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Exploring Program Model Differences in English and Spanish Writing Outcomes

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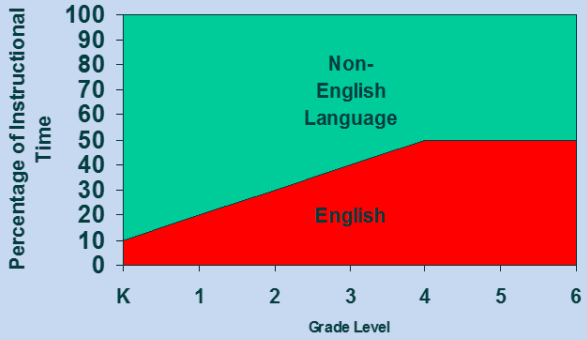
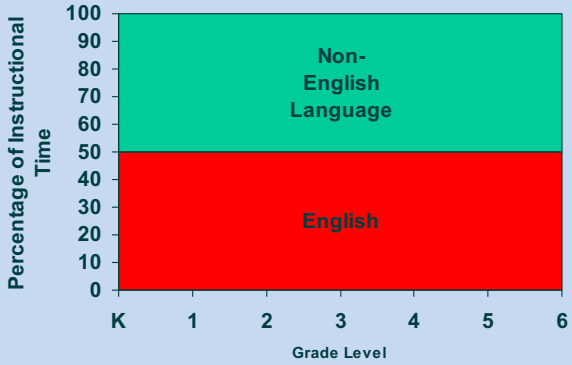




Rationale for the Study

- Despite the proliferation of two-way immersion (TWI) programs in the United States, little is known about potential differences in student outcomes in either or both languages of instruction; as a result, logistical and/or political considerations frequently drive program model choices. Specifically, communities may avoid the 90/10 model because of concerns about English acquisition; similarly, they may modify the 50/50 model to avoid simultaneous biliteracy because of concerns that it will be confusing to students and impede literacy development.

What Do We Know about Program Model Differences in Literacy Outcomes?

- Comparing TWI to monolingual models, there is evidence of long-term benefits of TWI on literacy outcomes in English (Berens, Kovelman, & Petitto, 2013 ; Steele, et al., 2015; Thomas & Collier, 2002) and partner languages (Burkhauser, et al., 2016).
- Within TWI, there is evidence of a short-term advantage in English literacy among 50/50 students, with 90/10 students catching up by the upper elementary grades and remaining on par through the secondary grades; there is also evidence of a persistent advantage in Spanish literacy among 90/10 students (Lindholm-Leary & Howard, 2008).
- Within TWI, there is evidence of a relative advantage of each model for specific subskills of reading in the middle elementary grades – e.g. phonological awareness and decoding for 90/10 and reading comprehension for 50/50; in contrast, there is evidence of a consistent advantage in all reading subskills in Spanish for 90/10 students in the middle elementary grades (Berens, Kovelman, & Petitto, 2013).

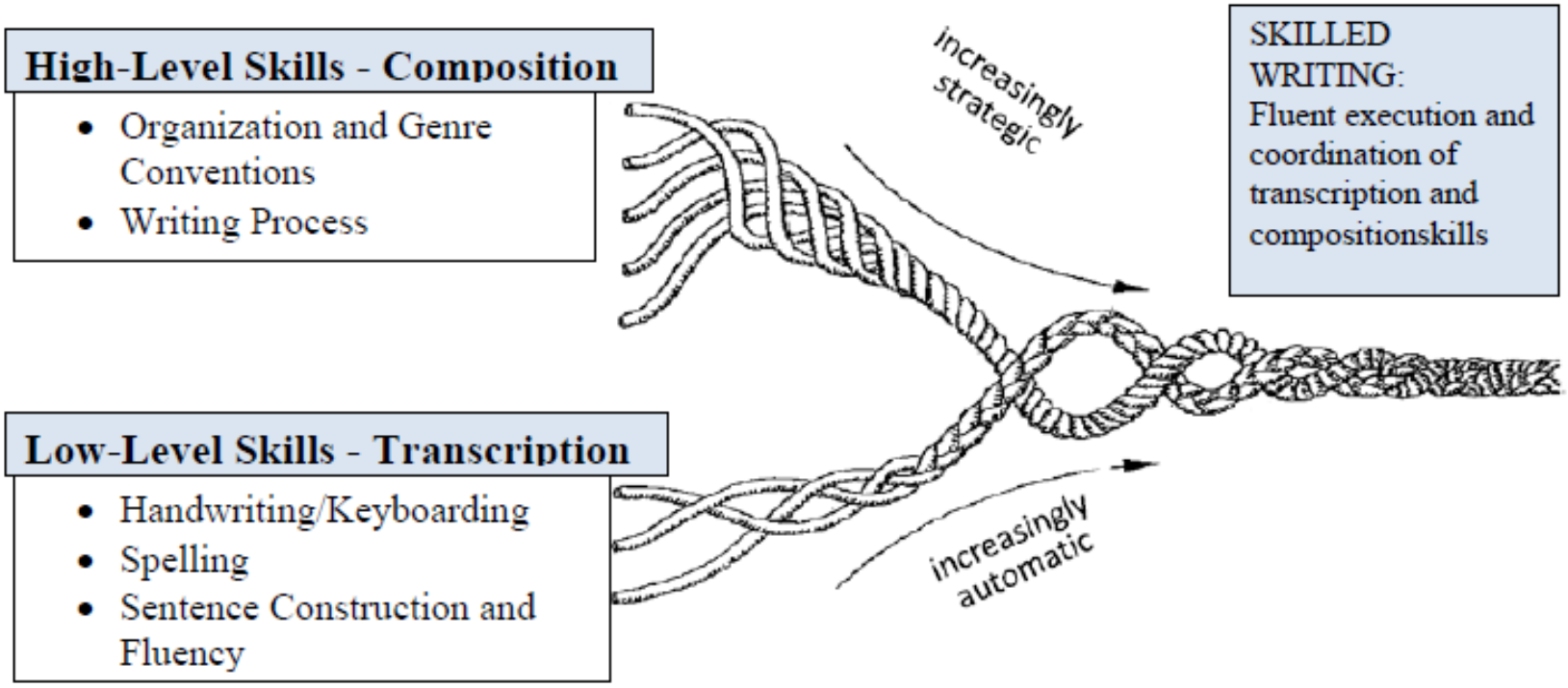
Why Focus on Writing?

