



Transitional Bilingual & Two-Way Bilingual Programs: Experimental Results for Kindergarten Achievement Scores

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The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant 144-NL14 to the University of Wisconsin-Madison.
The opinions expressed are those of the authors and do not represent views of the U.S. Department of Education.



Introduction and Theoretical Background

Low achievement by Latino students has been linked to language use by many politicians and other lay persons. Such claims have provided some impetus for state propositions and referenda completely outlawing bilingual education programs. More often than not, scant data have been available to either support or refute such claims. This study will provide some evidence for this debate by analyzing the impact of two distinct bilingual education programs on students' achievement scores in an experimental context.

Bilingual Students:

- Constitute approximately 7 million of the school aged (5-17 year old) population in the United States (American Community Survey, 2005).

- Drop out of school at a rate 3 times that of non-Latino whites – and lead the way among all population sub groups in the United States. (Current Population Survey, 2003).

- Concentrate in California, Texas, Arizona, Florida, and New York but are making inroads within nontraditional immigrant receiving states.

- Perform well in school when attending schools in a similar bilingual and ethnic context (Feliciano 2001)

- Exhibit positive psycho-social adjustment upon entry into the United States (Portes & Hao 2002)

Interventions & Control:

- Transitional Bilingual Education (TBE) teaches students in native language first and then transitions them into English instruction by third grade.

- Two-Way Bilingual Education (TWB) teaches students in both English and Spanish during the same school day or school week.

- (Control) Structured English Immersion

Methods

Causal Inference Through Random Assignment to Two Alternate Bilingual Programs Versus Structured English Immersion

(Treatment 1) Transitional Bilingual Education

324 kindergarten students nested within 8 schools

(Treatment 2) Two-Way Bilingual Education

126 kindergarten students nested within 4 schools

Dependent Variables:

Peabody Picture Vocabulary Test (PPVT)

Test de Vocabulario en Imagnes Peabody

Analysis

Student Level OLS Regression

Analysis of treatment effects with school fixed effects

$$Y_{ij} = \alpha + \beta_0 T_{ij} + \beta_1 S_{ij} \epsilon_j \quad (1)$$

Where:

Y_{ij} = the posttest outcome for individual i from cluster j

α = the mean outcome for the control group

β_0 = the program effect

T_{ij} = 1 for the treatment group members and 0 for control group members

β_1 = the school effect

S_{ij} = a vector of school fixed effects

ϵ_j = the error term for individual i from cluster j

Multilevel Analysis

Analysis of treatment effects with school random effects

$$Y_{ij} = \alpha + \beta_1(\text{pretest})T_{ij} + \beta_2(\text{treatment})T_{ij} + r_j \quad (2)$$

$$\alpha = \gamma_{00} + u_0 \quad (3)$$

$$\beta_1 = \gamma_{10} \quad (4)$$

$$\beta_2 = \gamma_{20} + u_2 \quad (5)$$

Results

Impact Estimates from Student Level OLS Regressions

Transitional Bilingual Education (TBE)

PPVT: -0.39*** (0.09)

TVIP: 0.48*** (0.10)

Two Way Bilingual (TWB)

PPVT: -0.12 (0.15)

TVIP: 0.45*** (0.13)

Impact Estimates From Multilevel Analyses and Heterogeneity of Treatment Effects Across Schools

Transitional Bilingual Education (TBE)

PPVT: -0.42*** (0.11)

TVIP: 0.45* (0.15)

Two Way Bilingual (TWB)

PPVT: -0.07 (0.14)

TVIP: 0.43+ (0.20)

*** $p < .001$; * $p < .05$; + $p < .10$

Statistically significant random variation across schools for the treatment effects on Spanish outcomes for both TBE and TWB

Conclusions & Future Directions

Transitional Bilingual Education and Two-Way Bilingual Education programs have negative effects on English test scores – although the effect for TWB is not significantly different from zero. The effects of both TBE and TWB programs on Spanish test scores are positive. The results for English test scores are compromised for TBE treatment students since they have yet to experience a transition to English instruction. Also, there is statistically significant variation in the program effects across schools for the Spanish outcomes. We are currently in the process of analyzing data from the second and third waves of the study (first and second grades). Longitudinal impacts on English and Spanish outcomes (especially after transition to English-only classes) will be of central interest.

References

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