

## INTRODUCTION

- The population of dual language learners (DLLs) in U.S. public schools continues to increase, including five states with EL increases > 40 percent (The Department of Education, 2017).
- On average, Spanish-speaking DLLs exhibit less favorable academic outcomes attributed to early language differences when entering English-speaking schools (Aud et al., 2012).
- According to Fry (2008) and Gorman (2009), Spanish-speaking DLLs, often score lower in standardized state tests and are at risk for lower academic achievement at school entry.
- Expressive oral language skills have been found to be predictive of later academic achievement (Rojas et al., 2019).

### Research question:

What aspects of early language production in preschool age Spanish-speaking DLLs could serve as predictors of English reading comprehension in 3<sup>rd</sup> grade?

## METHODS

### Participants

- 35 Spanish-English DLLs (M = 50.5 months; SD = 6.9 months).
- Attended an English-immersion school in Texas.

### Procedure

- Narrative language samples produced in English and Spanish (25 Spanish samples; 35 English samples).
- Language samples elicited via story-retell based on a wordless picture story 'frog' books (Mayer, 1968; 1973; 1974; 1975).
- Measure of Academic Progress (MAP) English Reading: Test scores from Spring semester of 3<sup>rd</sup> grade from all participants.

### Data Analysis

- Narrative retells transcribed, coded, and analyzed with the Systematic Analysis of Language Transcripts (SALT) software (Miller & Iglesias, 2017).
- Language sample analysis (LSA) measures calculated using SALT:
  - Percentage of Grammatical Utterances (PGU) as a measure of grammaticality.
  - Moving-average type-token ratio (MATTR) as a measure of vocabulary.
  - Code switching (CS).
- Statistical Package for Social Science (SPSS) software used for multiple linear regression models (Armonk, 2017) to identify language measures as predictors of MAP Reading test scores.

## RESULTS

### Multiple linear regression model: English LSA (preschool) and Gender on MAP Reading English (Third Grade)

- Combined effect of Gender, PGU-English, MATTR-English, and CS significantly explained 30% variability of 3<sup>rd</sup> grade English MAP Reading scores in English.
  - A 1% increase in CS during English language production in preschool predicted a MAP Reading English score decrease of -0.78 points in 3<sup>rd</sup> grade.
  - A 1% increase in PGU-English during preschool trended towards predicting a MAP Reading English score increase of 21.9 points in 3<sup>rd</sup> grade.

### Multiple linear regression model: Spanish LSA (preschool) on MAP Reading English (Third Grade)

- Combined effect of Gender, PGU-Spanish, MATTR-Spanish, and CS did not significantly explain variability of 3<sup>rd</sup> grade English MAP Reading scores in English.

**Table 1**

Multiple linear regression models: Proportion of grammatical utterances (PGU), moving-average type-token ratio (MATTR), code switching (CS), in English and Spanish on MAP Reading English scores.

| Preschool English LSA on 3 <sup>rd</sup> Grade MAP Reading |              |            |               | Preschool Spanish LSA on 3 <sup>rd</sup> Grade MAP Reading |              |            |             |
|------------------------------------------------------------|--------------|------------|---------------|------------------------------------------------------------|--------------|------------|-------------|
| $R^2 = 0.3$ ; $F(4,28) = 3.003$                            |              |            |               | $R^2 = 0.134$ ; $F(4,17) = 0.658$                          |              |            |             |
| Gender                                                     | PGU          | MATTR      | CS            | Gender                                                     | PGU          | MATTR      | CS          |
| $B = -7.1$                                                 | $B = 21.9^*$ | $B = 22.0$ | $B = -0.78^*$ | $B = -8.5$                                                 | $B = -8.995$ | $B = 37.1$ | $B = 0.0$   |
| $p = 0.14$                                                 |              | $p = 0.39$ |               | $p = 0.23$                                                 | $p = 0.71$   | $p = 0.18$ | $p = 0.996$ |

Note.  $R^2$  = coefficient of determination; LSA = language sample analysis;  $B$  = unstandardized regression coefficient.

\* $p < .05$ . \*\* $p < .01$

**Table 2**

Descriptive Data: Preschool and Third Grade

|         | Preschool LSA Measures | Third Grade MAP Reading English |
|---------|------------------------|---------------------------------|
| English |                        |                                 |
| PGU     | 0.6 (0.2)              | 197.6 (14.5)                    |
| MATTR   | 0.5 (0.1)              |                                 |
| CS      | 2.0 (6.7)              |                                 |
| Spanish |                        |                                 |
| PGU     | 0.69 (0.16)            |                                 |
| MATTR   | 0.54 (0.13)            |                                 |
| CS      | 24.5 (34.8)            |                                 |

## MAIN CONCLUSIONS

- Findings indicated that specific preschool LSA measures in English significantly predicted 3<sup>rd</sup> grade English reading comprehension.
  - Preschoolers who code switched to Spanish when speaking English demonstrated slightly lower English reading comprehension in 3<sup>rd</sup> grade.
  - Preschoolers who demonstrated higher grammaticality in English tended to demonstrate considerably higher English reading comprehension in 3<sup>rd</sup> grade.
- Findings indicated that specific preschool LSA measures in Spanish did not predict 3<sup>rd</sup> grade English reading comprehension.
- Findings indicated no differences in 3<sup>rd</sup> grade English reading comprehension by gender or preschool vocabulary production in either language.
- This study serves as a downward extension of Rojas et al. (2019).
- Use of these findings could better inform interventions applied to early preschool language education to better address the academic gap experienced by Spanish-speaking DLLs.

## SELECTED REFERENCES

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## ACKNOWLEDGEMENTS

- I would like to thank the REU Fellowship program for the opportunity and experience; and Dr. Rojas for REU mentorship and access to the data for this study.
- I would like to thank the other REU fellows for the conversations and advices that inspired the pursuit of this topic, specifically Sandra Ventura and Monze Gonzalez; and the TA for the program Natalie Quintero-Flores.