- Strong writing skills are essential for success in school and the workplace (Applebee, 1999; Graham, 2007; Schleppegrell & Colombi, 2002; Shanahan, 2006).

- Findings from the National Assessment of Educational Progress (NAEP) indicate that few students reach proficient or advanced levels of writing; most ELLs score below the basic level.

- Writing has received far less attention than reading in instruction, assessment, and research for both native speakers and second language learners (Lesaux, et al., 2008; Magrath, 2003).

A Conceptual Model of Skilled Writing



Skilled writing requires the integration of several skills acquired over years of instruction and practice.

Olinghouse, Wilson, & Neugebauer, 2012

Research Questions

RQ1: Controlling for home language input and socioeconomic status, are there program model differences in English and/or Spanish writing outcomes in grades 2-5?

RQ2: Controlling for home language input and socioeconomic status, are there program model differences in the rate of change in English and/or Spanish writing ability from grade 2-grade 5?

Sample

- Study 1: Total sample included 257 students across 6 schools
  - 88 in the 50/50 (simultaneous) model
  - 169 in the 90/10 (sequential) model
    - The larger number of students from the sequential model is due to the fact all three of the simultaneous models were strands within schools; in contrast, two of the three sequential programs were whole-school models

- Study 2: Total sample included 258 students across 6 schools
  - 98 in the monolingual model (English Only), 3 schools
  - 91 in the 90/10 (sequential) model, 2 schools
  - 69 in the 50/50 (simultaneous) model, 1 school
    - All schools in the study were whole-school models of their respective program type.

Sample Characteristics

Study 1. Sample Characteristics & Summary Statistics of Covariates

	Sequential	Simultaneous	Overall
n	169	88	257
Female	54.44%	55.68%	54.86%
Lunch	47.34%	51.14%	48.64%
Spanish	45.56%	63.64%	51.75%
*Parent's Yrs of Ed.	**5.06** (2.32)	**5.26** (2.83)	**5.12** (2.47)
*Home Lang Use	**2.49** (1.12)	**2.63** (1.10)	**2.53** (1.11)

* ***Mean*** *(Standard Deviation)*

Study 2. Sample Characteristics & Summary Statistics of Covariates

	Monolingual	Sequential	Simultaneous	Overall
n	98	91	69	258
Female	51.02%	47.25%	56.52%	51.16%
Lunch	52.04%	41.76%	43.48%	46.12%
Spanish	41.84%	54.95%	50.72%	48.84%
*Parent's Yrs of Ed.	**11.81** (4.09)	**12.52** (5.34)	**14.34** (4.98)	**12.72** (4.90)
*Home Lang Use	**2.10** (1.32)	**2.70** (1.12)	**2.29** (1.26)	**2.36** (1.26)

* ***Mean*** *(Standard Deviation)*

Data Collection

Study 1 Outcome Measures

- Researcher-developed measure of English and Spanish narrative writing ability, including composition, grammar, and mechanics.
  - Scores range from 0 to 5
  - collected three separate times (fall/winter/spring) during each academic year, from 3rd to 5th grade.
    - The medial time point (winter) was selected for all analyses

Study 2 Outcome Measures

- English and Spanish assessments of lower-order writing skills (spelling, usage, and punctuation) were collected once per year in 2nd through 5th grade via the Woodcock Language Proficiency Battery-Revised.
  - Standard Scores (SS) – mean of 100 and sd of 15
  - W Scores (W) – 500 is benchmark for end of fifth grade performance

Data Collection, continued

Control Variables Used in Study 1 and Study 2

- Home Language Input, determined by averaging four questions on a parent questionnaire.
  - Indicates language input to child from:
    - Mother
    - Father
    - Other adults
    - Children in the home
  - Measured on a 5-point scale:
    - 1 = English monolingual
    - 3 = balanced bilingual
    - 5 = Spanish monolingual

- Socioeconomic status as indicated by years of parent education and free/reduced lunch eligibility

Data Analysis

- Research Question 1:
  - *Analysis of Covariance* (ANCOVA)
  - Test whether program models differed with respect to total writing ability
    - Controlling for parent education and home language input

