Sentence Types across Varieties of European Portuguese: Production and Perception

Marisa Cruz & Sónia Frota

Universidade de Lisboa (Laboratório de Fonética – CLUL/FLUL)

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Prosodic features of Standard European Portuguese (SEP)

Phrasing:

- Intonational Phrase (IP) is the strongest constituent of the prosodic hierarchy (Vigário 1998, Frota 2000, 2003). Differently from the Phonological Phrase (PhP) – immediately below IP – the IP is the domain for (i) *sandhi* phenomena (fricative voicing, vowel deletion, etc.), (ii) pre-boundary lengthening, (iii) its edge is the locus for potential occurrence of pauses; (iv) minimal tune [only the IP-head must be pitch-accented (NPA) and only its right-edge requires tonal boundary marking; its left edge is optionally signalled by an initial H tone];

- IP mapping (syntax-prosody): IPs are mapped from root sentences, thus subjects, verbs and objects are usually grouped together in the same IP [(SVO)], except for long subjects (+ than 8 syllables), which tend to form a single IP [(S)(VO)] – Elordieta et al. 2005.

Intonation:

- pitch accent distribution: only 17-27% of IP-internal stressed syllables are pitch accented – corpus of utterances with 3 to 8 PWs (Vigário & Frota 2003).

- nuclear contours (Frota 2002)

Variety	Declarative		Wh- question	Yes-No question	
	Broad Focus	Narrow Focus		Broad Focus	Narrow Focus
SEP	H+L* Li	H*+L	H+L* Li or LHi	H+L* LHi	L*+H HLi or LHi

Table 1 – Declarative and Question nuclear contours (with broad and narrow focus) in SEP.

Background on prosodic variation

Other Languages:

Intonational variation has been the focus of study in several languages, with important consequences for the knowledge of intonation structure and of intonational typology (work on Swedish varieties by Bruce and collaborators, the IVie project for British English, the Catalan Atlas project by Prieto and collaborators, *inter alia*).

European Portuguese (EP):

Studies on prosodic variation in EP are still incipient. Besides Standard European Portuguese (SEP), only a Northern variety from the region of Braga (NEP) was investigated by Vigário & Frota (2003). The authors have compared both varieties and have shown that:

- The two varieties are intonationally different (although narrow focus remains to be analyzed in NEP);

Variety		Declarative		Wh- question	Yes-No question	
		Broad Focus	Narrow Focus		Broad Focus	Narrow Focus
NEP	most freq.	L* Li	---	L* Li	L* H· Li	---
	alternative	---	---	H+L* Hi	H+L* Li	---

Table 2 – Declarative and Question nuclear contours (with broad focus) in NEP.

- Intonational phrasing is a further dimension of variation – in NEP declaratives usually form 2 IPs [(S) (VO)];

- NEP is prosodically similar to Spanish (and other Romance languages).

Present Research

Our goals: (i) to provide a description of the intonation of declaratives (with broad and narrow focus), yes-no questions (with broad and narrow focus) and wh-questions in two Southern varieties (ALE – Alentejo, and ALG – Algarve); (ii) to investigate the perception of sentence type (declarative vs. interrogative) and pragmatic meaning (broad vs. narrow focus) in ALE and ALG by SEP listeners.

Analysis: several parameters were observed, such as (i) nuclear contours in ALE and ALG; (ii) pitch accent distribution by type of sentence; (iii) variety specific tonal events.

Methodology

Production: 34 sentences read in random order (3x) by two male adult speakers from Alentejo (ALE) and two female adult speakers from Algarve (ALG), all aged between 25-35 years old, and recorded in BabyLab (University of Lisbon) with *Marantz PMD670* and an unidirectional microphone *Oktava MK-319* (40-20.000Hz). The 44100Hz digital files were converted to 22050Hz format, edited with *Adobe Audition 1.5* tool (Adobe Systems Incorporated, 2004) and each sentence was annotated using *Praat 5.0.01* (Boersma & Weenink, 2007).

Corpus (Frota 2000; D'Imperio, Elordieta, Frota, Prieto & Vigário 2005)**:** a total of 34 sentences (33 IPs/85 PhPs) manipulated in terms of (i) sentence type, (ii) pragmatic meaning (broad and narrow focus) and (iii) length. For sentence type, we have analyzed declaratives (see table aside for details), yes-no questions and wh- questions. The stress position in the nuclear word was also controlled for both types of questions.

Perception: 13 SEP listeners were subjects in two experiments.

Experiment 1 – They were indirectly asked to distinguish between broad and narrow focus: they listened to 29 sentences (wh- questions were not included in perception tasks), randomized (3x), and they had to choose the most adequate context - neutral (A) or contrastive (B) - for each sentence.

Experiment 2 – They were directly asked to distinguish between declarative and interrogative sentences: they listened to the same 29 sentences and they had to click A for declarative, B for interrogative and C for 'I'm in doubt'.

Sentence Type	Length	Pragmatic Mean
Declarative	Non-branching **S**SS	Broad and Narrow Focus
	Non-branching **L**LL	
	Non-branching S**L**L	
	Non-branching L**S**S	
	Non-branching LL**S**	
	L double branch N-AP-PP **S**S	
	L double branch N-AP-PP **L**L	
	L double branch N-AP-PP **S**L	
	L double branch N-AP-PP L**S**	
	L double branch N-AP-PP L N-AP-PP	Broad Focus

Table 3 – Length of declarative sentences with broad and narrow focus. 'S' stands for 'short', L stands for 'long' and **bold** marks the focused constituent.

