The question of how schools can best serve language minority (LM) children continues to be the subject of ongoing debate. Previous syntheses have found small positive effects of bilingual education on the English outcomes of LM students. Few have examined native language outcomes and none have included studies conducted in PreK. This study update and extends previous research by meta-analyzing 14 studies published from 2003 to 2020. A mixed-effects model was used to pool the effect of bilingual education—defined as native language instruction during the school day—on English and Spanish outcomes; 2) determine whether the effect differed by grade level; and 3) examine differences by literacy skills. Results show that, compared to LM students receiving English-only instruction, those in bilingual education performed significantly better on literacy outcomes in their native language (Spanish), as well as in English. Though not significantly different, the effects of native language instruction on English outcomes was larger for PreK than for K-6th grade. The mean effect size was also larger for constrained literacy skills as compared to unconstrained skills in both English and Spanish. These results echo previous work showing that bilingual education strengthens students’ native language skills without compromising English acquisition.

Results

### Background

- There is growing research on the benefits of bilingualism (Bialystok, Craik, & Luk, 2012; Garcia, 2009) yet the debate persists regarding the role of the native language in the classroom in promoting LM students’ language and literacy development.
- Past meta-analyses:
  - Willig (1985) found a large, positive effect (ES = 0.63) for programs which used native language instruction during the school day compared with English-only programs on the development of LM students.
  - Greene (1997) found an effect size of 0.21 in favor of native language instruction when implemented for at least one year.
  - Slavin and Cheung (2005) reported an overall positive effect (ES = 0.33) of bilingual education.
  - Rolstad, Mahoney, and Glass (2005) found bilingual education to be superior to English-only approaches in English (ES = 0.23) as well as native language outcomes (ES = 0.86).
- In Francis, Lesaux, and August (2006), a positive effect (ES = 0.37) of native language instruction was found on the English reading outcomes of LM students.
- The present meta-analysis:
  - Reviews studies from 2003-2015
  - Looks at bilingual education’s effect on outcomes in both English and in the native language (Spanish)
  - Is the first to include studies conducted during the preschool years
  - Using Panis’ (2005) distinction between constrained (e.g. decoding) and unconstrained (e.g. comprehension) literacy skills, we investigate the moderating effects of type of literacy outcomes on language and literacy achievement in both English and Spanish.

### Conclusions

- Our findings are consistent with previous meta-analyses showing that native language instruction has a small to moderate positive effect on English outcomes and a moderate to large positive effect on Spanish outcomes for English-speaking LM students.
- LM students instructed in their native language performed half of a SD higher than their English-only instructed peers on Spanish assessments.
- LM students instructed in their native language performed one SD higher than their English-only instructed peers on English assessments.
- The average effect size was larger for students tested in PreK compared to those tested in K-6th, but this was only true of the English outcomes.
- Across both languages, the combined mean effect size for constrained literacy skills such as phonological awareness and decoding was larger than for unconstrained literacy skills such as vocabulary and comprehension.

## Methods

### Literature Search

- Academic Search Premier, Education Abstracts, ERIC, & PsycINFO
- Search terms related to bilingual education, student age and methodology
- Empirical studies conducted in the U.S. since 2003 (last searched 6/27/17)

### Inclusion Criteria

- Compares the effect of native language instruction to English-only instruction on language and literacy outcomes
- Intervention or program conducted during the regular school day with PreK-6th grade LM students (at least 50% LM or disaggregated results).
- Experimental design OR control for pretest differences, with at least 1 school year between pre- and post-test
- Sufficient information to derive a standardized mean difference at posttest.

### Excluded Studies

- Did not compare native language to English-only instruction during the school day
- Outside the U.S.
- Not experimental and no post-test sufficient information to calculate an effect size

### Results

#### Sensitivity Analyses

Using Rosenthal’s 1979 “Fail-safes” formula, we found that it would take 156 additional studies with a null result to change our significantly positive combined mean effect for Spanish outcomes, and 64 studies for English outcomes.

#### Moderator Analyses

- Constrained vs. Unconstrained Literacy Skills
  - To examine developmental differences in the effect of native language instruction on English outcomes, we compared the pooled ES by grade (PreK vs. K-6th).
  - The mean effect size for PreK (ES = 0.23 [CI: 0.03, 0.43]) was larger than for K-6th (ES = 0.15 [CI: 0.05, 0.25]), but the between the mean effect sizes was not statistically significant.

#### Results in Context

- **Past Meta-Analyses**
  - Willig, 1985 (Instruction during the school day; U.S. or other country context)
  - Greene, 1997 (Programs that lasted at least 1 academic year; no duplicate samples)
  - Slavin & Cheung, 2005 (Elementary reading for Spanish-dominant children; best evidence synthesis)
  - Rolstad, Mahoney, & Glass, 2005 (Bilingual education; included unpublished studies)
  - France, Lesaux, & August, 2006 (English reading only; all but three studies overlap with Slavin & Cheung, 2005)

- **The Current Meta-Analytic Study**
  - Included PreK; no overlap with previous reviews

## Future Directions

- Expand search beyond Academic Search Premier, Education Abstracts, ERIC, and PsycINFO to additional databases
- Include other types of outcomes (e.g. math, socio-emotional skills)
- Include native languages in addition to Spanish
- Increasing the number of studies may allow for a more nuanced analysis of the moderating effect of grade level and to explore other potential moderators.

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### References


Borenstein, M. (2009, p. 230). Fixed-effects model was used to pool the effect of bilingual education—defined as native language instruction during the school day—on English and Spanish outcomes; 2) determine whether the effect differed by grade level; and 3) examine differences by literacy skills. Results show that, compared to LM students receiving English-only instruction, those in bilingual education performed significantly better on literacy outcomes in their native language (Spanish), as well as in English. Though not significantly different, the effects of native language instruction on English outcomes was larger for PreK than for K-6th grade. The mean effect size was also larger for constrained literacy skills as compared to unconstrained skills in both English and Spanish. These results echo previous work showing that bilingual education strengthens students’ native language skills without compromising English acquisition.