



# **Promoting Bilingualism and Biliteracy: Programmatic Difference between One-way Dual Language (Developmental Bilingual) and Transitional Bilingual Models**

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# Introduction



- ❖ A well-known fact is that an increasing number of children enter school with a home language of Spanish (Suárez-Orozco & Páez, 2002).
  - In Texas, alone, over 774,719 students were served in ELL programs in 2007-2008, accounting for 17% of the school population (TEA, 2008) with over 90% Spanish speakers and 87% of those economically disadvantaged (Gonzalez, 2007).
- ❖ Bilingual education incorporates minority students' native/first language (L1) in instruction.
  - **Developmental bilingual education** (DBE, or one-way dual language) seems to be most promising in maintaining students' L1 while enhancing their English (i.e., L2) (Thomas & Collier, 2002), whereas
  - **Transitional bilingual education** (TBE) is considered a subtractive model (Ovando, Combs, & Collier, 2006).
- ❖ Programs greatly vary in terms of instructional practices, curriculum design, district recourses, professional development, and parental training. Questions arise about the congruency between program designation and operation (Torres-Guzmán, Kleyn, Morales-Rodríguez, & Han, 2005).

# Purpose



- ❖ We provide a detailed description of a Spanish/English DBE model, which implements an enhanced/interventional curriculum supporting students' language and literacy development in Spanish and English.
- ❖ We evaluate the effectiveness of this DBE model as compared to a traditional TBE model in light of students' learning outcomes in language and literacy acquisition in both Spanish and English longitudinally from kindergarten through third grade.

# Review—TBE



- ❖ The most common L1 instructional model in the United States.
- ❖ Goal: to enhance students' English language skills in a certain period of time and then mainstream them.
  - Students' L1 is used at the early stage of instruction.
  - All other instruction is in English, with L1 used only as a support for clarification. As students approach upper grades, the use of L1 quickly phases out (Lara-Alecio, Irby & Meyer, 2001).
- ❖ Synonymous to **early-exit TBE**, a subtractive or remedial instructional model that encourages English performance at the earliest date possible without continued support in native language development (Genesee, 1999; Ramirez, Yuen, Ramey, & Pasta, 1991).
- ❖ Does not aim for bilingualism (i.e., to communicate in both languages) or biliteracy (i.e., to read and write in both languages).

# Review—DBE



- ❖ Used interchangeably with **one-way dual language (DL)**, **one-way developmental, maintenance bilingual**, and **late-exit bilingual** (Genesee, 1999; Lindholm-Leary, 2001; Ramirez et al, 1992; Thomas & Collier, 2002)
- ❖ DBE is characterized as:
  - strong grade-level schooling throughout the elementary years.
  - gradually increasing the amount of instruction in English each year until 50% of the content instruction is in English by 4<sup>th</sup> grade.
  - promoting high levels of academic achievement in all curricular areas and full academic language proficiency in L1/L2.
- ❖ The allocation of instructional time in L1 and L2 may vary across program types.
  - Collier and Thomas (2004) have identified 90/10 and 50/50 as two major patterns of one-way DL/DBE programs.
- ❖ Students are from the same linguistic and ethnic background with limited or no mastery of English (distinguished from two-way DL) (Genesee, 1999; Gomez, Freeman & Freeman, 2005; Mora, Wink, & Wink, 2001).



# Review—Program Effectiveness



## ❖ Medina (1991)

- In an 80/20 DBE program, regardless of students' initial level of Spanish oral proficiency, students consistently scored at or above Texas norm on reading and math standardized tests in Spanish.

## ❖ Medina & Escamilla (1992a)

- All maintenance bilingual education (MBE) participants acquired significant levels of English.
- Students with lower Spanish oral proficiency demonstrated the greatest gain in their oral English development as compared to their fluent counterparts.
- The authors concluded that MBE models might be the best alternative to serve ELLs, and yet they are the least implemented.

# Review—Program Effectiveness



## ❖ Medina & Escamilla (1992b)

- Although students placed in both TBE and MBE models made statistically significant improvement in oral English proficiency from K to 2nd grade, the additive effects of MBE emerged in that students' oral proficiency in L1 was maintained.

## ❖ Thomas & Collier (2002)

- Only students in two-way DL or 50/50 DBE models reached or surpassed the 50th percentile in both L1 and L2 in all subjects after four to seven years participating in the program.

## ❖ Collier & Thomas (2004)

- Students attending either DBE or two-way DL models achieved at grade-level or above grade-level in standardized English and Spanish reading tests with an annual effect size of .14 or higher.

# Review—Summary



- ❖ Empirical studies have suggested that DBE is one of the best pathways to bilingualism, biliteracy, and multiculturalism as well as academic success (Krashen 1996; Lindholm-Leary, 2001; Ramirez, Yuen, Ramey, & Pasta, 1991; Slavin & Cheung, 2005; Thomas & Collier, 2002).
- ❖ Very few studies reviewed in this section have randomized participants or followed same groups of participants longitudinally.
- ❖ Valid conclusions as to what type of accommodations or adaptations are most effective for ELLs cannot be drawn from existing studies. Many of the quantitative studies did not provide a full array of description on the instructional programs. This disconnection between “instructional effectiveness” and rich description on effective strategies (Snow, 2006) or between program labeling and implementation (Torres-Guzmán, Kleyn, Morales-Rodríguez, & Han, 2005) makes replication almost impossible.
- ❖ Attention should also be given to various DBE models other than 90/10 and 50/50 (80/20 in Medina & Escamilla, 1992a).

# Method



- ❖ Our study is part of a longitudinal randomized trial project targeting Hispanic English learners' English language and literacy acquisition (Project ELLA) from K-3<sup>rd</sup> grade.
- ❖ Large School District in Southeast Texas
  - Urban
  - Recognized
  - 65% Hispanic
  - 89-98% low socio-economic status
  - 7 elementary schools



- ❖ Same groups of students were followed from **Kindergarten to 3<sup>rd</sup> grade** in both treatment and comparison conditions.
  
