Perception of Welsh vowel contrasts by Welsh-Spanish bilinguals in Argentina

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1. RESEARCH QUESTION

Previous (and ongoing) work has investigated the production of Welsh vowels by Spanish and English bilinguals in casual speech, finding that both groups relied equally on duration contrasts, despite differences in the vowel systems of Spanish and English.

How does age of acquisition affect the perception of Welsh vowel length contrasts by Welsh-Spanish bilinguals?

Prediction: Simultaneous Welsh-Spanish bilinguals will rely on both tenseness and duration in perception of Welsh vowel contrasts, while Spanish-first bilinguals will rely more heavily on duration, ignoring tenseness.

2. BACKGROUND

Welsh has been spoken in Argentina since 1865.

The vowel system of Welsh is more crowded than that of Spanish. Welsh vowels are distinguished based on phonemic length distinctions, realized phonetically by covarying duration and tenseness, see Fig. 1 [6].

Vowel length is predictable, except before /n, l, r/ where it is marked orthographically:

tân /ta:n/ 'fire' vs. *tan* /tan/ 'until'
tâl /ta:l/ 'payment' vs. *tal* /tal/ 'tall'
môr /mo:r/ 'sea' vs. *mor* /mor/ 'so'

Previous work has demonstrated a tendency for Spanish-English bilinguals to rely on vowel duration in perception and production of English tense-lax vowel contrasts [2,3,5].

Age/order of acquisition effects have been demonstrated for production and perception of non-native vowels [4,7].

References
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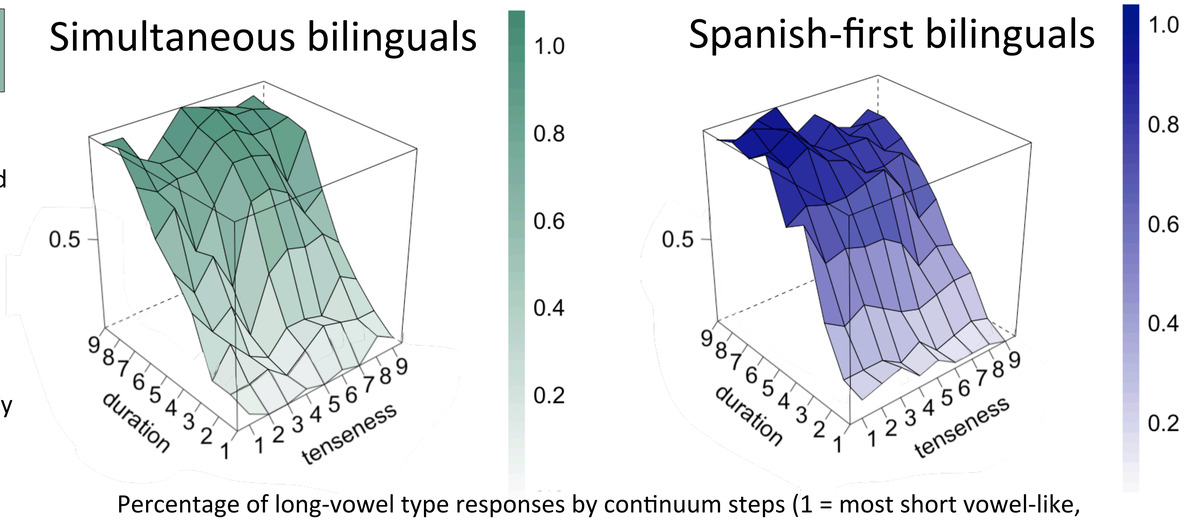


Percentage of long-vowel type responses by continuum steps (1 = most short vowel-like, 9 = most long vowel-like) of duration and tenseness (covaried F1 & F2). **Both groups relied more strongly on durational cues than on tenseness cues**, as shown by the one-sided rise in long vowel identification at the most long vowel-like (9) duration step, with no corresponding rise at the far end of the tenseness continuum.