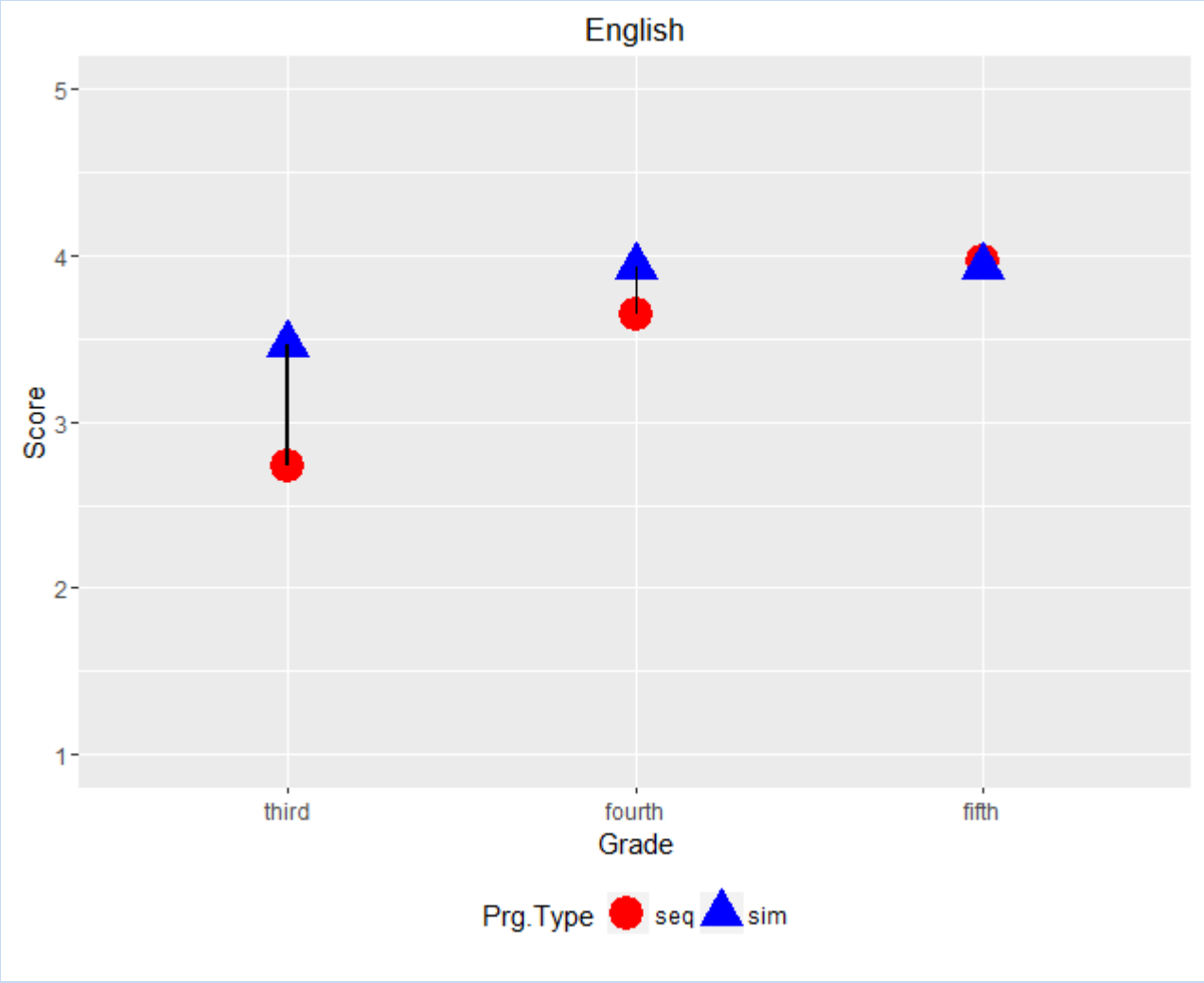
- Research Question 2:
  - *One-Way Repeated Measures Analysis of Covariance* (RM-ANCOVA)
  - A multivariate technique producing:
    - A Within-Subjects effect, **Time**
    - A Between-Groups Effect, **Program Model**
    - As well as an interaction effect, **Time*Program Model**; testing whether or not trends differed as a function of program model, controlling for parent education and home language input

