Gender Differences on English Language/Literacy Acquisition Among Hispanic Second Language Learners: A Longitudinal Study

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Introduction

- English language learners (ELLs) are
  - 10.3% of U.S. public school population
  - The fastest growing segment
- ELLs lag behind their monolingual English peers in school performance
  - Must acquire second language (L2) while learning content knowledge in L2
- Educators’ challenge:
  - Provide quality instruction to ELLs to ensure high levels of English language proficiency, academic competence, and literacy development
Literature Review

- Gender differences in first language (L1) development
  - Female advantage for
    - Verbal and written language acquisition (Bjorklund & Frankel, 1989; Roulstone, Lader, & Northstone, 2002)
    - Reading achievement in early elementary years (LoGerfo, Nichols, & Chaplin, 2006)
    - Verbal ability from grade 4 and beyond (Cole, 1997)
  - No difference between males & females
    - Gender difference accounted for <1% of the variance in reading achievement (vocabulary, passage comprehension) in HSB national survey (Hogrebe, Nist, & Newman, 1985)
    - No difference in K and 5th grade word-decoding and comprehension (Lummis & Stevenson, 1990)
Literature Review

- Gender differences in L2 development
  - Female advantage for
    - Grammatical morphology and syntax (Slavoff & Johnson, 1995)
    - Comprehension, usage, spelling, and vocabulary (Lynn & Wilson, 1993)
    - Expressive vocabulary (Duursma et al., 2007)
  - No difference between males & females
    - No difference between Spanish-speaking boys and girls in English (L2) oral proficiency and reading (Medina & Escamilla, 1994; Medrano, 1986)
    - Gender did not account for variance in English (L2) reading achievement (Thomas & Collier, 2002)
  - Male advantage for
    - Expressive and receptive English (L2) vocabulary at K entrance and throughout the K school year (Nakamura, 2004)
Literature Review

• Instructional interventions to facilitate L2 development
  • Paucity of quality, systematic evidence on how to enhance academic English acquisition for ELLs (Keiffer, 2008; Gersten et al., 2007)
  • Gersten et al. (2007) recommended the inclusion of the following strands:
    • Phonological awareness
    • Alphabetic knowledge
    • Reading fluency
    • Decoding ability
    • Vocabulary
    • Comprehension
    • Higher-order thinking skills
Literature Review

• Summary
  • Mixed results for the influence of gender on L2 acquisition
  • Few studies are longitudinal
    • Only Nakamura (2004), nine-month period, and Medina & Escamilla (1994), three-year period
    • Limits our understanding of L2 development
  • Little is known about how quality instruction can accelerate English oral and reading development for ELLs (Genesee et al., 2006)
  • Missing from the literature:
    • A simultaneous investigation of instructional intervention and gender differences on English language and literacy development over time for ELLs
Purposes

1) Investigate gender differences between ELL boys and girls regarding English language and literacy acquisition from a developmental perspective

   **Hypothesis**: female advantage (in light of findings of previous research)

2) Examine the effectiveness of a 3-year English language and literacy intervention for Spanish-speaking ELLs from K to 2nd grade

   **Hypothesis**: Intervention students would develop L2 proficiency at a faster rate compared to control students.

3) Examine the possible interaction between gender and intervention

   **Hypothesis**: no difference between boys and girls in the experimental condition
Method

• Context
  • Part of a larger quasi-experimental longitudinal randomized project
  • Large urban school district in southeast Texas
  • Recognized (state accountability system)
  • 65% Hispanic, 89-98% low socio-economic status, 28.4% ELLs

• Participants
  • 335 Spanish-speaking limited-English proficient students with imputation data
  • Followed from K through 2nd

<table>
<thead>
<tr>
<th></th>
<th>Girls</th>
<th>Boys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>72</td>
<td>91</td>
<td>163</td>
</tr>
<tr>
<td>Control</td>
<td>71</td>
<td>101</td>
<td>172</td>
</tr>
</tbody>
</table>
Method

