The role of Prosody in on-line processing of ambiguity

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Introduction
Prosody is known to constrain both lexical access and syntactic analysis in ambiguous sentences (Kjelgaard & Speer 1999, Christophe et al. 2004, Millotte et al. 2007, 2008, Dilley & McAulley 2008).

Can listeners rely on information of different types of prosodic boundaries?

There is some agreement on the disambiguating role played by intonational phrase (IP) boundaries; however, the role of lower phrase boundaries, as well as of word boundaries, seems to be an open issue, in different studies and in different languages (e.g. Price et al. 1991, Kjelgaard & Speer 1999, Christophe 2003, Li & Yang 2009).

This study:
We address the role of prosodic structure in on-line processing of both lexical and syntactic ambiguities in European Portuguese (EP), by means of two experiments: word detection (Exp.1); eye-tracking (Exp.2).

Our goal is to examine the effects of the full range of prosodic boundaries reported for EP in previous literature: prosodic word (PW), prosodic word group (PWG), phonological phrase (PPh) and IP (Frota 2000, in press, Vigário 2003, 2009).

Previous Research:  The processing of ambiguity in an offline task (Completion task)

Materials: subset of Completion task (expert sp).
- Only Conditions 1, 2, 3, 4, and 6 were tested.
- Experiment 6: Only test items with long phrases, sentences with ambiguous words in the target phrase.

Sentence onset is the target matched.
- Homophones have the same prosodic structure except for the boundary contrast tested.
- Sentences paired for no syllables, PWs, PPhs.
- Visual targets:
  - sigla for low boundary and picture for high boundary.

Results: All data

Participants: 12 native speakers of standard EP.

Procedure: For each pair, each target and control were presented with appropriate and non-ambiguous words and target.

Results: Data analysis in progress.

Experiment 1: Word Detection

Visual targets for Word Detection:
- Conditions 1, 2, 3, 4.
- Condition 1: V/ N (infinitive form).
- Condition 2: Pronoun + copula + Adj / (to drop)
- Condition 3: A and other(s) did / x did
- Condition 4: Els fissam / A comissao faze

Results: window [target] + 200ms + duration of 1st C

Disambiguation in all conditions (but the last: lower boundary interpreted as high even in controls) + IP-length effect on processing?

Variation in RTs across p-conditions: word, phrase, higher phrase (complexity?)

RTs faster for controls than for targets.

Experiment 2: Eye-tracking (disambiguation using pictures)

Materials: 6 ambiguous pairs plus respective controls per prosodic condition (12x12).

Procedure: presentation of 2 pictures side by side for 3s > visual target + audio; pictures counterbalancing, 5-point calibration + validation; Tracking rate: 81.4 – 99.9.

Results: Data analysis in progress.

Conclusions

Responses tend to be faster for the (offline and on-line) prosodic length in both high boundary in each condition (for targets only), suggesting that prosodic information is being used.

Prosodic length seems to be crucial for IP boundary assignment (off-line and on-line).

Disambiguating role of the IP in EP, supported by results from on-line tasks.

Different results from off-line and on-line experiments argue for a multiple task study to the task of prosody in disambiguation, to be further explored in future research.

Selected References


Full data analysis in progress.