



# Impact of bilingual education programs on limited English proficient students and their peers: Regression discontinuity evidence from Texas <sup>☆</sup>



Aimee Chin <sup>a</sup>, N. Meltem Daysal <sup>b</sup>, Scott A. Imberman <sup>c</sup>

<sup>a</sup> Department of Economics, University of Houston, 204 McElhinney Hall, Houston, TX 77204-5019, United States

<sup>b</sup> Department of Business and Economics, University of Southern Denmark, Campusvej 55, 5230 Odense M, Denmark

<sup>c</sup> Department of Economics, Michigan State University, Marshall-Adams Hall, 486 W Circle Dr Rm 110, East Lansing, MI 48824, United States

## ARTICLE INFO

### Article history:

Received 28 November 2012

Received in revised form 12 August 2013

Accepted 13 August 2013

Available online 30 August 2013

### Keywords:

Bilingual education

Peer effects

Limited English proficient (LEP) students

## ABSTRACT

Texas requires a school district to offer bilingual education when its enrollment of limited English proficient (LEP) students in a particular elementary grade and language is twenty or higher. Using school panel data, we find a significant increase in the probability that a district provides bilingual education above this 20-student cutoff. Using this discontinuity as an instrument for district bilingual education provision, we find that providing bilingual education programs (relative to providing only English as a Second Language programs) does not significantly impact the standardized test scores of students with Spanish as their home language (comprised primarily of ever-LEP students). However, we find significant positive impacts on non-LEP students' achievement, which indicates that education programs for LEP students have spillover effects to non-LEP students.

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## 1. Introduction

One of the major challenges facing educators and policymakers today is the large and growing number of limited English proficient (LEP) children in U.S. public schools. About 1 in 9 students enrolled in pre-kindergarten to grade 12 were classified as LEP in 2008–09, a marked increase from the ratio of 1 in 13 recorded one decade earlier (National Clearinghouse for English Language Acquisition, 2011). These LEP students are present not only in big cities and other traditional immigrant-receiving areas, but also across the country; even by 2001–02, when U.S. immigrants were less geographically dispersed than they are today, about half of public schools in the U.S. had at least one LEP student (Zehler et al., 2003). Lack of proficiency in English presents a significant barrier to learning in U.S. schools, and given these recent trends in LEP student population and geographic dispersion, how to educate LEP students is likely to remain an important policy issue in the coming years.

School districts are required by federal law to provide special assistance to LEP students.<sup>1</sup> They typically offer Bilingual Education (BE) or English as a Second Language (ESL) to help LEP students. While there

is considerable variation in how these programs are implemented in the classroom, a defining feature of BE is the use of the student's native language for at least some of the academic instruction; other programs such as ESL teach only in English. Given this feature, LEP students participating in BE tend to be placed in a self-contained classroom with classmates who share the same home language and a dedicated bilingual education teacher who can teach in that language. In contrast, LEP students participating in ESL tend to be placed in mainstream classrooms with pullout time with an ESL teacher to improve their English skills.

In this paper, we identify the causal effect of BE on the academic achievement of LEP students and their non-LEP peers using quasi-experimental variation in BE exposure generated by a policy rule governing the provision of bilingual education programs in Texas. The policy rule requires a school district to offer BE when its enrollment of LEP students in a particular elementary grade level and language is twenty or higher. Below this 20-student cutoff, districts are free to offer BE or ESL, with most choosing to offer only ESL.<sup>2</sup> This suggests a regression discontinuity (RD) design in which the effect of providing BE (relative to ESL) on student achievement can be obtained by comparing student outcomes in districts just above the 20-student cutoff (and therefore more likely to provide BE) and student outcomes in districts just below the cutoff. We elaborate on this RD strategy in Section 5.