Results

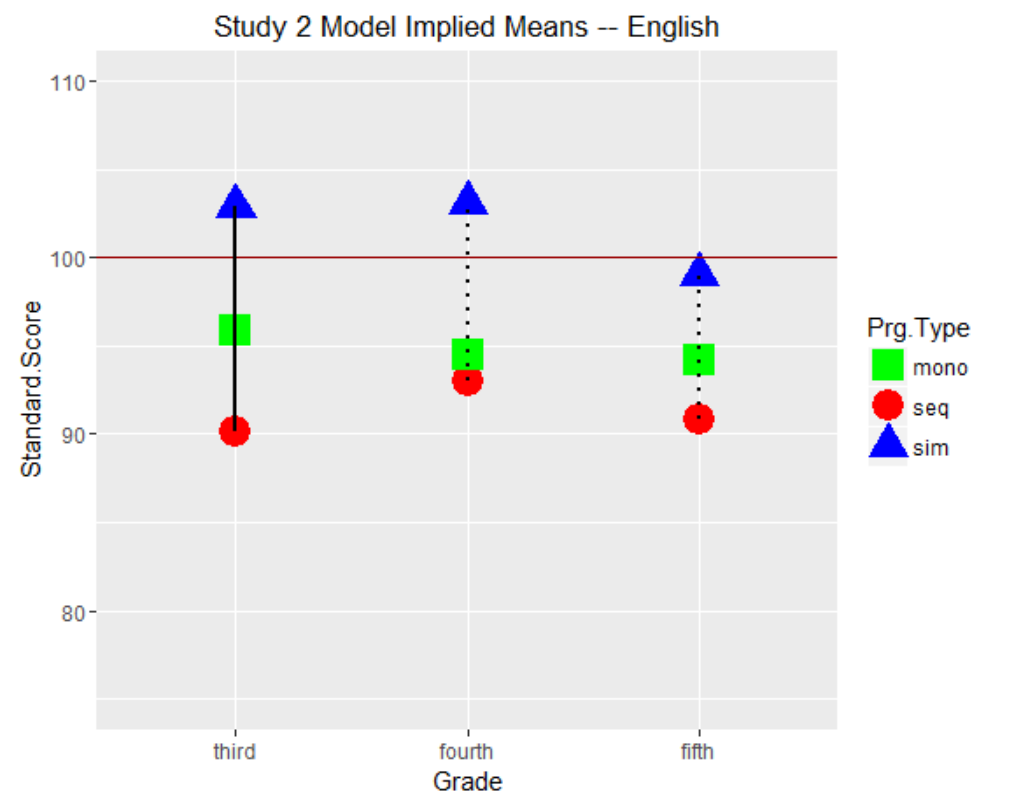
Research Question 1

Controlling for home language input and socioeconomic status, are there program model differences in English and/or Spanish writing outcomes in grades 2-5?

RQ1 English Results
Comparison of Adjusted Means



Comparison of Adjusted Means

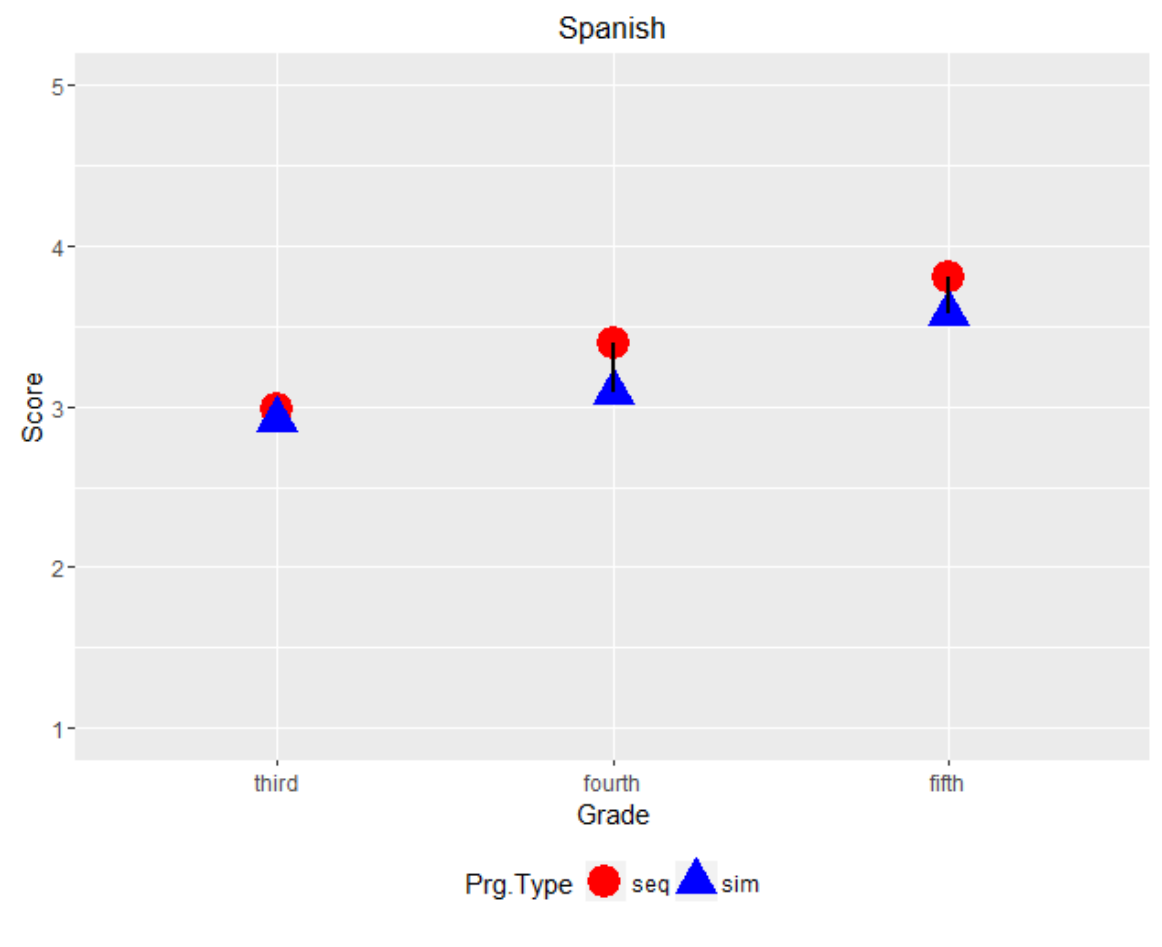


3rd Grade:

