



Comparison of Word Learning by Spanish- and English-Speaking Toddlers: Effects of Neighborhood Density, Word Frequency, and Word Length



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Introduction

• Do lexical characteristics affect word learning by Spanish-speaking toddlers in the same way as English-speaking toddlers?

– Focus: 3 lexical characteristics

1. Neighborhood density
2. Word Frequency
3. Word Length

Neighborhood Density

• Number of words differing by one phoneme (Luce & Pisoni, 1998)

• e.g. kok sok kek kot _ok krok

• Dense - many neighbors - 'sol' 32 or 'bat' 33

• Sparse - few neighbors - 'pelota' 2 or 'beads' 2

Word Frequency

• How often a word is used in a language

• Frequent - used often - 'coche' 688 or 'house' 736

• Infrequent - used rarely - 'baño' 2 or 'bench' 2

Word Length

• The number of phonemes in a word

• Long - many phonemes - 'refrigerador' 12 or 'refrigerator' 10

• Short - few phonemes - 'tia' 3 or 'cheek' 3

Spanish & English Differences

• Spanish words are longer than English (Perea, Gotor, & Miralles, 1988)

• According to Vitevitch & Rodriguez

– 90% of Spanish = 2 to 3 syllable words

– 80% of English = 1 to 2 syllable words

• Processing differences between Spanish & English

– Spanish: adults recognize dense words more quickly than sparse (i.e., facilitation)

– English: adults recognize dense words more slowly than sparse (i.e., competition)

• Adults process language differently depending on the characteristics of the language

Do lexical characteristics influence word learning by Spanish-speaking and English-speaking toddlers in the same way?

Methods

• Bates-MacArthur Communicative Development Inventory Databases

– Checklist that parents use to indicate words their child knows

– Intended for children age 16-30 months

– Valid and reliable measure of word learning

– Spanish & English data available from cross-sectional normative samples http://www.sci.sdsu.edu/cdi/lexical_e.htm

– Analysis limited to nouns

Predictor Variables

• Spanish variables identified using 175,000 word adult Spanish database (Sebastian Galles, et al., 2000) provided by Michael Vitevitch

• English variables identified using a 20,000 word adult English database (Nusbaum, et al., 1984) available at <http://128.252.27.56/neighborhood/Home.asp>

– Except for word frequency, which was taken from Moe, Hopkins, & Rush (1982)

• Neighborhood density

– Number of words differing by one phoneme

• Word frequency

– Number of occurrences in adult (Spanish) or child (English) speech

• Word length

– Number of phonemes in transcription

• Density x Frequency

• Density x Length

Outcome Variable

• Age of Acquisition

– Earliest age when 50% or more of the children in the database knew the word

Linear Regression Results

• Spanish

– Significant effects of:

• Density

• Length

• Density x frequency

• English

– Significant effects of:

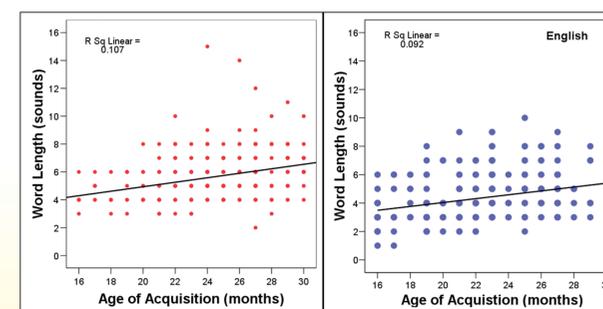
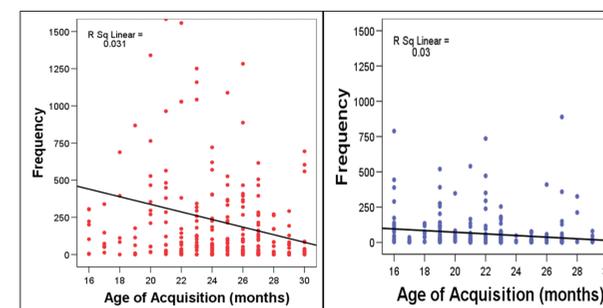
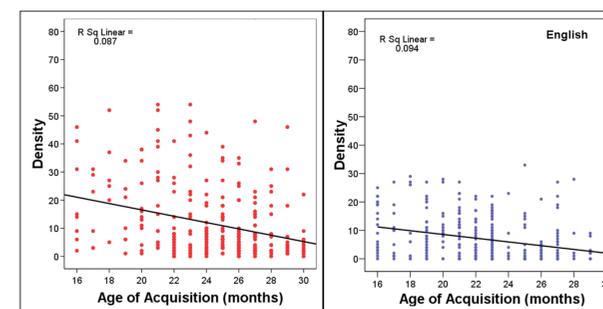
• Density

• ~Frequency (p=0.053)

• ~Density x frequency (p=0.063)

• Density x length

• Significant interactions explored by performing a regression for words that were high versus low on selected variable



Interactions

	Spanish	English
Density x Frequency	Significant	~Significant
Infrequent	Early = dense Early = short	Early = dense
Frequent	Early = short	Early ~ short
Density x Length	Not Significant	Significant
Short	Early = dense Early = frequent	Early = dense Early = frequent
Long	∅	∅

Summary

• Children learn:

– Dense words earlier than sparse words in both languages

– Frequent words earlier than infrequent words in both languages

– Short words earlier than long words in both languages

– Interaction patterns also similar in both languages

Discussion

• Word learning processes may be similar across languages, regardless of structural differences

• Impairments in word learning may show similar characteristics across languages

– Dissimilar to morphosyntactic impairments, which show language-specific expression

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