (0.0504)	-0.205** (0.0766)	-0.0467 (0.0467)	-0.0345 (0.0464)	-0.0323 (0.0777)
% EL * above	-0.000112 (0.00122)	-0.000571 (0.000984)	0.00283 (0.00185)	0.000878 (0.000720)	0.000597 (0.000915)	-0.00114 (0.00222)
% EL	-0.00133 (0.00110)	0.000397 (0.000744)	0.000290 (0.00114)	-0.00151* (0.000654)	-0.000425 (0.000824)	0.00126 (0.00189)
above CST cutpoint	-0.0159 (0.0627)	-0.0525 (0.0493)	-0.159 (0.0831)	-0.0398 (0.0414)	-0.0318 (0.0468)	-0.0607 (0.0807)
same language as all students*above	0.000253 (0.000734)	0.000418 (0.000647)	0.000529 (0.00129)	0.000695 (0.000471)	0.000324 (0.000565)	0.000126 (0.00116)
same language as all student	-0.000179 (0.000699)	0.000765 (0.000554)	0.000584 (0.000892)	-0.00147** (0.000451)	-0.000856 (0.000527)	-5.63e-05 (0.00106)
above CST cutpoint	0.0171 (0.0720)	-0.0566 (0.0577)	-0.111 (0.0993)	-0.0199 (0.0460)	-0.0214 (0.0545)	-0.165 (0.0918)
same language as EL students*above	-0.000335 (0.000687)	0.000231 (0.000529)	-0.000495 (0.00102)	0.000222 (0.000424)	5.91e-05 (0.000518)	0.00150 (0.000874)
same language as EL students	0.000728 (0.000751)	0.000678 (0.000773)	0.00213 (0.00111)	-0.000986* (0.000474)	-0.000746 (0.000614)	-0.000938 (0.00102)
above CST cutpoint	-0.0536 (0.0864)	-0.0732 (0.0798)	-0.136 (0.127)	-0.0579 (0.0527)	-0.0249 (0.0761)	-0.195 (0.116)
language homogeneity of ELs * above	0.0607	0.0433	0.00684	0.0667	-0.0207	0.197

	(0.0938)	(0.0879)	(0.152)	(0.0583)	(0.0901)	(0.129)
language homogeneity of ELs	-0.100	-0.0820	0.152	-0.129*	-0.107	-0.214
	(0.0859)	(0.0756)	(0.0885)	(0.0545)	(0.0817)	(0.111)
above CST cutpoint	0.0494	0.0219	-0.107	0.0375	0.132*	-0.309*
	(0.0830)	(0.0771)	(0.141)	(0.0765)	(0.0650)	(0.155)
% teachers have MA * above	-0.128	-0.150	-0.0327	-0.0830	-0.259**	0.419
	(0.147)	(0.142)	(0.248)	(0.110)	(0.0979)	(0.240)
% teachers have MA	0.105	0.0582	-0.255	0.177	0.126	-0.458*
	(0.131)	(0.113)	(0.156)	(0.0986)	(0.0892)	(0.196)
above CST cutpoint	0.0487	0.00380	-0.0595	0.0904	0.133*	-0.139
	(0.0844)	(0.0874)	(0.138)	(0.0614)	(0.0608)	(0.119)
median years teaching experience * above	-0.00515	-0.00429	-0.00540	-0.00721*	-0.0119**	0.00667
	(0.00610)	(0.00671)	(0.00959)	(0.00352)	(0.00396)	(0.00754)
median years teaching experience	0.00201	-0.000415	-0.0106	0.00708*	0.0106**	-0.0104
	(0.00543)	(0.00540)	(0.00579)	(0.00316)	(0.00354)	(0.00649)
above CST cutpoint					0.0183	-0.0384
					(0.0524)	(0.0724)
% no ELD at school * above					-0.000461	-0.00103
					(0.000684)	(0.00138)
% no ELD at school					0.000333	0.00133
					(0.000628)	(0.00122)
above CST cutpoint				-0.0119	-0.0399	-0.0110
				(0.0527)	(0.0461)	(0.0740)
% home language Spanish school zip neighborhood * above				0.0767	0.111	-0.201
				(0.0869)	(0.0785)	(0.163)
% home language Spanish school zip neighborhood				-0.176*	-0.149*	0.0156
				(0.0790)	(0.0706)	(0.135)
above CST cutpoint				-0.0198	-0.0782	-0.0103
				(0.0573)	(0.0548)	(0.0965)
% home language Spanish home zip neighborhood * above				0.0965	0.209	-0.115
				(0.105)	(0.109)	(0.211)