- Research Design
  - Schools selected based on availability of structured English immersion (SEI) programs
  - Random assignment of 22 schools to experimental/control
    - 11 schools - enhanced treatment (experimental)
    - 11 schools - typical practice (control)
  - Quasi-experimental design at student level
  - Experimental design at school level
Method

- **Instructional Intervention (treatment condition)**
  - SEI model, all instruction conducted in English (students’ L2)
  - English-as-a-second-language (ESL) block daily
    - 75 minutes - K
    - 90 minutes – 1st and 2nd grades
  - Focus changed as students developed L2 language and literacy
    - K & 1st (first semester) → oral language
    - 1st (second semester) & 2nd → reading fluency and comprehension

- **2 levels of intervention**
  - Level I: Professional Development
  - Level II: Student Instruction (3-tiers)
Overview of Intervention

Level I: Professional Development

Teachers & Paraprofessionals
Biweekly professional development, 3 hrs/session

Level II: Student Instruction

Tier I
Regular language arts and content area curricula in English

Tier II
English intervention

Tier III
Small-group tutoring
Tier II: English Intervention

**Strand I**
- Santillana Intensive English (45 min/day, K-1st)
- Early Interventions in Reading (EIR) Level II (45 min/day, 2nd)

**Strand 2**
- Story Retelling and Higher Order Thinking for English Language and Literacy Acquisition (STELLA) (25 min/day, K-2nd)

**Strand 3**
- Academic Oral Language (10 min/day, K)
- Academic Oral Language in Science (10 min/day, 1st)
- Academic Oral & Written Language in Science (10 min/day, 2nd)
Santillana Intensive English (K-1st)

- 35 minutes daily
- Promoted oral language development
- Modeled syntax and sentence structure to encourage students to speak in complete sentences
- Helped students build social and academic language
- Integrated content-based instruction
- Incorporated small group/pair activities
- Supported phonemic awareness

Ventriglia & Gonzalez (2000)
Teach
You may wish to review previous vocabulary using the Lesson Cards, Vocabulary Cards, and student Word Banks. WORD BANK

- **Vocabulary Cards** Introduce Personal Vocabulary Cards 186-190. Pass the cards around the group and ask: Are you hungry? Are you thirsty? Are you hot? Are you cold? Are you tired? Are you dizzy? Have each student take turns choosing the card that describes the response he or she would like to give and respond by saying I’m ______. Have students trace the letters and color the pictures on Personal Vocabulary Cards 186-190.

- Help students relate personal past events. Ask each student: What did you do yesterday? Elicit varied responses. Then ask: What are you doing today? and What are you going to do tomorrow? Have students offer ideas for the timeline by noting what the class did yesterday, is doing today, and will do tomorrow.

<table>
<thead>
<tr>
<th>Yesterday</th>
<th>Today</th>
<th>Tomorrow</th>
</tr>
</thead>
</table>

- Review Vocabulary Cards 17-18 and 62-63. Ask students: How do people change over time? How have cars changed over time? How have clothes changed over time? How do places change over time?
- **Lesson Card 1.59** Introduce the Lesson Card by explaining that ancestors include grandparents or great-grandparents. Review with students what they have learned about change over time. Then say: Houses have changed. Your grandparents and great-grandparents (the mothers and fathers of your grandparents) had a different house than you have today. Look at the house. Does it look like your house? This is what houses looked like long ago. Have you ever seen a house like this one? Say: Look and listen. Then read the story.

- My ancestors had to cook their food every day. They had no refrigerator to store it away. My ancestors had to wash their clothes by hand and hang them to dry. No washing machine could they buy.
- My ancestors had to go to the bathroom outside. They had no indoor plumbing inside. My ancestors had no electric lights. They had only a candle to light at night. My ancestors had no phone. They had no way to call their friends when they were home alone.
- Homes long ago were very different from the homes today, in almost every way.

- **Ask listening comprehension questions, such as:** What are ancestors? Where did Sara’s ancestors live? What’s a log cabin? How did Sara’s ancestors warm their feet? Did they have a heater? Why not? Did Sara’s ancestors have bathrooms inside the house? (Explain outhouses.) Did Sara’s ancestors have electric lights? What did they use for light? What is the story mainly about?