- ❖ Participants include bilingual students:
  - **DBE (experimental)**
    - Most content taught in Spanish, except for an enhanced ESL block, 75-90 minutes
  - **TBE (control)**
    - Most content taught in Spanish with a 45 minute ESL block

# Description



## Developmental Bilingual Education (DBE, enhancement)

N=118

- ❖ **70% (Spanish) / 30% (English)**
- ❖ **75 minutes structured ESL Intervention (K)**
- ❖ **90 minutes structured ESL Intervention (1<sup>st</sup>, 2<sup>nd</sup>, & 3<sup>rd</sup>), Tier 1 increased English than in TBE**

## Transitional Bilingual Education (TBE, typical practice)

N=112

- ❖ **80% (Spanish) / 20% (English)**
- ❖ **ESL – 45-60 minutes**

# Description—Intervention Components



- ❖ DBE students received structured ESL instruction for **75-90 minutes daily**.
- ❖ The curriculum focused on increasing student achievement in both language and academic content.

| <b>Grade</b> | <b>Focus</b>                      |
|--------------|-----------------------------------|
| K & 1st      | oral language development         |
| 2nd          | reading fluency and comprehension |
| 3rd          | reading in content area (science) |

# Daily Oral Language (K-2<sup>nd</sup>)



- ❖ 10 minutes daily
- ❖ Targets science vocabulary
- ❖ Provides sentence using words in context
- ❖ Asks a daily question using the target word
- ❖ Presents visual aides for comprehension
- ❖ In second grade, this component became Daily Oral and Written Language (DOWL)



- ❖ **Story Telling and Higher Order Thinking for English Language and Literacy Acquisition**
- ❖ 35min daily
- ❖ Uses authentic children's literature
- ❖ Utilizes Bloom's Taxonomy for questioning
- ❖ Integrates science concepts & vocabulary
- ❖ L1 clarifications (paraprofessional)
- ❖ 5-Day scripted lesson (1 book/week)

# Santillana Intensive English (K-1<sup>st</sup>)



- ❖ 35 minutes daily
- ❖ Promotes oral language development
- ❖ Models syntax and sentence structure to encourage students to speak in complete sentences
- ❖ Helps students build social and academic language
- ❖ Integrates content-based instruction
- ❖ Incorporates small group/pair activities
- ❖ Supports phonemic awareness



- ❖ 45 minutes daily
- ❖ Daily, explicit, and systematic instruction
- ❖ Incorporates five strands of reading:
  - Phonemic awareness
  - Letter-sound correspondence
  - Word recognition and spelling
  - Fluency
  - Comprehension



## ❖ Content ReadinIntegrating Science for English Language & Literacy Acquisition

- ❖ 55 minutes daily
- ❖ Enhancement of Scott Foresman's 3rd grade science adoption
- ❖ Scripted lesson plans integrating reading skills and expository text for ELLs

| <b>Skills</b>  | <b>Activities</b>   |
|--|---|
| <ul style="list-style-type: none"><li>❖ vocabulary</li><li>❖ sequencing</li><li>❖ compare/contrast</li><li>❖ drawing conclusions</li><li>❖ identifying main idea/details</li><li>❖ making inferences</li></ul> | <ul style="list-style-type: none"><li>❖ prereading</li><li>❖ partner reading</li><li>❖ graphic organizers</li><li>❖ hands-on inquiry</li><li>❖ cooperative grouping</li><li>❖ vocabulary extensions</li><li>❖ scaffolded questions</li><li>❖ fluency practice</li></ul> |

# Comparison Students



- ❖ The TBE students received regular ESL instruction for approximately **45-60 minutes daily** with **great variation** across teachers.
- ❖ Description:
  - Code switching to clarify and explain English concepts.
  - Curriculum aligned with the state of Texas standards
  - No support was provided by the research team.

| <b>Grade</b> | <b>Typical Practice (TBE)</b>   |
|--------------|---|
| K            | English oral language development provided through music, art, and physical education beginning in K; 80/20 model                   |
| 1st          | Students who passed Spanish language arts began formal English instruction by spring semester of 1st grade                          |
| 2nd          | English introduced in ESL, social studies, science, and with English reading lessons, while Spanish language arts and math continue |
| 3rd          | 50/50 English/Spanish   |

# Instruments



- ❖ The same comprehensive battery of measures in language and literacy was administered in both English and Spanish to all participants by well-trained professionals.
- ❖ Data were collected at the beginning and end of kindergarten (2004-2005), beginning and middle of 1<sup>st</sup> grade (2005-2006), and end of 3<sup>rd</sup> grade (2007-2008).
- ❖ Constructs tested include:
  - oral language proficiency
  - phonological processing
  - decoding skills
  - reading comprehension
- ❖ Pretest performance was used as the covariate for posttest performance on the same measure.

# Instruments



- ❖ *Comprehensive Test of Phonological Processing (CTOPP)*  
(Wagner, Torgesen, & Rashotte, 1999)
  - Assessed phonological awareness (PA), phonological memory (PM), and rapid naming (RN).
  - The average internal consistency or alternate forms reliability coefficients are reported to be over .80. The test-retest reliability coefficients range from .70 to .92. Detailed information on content validity, concurrent and predictive validity are provided in CTOPP manual
  
- ❖ *Test of Phonological Processing –Spanish (TOPP-S)*  
(Branum-Martin et al., 2006)
  - Developed as the Spanish version (with phonemes and syllables suited for Spanish language) parallel to linguistic complexity in CTOPP.
  - Rasch analysis yielded a reliability coefficient of .83 for the entire test.

# Instruments



## ❖ *Woodcock Language Proficiency Battery-Revised (WLPB-R)*

(Woodcock, 1991; Woodcock & Munoz-Sandoval, 1995)

### ■ English form

- normed on a sample of 6,359 native English-speaking participants from age two to 99 (3,245 in K to 12)
- construct, content and concurrent validity and related information can be found in the test manual (Woodcock, 1991).