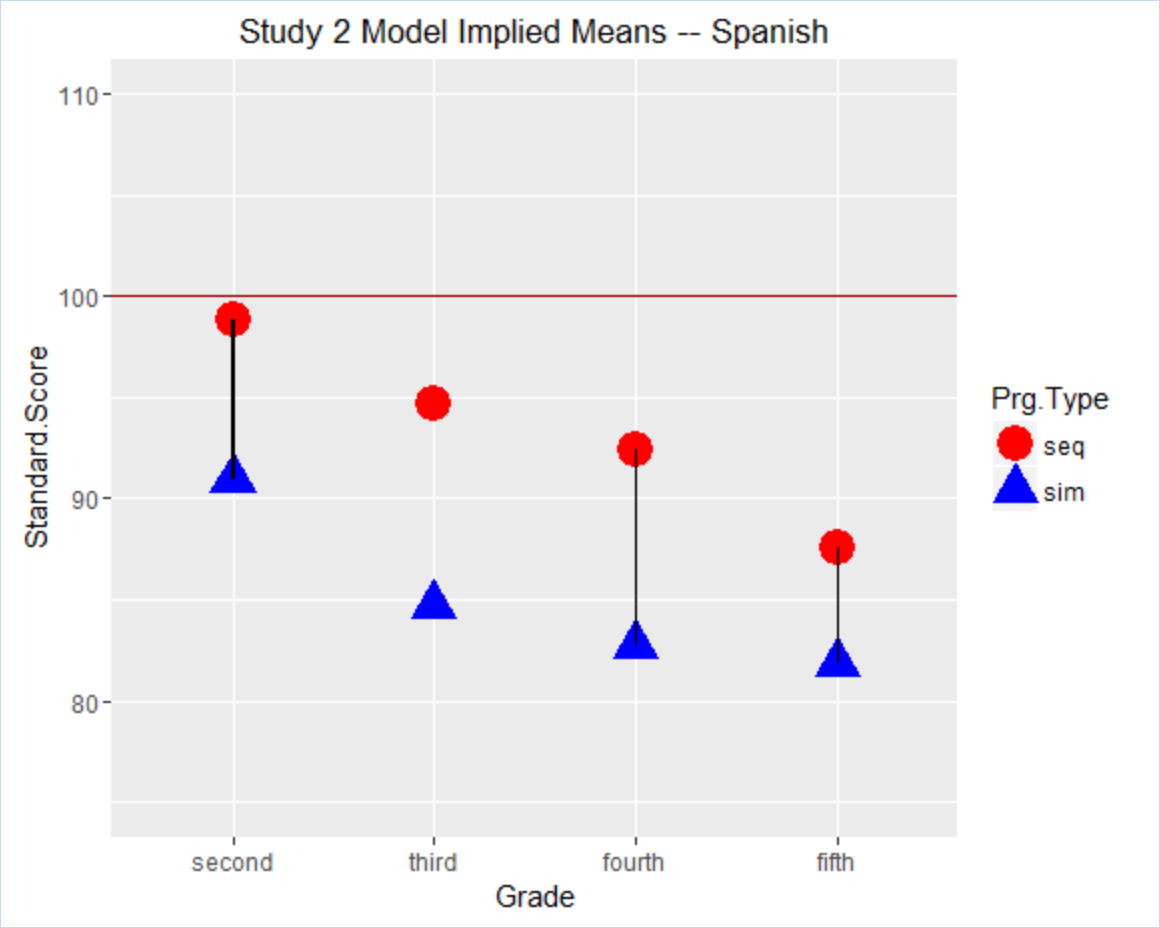
- Monolingual versus Sequential: (Est.: 5.75; **p = 0.007**)
- Monolingual versus Simultaneous: (Est.: -6.97; **p = 0.03**)

