

CV PHONOTACTICAL BIASES IN BRAZILIAN PORTUGUESE ACQUISITION

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Introduction

A number of studies investigate the role of biomechanics in shaping CV co-occurrence biases found in babbling and first words in many languages (MacNeilage & Davis, 2000).

Based on the articulation of stop and nasal consonants with certain vowels, the CV biases found are:

- 1) LC - labial (L) C's tend to occur with central (C) V's ;
- 2) CrF - coronal (Cr) C's tend to occur with front (F) V's;
- 3) DB - Dorsal (D) Cs tend to occur with back (B) V's.

The frequency biases recurring in babbling, in first words, and lexicons of languages.

Corpora: 2.000-2.500 types.

The Frame then Content theory predicts that inertia is the biomechanical basis of canonical syllable, and the regular mandible movement (frame) would precede the richer linguistic phonic content which would emerge later.

The statistics analysis: to observed-to-expected (O/E) ratios derived from chi-squared tables, without any effect size measure.

Corpora

- Children and adults speech corpora;
- Corpora derived from 100 hours of recordings the spontaneous speech during child-adult interactions;
- Ten children, aged 1;0 to 3;0 years old;
- Frequency counts of around 24.000 types.

Methodology

- All recordings were orthographically transcribed and translated into phones with Ortofon (ALBANO & MOREIRA, 1996).
- Frequency counts were performed with WordSmith Tools (SCOTT, 2008).
- The analysis was divided into two age-groups: from 12 to 23 months, and from 24 to 36 months.
- Statistical analysis of CV biases:

Association - Pearson chi-square (χ^2),
Strength of association/effect size - Cramer's V (ϕ),
Cell significance - Freeman-Tukey deviates (FT).

Aim

Investigate whether the CV combinations described in the literature are observed in data acquisition concerning the southern Brazilian Portuguese variant.

Results

CV biases found in children and adult corpora in two stages of analysis

Freeman-Tukey results to Cplace vs. Vplace Phase 1 (12 – 23 months)						
$\chi^2 = 329,02$ $p = 0,001$ $\phi = 0,10$	Group I			Group II		
	Front	Central	Back	Front	Central	Back
LABIAL	-1,78	2,69	-1,32	2,48	0,38	-3,21
CORONAL	4,55	-1,82	-3,04	3,06	-1,46	-2,00
DORSAL	-5,45	-0,93	5,48	-10,22	2,22	6,88

Freeman- Tukey results to Cplace vs. Vplace Phase 2 (24 – 36 months)						
$\chi^2 = 119,0$ $p = 0,001$ $\phi = 0,09$	Group I			Group II		
	Front	Central	Back	Front	Central	Back
LABIAL	2,94	-1,42	-1,95	3,16	-1,04	-2,66
CORONAL	2,14	-1,02	-1,37	2,30	-0,29	-2,34
DORSAL	-8,68	3,48	4,61	-9,40	1,80	6,96

Discussion

Group I: Biases found in phase 1: LC, CrF and DB
Biases found in phase 2: LF, CrF and DB

Group II: Biases found in phase 1: LF, CrF and DB
Biases found in phase 2: LF, CrF and DB

• Preliminary results partially confirmed the findings of MacNeilage and Davis (2000);

• the CV biases estimates are unstable in the acquisition data of Brazilian Portuguese;

• Cramer's V analysis indicates low statistical power .

Conclusion

• the results call for the need to increase the number of types, which is being arranged with the transcription of recently collected data;

- further analysis is needed of the combinations of biases in other syllabic contexts within the words (e.g. unstressed initial position, medial stressed position, unstressed final position), which would take into consideration prosodic and grammatical factors.

References

- ALBANO, E.C. (2009). *A corpus-based reappraisal of the role of biomechanics in lexical phonotactics*. Corpus Linguistics 2009 Abstracts. Liverpool: University of Liverpool.
- BROWMAN, C.; GOLDSTEIN, L. (1992). Articulatory Phonology: an overview. *Phonetica*, 49, 155-180.
- MACNEILAGE, P.F.; DAVIS, B.L. (2000). On the origin of internal structure of word forms. *Science*, 2000, 527-531.