### ■ Spanish form

- normed on a sample of 3,911 native Spanish-speaking individuals from 22 countries, including 1,325 from the United States and 1,512 from Mexico who were close to monolingual Spanish speakers
- median coefficient alphas range from .84 to .92 across all age ranges and from .68 to .95 at ages 6 and 9

# Instruments



| Measures                          | K-BOY | K-EOY | 1 <sup>st</sup> -BOY | 3 <sup>rd</sup> -EOY |
|-----------------------------------|-------|-------|----------------------|----------------------|
| <b>Blending Words</b>             | √     | √     | √                    | √                    |
| <b>Segmenting Words</b>           | √     | √     | √                    | √                    |
| <b>Picture Vocabulary</b>         | √     | √     | √                    | √                    |
| <b>Listening Comprehension</b>    | √     | √     | √                    | √                    |
| <b>Oral Vocabulary</b>            |       |       | √                    | √                    |
| <b>Memory for Sentences</b>       |       |       | √                    | √                    |
| <b>Letter-word Identification</b> |       |       | √                    | √                    |
| <b>Word Attack</b>                |       |       | √                    | √                    |
| <b>Passage Comprehension</b>      |       |       | √                    | √                    |



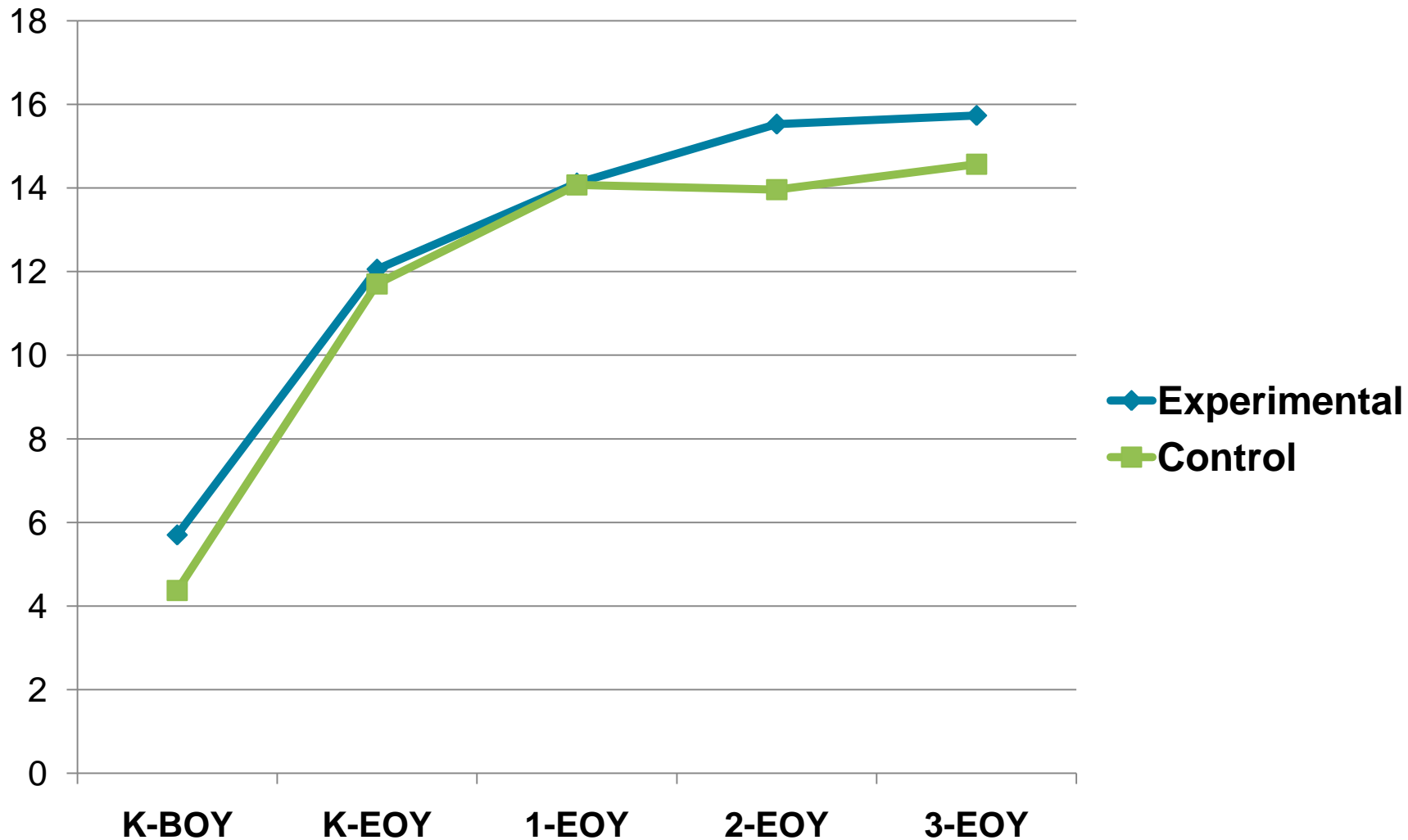
**Results: English**

| Measure                    | Group | n   | Pre M  | Pre SD | Post M | Post SD | Partial $\eta^2$ | F     | <i>P</i> < |
|----------------------------|-------|-----|--------|--------|--------|---------|------------------|-------|------------|
| Blending Phonemes          | DBE   | 117 | 5.10   | 3.36   | 15.74  | 2.92    | 0.19             | 4.01  | 0.047      |
|                            | TBE   | 90  | 4.80   | 3.49   | 14.75  | 3.85    |                  |       |            |
| Segmenting Words           | DBE   | 117 | 1.60   | 2.80   | 11.12  | 4.09    | 0.30             | 6.27  | 0.013      |
|                            | TBE   | 90  | 1.24   | 2.30   | 9.56   | 4.91    |                  |       |            |
| Picture Vocabulary         | DBE   | 117 | 48.97  | 16.73  | 82.68  | 13.09   | 0.06             | 11.78 | 0.00       |
|                            | TBE   | 90  | 45.22  | 17.98  | 73.69  | 20.98   |                  |       |            |
| Listening Comprehension    | DBE   | 117 | 51.56  | 16.72  | 80.48  | 13.90   | 0.04             | 7.81  | 0.01       |
|                            | TBE   | 90  | 48.56  | 15.48  | 74.32  | 15.49   |                  |       |            |
| Memory for Sentences       | DBE   | 112 | 75.78  | 12.90  | 87.06  | 13.80   | 0.01             | 1.19  | 0.28       |
|                            | TBE   | 112 | 73.79  | 13.10  | 84.19  | 15.19   |                  |       |            |
| Oral Vocabulary            | DBE   | 113 | 82.28  | 13.88  | 87.58  | 10.55   | 0.00             | 0.01  | 0.95       |
|                            | TBE   | 112 | 74.11  | 17.24  | 85.17  | 12.41   |                  |       |            |
| Letter-Word Identification | DBE   | 113 | 97.92  | 23.27  | 153.63 | 26.70   | 0.01             | 2.56  | 0.11       |
|                            | TBE   | 112 | 100.23 | 22.07  | 159.50 | 28.52   |                  |       |            |
| Passage Comprehension      | DBE   | 114 | 98.76  | 14.52  | 101.26 | 9.55    | 0.06             | 14.77 | 0.00       |
|                            | TBE   | 112 | 97.63  | 14.62  | 96.7   | 11.93   |                  |       |            |
|                            | DBE   | 114 | 106.82 | 13.24  | 107.81 | 14.22   | 0.00             | 0.02  | 0.89       |

