

Psycholinguistic assessment of diagnosed cleft palate and cleft lip and palate: a case study

ISABEL HUB FARIA*

ISABEL FALÉ**

**Faculdade de Letras da Universidade de Lisboa*

***Escola Superior de Educação – Instituto Politécnico do Porto (Portugal)*

This study is part of Project PRAXIS/PCSH/C/CLC/125/96 that officially started in June 97, and has the following Research Team:

- 1. Laboratory of Psycholinguistics, Faculdade de Letras, University of Lisbon, Portugal: Isabel Hub Faria (director), Isabel Falé, Amália Andrade, Maria do Céu Viana, Maria João Freitas, Hanna Batoréo, Armanda Costa, Isabel Guimarães*
- 2. Laboratory of Medical Psychology, Faculdade de Medicina, University of Lisbon, Portugal: Maria Luísa Figueira, Virgínia Ramos, Maria Madalena Fenha*
- 3. Plastic Surgery, Hospital de Santa Maria, Lisbon, Portugal: Edmundo Costa Santos*

SOME PREVIOUS CONSIDERATIONS

Portuguese surgeons and speech therapists do not have, up to this moment, accurate ways of registering and evaluating the results of surgical interventions that aim the reconstruction of the palate. A programme of evaluation of Portuguese speakers suffering from cleft palate or from cleft lip and palate must necessarily include a battery of tests that cannot merely be imported and translated from other languages. The battery of tests we propose to develop will be the first elaborated in Portugal directed to the evaluation of speakers of European Portuguese. The setting of assessment criteria, methods and technical basis are important for the correct design of complementary therapy schemes.

MAIN PURPOSES

To broaden scientific knowledge – psycholinguistic, cognitive and medical knowledge – on cleft palate and cleft lip and palate; to supply a totally new battery of tests in European Portuguese and for European Portuguese, with comprehensive and therapeutical uses; and to contribute for the improvement of the quality of life of individuals diagnosed with cleft palate and cleft lip and palate.

VERBAL PRODUCTION WITH CLEFT PALATE

Of all the functional changes in the palate splits that are caused by the abnormal anatomy of the palate, namely swallowing, suction, phonation, hearing and even the development of the face, phonation is, undoubtedly, the one that has more influence in the communication and social life of the patient, working as an influence on and also influencing his/her psycho-social growth.

Phonation changes are the result of the incapacity of the velopharyngeal sphincter to interrupt the air flux during phonation allowing it to escape to the nose. This incapacity is named velopharyngeal insufficiency.

The increasing improvement of knowledge on the growth and development of the «*terço médio*» of the face made surgeons change and innovate the lip and palate repairing techniques with a view to making them less aggressive for the growing bone and to using them in separate times avoiding the strongest outbreaks of face growth.

The decrease of malformations caused by surgery and a growth closer to the normal one has also improved the conditions of speech production. However, the closing of the palate in two times, precociously, before patients are eighteen months old, has proved to be the development that has shown better results in this area.

In the palate splits, reconstruction of an anatomically complete and functionally normal palate, alongside a normal nasopharynx, is still the unresolved problem. Alongside the increase in the percentage of successful recovery cases, with a normal phonation, there still are, even in the best treatment conditions, insufficient and bad results.

Only after the correct assessment of patients with cleft palate it is possible to know precisely the incidence of good results, with normal phonation, and conduct therapy for those who still show phonation deficiencies.

LANGUAGE DEVELOPMENT IN CHILDREN DIAGNOSED WITH CLEFT PALATE AND CLEFT LIP PALATE

Some fundamental aspects should be borne in mind for the study of language development in children diagnosed with cleft palate and cleft lip palate (cf. Jansonius-Schulteiss, 1996): the dynamic capacities of the vocal tract; the psychological development and psycho-social aspects; auditory perception; speech production.

Research conducted on this subject comes mainly from the medical community that have already produced thousands of publications in this field. The large bulk of this literature focus on the different techniques and methods of surgical intervention methods.

This Project will expand having as the object of study the evolution of verbal production in individuals that underwent surgery with a functional veloplasty first (according the Rosseli technique), followed by a uranoplasty (according to the Langenbeck technique).

Some of the medical literature available point the importance of assessing linguistic performance before and after surgery. Assessment techniques and methods prove to be essential for the assessment not only of individuals but also of the surgical methodology being used.

SURGICAL INTERVENTION

Surgical interventions have already been performed on children, adolescents and adults of both sexes with congenital malformation of the face on the palate and on the upper lip and palate, named, respectively, unilateral or bilateral cleft palate and cleft lip and palate.

The first surgical intervention, to close the soft palate, is done according to the Sanvenero Rosselli Technique, also known as functional veloplasty. In the cleft lip and palate, the cleft lip is also closed (queiloplasty) in the same surgery. The second surgical intervention is made to close the hard palate (uranoplasty), according to the Langenbeck technique with vomer flaps.

Evaluation and therapeutical support are advised whenever improper nasality or persistent

articulation deficiency are detected. The complementary exams of diagnosis and assessment of surgical interventions in such cases as cleft palate and cleft lip and palate are, in most cases, made through videofluoroscopy.

PSYCHOLOGICAL ASSESSMENT

The main goals of the psychological intervention are: clinical assessment and intervention. The psychological assessment should be multidimensional comprising intellectual efficiency and instrumental skills, personality, emotional stability, and skills of interpersonal and social adaptation. One wants to assess: the presence of global deficits of development versus specific neuropsychological deficits; the implications of emotional development in the development of self-image and in the cognitive and emotional competences, and their behavioural outcome; the profile of social and interpersonal relations; the way of adaptation to academic and professional duties.