**Practice and Apply**

- **Paired/Collaborative Activity** Have students work with a partner to make a chart of three things that have happened in their lives. (You might wish to give examples to guide them as shown below.) Ask each pair to dictate their events and write them as sentences on the board.

<table>
<thead>
<tr>
<th>My Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>When I was a baby, I cried.</td>
</tr>
</tbody>
</table>

- **Extend**
  - **Thinking** Compare and contrast homes today with homes long ago. Make a list of things that homes long ago didn’t have, such as electric lights, washing machines, and TV.
  - **Writing** Have students draw a picture and write or dictate sentences describing a home long ago.

**Bridge to Reading**

- **Phonemic Awareness** Practice oral blending of initial consonants. Say: /b/ lg—what’s the word? Continue with the following words: bat, bank, boot, box, boat, bread, Bob, bird.
- **Phonemic Awareness** Practice listening for long vowel sounds. Say: I am going to say some words. You say the word and tell me which long vowel sound you hear: bake, beat, bone, boat, bike, bean.
- **Phonics** Review the /b/ sound using Personal Vocabulary Card 204. Say: Bobby is bouncing the ball. Have students identify other words they know that start with /b/. Using Personal Vocabulary Cards 4, 27, and 39-40, review the /b/ sound. Say: I am going to say some words. You hold up the picture of the word I say. Then review all Personal Vocabulary Cards that start with “b.” Have students write the “b” words and underline the /b/ sound in...
Early Interventions in Reading (2\textsuperscript{nd})

Mathes et al. (2004)

- 45 minutes daily
- Daily, explicit, and systematic instruction
- Incorporated five strands of reading:
  - Phonemic awareness
  - Letter-sound correspondence
  - Word recognition and spelling
  - Fluency
  - Comprehension
STELLA (K-2\textsuperscript{nd})

Irby et al. (2004)

- Story Telling and Higher Order Thinking for English Language and Literacy Acquisition
- 35 min daily
- Used authentic children’s literature
- Utilized Bloom’s Taxonomy for questioning
- Integrated science concepts & vocabulary
- L1 clarifications (paraprofessional)
- 5-day scripted lesson (1 book/week)
Project ELLA
STELLA
Story-retell Time for English Literacy and Language Acquisition

Little Rabbit’s Journey
By: Beverly J. Irby/ Rafael Lara Alecio
Illustrated by Eva Vagretti Cockrille

Materials:
- Little Rabbit’s Journey
- Picture Word Cards
- Chart Paper for Rabbit Topic Web
- Story Mapping Chart
- Story Map/Dry Erase Marker
- Vocabulary graphic organizer
- Picture of a rabbit or a stuffed rabbit

ESL Strategy: Interactive Read Aloud, Visual Scaffolding, Preview/Review, Advance Organizer

Science: Chemistry – Earth Science/Landform

Language Arts:

- **Objective 1:** Writing/purposes. The student writes for a variety of audiences and purposes and in a variety of forms.
- **Objective 2:** To develop student’s comprehension through the use of higher order questioning and thinking strategies.
- **Objective 3:** To expand student’s vocabulary, listening and speaking skills.

Vocabulary:
- boulder
- sigh
- wisest
- steep
- stream
- journey

Day 1
Introduce Vocabulary
(Point to the title.)
Say This book was read to you while you were in Kindergarten last year.
Say Who remembers the title of the book?
• Say Yes the title of our story is Little Rabbit’s Journey.
(Point to the author’s name.)
• Say The authors of the book are Beverly J. Irby and Rafael Lara-Alecio. Say Does anyone remember another story written by Beverly J. Irby and Rafael Lara-Alecio? (The Cowboy Mouse)
• Say Let's pretend you are authors, what would you write about?
• Say Now, the title of the story is Little Rabbit's Journey.
• Say Do you know what a journey is?
• L1 Clarification: ¿Saben ustedes lo que es salir de viaje? (Wait for students to respond.)
• Say Looking at the cover of the book and by the title of the story, who can tell me one word we are going to learn? (Journey) (Wait for students to respond)
• Talk about any personal journey you enjoyed and ask the students about their experiences during any particular journey.
• Say Today we are going to go over three words. One of them you learned in Kindergarten. Let's see if you remember which one.