# Results—English



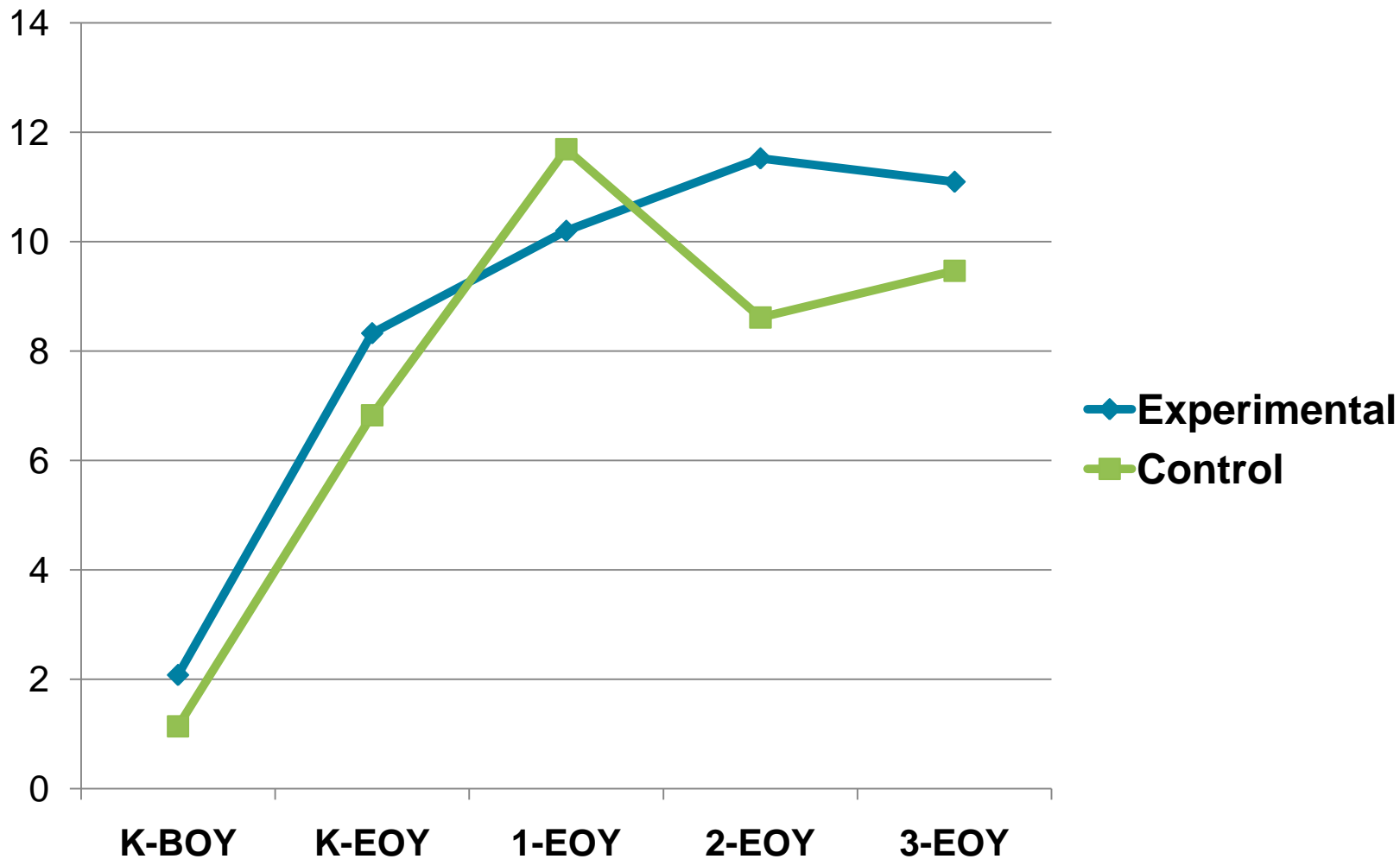
## Blending Phonemes into Words-English



# Results—English



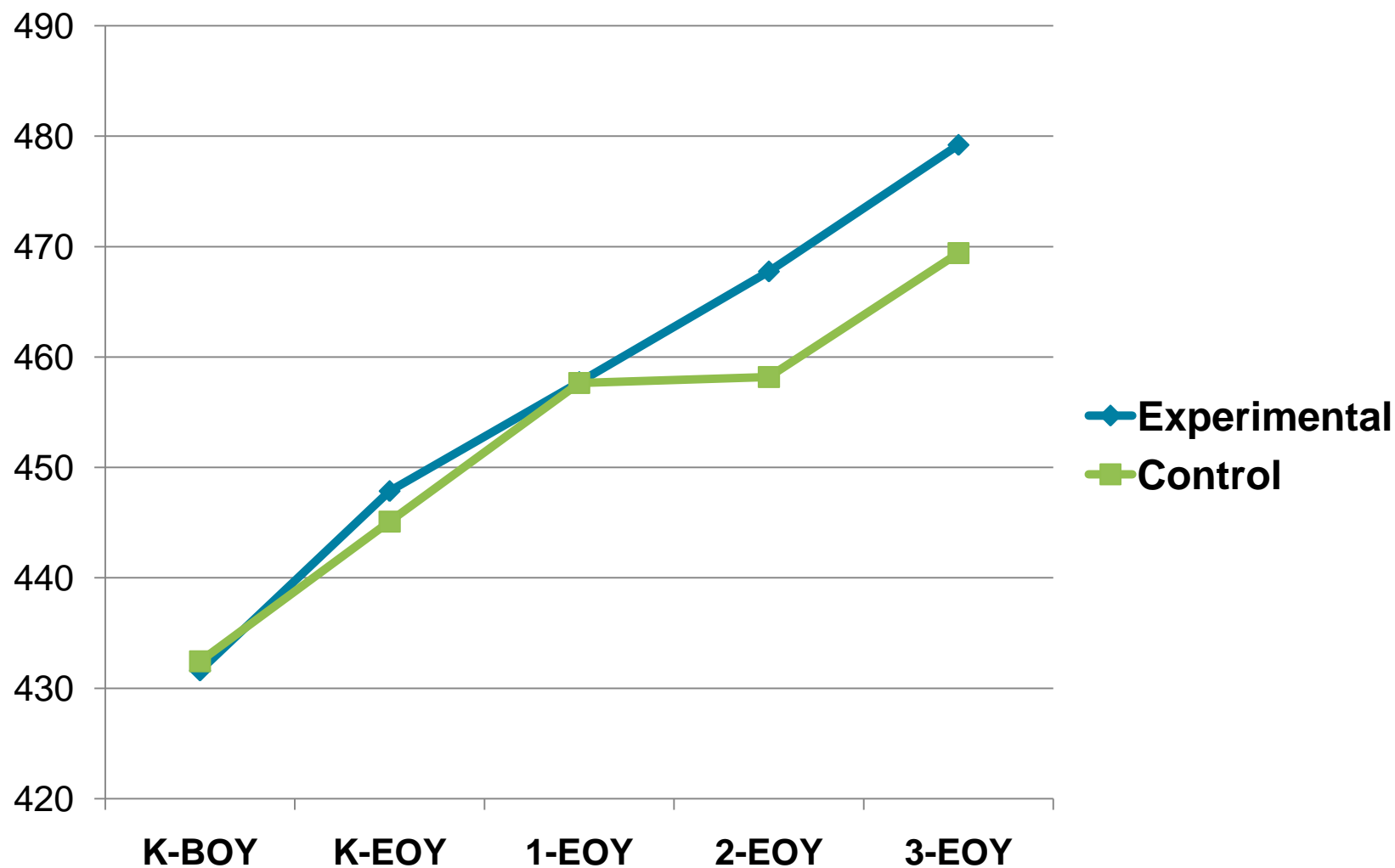
## Segmenting Words-English



# Results—English



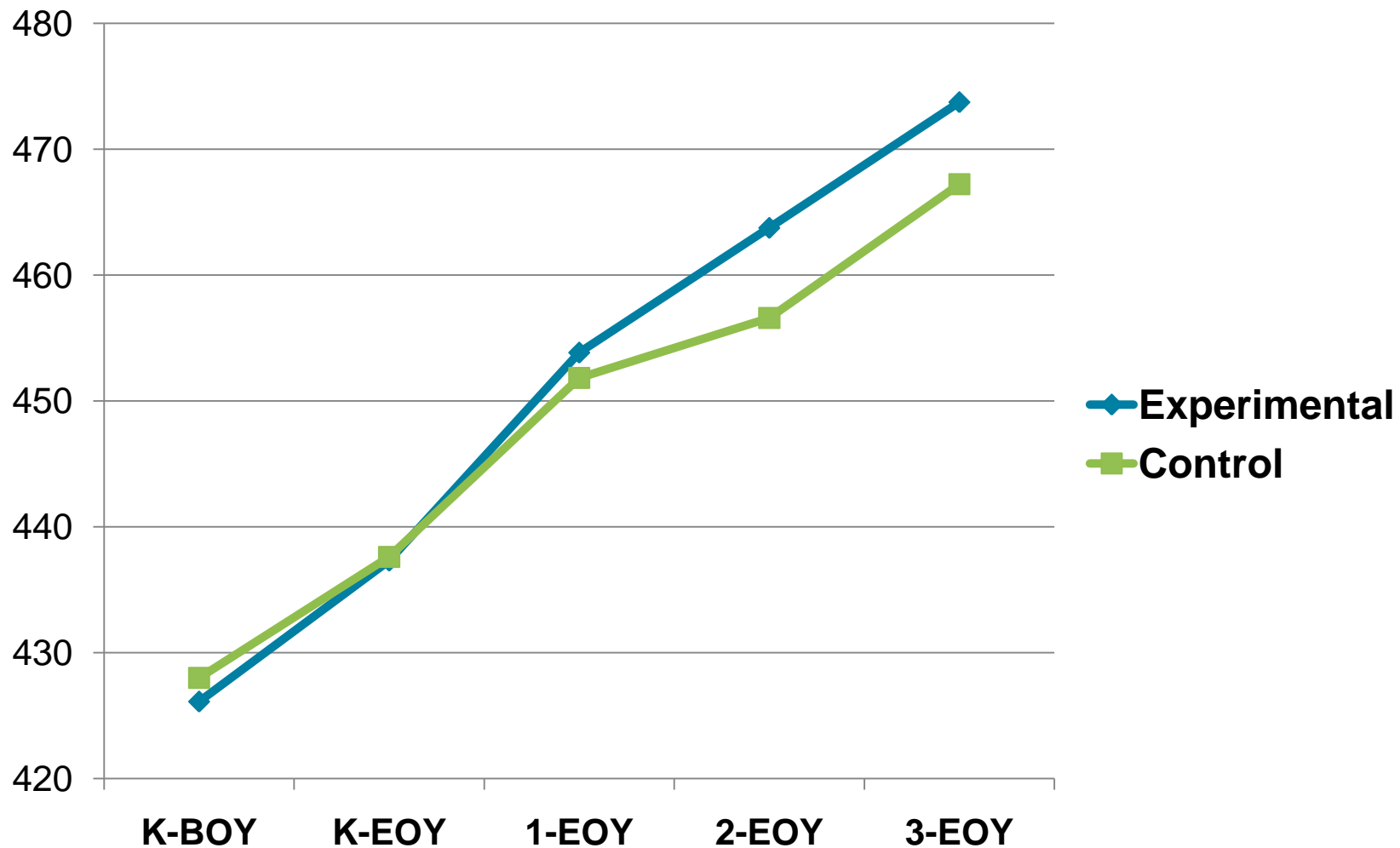
## Picture Vocabulary-English



# Results—English



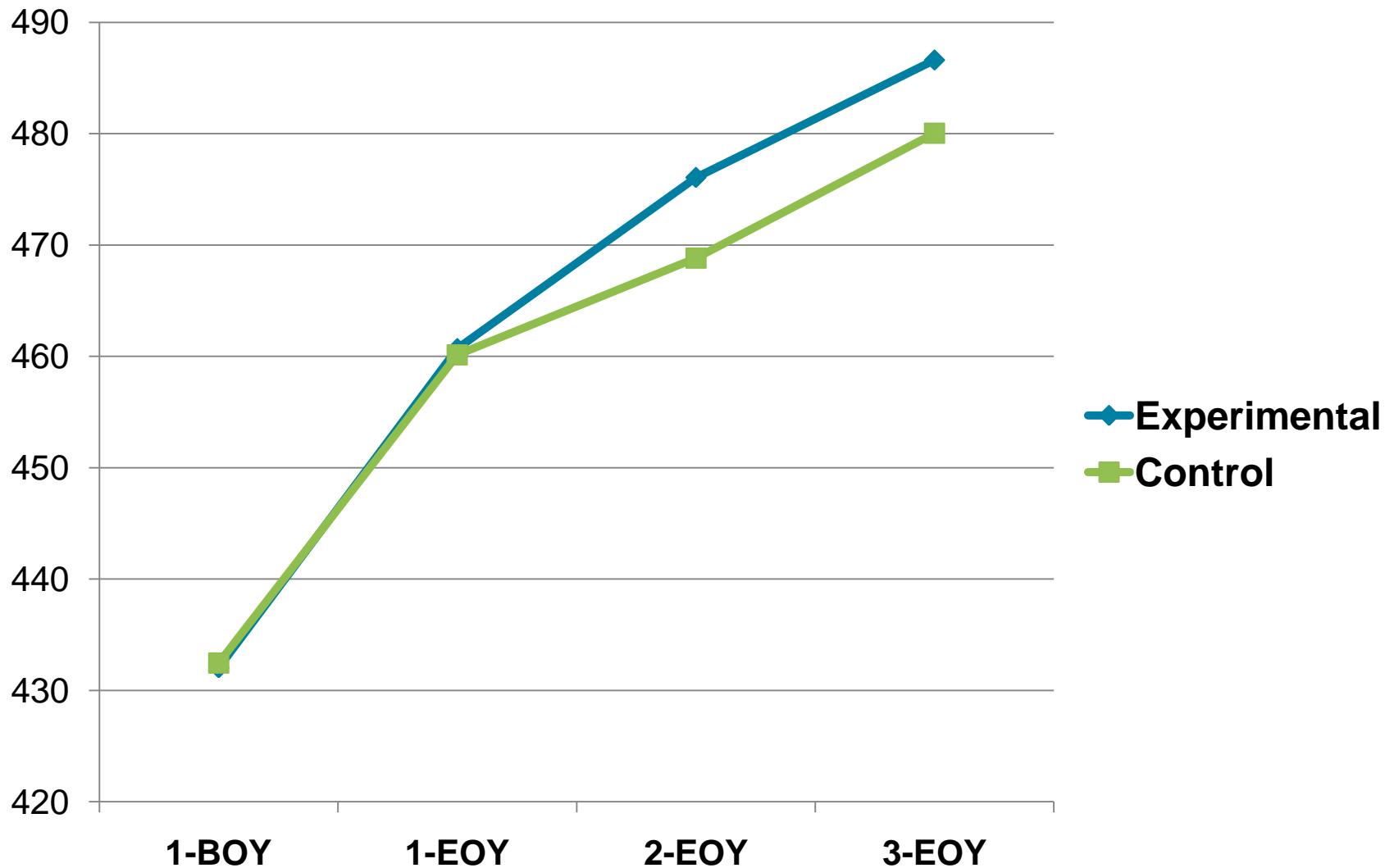
## Listening Comprehension-English



# Results—English



## Passage Comprehension-English



# Discussion—English



- ❖ All significant findings were in favor of treatment group, reflecting a range of oral and reading proficiency in English (including phonological processing, oral language, and comprehension).
- ❖ By the end of 3<sup>rd</sup> grade, the overall performance levels of treatment and control group in oral language development were 1.15 and 1.75 standard deviations, respectively, below that of the average monolingual speakers of the same age. Compared to the initial (beginning K) level of 3 standard deviations below the mean, this suggests the number of years required before ELLs can fully master academic language in English (August & Hakuta, 1997; Collier, 1987; Cummins, 1984; Genessee & Riches, 2006).
- ❖ The ultimate goal of reading is comprehension (Vaughn et al., 2006). On average, treatment students demonstrated statistically higher performance than control students on contextualized reading comprehension and scored higher than the average monolingual English speakers of the same age.