This paper adds to a large literature evaluating educational programs for LEP students, which we briefly summarize in Section 2.2. It addresses two major gaps in this literature. First, this literature has focused exclusively on the impacts on the intended beneficiaries themselves (i.e., the

<sup>☆</sup> We thank Erzo F.P. Luttmer, Chinhui Juhn, Danielle Li, and workshop participants at the 2010 and 2011 National Academy of Education Annual Meeting, 2011 ASSA Meetings, 2012 SOLE Meetings, and 2012 APPAM Fall Research Conference for helpful comments and discussion. Imberman gratefully acknowledges financial support from the National Academy of Education/Spencer Foundation Postdoctoral Fellowship. A University of Houston Small Grant was used to purchase the data, for which we are grateful. The authors bear sole responsibility for the content of this paper.

E-mail addresses: [achin@uh.edu](mailto:achin@uh.edu) (A. Chin), [meltem.daysal@sam.sdu.dk](mailto:meltem.daysal@sam.sdu.dk) (N.M. Daysal), [imberman@msu.edu](mailto:imberman@msu.edu) (S.A. Imberman).

<sup>1</sup> The relevant laws are Title VI of the 1964 Civil Rights Act and the Equal Educational Opportunity Act of 1974. Section 2.1 provides a legislative background on educational programs for LEP students.

<sup>2</sup> There are cost advantages to offering only ESL, as we discuss in Section 5.1.

LEP students) and ignored any effects that these programs might have on non-LEP students. Yet, because these programs change the student composition of mainstream classrooms and school budgets, among other things, there is potential for spillover effects to non-LEP students. To our knowledge, our study is the first to test for spillover effects of educational programs for LEP students, and to the extent that they exist, to quantify them. Quantifying these spillover effects is necessary for a complete cost–benefit analysis of the various LEP programs; *all else equal*, policy makers might prefer the program that benefits non-LEP students more (or, stated differently, harms non-LEP students less).

Second, most of the studies in this literature do not address the potential problem of endogeneity in student exposure to the educational programs for LEP students. In general, student exposure to a program is not random, and instead is the result of decisions made by students, parents, schools and districts. Thus, it is likely correlated with unmeasured and unobserved characteristics of the students, parents, schools and districts, some of which might in turn be correlated with student achievement. Estimates of program effects that do not take this into account tend to be biased. Our research adds to the handful of studies that provide estimates of the impacts of LEP programs with a causal interpretation.<sup>3</sup>

We implement our RD strategy using panel data on elementary schools in districts near the 20-Spanish-LEP-student cutoff defined by the policy rule. We describe these data in Section 6. We restrict our attention to the policy rule *vis-à-vis* Spanish LEP students for a practical reason: Spanish is the home language of 90% of Texas' total LEP enrollment, and is the only language for which there is enough variation across districts to implement our empirical strategy. Due to this restriction, our results pertain to the effect of district provision of Spanish bilingual education programs (relative to providing only ESL for Spanish LEP students). However, considering that Spanish is the language of over three-quarters of total LEP enrollment in the U.S. and accounts for an even higher share of bilingual education programs operating in the U.S. (Zehler et al., 2003), it is especially policy relevant to understand the effects of Spanish BE programs.

To preview the results of Section 5, we find a significant increase in the probability that a district provides BE above the 20-Spanish-LEP-student cutoff. We do not find any significant jumps at the cutoff in covariates unrelated to BE provision, nor do we observe “stacking” of districts below the cutoff, which validates the interpretation of differences in student outcomes just above and just below the cutoff as due to district BE provision.

We proceed by using the variation in district provision of BE induced by the policy rule as an instrumental variable to identify the causal impact of district provision of BE on student achievement. While the impact of *school* provision of BE would also be of interest, we focus on *district* provision of BE because this is directly linked to the policy rule. These instrumental variable estimates provide the local average treatment effect of district provision of Spanish BE among districts whose decision to offer Spanish BE is constrained by the policy rule. Our main findings are as follows. First, district provision of BE raises the standardized math and reading test scores of students who are non-LEP and whose home language is not Spanish. In our preferred specification controlling for a linear spline of the running variable, the district-wide Spanish LEP count in a student's first grade cohort, the positive impacts on non-LEP achievement are statistically significant. Students who are non-LEP and whose home language is not Spanish would never have been candidates to participate in Spanish BE programs, thus this finding is indicative of spillover effects.