% home language Spanish home zip neighborhood	-0.197* (0.0955)	-0.269** (0.0975)	-0.00853 (0.180)
above CST cutpoint	0.0366 (0.0705)	-0.0229 (0.0570)	0.124 (0.0955)
% foreign-born in school zip neighborhood * above	-0.0774 (0.178)	0.0431 (0.153)	-0.746* (0.298)
% foreign-born in school zip neighborhood	-0.100 (0.162)	-0.107 (0.138)	0.355 (0.253)
above CST cutpoint	0.0392 (0.0859)	-0.0722 (0.0833)	0.205 (0.154)
% foreign-born in home zip neighborhood * above	-0.0815 (0.233)	0.207 (0.248)	-0.871 (0.482)
% foreign-born in home zip neighborhood	-0.0858 (0.213)	-0.322 (0.221)	0.159 (0.416)
above CST cutpoint	-0.0250 (0.0615)	-0.0618 (0.0532)	0.0383 (0.0915)
% in poverty in school zip neighborhood * above	0.0906 (0.102)	0.140 (0.0935)	-0.259 (0.183)
% in poverty in school zip neighborhood	-0.203* (0.0924)	-0.164 (0.0841)	0.0400 (0.154)
above CST cutpoint	-0.0510 (0.0669)	-0.0983 (0.0667)	-0.0112 (0.119)
% in poverty in home zip neighborhood*above	0.150 (0.119)	0.215 (0.126)	-0.0899 (0.237)
% in poverty in home zip neighborhood	-0.252* (0.108)	-0.291* (0.113)	-0.0335 (0.203)

SOURCES: Authors' estimates.

NOTES: Each set of rows represents six different regressions. Coefficients and standard errors are reported for being just above the CST cutpoint, the moderator, and moderator * above. Other control variables used in the regressions reported in Table 5A are included for each regression. Regressions are Intent to treat, second order polynomial. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

TABLE 9

Estimates of the effect of moderator variables on CST ELA one year after reclassification, CST as running variable, moderators estimated simultaneously, LAUSD, 2003-12

	CELDT Era 1 ('03-'06)			CELDT Era 2 ('07-'12)		
	Elementary	Middle	High School	Elementary	Middle	High School
above	-0.0262 (0.0789)	0.106 (0.0861)	0.232 (0.151)	-0.180** (0.0587)	0.128** (0.0465)	0.175* (0.0690)
Spanish * above	0.0206 (0.0554)	-0.0421 (0.0422)	-0.0840 (0.0563)	0.0683 (0.0436)	-0.107** (0.0276)	-0.181** (0.0515)
Spanish Home-Language	-0.254** (0.0521)	-0.158** (0.0356)	-0.170** (0.0399)	-0.299** (0.0423)	-0.159** (0.0244)	-0.112** (0.0383)
% no ELD at school	-0.114 (0.227)	-0.0815 (0.0626)	0.0610 (0.109)	0.273* (0.139)	-0.0766** (0.0267)	0.0184 (0.0785)
% no ELD at school * above	0.600* (0.252)	0.0152 (0.0834)	-0.131 (0.179)	0.0294 (0.150)	0.107** (0.0348)	-0.285** (0.0620)
% EL	0.0477 (0.0718)	-0.0648 (0.0755)	-0.244** (0.0916)	0.0206 (0.0534)	0.0596 (0.0464)	0.0843 (0.0868)
% EL * above	-0.0446 (0.0794)	0.0539 (0.0994)	0.205 (0.150)	0.105 (0.0565)	0.0678 (0.0585)	-0.0847 (0.0670)
% teachers have MA	-0.00738 (0.103)	0.288* (0.121)	0.337* (0.161)	-0.111 (0.0703)	-0.0492 (0.0510)	0.0114 (0.0896)
% teachers have MA*above	0.0275 (0.115)	0.0383 (0.156)	-0.225 (0.265)	0.0868 (0.0745)	-0.0631 (0.0600)	0.233** (0.0346)
% home language Spanish home zip neighborhood	0.0250 (0.0558)	-0.0312 (0.0498)	0.127 (0.0650)	-0.128** (0.0396)	-0.119** (0.0249)	-0.151** (0.0494)
% home language Spanish home zip neighborhood * above	-0.0549 (0.0624)	-0.105 (0.0657)	-0.169 (0.101)	-0.0573 (0.0420)	-0.0927** (0.0321)	0.00701** (0.00145)
Constant	-2.283** (0.131)	-3.048** (0.147)	-2.918** (0.253)	128.2** (3.007)	128.7** (4.141)	70.87** (6.218)