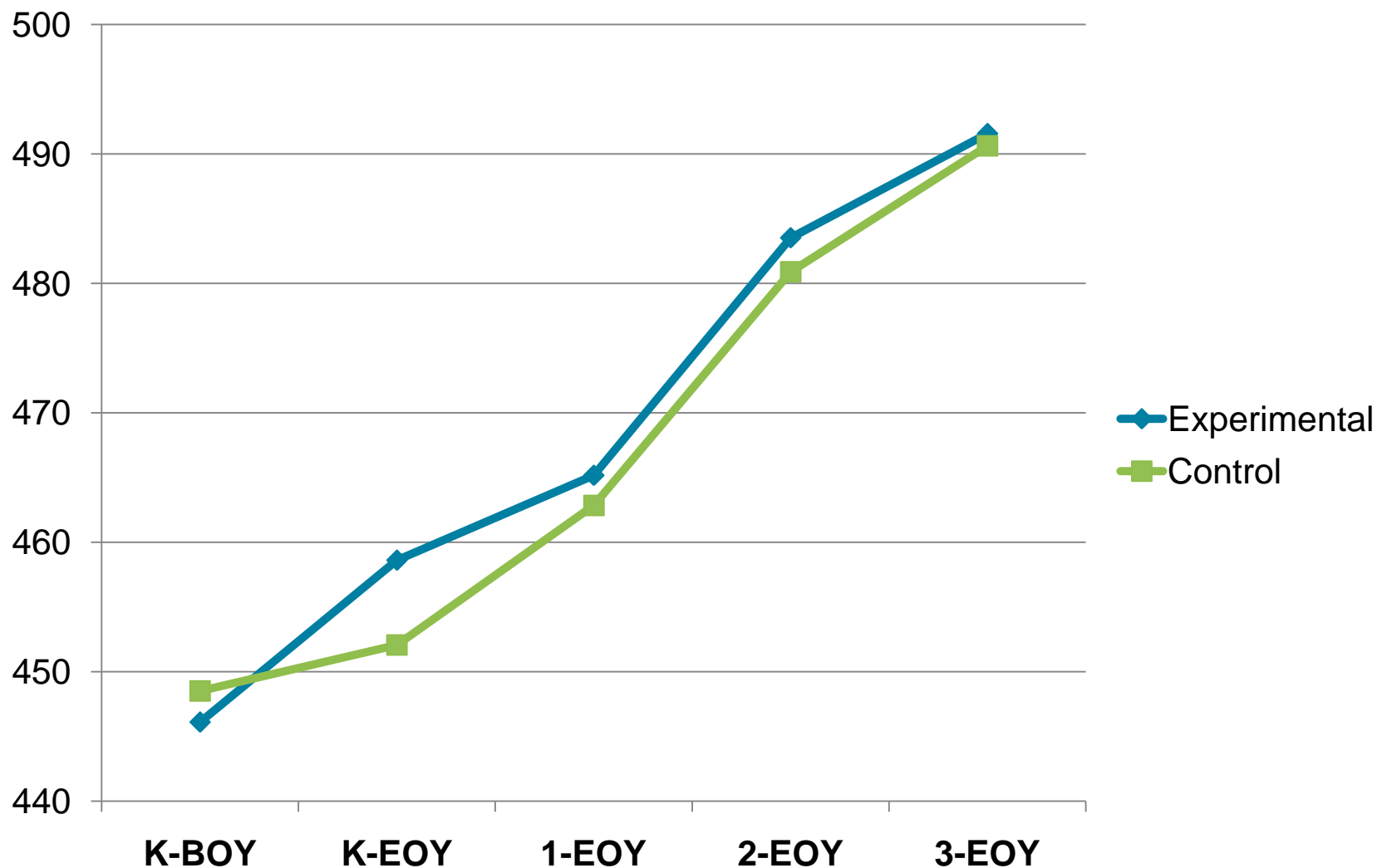
**Results: Spanish**

| Measure                    | Group | n   | Pre M  | Pre SD | Post M | SD    | $\eta^2$ | F    | <i>P</i> < |
|----------------------------|-------|-----|--------|--------|--------|-------|----------|------|------------|
| Blending Phonemes          | DBE   | 116 | 5.50   | 4.14   | 16.71  | 2.52  | 0.00     | 0.42 | 0.52       |
|                            | TBE   | 90  | 5.10   | 4.78   | 16.42  | 2.56  |          |      |            |
| Segmenting Words           | DBE   | 117 | 1.94   | 4.28   | 17.17  | 3.63  | 0.01     | 1.53 | 0.22       |
|                            | TBE   | 90  | 1.30   | 3.57   | 16.53  | 3.42  |          |      |            |
| Picture Vocabulary         | DBE   | 117 | 89.69  | 24.10  | 99.56  | 20.32 | 0.00     | 0.15 | 0.70       |
|                            | TBE   | 90  | 84.83  | 23.77  | 97.86  | 20.18 |          |      |            |
| Listening Comprehension    | DBE   | 117 | 85.42  | 15.50  | 99.02  | 11.40 | 0.00     | 0.01 | 0.92       |
|                            | TBE   | 90  | 81.97  | 19.98  | 98.16  | 12.59 |          |      |            |
| Memory of Sentences        | DBE   | 113 | 82.85  | 11.99  | 83.84  | 10.12 | 0.01     | 2.99 | 0.09       |
|                            | TBE   | 112 | 80.78  | 11.93  | 85.56  | 11.82 |          |      |            |
| Oral Vocabulary            | DBE   | 113 | 85.62  | 17.95  | 99.07  | 20.08 | 0.00     | 0.53 | 0.47       |
|                            | TBE   | 112 | 76.11  | 21.55  | 98.20  | 20.50 |          |      |            |
| Letter Word Identification | DBE   | 113 | 101.86 | 23.40  | 143.64 | 17.85 | 0.01     | 1.85 | 0.18       |
|                            | TBE   | 112 | 102.73 | 20.94  | 146.78 | 20.04 |          |      |            |
| Passage Comprehension      | DBE   | 113 | 100.61 | 16.35  | 100.04 | 8.073 | 0.01     | 2.55 | 0.11       |
|                            | TBE   | 112 | 99.33  | 16.27  | 97.91  | 8.675 |          |      |            |
| Word Attack                | DBE   | 113 | 91.19  | 19.25  | 130.96 | 19.63 | 0.01     | 2.86 | 0.09       |
|                            | TBE   | 112 | 92.36  | 18.09  | 136.20 | 21.17 |          |      |            |