*** p-values were adjusted using Tukey's Honest Significant Difference approach**

Comparison of Adjusted Means



Comparison of Adjusted Means



Summary of Findings: RQ 1

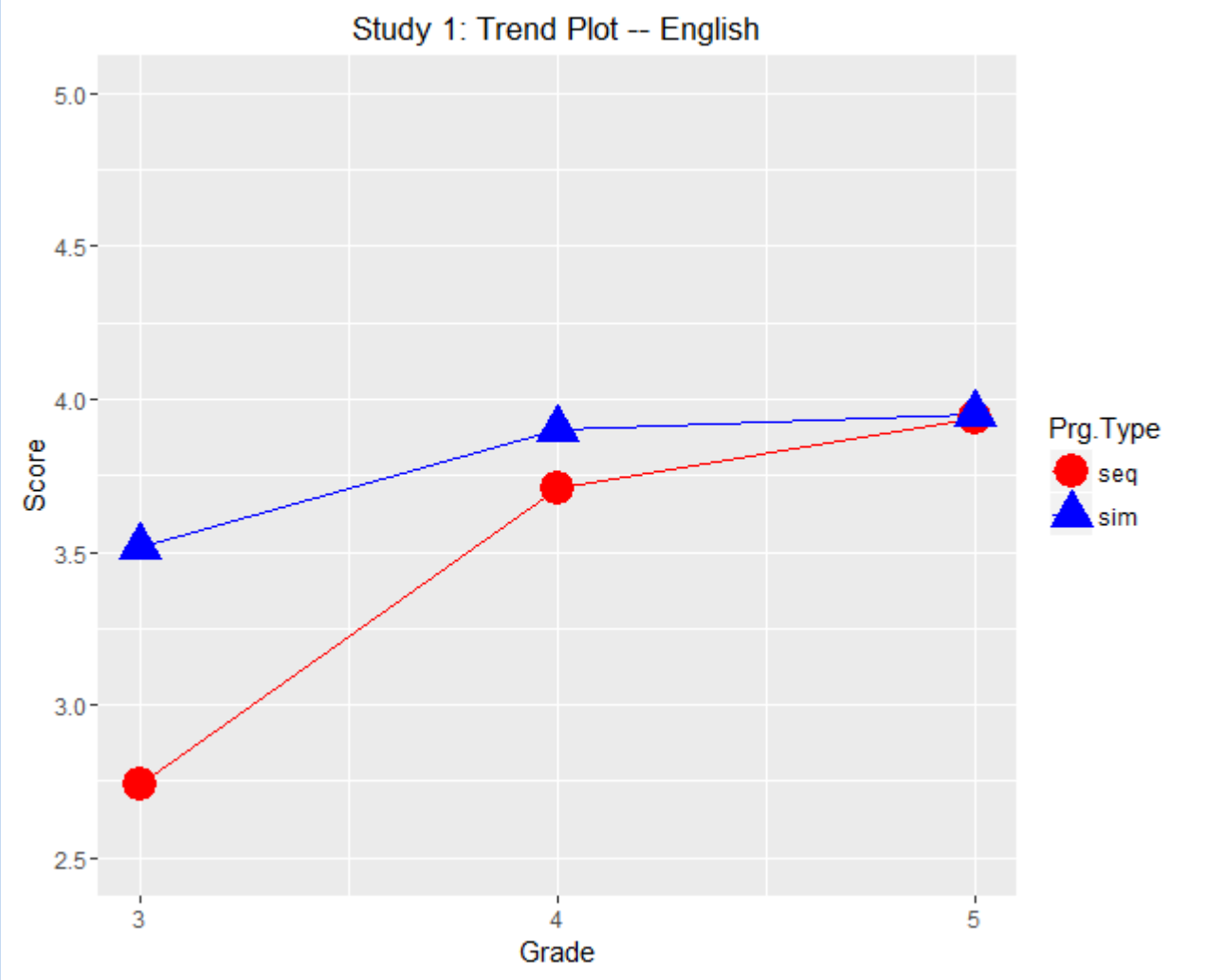
- English findings are equivocal. In Study 1, there is an early advantage for students in the 50/50 program that disappears by 5th grade. In Study 2, the 50/50 advantage persists in 5th grade. Interestingly, the 50/50 students have an advantage over students in monolingual English programs in grades 3 and 4, but not in grade 5. Similarly, monolingual English students outperform 90/10 students in grade 3, but not in grade 4 or 5.

- Spanish findings are generally consistent. In Study 1, there is no program model difference in grade 3, but there is an advantage for 90/10 students in grades 4 and 5. In Study 2, there is an advantage for 90/10 students in grades 2, 4, and 5.