Observations	15,127	11,482	5,186	48,325	40,320	20,416
R-squared	0.343	0.277	0.239	0.287	0.246	0.168

Robust standard errors in parentheses

** p<0.01, * p<0.05

SOURCES: Authors' estimates

NOTES: Each column is a separate regression. Other control variables used in the regressions reported in Table 5A are included for each regression. Regressions are Intent to treat, second order polynomial. Coefficients shaded green are positive and significant while those shaded red are negative and significant.

Table 10A

Years in US Schools by Grade, Current/Reclassified English-Learners (LAUSD)

Student Grade	0-3 Years in US Schools, ELs		4-5 Years in US Schools, ELs		6+ Years in US Schools, ELs		Reclassified		Total
	#	%	#	%	#	%	#	%	
PRE-K	16,491	99.79%	9	0.05%	3	0.02%	22	0.13%	16,525
K	174,689	99.54%	141	0.08%	63	0.04%	598	0.34%	175,491
g1	258,803	98.54%	2,829	1.08%	157	0.06%	847	0.32%	262,636
g2	204,012	75.89%	47,908	17.82%	572	0.21%	16,345	6.08%	268,837
g3	20,205	7.34%	211,816	76.98%	5,809	2.11%	37,325	13.57%	275,155
g4	14,182	5.27%	142,783	53.02%	51,747	19.21%	60,600	22.50%	269,312
g5	12,811	4.85%	13,703	5.18%	144,107	54.52%	93,688	35.45%	264,309
g6	12,524	4.91%	8,398	3.29%	110,483	43.32%	123,639	48.48%	255,044
g7	12,544	4.77%	7,533	2.86%	87,693	33.34%	155,253	59.03%	263,023
g8	12,741	4.77%	7,138	2.67%	76,025	28.44%	171,433	64.13%	267,337
g9	23,277	7.47%	8,709	2.80%	88,177	28.31%	191,352	61.43%	311,515
g10	16,676	6.61%	7,162	2.84%	57,316	22.71%	171,185	67.84%	252,339
g11	10,730	5.07%	6,953	3.29%	39,347	18.60%	154,514	73.04%	211,544
g12	3,350	2.00%	8,042	4.79%	28,651	17.08%	127,737	76.13%	167,780

SOURCE: Authors' calculations.

Table 10B

Years Since First Enrolling in SDUSD by Grade, Current/Reclassified English-Learners (SDUSD)