For the assessment we count on the following instruments: Structured interview for assessment of psychological disorders, adaptation deficits and psychosocial functioning. A battery of psychological tests comprising: intelligence tests and psycho-motor development tests (Borel-Maisonny Psycho-motor development tests, WIPPS, WISC, and WAIS); tests on memory, attention and concentration; cognitive development tests; personality tests (CAT, TAT, and RORSCHACH).

LINGUISTIC ASSESSMENT

Data is obtained during a semi-structured interview of the subject and recorded in magnetic (digital) tape and in video in a comfortable acoustic isolated place with permanent presence of (at least) on researcher and during a child observation, the child's mother or caring person. Verbal productions have been elicited through: immediate and deferred repetition of verbal stimuli; naming visual stimuli; reading separate words from word lists and word sequences; structuring narratives. Data is to be analysed for: acoustic quality of speech; morphological and syntactical processing; structuring and textual cohesion; communicative competence.

STIMULI DESCRIPTION

We developed a production test based on European Portuguese phonological system and testing 19 consonantal phonemes in relation to: manner and place of articulation, nasality and voicing of consonants; in initial, medial and final word position; each phoneme is tested at least three times in each word position.

The test contains 113 stimuli that will elicit monosyllabic and polysyllabic words easy to identify within the portuguese universe of reference with: CV and CVC syllabic structure, the predominant pattern of stress.

A CASE STUDY

Name: ML; Sex: M; Age: 19; Occupation: Fireman; Birth place: Odemira (Alentejo, Portugal); Living place: Odemira; LgObs: Speaker of a Center-meridional Portuguese dialect (cf.

Lindley Cintra, 1971); Diagnosis: Cleft of secondary palate which caused Velopharyngeal Incompetence.

PRE-SURGICAL LINGUISTIC (WORD STIMULI) ASSESSMENT

In the pre-surgical linguistic assessment 46 % of the produced words were different from stimuli-words of which, 7% were unexpected words, 5% were judged as dialect variation and 34% presented subjective idiosyncratic phonetic variation.

POST-SURGICAL LINGUISTIC (WORD STIMULI) ASSESSMENT

Only 6 % of produced words were different from stimuli-words, 1% were unexpected words, 1% were due to dialectal variation and 4% consisted of subjective idiosyncratic phonetic variation.

DISTRIBUTION OF PHONETIC VARIANTS BEFORE SURGERY

Place of articulation				
Fronting	11%	[gɔ'Rafo]	>	[gɔ'rafo]
Backing	8%	['kabrɔ]	>	['?abrɔ]

Manner of articulation				
Fricatization of stops	13%	['porku]	>	['forku]
Gliding	5%	['olu]	>	['oju]

Nasality				
Nasalization	40%	['brasu]	>	['mr̃asu]
		['pratu]	>	['pr̃atu]

Word Syllabic Structure				
Word Initial Consonant Deletion	18%	['bɔl̃ɔw]	>	['ɔl̃ɔw]
		['lapi]	>	['wapi]

Undue vowel nasalization – Orthographic transcription					
porta	>	p̃orta	macaco	>	mac̃aco
quadro	>	quãdro	cama	>	cãma
prato	>	prãto	cartas	>	cãrtas
tractor	>	trãctor	nuvem	>	nũvem
mesa	>	m̃esa	gato	>	gãto

Undue consonant nasalization – Orthographic transcription				
bota	>	mota		
braço	>	mraço		
dado	>	nado		
nariz	>	naniz		

Palatalization of consonants and velar vowels – Orthographic transcription

luvas	>	lhuvas
prato	>	pratü
chucha	>	chücha

Articulatory fronting – Orthographic transcription

cabra	>	?abra
garfo	>	?arfo
garrafa	>	garafa
Rato	>	rato

CONCLUSIONS

From the pre-surgical stage to the post-surgical stage we can detect significant differences in the speaker's speech intelligibility. In the second stage there are less phonetic variants and the persistent undue nasalization of vowel and consonants disappears.

Further cases with similar tendencies of results will allow us to positive evaluate this surgical protocol.

REFERENCES

- Broen, P. A. et alii. 1993. The velopharyngeally inadequate child: phonologic change with intervention. *Cleft Palate Craniofacial Journal*, 30 (5), 500-507.
- Costa Santos, E.; Faria, I. H.; Falé, I.; Fenha, M.; Figueira, M. L. 1997. Two stage protocol for cleft lip and palate patients. Preliminary results of psycholinguistic evaluation. Presented at the *8th Congress of the European Section of IPRAS*, Lisboa.
- Grobbelaar, A.; D. Hudson. 1995. Speech results after repair of the cleft palate. *Plastic Reconstruction Surgery*, 95 (7), 1150-1154.
- Jansonius-Schulthesis, K. 1996. Sensorimotor speech problems in cleft palate babies. The influence upon early language development. Poster presented at the *Second Conference on Sensory, Motor and Cognitive Abilities in Early Infancy*, San Feliu del Guixols, Spain.
- Jansonius-Schulthesis, K.; A. Baker. 1996. Utterances in two-year old cleft palate children. Poster presented at the *VIIIth Congress on Child Language*, Istanbul, Turkey.
- Lieberman, P.; S. Blumstein. 1988. *Speech physiology, speech perception, and acoustic phonetics*. Cambridge, Cambridge University Press.
- Mateus, M. H. et alii. 1990. *Fonética, fonologia e morfologia do Português*. Universidade Aberta, Lisboa.
- McWilliams, B.; Morris, H.; Shelton, R. 1990. *Cleft palate speech*. Philadelphia, B.C.Decker Inc.
- Stengelhofen, J. ed. 1989. *Cleft palate: the nature and remediation of communicative problems*. Churchill Edinburgh, Livingstone.
- Stengelhofen, J. 1990. *Working with cleft palate*. Winslow Press, Bicester, Oxon.