Results from Production

ALE – Nuclear Contours and Pitch Accent Distribution
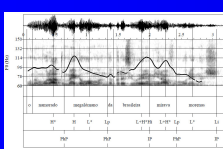

Figure 1 - Declarative with broad focus (long subject) in ALE (N). *O namorado megalómano da brasileira mirava morenas.* 'The Brazilian girl megalomaniac boyfriend looked at the dark-haired women'.

There is a variety specific tonal event (Lp), which signals the left edge of the last PhP of the IP (even when a sentence is composed by 2 IPs). It may also occur (for ALE_D) in the left edge of both the penult and the last PhPs of the IP.

The most frequent nuclear contour of neutral declaratives is the same as in NEP: L* Li vs. H+L* Li in SEP.

Pitch accent distribution: almost 1PA/non- nuclear PW

%Lp/IP	N	D
neutral decl.	96%	51%
foc. decl.	0%	49%
neutral Yes-No	0%	47%

%PA/PW	N	D
Declarative	95%	117%
Yes-No question	44%	0%
Wh- question	48%	19%

≠ SEP

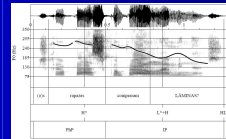| Variety		Declarative		Wh- question	Yes-No question	
		Broad Focus	Narrow Focus		Broad Focus	Narrow Focus
ALE	N	L* Li	H*+L	(H+)L* Li	L* Li	¡H*
	D	H+L* Li		L*+H HLi	L*+H HLi	L*+H LHi

Table 4 – Declarative and Question nuclear contours (with broad and narrow focus) in ALE.

ALG – Nuclear Contours and Pitch Accent Distribution

Variety		Declarative		Wh- question	Yes-No question	
		Broad Focus	Narrow Focus		Broad Focus	Narrow Focus
ALG	C	(H+)L* Li	(!)H*+L	H*+L Li	H+L* Li	L*+H HLi
	H	H+L* Li		H+L* HLi		

Table 5 – Declarative and Question nuclear contours (with broad and narrow focus) in ALG.

Figure 2 – Yes-No question with narrow focus in ALG (C). *Os rapazes compraram LÂMINAS?.* 'Did the boys buy SLIDES?' (uttered in the context 'I would like to know if they really bought slides and not any other accessory'.

As in SEP, and differently from ALE, in ALG there is no intonational evidence for the boundary of the last PhP of the IP, thus there is no Lp.

Pitch accent distribution: great association PA/non-nuclear PW but only in declaratives.

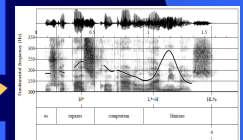| %PA/PW	C	H
Declarative	87%	87%
Yes-No question	0%	6%
Wh- question	0%	0%

Figure 3 – Yes-No question with narrow focus in SEP. *Os rapazes compraram LÂMINAS?.* 'Did the boys buy SLIDES?' (uttered in the context 'I would like to know if they really bought slides and not any other accessory'.

Perception

Neutral sentences: easier recognized by SEP listeners.

Pragmatic meaning (both of them): easier detected in declaratives.

Declaratives: easier detected than interrogatives and there is no difference regarding meaning.

Type of sentence: easier identified than pragmatic meaning.

Experiment 1 – broad vs. narrow focus

Variety/Speaker	Focus						Neutral					
	Decl.	%	Interr.	%	Total	%	Decl.	%	Interr.	%	Total	%
ALE_N	194	55%	122	63%	316	58%	303	78%	122	63%	425	73%
ALE_D	312	89%	64	33%	376	88%	343	88%	144	74%	487	83%
ALE_total	506	72%	186	48%	692	63%	646	83%	266	68%	912	78%
ALG_C	176	50%	50	26%	226	41%	337	86%	124	64%	461	79%
ALG_H	185	53%	67	34%	252	46%	350	90%	134	69%	484	83%
ALG_total	361	51%	117	30%	478	44%	687	88%	258	66%	945	81%

Table 6 – % of correct responses given by SEP listeners in Experiment 1.

Experiment 2 – declarative vs. interrogative

Variety/Speaker	Declarative						Interrogative					
	Focus	%	Neutral	%	Total	%	Focus	%	Neutral	%	Total	%
ALE_N	330	94%	361	93%	691	93%	82	42%	174	89%	256	66%
ALE_D	346	99%	389	100%	735	99%	186	95%	167	86%	353	91%
ALE_total	676	96%	750	96%	1426	96%	268	69%	341	87%	609	78%
ALG_C	346	99%	389	100%	735	99%	188	96%	163	84%	351	90%
ALG_H	347	99%	388	99%	735	99%	182	93%	182	93%	364	93%
ALG_total	693	99%	777	100%	1470	99%	370	95%	345	88%	715	92%

Table 7 – % of correct responses given by SEP listeners in Experiment 2.

marisasousacruz@gmail.com   sonia.frota@mail.telepac.pt   http://www.fl.ul.pt/LaboratorioFonetica/