Student Grade	0-3 Years in US Schools, ELs		4-5 Years in US Schools, ELs		6+ Years in US Schools, ELs		Reclassified		Total
	#	%	#	%	#	%	#	%	
K	30,594	94.58	1,429	4.42	197	0.61	127	0.39	32,347
g1	27,923	83.28	5,173	15.43	301	0.90	134	0.40	33,531
g2	24,726	76.08	6,489	19.97	1,138	3.50	147	0.45	32,500
g3	4,443	14.02	19,188	60.57	2,855	9.01	5,194	16.40	31,680
g4	3,626	11.82	14,205	46.32	4,599	15.00	8,239	26.86	30,669
g5	2,942	9.76	1,545	5.12	12,302	40.79	13,369	44.33	30,158
g6	2,521	8.60	1,322	4.51	10,608	36.21	14,847	50.68	29,298
g7	2,309	8.05	1,147	4.00	9,081	31.65	16,158	56.31	28,695
g8	2,152	7.71	1,010	3.62	7,960	28.53	16,777	60.13	27,899
g9	3,138	9.81	1,149	3.59	10,487	32.78	17,215	53.82	31,989
g10	2,641	9.31	1,145	4.03	8,366	29.48	16,227	57.18	28,379
g11	1,815	7.96	910	3.99	5,825	25.53	14,265	62.52	22,815
g12	860	3.79	1,043	4.59	6,776	29.84	14,026	61.77	22,705

SOURCE: Authors' calculations

Notes: The results use students who are currently or were formerly ELs in the school years 2007-08 through 2013-14. Pre-K observations were excluded in calculating years in district.

Table 10B differs in a subtle way from Table 10A, because the year of first enrollment in a US school was not available for SDUSD. Instead, we measure in Table 10B the number of years elapsed since first enrollment in SDUSD.

The next two tables show the characteristics of these two related measures (years in US schools for LAUSD, and years since first enrolled in SDUSD for SDUSD), for the sample of ELs who appear in any of our RD experiments.

TABLE 11A

Distribution of years in US schools upon reclassification, students included in at least one RD Experiment, LAUSD

Percentiles			
1%	2	Obs	180,392
5%	4	Sum of Wgt.	180,392
10%	4		
25%	4	Mean	6.0858
50% (Median)	6	Std. Dev.	2.2471
75%	7		
90%	9	Variance	5.0492
95%	11	Skewness	1.1143
99%	13	Kurtosis	4.4758

SOURCE: Authors' calculations

NOTES: The sample is based on an RD sample that uses a CST bandwidth of 50.

TABLE 11B

Distribution of years since first enrolled in SDUSD upon reclassification, students included in at least one RD Experiment, SDUSD

Percentiles			
1%	1	Obs	48,617
5%	1	Sum of Wgt.	48,617
10%	2		
25%	3	Mean	4.5564
50% (Median)	4	Std. Dev.	2.3623
75%	6		
90%	8	Variance	5.5806
95%	9	Skewness	0.6925
99%	11	Kurtosis	3.3088

SOURCE: Authors' calculations

NOTES: The sample is based on an RD sample that uses a CST bandwidth of 50.

The main report discusses the correlation between the CST and various CELDT test scores, and states that the scores are not strongly correlated, meaning that it is appropriate to consider an RD experiment for one test for the subsample of students who meet the reclassification criteria on the other test. Table 12A examines this question in a slightly different way. It reports the correlation between dummy variables for whether a student was included in a given experiment and another RD experiment. In LAUSD these indicators are positively related and strongly so in the case of the CELDT OPL and CELDT reading experiments. The table shows an average for the two CELDT eras. In SDUSD the analysis is simpler because it was only in era two, and between the CST and CELDT reading experiments, that we conducted two RD experiments together. In that case, the correlation between dummy variables indicating inclusion in the given experiment was 0.45.

Table 12A
Correlation Between Inclusion in the Three Experiments (LAUSD)

Experiment	lagcstela	celdtOPL	celdtREAD
lagcstela			
celdtOPL	0.7448		
celdtREAD	0.7974	0.9113	

SOURCE: Authors' calculations combining both CELDT eras.

Tables 13A and 13B show for LAUSD and SDUSD the percentage of all ELs who did and did not meet the overall (OPL) CELDT requirement for reclassification, which in both districts was at the Early Advanced level, versus the percentage who met and did not meet the districts' subtest requirements. The most dramatic difference between the districts is that in SDUSD virtually no students who failed to meet the OPL requirement met the subtest requirement, and this reflects the very high requirement in SDUSD, where students must score Early Advanced on all but one subtest, with one allowed at the Intermediate level.

