

Acquisition of phonology and Spanish-Basque bilinguals' phonological systems

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ABSTRACT

En acquisition du langage, il est établi que tous les éléments de la langue ne sont pas acquis de la même manière. Ceci bien entendu s'applique à la phonologie. Dans cet article, je fais une présentation sommaire de quelques idées de la Phonologie Naturelle (NP) dans le contexte de l'acquisition de la langue. Concrètement, je vais évaluer certains principes de base de la théorie de la NP pour les bilingues espagnol-basque, pour conclure à propos de certaines différences l'acquisition phonologique L1 et L2, du point de vue de l'acquisition phonologique en général. Je vais entre autres traiter de l'apprentissage de la prononciation de la L2, plus spécifiquement chez les bilingues tardifs (i.e. ceux qui ont appris la L2 bien après l'adolescence).

1. INTRODUCTION¹

In this research, we follow the basic thesis of Natural Phonology (NP): there are implicit forces in human vocalization and perception governing the sound patterns of languages, and these forces occur “in their development in each individual as well as in their evolution over the centuries” [Don79; 126]. These implicit phonetic forces are manifested as processes. Those processes should be understood as mental substitutions that “adapt our phonological intentions to our phonetic capacities” systematically and subconsciously. In that sense, according to NP, phonology is phonetically motivated. Therein lies the *naturalness*, i.e. in the phonetically natural aspect of phonology.

“The particular phonological system of our native language is the residue of a universal system of processes”; that marks the limits of our phonological universe, and governs our production and perception. So, our first phonological system imposes a ‘substratum’ accent on languages we subsequently learn [Don79; 126-127].

In this sense, we want to argue that when the bilingual is able to overcome a phonetic difficulty in one of his/ her languages, s/he will be able to overcome it in the other language too. That is an important consequence deriving from the concept of process as conceptualized in NP, i.e. as an answer to a particular phonetic difficulty. In this sense processes could be seen as the universal phonetic constraints of Optimality Theory (OT).

According to NP, phonemic inventories are the product of process application or inhibition as well as sequences. We could say that NP context-free processes reflect Jakobson's implication laws integrating them in the overall phonetically motivated phonological system. This view allows a better formulation of the comparison of different inventories used by bilingual speakers, and offers the theoretical basis on which this paper is focused.

Learning Basque during adulthood can bring difficulties with the processes that Spanish keeps but Basque needs to overcome. Precisely, to keep a process means to give up the choice to a given feature contrast. In other words, the learner will have to overcome the process that Basque phonology requires him/her to suppress. If that is achieved, this speaker will successfully learn the Basque sound contrasts.

We have compared the Spanish and Basque phonological systems to see which sounds they do not share. Specifically, we will focus our work in the context-free processes that Spanish (L1) keeps but Basque (L2) requires the speaker to overcome in order for a given phonemic opposition to exist.

We will examine some Spanish (L1)-Basque (L2) late bilinguals to see the state of the processes that they should have overcome in order to have mastered the phonological system of Basque. Later, we will compare the results with the data of one balanced Spanish-Basque bilingual.² The main aim is to check the differences in perception and pronunciation of Basque depending on the age at which it was learned by the speaker.

¹ I have to express my sincerest thanks to the Professor M.L. Oñederra for her judicious corrections and wise counsels, apart from her patience. This work would not have been possible without her appreciated help.

² *Balanced* meaning here that both languages were acquired before adolescence.

2. THE STUDY

Following the principles of NP, we will state the sound contrasts to be analyzed in phonetic terms, through processes,³ according to the pattern established in Sta79, Don95 and Don09:

	Basque	Castilian Spanish
<i>Fricative sibilant</i> → <i>Apical</i>	- ⁴	+
Phoneme inventory	/s, ś/	/s/ ⁵
<i>Non-stop obstruent</i> → <i>Fricative</i>	-	+
Phoneme inventory	/s, ś/ & /ts, tś/	/s/
<i>Delateralization of lateral palatal</i>	-	+
Phoneme inventory	/ç/ & /j/	/j/

Table 1. Processes to analyze.

➤ Subjects

- S1: One balanced Spanish-Basque bilingual woman. It is important to note that she speaks a Basque regional variety, and the other bilinguals use a more standard variety.

- S2, S3, S4: Three late bilingual men, who learned Basque at the age of 15 (S2)⁶, 20 (S3) and 22 (S4). They use some aspects of the Basque variety of the area they are from.

➤ Experiment

Phonology (in any language) deals with perception and pronunciation, and the theory of NP lies essentially on both [Don79]. We will therefore measure both.

Generative Phonology has been more neutral with perception and production, and the higher part of modern generative phonology is oriented towards production; it answers to changes underlying representations, and perception is rarely considered [Don01].

OT proposes that “adult phonological perception will be highly accurate, more accurate than adult production” [Don98]. Also, OT admits the influence of underspecified lexical representations [Smo96], but it seems that a model of perception dependent on these representations is not totally suitable for all perceptual phenomena [Don98]. So, answering to the ‘Richness of the base’ hypothesis proposed in OT in reference to

³ Bearing in mind that to analyze all the processes would overcome the limits of this work, we just chose the most distinctive ones in Basque phonology (vs. Cast. Spanish). The form of the processes is so far a provisional working tool.