3. METHODS

Forced choice vowel identification task tested dependence on tenseness and duration in identification of long and short vowels /i: i, e: e, u: u, o: o/ (see Fig. 2).

Participants: 3 Simultaneous Welsh-Spanish bilinguals, 3 Spanish-first bilinguals
Group membership determined by Bilingual Language Profile responses – cutoff was at Welsh acquisition before age 10.

Stimuli: Welsh long-short vowel pairs source-filter resynthesized in Praat to create 2 continua of tenseness (F1 & F2) and duration [1]. Continuum steps were ≥ JND for F1 values in Hz and duration, and tenseness continuum steps were linear in mel (Fig. 2).

Procedure: Subjects chose the best orthographic representation (tîn vs. tin) for each stimulus.

Fig. 1: Welsh vowel contrasts

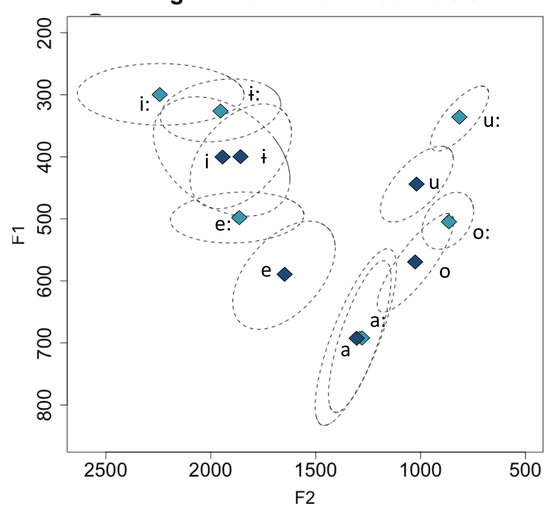
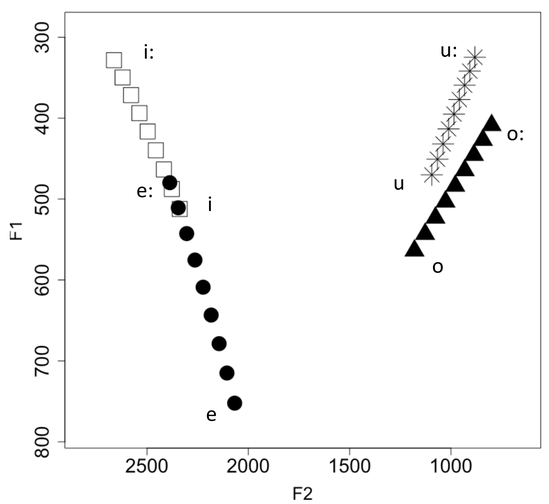


Fig. 2: Tenseness continua



4. RESULTS

Regardless of acquisition group, all participants relied strongly on vowel duration – both groups performed at chance when vowels varied in tenseness.

There were non-significant differences in reliance on tenseness between the groups, with the **Simultaneous group relying more strongly on tenseness than the Spanish-first group** at the long vowel-like end of the continuum.

5. DISCUSSION

These results support past work demonstrating that speakers of a language that lacks a particular phonemic contrast (i.e. tense-lax vowel pairs in Spanish) will rely on the most salient phonetic dimension of an L2 contrast (i.e. duration over tenseness in Welsh).

They also present an atypical case in which the normal effect of age and order of acquisition on speakers' adaptation to using native phonetic cues is outweighed by language dominance.

These results suggest that **lifetime linguistic experience may outweigh the effects of order of acquisition**, which warrants further investigation.

6. FUTURE WORK

Future work will expand the subject pool and include control groups of Welsh-English bilinguals & Argentinean Spanish monolinguals.

Vowel identification data will be supplemented with results of a discrimination (4 item-oddity) task, in order to investigate correlations between individuals' success with production and perception.

Production data for predictable & unpredictable vowel contrasts is currently undergoing analysis – on an individual basis, it appears that **simultaneous bilinguals produce both tenseness and duration differences consistently in vowel length based minimal pairs.**

Comments/questions?
Feel free to leave a note!