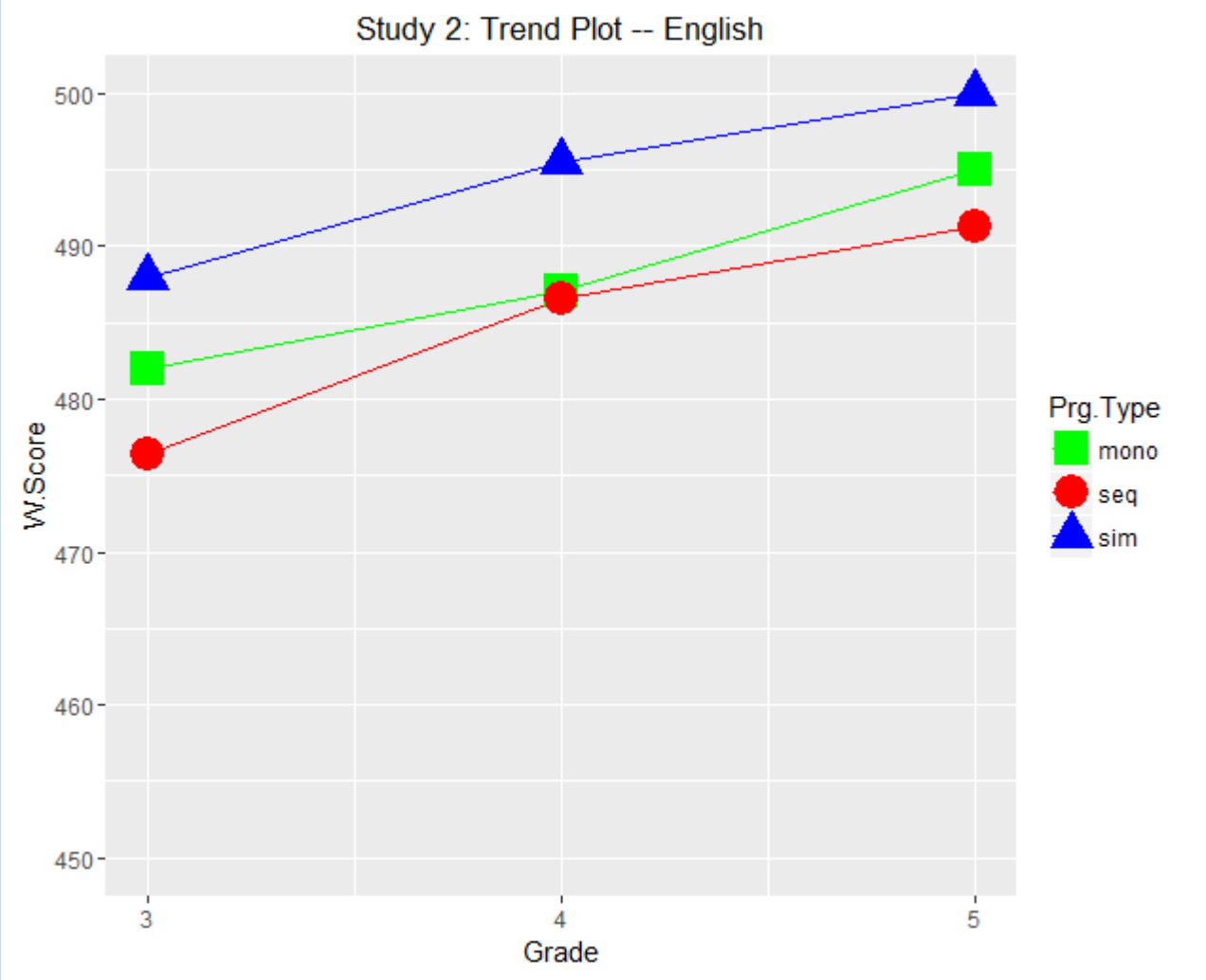
Research Question 2

Controlling for home language input and socioeconomic status, are there program model differences in the rate of change in English and/or Spanish writing ability from grade 2-grade 5?

