

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 pitch¹⁰
 - slower speaking rates ^{4,9}
 - better articulation ^{11,12}
 - Vowel hyperarticulation ²
- Infants show preference for IDS over ADS ¹³
- Vowel hyperarticulation makes language easier to learn ⁵
- Longer consonantal releases produced by Spanish-speaking caregivers ³ could be indicative of:
 - stronger hyperarticulation ⁴
 - slower speech ^{4,9}
- 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 has shown to delay infants' ability to differentiate the 2 languages ^{3,6}

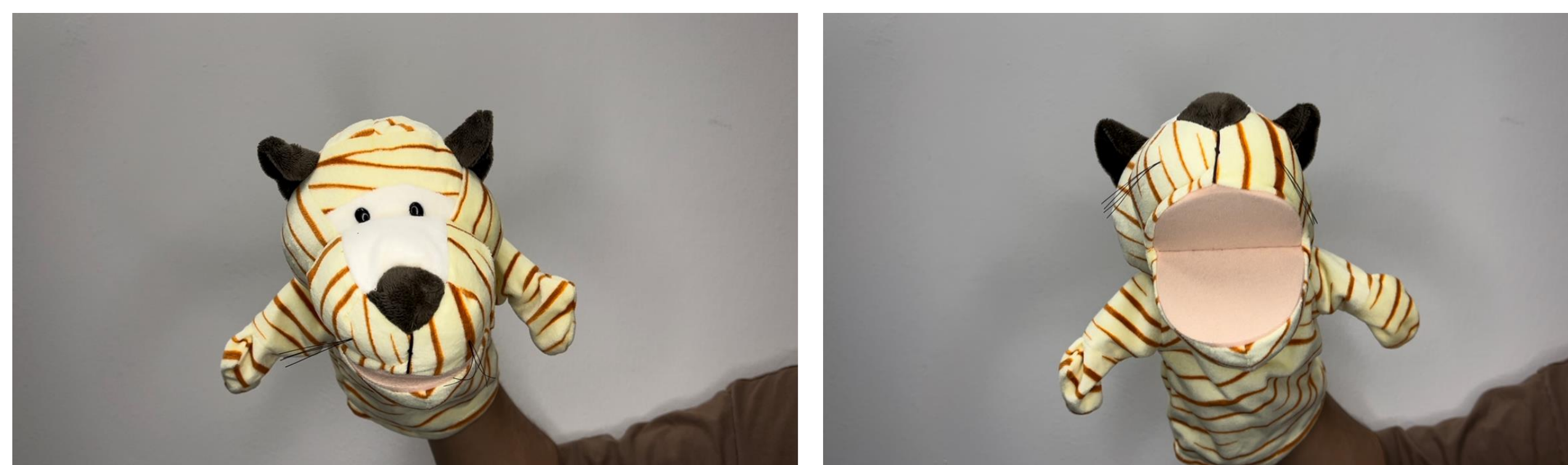
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Method

Stimuli & Stimuli Creation

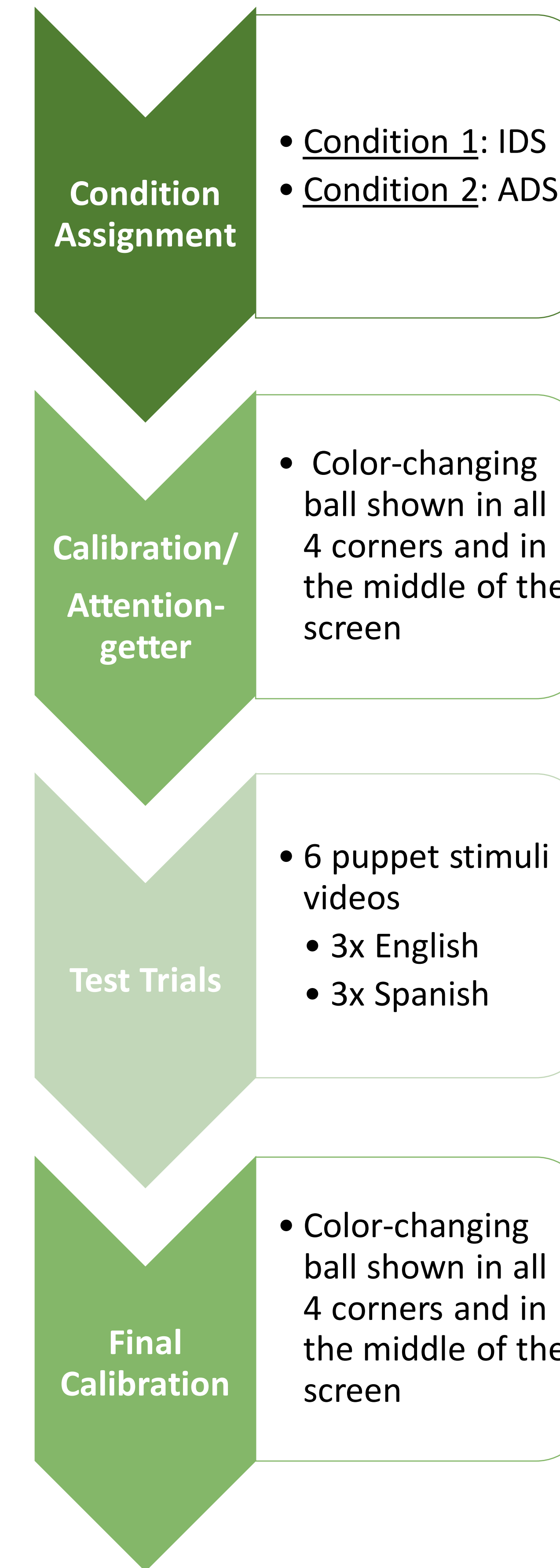
- 1 bilingual mother will be recorded reading an identical 2-minute story using IDS and ADS in English and Spanish
 - First and last 10 seconds from each recording will be cut
- Each recording will be cut into 3 segments (15-20 seconds each) resulting in 12 recordings
 - Segments will be chosen based 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.⁷