Table 13A

Rate of Students Meeting CELDT Subtest Requirements but NOT Overall Requirement in LAUSD (All EL Students)

	Subtest Not Met		Met Subtest	
	Overall Not Met	749,783	77.36%	219,412
Met Overall	67,913	10.27%	593,343	89.73%

Table 13B

Rate of Students Meeting CELDT Subtest Requirements but NOT Overall Requirement in SDUSD (All EL Students)

	Subtest Not Met		Met Subtest	
	Overall Not Met	208,187	96.8%	6,789
Met Overall	38,742	37.8%	63,833	62.2%

Tables 14A and B show the same cross-tabulation, but this time limiting the sample to those ELs who in a given year were included in one of the RD experiments. In LAUSD the percentage of those not meeting the overall CELDT proficiency level who met the CELDT subtest requirements was quite high relative to the same cell in Table 13A, which is for the entire EL population. In Table 14A, each included EL was included in at least one of the RD experiments, so they must have also met the CST and CELDT OPL requirements. The table for SDUSD has no entries in the “Overall Not Met” row because all three of the RD experiments we used (CST in eras 1 and 2 and CELDT Reading in era 2) required students to have met the other reclassification requirements, including the CELDT Overall Proficiency Level requirement.

Additional insights emerge by comparing Tables 13 and 14, because the earlier tables include all ELs and the later tables include only EL students used in an experiment. A comparison of the numbers shows that in LAUSD about one quarter of all EL observations were included in the RD experiments, compared to about one tenth in SDUSD. The smaller proportion of ELs used in San Diego mostly reflects the much higher CELDT subtest requirements in SDUSD compared to LAUSD. Recall that in SDUSD, only one CELDT subtest may be at the Intermediate level, and all other subtests must be at the Early Advanced level. In LAUSD, all subtests may be at the Intermediate level.

Table 14A

Rate of LAUSD Students Meeting CELDT Subtest Requirements but NOT Overall Requirement (Students In At Least One Experiment)

Overall Not Met	Subtest Not Met		Met Subtest	
		12,437	24.22%	38,910
Met Overall	7,701	2.47%	304,125	97.53%

SOURCE: Authors' calculations.

Table 14B

Rate of SDUSD Students Meeting CELDT Subtest Requirements but NOT Overall Requirement (Students In At Least One Experiment)

Overall Not Met	Subtest Not Met		Met Subtest	
		0	N/A	0
Met Overall	3,742	12.0%	27,420	88.0%

SOURCE: Authors' calculations.

NOTES: N/A – Not Applicable.

Finally, Table 15 shows what happens to the ITT and TOT estimates of the impact of reclassification on graduating on time in San Diego when students who moved to other districts before graduation are treated as not graduating on time. This exercise is useful because in LAUSD the data did not distinguish between dropouts and those leaving for other districts, meaning that in the LAUSD models of graduating on time leavers were treated as not graduating on time. For further discussion of this table see Appendix A.

TABLE 15

A Comparison of the SDUSD CST Regression Discontinuity Results for Era 2 (2007-2014) for the Outcome Graduation on Time, Treating District Leavers as Not Having Graduated on Time Versus the Original Results Which Exclude District Leavers Who Did Not Drop Out

Grade Span	Treating Leavers as Non-Graduates		Original Results	
	Intent to Treat	Treatment on Treated	Intent to Treat	Treatment on Treated
3-5	0.0309 (0.0571) N=2957	0.069 (0.127)	0.0289 (0.0550) N=1814	0.0721 (0.137)
6-8	-0.0464 (0.0372) N=6216	-0.0670 (0.0539)	-0.00984 (0.0393) N=4271	-0.0138 (0.0552)
9-12	0.00842 (0.0304) N=6376	0.0165 (0.0594)	0.00961 (0.0309) N=5715	0.0189 (0.0607)

SOURCE: Authors' calculations.

NOTES: The results use bandwidth of 50, with a second order polynomial.



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