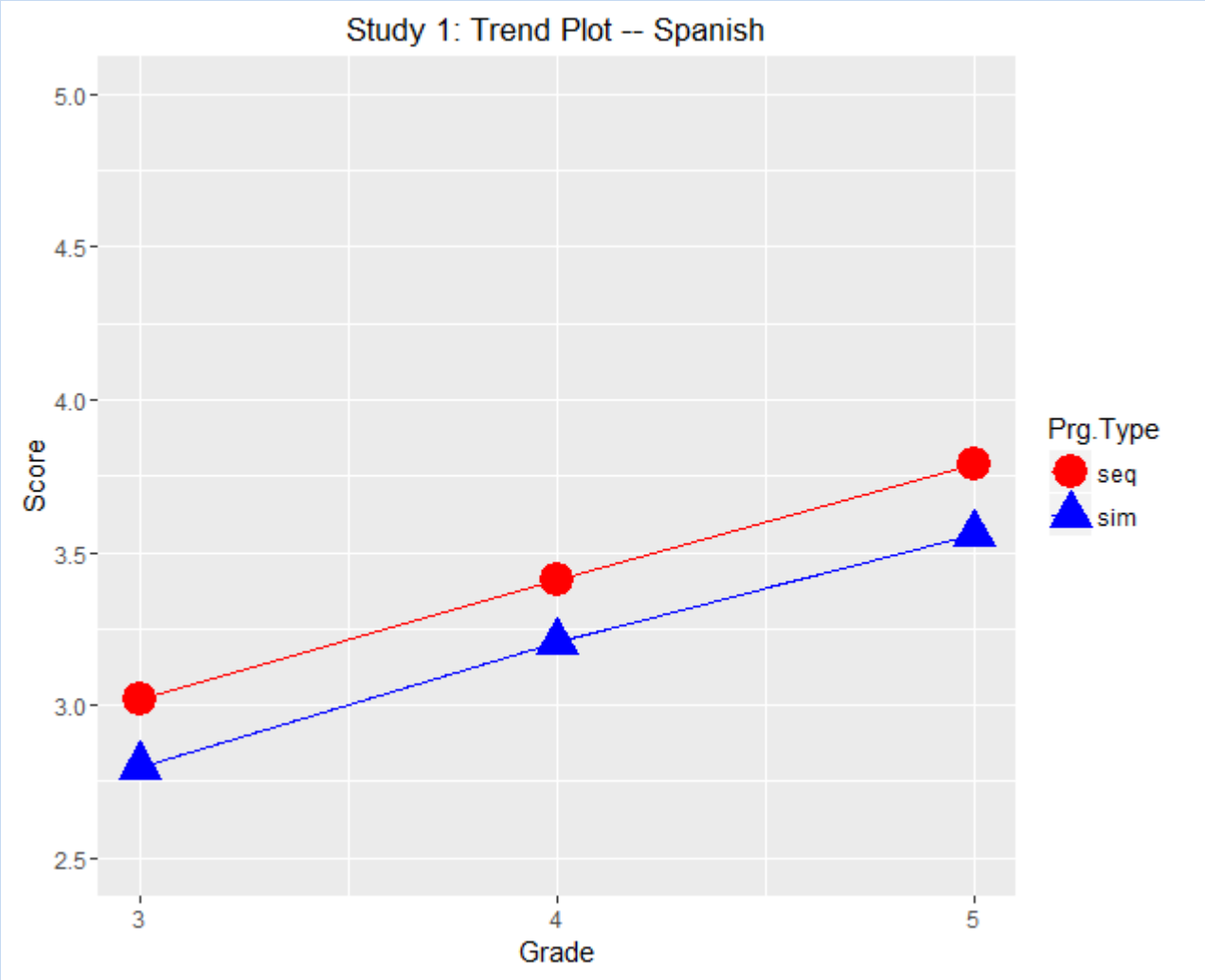
Study 1: English Trend Lines



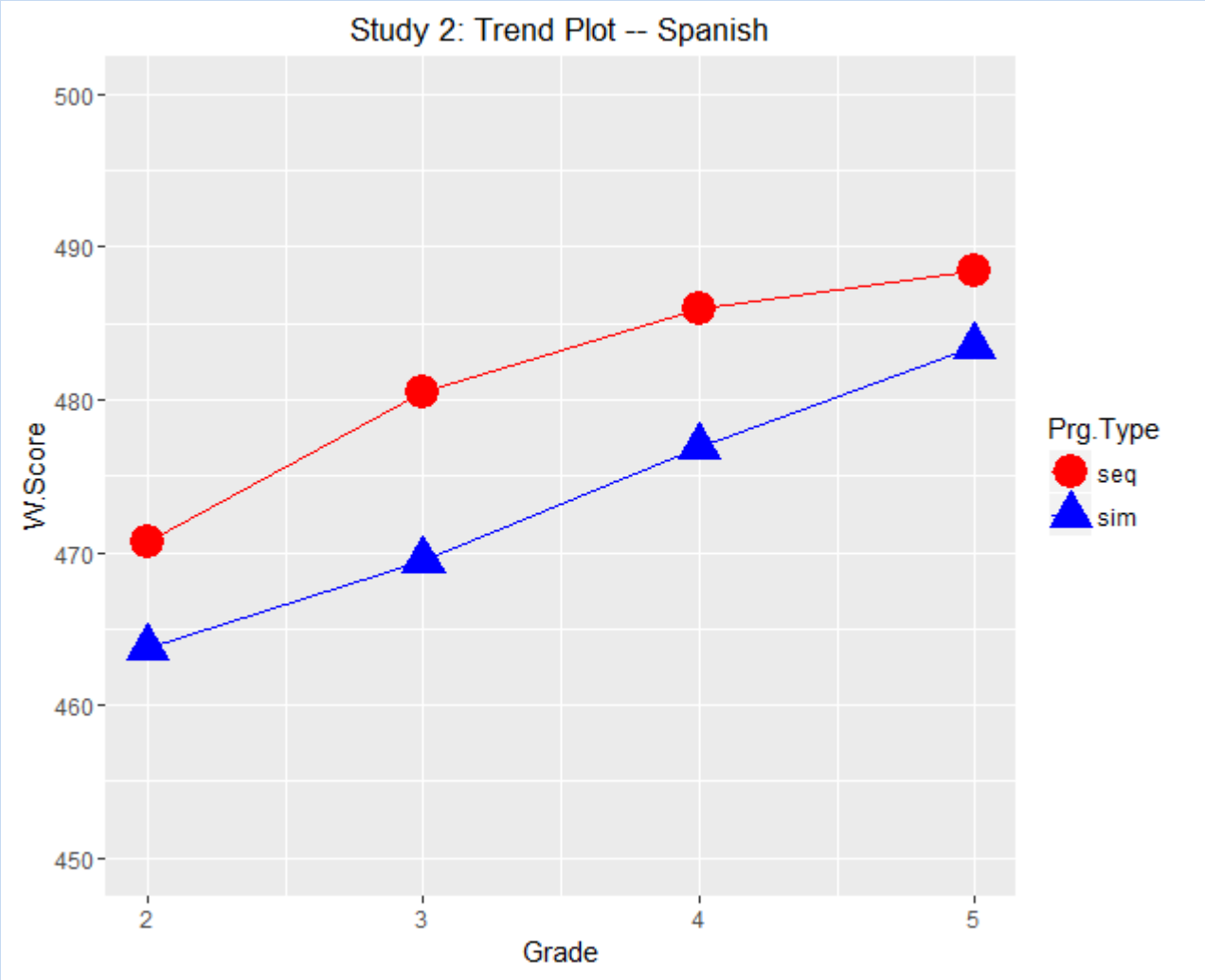
Study 2: English Trend Lines



Study 1: Spanish Trend Lines



Study 2: Spanish Trend Lines



Summary of findings: RQ2

- Significant differences in rates of change across program models for study 1 and study 2. Faster rate of change for 90/10 in study 1; different rates of change across the 3 models in study 2
- Equivocal findings for Spanish – no difference in rates of change for study 1; significantly faster growth for 50/50 in study 2.

Conclusions

Discussion

- Both studies confirm previous findings that …
  - on measures of English literacy, TWI students perform as well as or better than comparable students educated monolingually in English;
  - there is a Spanish literacy advantage for 90/10 students that develops and/or persists in the upper elementary grades;
  - there is an English literacy advantage for 50/50 students that goes away by 5th grade in Study 1 but persists through 5th grade in Study 2, thus raising questions about the length of time that the English advantage may persist;
  - both models promote ongoing growth in literacy ability in both languages, although there are sometimes differences in the rates of change; and
  - there is no evidence of confusion resulting from simultaneous biliteracy acquisition (50/50), as the English adjusted means for the 50/50 model were consistently as high as or higher than those for the other model(s) and at or above English monolingual norms.

Limitations

- The sample size within each program type was very small. It would be helpful to replicate this type of study with more schools per program model.

- The outcome measures were not designed for bilingual/biliterate students. Future research could develop and utilize specific measures for this population.

- The study only looked at global writing outcomes. Future investigations could look at writing subskills to see if there are nuanced differences.

Acknowledgements

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