

# Crosslinguistic child phonology project - European Portuguese (CLCP-EP): Adaptation and validation procedures



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## 1. INTRODUCTION

• **Phonological assessment in Portuguese clinical context:** a reduced number of tests (T) are used for child phonology and articulation in Portuguese

Table 1. Survey (digital format) applied to Portuguese Speech and Language Therapists via SurveyMonkey (N=183) (Ramalho, *in prep.*)

Test	% answers
TAV (Guimarães & Grilo, 1997)	70,5%
TFF-ALPE (Mendes <i>et al.</i> , 2009/2013)	53,3%
Outros (e.g. TAPAC, Falé <i>et al.</i> , 2001)	10%

- There are no **national norms** for test building (Vieira, 2011);
- Linguistic variables are not rigorously and systematically controlled in the available tests;
- It is crucial for SLTs to be able to conduct comprehensive phonological assessments of young children in a short time interval as a basis for intervention programming.

## 2. CLCP-PE ADAPTATION PROCEDURES

- **Crosslinguistic Child Phonology Project (CLCP)**, B. May Bernhardt & Joseph P. Stemberger, University of British Columbia, Canada;
- **Theoretic background:** Non-linear Phonology applied to clinical practice (*nonlinear scan analysis* in Bernhardt & Stemberger 2000);
- Adaptation into European Portuguese (EP) : **CLCP-PE, Ramalho, Almeida & Freitas (2014)** from the original of Bunney, Bernhardt and Stemberger (2011), (registered at Portuguese Institute IGAC with code: 67/2014);
- Visual stimuli are presented in a story telling format: picture naming activities in **The Story of Cenourinha Bunny**, who lives with a human family (attractive format to children);
- The **actual version** contains 157 words, grouped in 44 scenarios; paper and digital presentation possibilities;
- The tool also allows to access **spontaneous speech** (in the context of story telling).



- **Non-phonological variables: semantic and lexical criteria** (stimuli are grouped in thematic scenarios [lexical nets]: e.g. – *at the dentist*); **social and cultural criteria** (adapted to the Portuguese children's context); **lexical criteria** (most of the words are available in the children's lexicon from age 3 years (Santos *et al.* (2014))).

Table 2. Children lexicon representation in EP corpora

Pattern	Freitas (1997) [0;10-3;7]	Santos, Freitas & Cardoso (2014) [1;02-;3;11]
Child Lexicon Representation	79% (124/157)	83% (131/157)
Examples	<i>balloon, princess</i>	<i>house, fish, flower</i>

- **Graphic control** (illustrator Brígida Machado): the pictures are graphically balanced; both children's and adults' comments were collected on different types of pictures - **contour intensity, colour and surface control**.



- **Phonological variables** (Mateus & Andrade 2000) - target structure present in at least 2 words:

1. **Segmental inventory:** all EP consonants.
2. **Syllable constituency:** Simple Onset; Branching Onset; Simple Coda.
3. **Position within the word:** initial, medial, final.
4. **Word Stress:** target segment in stressed syllable and unstressed syllables; Stress Patterns: (w)wS= 33; (w)Sw=114; (w)Sww =10).

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Table 3. Variables 1 to 4

CLASS	Segment	Singleton Onset				Branching Onset				Coda			
		Stressed		Unstressed		Stressed		Unstressed		Stressed		Unstressed	
		IP	MP	IP	MP	IP	MP	IP	MP	NFP	FP	NFP	FP
Plosives	[p]	6	2	4	5	3	0	8	2				
	[b]	2	3	5	2	2	0	3	5				
	[t]	2	8	4	22	2	2	5	2				
	[d]	2	3	3	9	0	1	1	2				
	[k]	8	6	6	7	4	2	2	2				
Fricatives	[g]	2	3	3	5	2	0	1	3				
	[f]	2	1	4	5	4	0	2	0				
	[v]	3	2	1	5		0		2				
	[s]	3	8	2	4								
	[z]	2	3	1	4								
	[ʃ]	4	0	4	3					5	9	3	30
Nasals	[ʒ]	1	2	4	4								
	[m]	4	2	3	7								
	[n]	2	6	1	6								
Liquids	[ɲ]		2		4								
	[l]	6	5	1	11	4	1	3	2	2	6	4	1
	[ʎ]		3		3								
	[R]	3	3	2	3								
	[r]		8		7	13	3	13	16	5	7	6	1

LEGEND: IP – initial position; MP – medial position; NFP – non final position; FP – final position.

- 5. **Word length:** 1 to 5 syllables per word; most frequent pattern: words with 2 and 3 syllables (most common in EP and in child production (Vigário *et al.* 2006)).

Table 4. Word length

Pattern	1 syl.	2 syl.	3 syl.	4+ syl.
Frequency	11	70	57	19

## 3. PILOT STUDY: PICTURE NAMING TEST

### 3.1. Method

- **Sample** (convenience): 28 children from Évora (Portugal) aged 39-73 months; without language disorder.
- **Data collection procedures:**  
\* Informed consent (schools and parents), according UBC guidelines;  
\* Test format: digitally on PC screen;  
\* Audio recording and spreadsheet analysis.

### 3.2. Results

Table 5. Global percentages for the lexical items in the test (N=157)

% of correct answers	100%	75-100%	50-75%	< 50%
N=157	61	61	21	14
examples	<i>dog</i>	<i>snake</i>	<i>sugar</i>	<i>club</i>

- Adequacy of the story telling format: 122 words showed 75% or more of success rate in the spontaneous naming task.
- **After the pilot study, changes were made** related to picture recognition (naming increased with phonological cues and lower repetition values to below 25%).
- **Phonological production: Currently being tested** in 90 typically developing children (30 per age group: 3;0, 4;0, 5;0) and 10 children with protracted phonological development.

## 4. CONCLUSIONS/NEXT STEPS

- First EP test based on Non-Linear Phonology (rigorously controlled for coverage of phonological form).
- Data collected since this pilot study (n=90) are being analysed in Phon (<http://childes.psy.cmu.edu/phon/>)
- Screening version/versions by age (100 words);
- The final version of CLCP-PE (pictures, final word list, tests by age, manual) will be free and available by summer 2015 online at:

<http://phonodevelopment.sites.olt.ubc.ca/>

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