Infant Participation

- Study will be conducted using the MIT-developed online study platform, *Lookit*.⁸
- Caregivers will log into *Lookit* from their homes and position their infant over their shoulders faced toward their computer screen.
- 2 participant groups: English-learning 10-month-old infants and Spanish-learning 10-month-old infants (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



Analysis

RQ1

- Acoustic analyses will be run on the recorded mother's IDS to investigate:
 - Vowel hyperarticulation
 - Pitch

RQ2

- A two-way ANOVA will be conducted
 - Between-subjects variable**: previous language exposure (En. or Spa.)
 - Between-subjects variable**: speech type presented (IDS or ADS)
 - Dependent variable**: infant looking time to each stimulus

RQ3

- A two-way ANOVA will be conducted
 - Between-subjects variable**: previous language exposure (En. or Spa.)
 - Within-subjects variable**: language presented during task (native or non-native)
 - Dependent variable**: infant looking time to each stimulus

Projected Results & Discussion

Projected Results

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

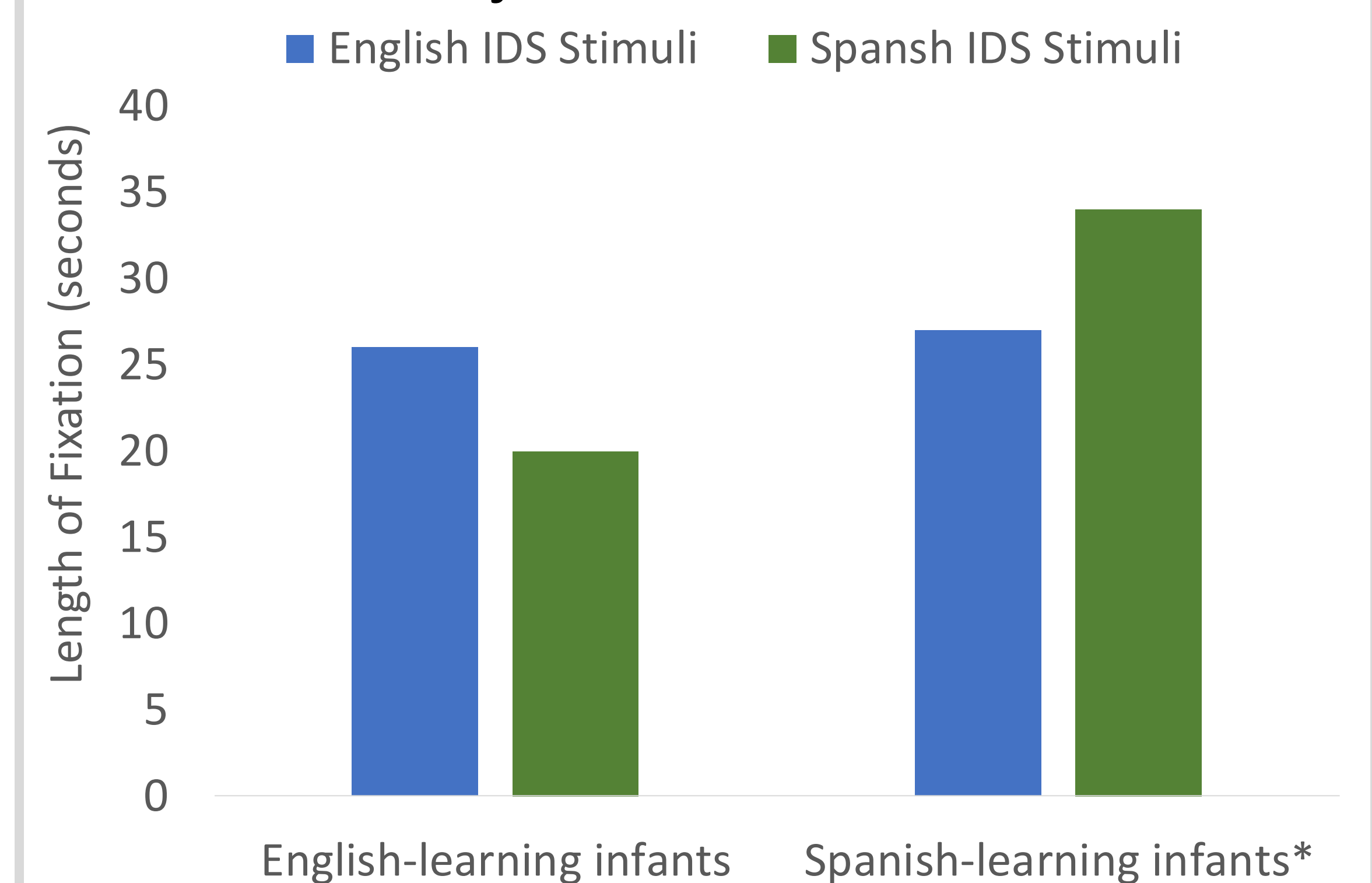
RQ2:

- 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



* Expected significant results

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.