• (Show the picture card stream.)
• Say This is our first vocabulary word for the story.
• Say This is the picture for stream.
(Read the sentence on the back of the card.)
• Say A stream is a body of running water that is smaller than a river.
• L1 Clarification: “Stream” es como un arroyo, una corriente de agua. Una corriente de agua que no es tan grande como un río.
• (Model answer using the following stem “I could find __________ in a stream.” found on the back of the card. Wait for students to respond with their own sentences using the stem. Students should answer in a complete sentence. If students do not answer in a complete sentence, you need to model for them and ask them to repeat after you.

• Say I could find ... I could find... many pebbles in a stream.
Say What else can you find in a stream? Your turn, I could find...
_______ in a stream.
(Wait for students to respond. Students should answer in a complete sentence.)

• (Show the picture card for boulder.)
• Say Who can tell me what this is?
(Wait for students to respond)
• Say This is a picture of a boulder. This is not really a new word for you, but I want to see how many of you remember what a boulder is.
L1 Clarification: Esta es la lámina de una roca.
(Read the sentence on the back of the card.)
• Say A boulder is a large rock.
• L1 Clarification Una roca es como una piedra grande en un riachuelo.
• Say Have you seen a boulder before? Where?
journey
Definition:
A journey is when you travel from one place to another.

Stem:
I would like to go on a journey to...,
Vocabulary Mapping Chart

Draw a Picture

Project ELLA
STELLA
2005-2006

WORD steep

Synonym straight-up

Definition: when something is straight up and down, having a very sharp slope.

Antonym flat

Write a sentence using the new word.

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Academic Oral Language (K-2nd)

- 10 minutes daily
- Targeted science vocabulary
- Provided sentence using words in context
- Asked a daily question using the target word
- Presented visual aides for comprehension
- In second grade, this component became Academic Oral and Written Language in Science (AOWLS)
How would you move a large mass of dirt?

wagon  bucket  box
Tier III: Small-Group Tutoring

- Lowest performing students were identified
- Received additional instruction
  - 20 min/day
  - Delivered by highly trained paraprofessionals

- K, 1st (Fall)
  - Communication Games

- 1st (Spring), 2nd
  - Early Interventions in Reading, Level I
Method

- Control Condition (Typical Practice)
  - ESL block for 45 minutes daily with great variation among teachers
  - Vocabulary instruction included: incidental word learning, flash cards, activity pages
  - Other instructional activities: oral reading of sentences, decoding words, counting syllables, reading syllables and words
  - Curricula aligned with state objectives and district ESL benchmarks
  - No support provided by the research team
<table>
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<tr>
<th>Measures</th>
<th>K BOY</th>
<th>K EOY</th>
<th>1st BOY</th>
<th>1st EOY</th>
<th>2nd EOY</th>
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<tr>
<td>Segmenting Words (CTOPP)</td>
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<td>Listening Comprehension (WLPB-R)</td>
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<td>Oral Language Proficiency (IPT-I)</td>
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<td>Letter-Word Identification (WLPB-R)</td>
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<td>Word Attack (WLPB-R)</td>
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<td>✓</td>
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</table>
Method

- **Data Analysis**
  - Analyses conducted by construct
    - Phonological skills
    - Oral language skills
    - Reading-related skills
  - Established initial equivalence on pretest measures (Time 1)
    - 2x2 factorial MANOVAs
      - Gender (boy vs. girl)
      - Group (experimental vs. control)
      - Interaction (Group x Gender)
  - Repeated measures factorial MANOVAs
    - Within-subjects factor: Time
    - Between-subjects factors: Gender and Group
    - Interaction terms
  - ES reported as partial eta squared
## Results