# Results—Spanish



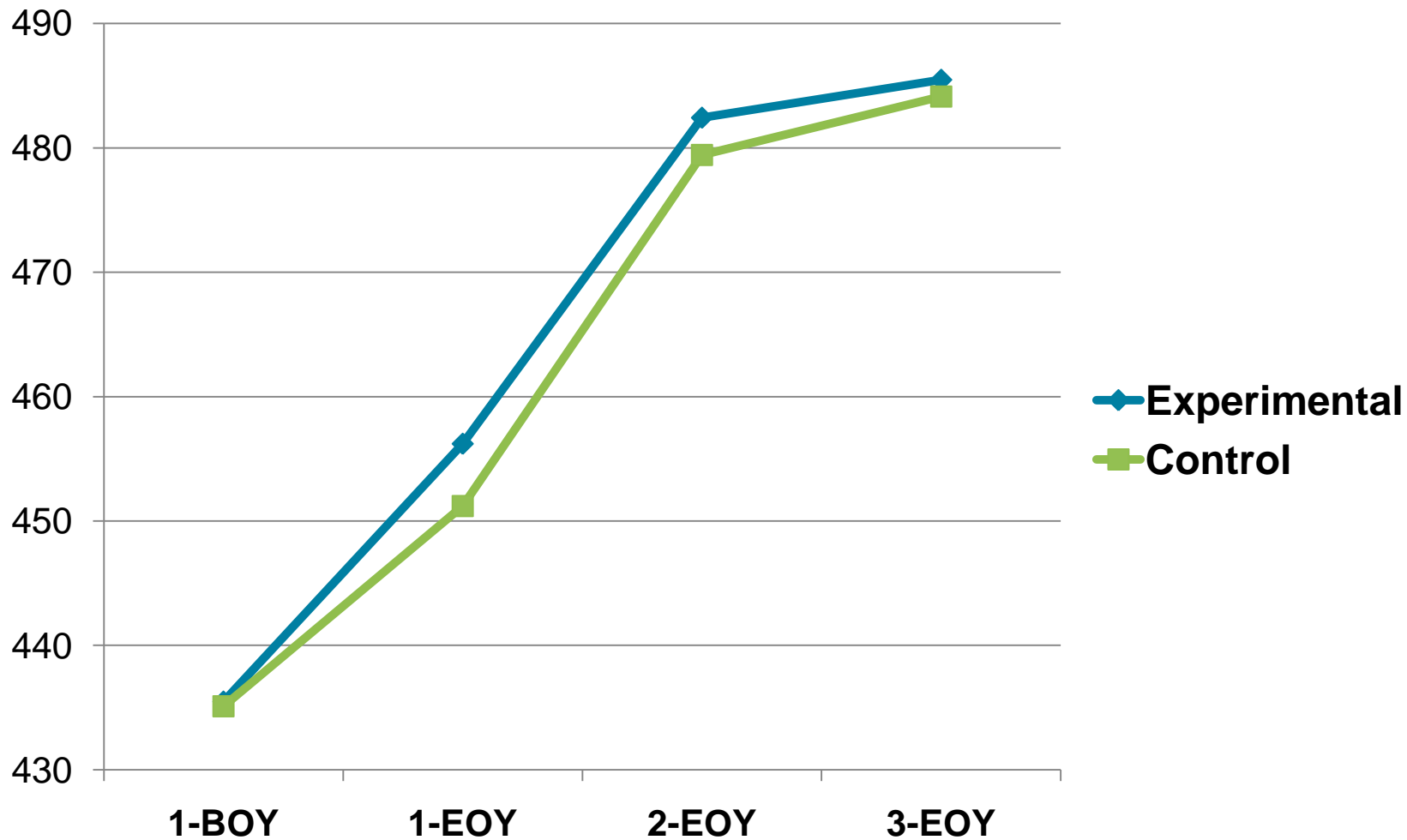
## Listening Comprehension-Spanish



# Results—Spanish



## Passage Comprehension-Spanish



# Discussion—Spanish



- ❖ On average, no statistically significant difference was identified between treatment and control students.
- ❖ Numerically, treatment students achieved greater gains than their control peers in phonological processing and reading comprehension. The performance levels of both groups were comparable with that of English measures.
- ❖ On measures of decoding skills, no difference was found between the two groups. Post-test performance in 3rd grade for both groups approximated the ceiling of 2 standard deviations above the average performance of monolingual Spanish speakers.
- ❖ Although there was decreased Spanish instructional time in the treatment group, the development of English language influenced gains in Spanish, indicating a two-way cross-linguistic transfer (August, 2003; Cummins, 1989; Snow, 1992; Vaughn et al., 2006)

# Conclusions



- ❖ The 70/30 model promoted bilingualism and biliteracy, indicating the effectiveness of this English intervention
- ❖ “A next major step for researchers is to produce the next generation of bilingual education researchers who will conduct program evaluation research, to refine what particular forms of DL programs are most effective” (Thomas & Collier, 2004, p. 18)
- ❖ The outcome of our study suggests the integration of following strands: phonemic awareness, letter-sound correspondence, word recognition and spelling, fluency and comprehension. The intervention supported students’ learning by incorporating structured and direct instruction, ESL strategies, context embedded vocabulary and activities engaging students’ learning to develop higher order thinking skills.
- ❖ Future research addressing the amount of oracy required to facilitate literacy and at what developmental periods would help educators make research-based decisions about the time allocation of two languages during instruction.



# Thank You !

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