Second, district provision of BE has generally positive but smaller and statistically insignificant effects on students whose home language is Spanish. A vast majority of Spanish home language students (89%) are classified as LEP in first grade, and so would have been eligible to

participate in educational programs for Spanish LEP students. Hence, our results suggest that the intended beneficiaries of the LEP programs fare similarly in BE and ESL programs. Finally, we find that district BE provision increases test scores on all students taken together. The positive net impact indicates that on average, the test score gains due to district BE provision exceed test score losses.

## 2. Background and related literature

### 2.1. Legislative background on educational programs for LEP students

The Bilingual Education Act passed in 1968 was the first federal law expressly addressing the educational needs of LEP students in American schools, and did so by providing a financial reward—federal grants awarded on a competitive basis—for providing help to LEP students.<sup>4</sup> Later federal laws made it a legal responsibility of school districts to provide such help. The two main pieces of legislation are the Title VI of the 1964 Civil Rights Act, which prohibited discrimination on the basis of race, color or national origin in federally-assisted programs, and the Equal Educational Opportunity Act of 1974, which basically extended Title VI to school districts not receiving federal funds. School districts faced termination of funding from the U.S. Department of Education or private lawsuits if they failed to provide LEP children with an equal educational opportunity.

The U.S. Supreme Court's *Lau v. Nichols* decision in 1974 made clear that the prevalent practice of “sink or swim” instruction, in which LEP students are placed in the same classrooms as non-LEP students without additional services, was a violation of LEP students' civil rights. To receive an equal educational opportunity, LEP students were entitled to special assistance. Guidelines on Title VI compliance issued by the Department of Education to school districts in 1970 called for “affirmative steps”<sup>5</sup> to help LEP students without specifying what educational programs to use, and new guidelines in 1975 specified bilingual education.

In an environment that demanded Title VI compliance, individual states passed laws mandating bilingual education programs for LEP students. Massachusetts was the first, with a 1971 law, followed by Alaska (1972), California (1972), Illinois (1973), Texas (1973), New York (1974), and others. The programs mandated by these laws tended to be *transitional* BE programs, which have the goal of mainstreaming the LEP students as soon as they acquire sufficient English-language skills; native language instruction is temporarily used so that the LEP students can keep up in academic subjects.<sup>6</sup> Additionally, these laws did not require *every* school district to provide bilingual education to *every* LEP student. Instead they specified the circumstances under which a school district would provide BE, and these circumstances generally involved the number and concentration of LEP students of a particular grade and of a particular language group in a school district. Below, we take advantage of the specifics of the Texas law to identify the effects of bilingual education.

Since the late 1990s, there has been a shift away from using bilingual education toward using English-only programs to help LEP students. Revealingly, in 2002, the Bilingual Education Act was renamed the English Language Acquisition, Language Enhancement, and Academic Achievement Act. Also, several states eliminated bilingual education in public schools through ballot initiatives: California (1998), Arizona (2000) and Massachusetts (2002). Reflecting this policy shift, 40% of LEP students in U.S. public schools were in a BE program in 2001–02, compared to 63% in 1991–92. The rest are in English-only programs, with the largest being ESL (Zehler et al., 2003).

<sup>4</sup> This legislation was Title VII of the Elementary and Secondary Education Act. Crawford (1989) provides a good history of BE in the U.S., and Nieto (2009) provides a more recent summary.

<sup>5</sup> 35 Fed. Reg. 11,595 (1970) as cited in U.S. Commission on Civil Rights (1975), p. 71.

<sup>6</sup> Dual language programs that mix LEP and non-LEP students with the goal of proficiency in both English and another language (the LEP students' home language, which is a foreign language for non-LEP students) are rare and not the subject of this study.

<sup>3</sup> These studies include Slavin et al. (2011), Matsudaira (2005) and Angrist, Chin and Godoy (2008), which we summarize in Section 2.2.

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