Monolingual Infants’ Perception of Infant-Directed Speech Produced in English and Spanish

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Research Questions

RQ1: Are there significant acoustic differences between infant-directed speech (IDS) produced in English when compared to Spanish?

RQ2: Will both English- and Spanish-learning infants exhibit longer overall fixation times for IDS when compared to ADS?

RQ3: Will Spanish-learning infants exhibit longer fixation times for infant-directed speech in their native language when compared to English-learning infants’ fixation to their native language?

Introduction

- IDS is characterized by: 1 higher and more variable pitch, 2 slower speaking rates, 3 better annunciation, 4 Vowel hyperarticulation
- Infants show preference for IDS over ADS. 5
- Vowel hyperarticulation makes language easier to learn.
- Longer consonantal releases produced by Spanish-speaking caregivers could be indicative of: stronger hyperarticulation, slower speech
- The effects of longer consonantal releases could make Spanish IDS “higher quality”
- Could impact infant attention to IDS
- Attentional differences will be investigated in 10-month-olds
- Overlapping phonemes in English and Spanish have shown to delay infants’ ability to differentiate the 2 languages.

Method

Stimuli & Stimuli Creation
- 1 bilingual mother will be recorded reading an identical 2-minute story using IDS and ADS in English and Spanish
- First and last 10 seconds from each recording will be cut
- Each recording will be cut into 3 segments (15-20 seconds each) resulting in 12 recordings
- Segments will be chosen based on their comparability which will be determined by assessing:
  - Total number of words
  - Sentence structure similarity
- A puppet moving its mouth will be synchronized to the mother’s speech and presented to infants in the test trials.

Infant Participation
- Study will be conducted using the MIT-developed online study platform, Lookit.
- Caregivers will log into Lookit from their homes and position their infant over their shoulders faced toward their computer screen.
- Two participant groups: English-learning 10-month-olds and Spanish-learning 10-month-olds (at least 70% Spanish heard regularly)
- 2 conditions: IDS or ADS
- 6 randomized trials: 3 English and 3 Spanish trials
- Measure: Length of fixation to each stimulus type

Lookit Procedure

Condition Assignment
- Condition 1: IDS
- Condition 2: ADS

Calibration/Attention-getter

6 puppet stimuli videos
3x English
3x Spanish

Test Trials

Color-changing ball shown in all 4 corners and in the middle of the screen

Final Calibration

Color-changing ball shown in all 4 corners and in the middle of the screen

Analysis

Projected Results & Discussion

RQ1: Significant acoustic differences between IDS produced in English compared to Spanish
- Compared to English IDS, Spanish IDS will have:
  - Higher frequency
  - Stronger vowel hyperarticulation
  - Longer consonantal releases

RQ2: Spanish and English-learning infants will exhibit longer fixation times to IDS compared to ADS

RQ3: Spanish-learning infants will exhibit a longer overall fixation time to IDS in Spanish and English compared to English-learning infants

Projected Infant Fixation Time

Discussion

- This study serves to replicate and further validate already known attentional effects of infant-directed speech across languages and while utilizing an online platform that could lend itself to more participants
- Seeks to examine whether acoustically significant language differences could impact an infant’s ability for speech perception in later childhood
- Could establish differences in attention which could suggest that certain vowel-heavy languages produce better quality infant-directed speech.