<table>
<thead>
<tr>
<th>Source</th>
<th>Favoring</th>
<th>F (df&lt;sub&gt;B&lt;/sub&gt;, df&lt;sub&gt;W&lt;/sub&gt;)</th>
<th>P</th>
<th>Partial η²</th>
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<tbody>
<tr>
<td><strong>Time</strong></td>
<td></td>
<td>418.96 (6, 326)</td>
<td>&lt;.001</td>
<td>.89</td>
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<td><strong>Time x Group</strong></td>
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<tr>
<td>Blending Phonemes Time 1 -&gt; 2</td>
<td>Exp.</td>
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<td>11.51 (1, 331)</td>
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<td><strong>Time</strong></td>
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<td>.85</td>
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<td>Passage Comprehension</td>
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<td>6.88 (1, 311)</td>
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</table>
Estimated Marginal Means of BP

Group
- Blue: Experimental
- Green: Control

Time
- Beginning of K
- End of K
- End of 1st Grade
- End of 2nd Grade
Estimated Marginal Means of SW

- **Group**
  - Experimental
  - Control

**Time**
- Beginning of K
- End of K
- End of 1st Grade
- End of 2nd Grade

**Estimated Marginal Means**
- Y-axis range: 0 to 12
Discussion

• Gender Differences
  • Phonological skills
    • No gender difference observed, suggesting that boys and girls have acquired similar skills in phoneme blending and segmentation.
  • Oral English skills
    • Spanish-speaking ELL boys entered school with a higher level of English expressive vocabulary than girls
      • Contrary to most of the extant literature other than Nakamura (2004)
    • On expressive vocabulary, boys in experimental group performed at a higher level than girls in the experimental group.
      • Suggests that boys might acquire L2 oral proficiency more substantially than girls when provided quality instruction
      • (See Figure 8)
Discussion

- Gender Differences
  - Reading-related skills
    - No initial difference (between boys and girls) observed for decoding and reading comprehension
    - Boys and girls demonstrated a similar rate of development on these skills
  - Summary
    - Contrary to the consistent findings related to gender differences in L1 acquisition, this study failed to observe female advantages in L2 development.
Discussion

- **Effect of Instructional Intervention**
  - **Phonological skills**
    - Control students had higher initial level of phonological awareness upon school entry.
    - Experimental students improved more significantly over time as compared to control students and caught up by the end of 2\textsuperscript{nd}.
  - **Oral English skills**
    - Control students exhibited higher initial level of oral English skills at school entry.
    - However, at the end of 2\textsuperscript{nd} grade, the difference was no longer statistically significant, indicating substantial gain in oral L2 skills for the students receiving intervention.
    - Given the critical need for studies in this area (Saunders & O’Brien, 2006), this study is distinctive in that it demonstrates the effectiveness of an intervention for accelerating L2 oral English development.
Discussion

• Effect of Instructional Intervention
  • Reading-related skills
    • Control students exhibited higher initial performance on decoding skills and reading comprehension at beginning of 1st grade.
    • However, the intervention produced a statistically significant difference in favor of experimental students, particularly during 1st grade when experimental students demonstrated faster growth in reading-related skills.
  • Summary
    • Experimental students responded favorably to the instructional intervention. Although these students were not proficient speakers of English at the outset of intervention, they were able to improve L2 oral and reading skills by participating in the intervention.
Conclusions

Our study suggests:

- Important to provide high quality instructional interventions to ELLs at early elementary level
- The intervention examined here was effective at improving phonological awareness, oral L2 skills, and reading-related skills for ELLs in SEI program.
- L2 acquisition not related to gender—rather, is related to quality of instruction
Recommendations

- Examine effect of language of instruction on differences in L2 development
  - Compare results to our previous study of gender differences in ELLs instructed in native language
- More studies of gender differences in L2 development that include
  - Empirical, longitudinal evidence
  - Language-minority students who speak a language other than Spanish
  - L1 measures to understand influence of native language skills on L2 development
Acknowledgements

- This research is supported by Grant R305P030032, funded by Institute of Education Sciences.
- We thank the coordinators, school administrators, teachers, school personnel, students, and parents who are involved in this project.
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Thank you!