Evidence of an Early Word Gap between English and Spanish Speakers

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INTRODUCTION

- Equivalent exposure to the maternal language results in higher vocabulary in English than in Spanish.[1]
- Socioeconomic status does not fully explain this effect.[2,3,4]
- Both quantity and quality of language input is associated with higher vocabulary.[5,6]
- Communicative intent, and therefore, quality of parent-child engagement varies between cultures.[7]

TWO STUDIES

- **Study 1:** Mixed models analysis to determine the model with best fit and parsimony to characterize differences in home language vocabulary in young children exposed primarily to Spanish relative to English.
  - **Hypothesis:** Expressive vocabulary will vary primarily as a function of age and language of assessment.
- **Study 2:** Analysis of parent-child engagement quality and relation to early vocabulary across languages.
  - **Hypothesis:** Quality of engagement will account for differences in expressive vocabulary above and beyond maternal education.

METHOD

Participants

- San Diego, California; Exposure to home language => 75%
- 27 Spanish- (19 girls) and 33 English- (15 girls) speaking children
  - -16 (M = 16.83, *range* = 15.50 to 20.70),
  - -22 (M = 23.30, *range* = 21.00 to 27.50), and
  - -30 (M = 30.83, *range* = 28.60 to 37.20) months of age.

Study 1

- Longitudinal design
- Parents completed MCDI:WG at Waves 1 and 2 and MCDI:WS[8] at Wave 3.
- Expressive vocabulary was calculated from the vocabulary checklist.

Study 2

- Dyads participated in 20 minutes of free play at Wave 3.
- Conversations were transcribed to inter-rater agreement =.90
- Transcripts of free play were coded for quantity and quality of three communication styles[5] (inter-rater agreement =.87).

P what/'s this?
C (oh no) the cow.
P the cow.
C {moo}.
P what/'s this?
C the piggy {oink}.
P {oink}.
P what/'s that?
C X.
P yeah.
P what/'s this?
C doggy.
P it/'s a horsey?
C no.
C it/'s a doggy.

Symbol Infused Joint Engagement: parent and child engage in turn-taking with a focus on naming objects and actions.

P what/'s this?
C doggy.
P it/'s a horsey?
C no.
C it/'s a doggy.
C XX I had to close it.
P are you go/ing to close it?
C yeah.
P wow I like these toy/s.
P these are neat.
C yeah.
C I like it too.
P I like them.
P what else do you want to play with?
P what else?
C um, play this.
P you want to play this?
P okay.
C {goo goo, neigh neigh}.
P let's put the horsey in the stable.

Fluency and Connectedness: rhythmic turn-taking in which topics are shared and changes are followed smoothly by both parties.

RESULTS: Study 1

- Expressive vocabulary data were evaluated across Waves to characterize patterns of vocabulary acquisition across languages using mixed models analysis to identify the model of best fit.
- First a model with only Wave to define the intercept was tested, followed by a model in which Wave was nested within Language. Finally, a model with maternal education nested within Language was assessed.

Model	-2LL	AIC	BIC
Wave	3973	3975	3978
L1 X Wave	3882	3884	3887
L1 X Wave, Maternal Education	**3850**	**3860**	**3863**
L1 X Wave, L1 X Maternal Education	3856	3860	3868

Factor	Test Statistic	*p*
L1 X Wave	$F_{(5, 11.4)}$= 98.3	**.000**
L1 X Maternal Education	Wald Z = .520	.608

Follow-up t-tests indicate that expressive vocabulary differed significantly between groups:

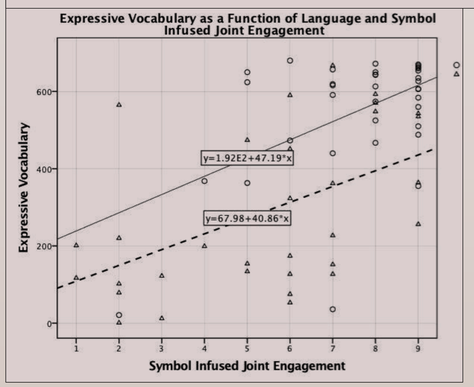
Wave 2 ($t_{(58)}$=3.38, p=.001)
Wave 3 ($t_{(58)}$=5.46, p=.000)

RESULTS: Study 2

Symbol Infused Joint Engagement accounted for unique variance above and beyond parent education, sex of the child, exposure to maternal language, and language group.

Step 4	.489			**<.001**
Parent Education		7.496	-.009	.932
Sex of the Child		40.637	-.054	.559
Exposure to Maternal Language		299.609	.160	.138
Language		27.115	.297	**.019**
Symbol Infused Joint Engagement		14.168	.427	**.006**
Fluency and Connectedness		13.620	.012	.932

Note. R^2 is adjusted. Significant values are in bold.



Every 10% increment in the use of Symbol Infused Joint Engagement was associated with an increase of roughly 40 to 50 words in expressive vocabulary.

DISCUSSION

- Findings from Study 1 support prior research showing slower vocabulary acquisition in Spanish-speaking children in the U.S. relative to their English-speaking peers.
  - Mixed models analysis confirms a significant effect of home Language across Waves. Although maternal education is important to fit, it is not a significant predictor of this effect.
- Findings from Study 2 suggest that when controlling for parent education, child sex, and language exposure, both home Language and quality of engagement predict expressive vocabulary.
  - This supports prior work indicating that quality of input strengthens children's vocabulary development and extends this finding to Spanish-speakers.
  - This relation is consistent across languages however, home language predicts both the quantity and quality of engagement.

FUTURE DIRECTIONS

- Conduct growth curve analyses to explore in greater detail the difference in the trajectories in expressive vocabulary across samples.
- Identify characteristics of communication styles beyond the two explored in Study 1.
- Examine parent-child engagement patterns in the home.
- Extend research to Spanish-speakers living in Mexico.

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