⁴ ‘+’ means that a process applies, ‘-’ that it is inhibited.

⁵ The /s/ symbol represents the voiceless apical fricative sound.

⁶ 15 years of age may be not so late.

the unlimited candidate set, we could add that in perception the input must be just as unlimited as in production, understanding this richness as bidirectional [Don98].

Even so, OT and NP consider phonology as a system for the perception and production of speech and they share the interest in universal constraints, claiming that these constraints have phonetic motivation [Don01].

Our aim is to analyze perception and production in order to see the competence subjects have reached in each of these areas.

· Perception-experiment: we asked bilinguals to write *logatoms*⁷ that they heard in a Basque recording (they had to write exactly what they heard, regardless of the Basque orthography rules).

· Production-experiment: we asked the subjects about different tasks; they answered in spontaneous speech and in experimental conditions.

3. RESULTS

3.1. Perception of sibilants

The fricative sibilant in Cast. Spanish is an apical [s] sound, and since this is S2’s and S3’s L1, we expected these speakers to be able to perceive the sound as such at 100%; but S2 never identifies it and S3 only does so at 67%.⁸

However, both produce it correctly (in all the contexts in 100% of the cases) in spontaneous speech and in experimental conditions.

Even so, the Basque sound which is the most difficult to perceive for all the speakers is /tś/, apical affricate (S3 and S4 do not distinguish it ever).

Almost all the speakers identify /ts/, laminal affricate, in its entirety (except S3, who perceives it at 86%), and the percentage of production is also high (we will not present these data here, because the corpus from which we have taken them is not sufficiently relevant. It should be checked in a larger corpus).

Therefore, in the way of overcoming the process that turns non-occlusive obstruents into fricatives (i.e. at the first stage of the acquisition of affricates), the Spanish-Basque bilinguals find it easier to perceive and produce the /ts/ laminal affricate than the /tś/ apical affricate.

⁷ Logatoms are meaningless words that present the linguistic features to be considered.

⁸ They show a strong tendency to mix it up with either [ʃ] or [s].

3.2. Production of the apical affricate /tʃ/

No subject produces clearly apicality in the /tʃ/ sound: S1 always produces a sound intermediate between /tʃ/-/tʃ/ in intervocalic position, and S2 does the same in 25% of the cases. S2 tends to produce /tʃ/ after sonorant consonants (50%), but also produces the fricative /s/ (37.5%) or some intermediate between /tʃ/-/tʃ/ (12.5%).

All the speakers show a lower production of the /tʃ/ sound after sonorant consonants than between vowels: most of them tend to replace /tʃ/ with the /s/ fricative.

S1 and S2 produce relatively more often the /tʃ/ sound in experimental conditions than in spontaneous speech (S3 and S4 do not produce it in any of the cases). S1 is the one who produces it in more contexts.

3.3. About /ʎ/ lateral palatal

S1 produces systematically /ʎ/ both in Cast. Spanish and in Basque (although in experimental conditions in Basque she does not exceed the 60%). Even so, she is only able to perceive the sound in 66.7% of the cases.

S2 perceives /ʎ/ at 33.3%, but in Basque he produces it at 67% in experimental conditions and at 11% in spontaneous speech.

S3 and S4 never perceive /ʎ/ neither in Basque nor in Spanish, and proving the basic principle of phonology which claims that perception is previous to production, they do not produce a sound that they do not perceive.

4. DISCUSSION

According to these results, we can say that, as expected, perception conditions production, which agrees with the NP definition of the phoneme: phonemes are the sounds that speakers perceive, memorize and intentionally produce. But perception is gradual and has levels. Speakers do not distinguish sounds with the same ease in different contexts. At the same time, it seems that perceiving a sound does not always mean that the speaker will produce it.⁹ These are the main conclusions.

On the one hand, some experiments might lead to the conclusion that production is mastered before perception. But this should be tested again in the light of more spontaneous data and more subjects' response, in order to see the influence of the experiment on the speakers. It may also be related to the intrinsic

perceptual difficulties of these specific contrasts that are phonologically quite marked (apical-laminal in sibilants; laterality in palatals).

On the other hand, the experiment confirms that the bilingual speaker that started learning Basque earlier (S2) has been able to overcome more processes following the demands of Basque phonology. However, contrary to what we expected, a bilingual who started learning Basque later (S4) had more processes overcome than the other who started earlier (S3). Although the difference in age is small, it suggests that apart from the age and from the sociolinguistic environment, the psycholinguistic features of each speaker must also be taken into account. We will pursue this study in the future contrasting larger age differences.

We could see that speakers apply processes for the sounds with which they have difficulties (either in perception or production), but different processes can be used to cope with the same physical difficulty: processes in NP are mental substitutions that "cope with" physical difficulties.

Finally, it is necessary to measure whether or not training can help the bilinguals overcome their difficulties in perception and production with /s/, /tʃ/, /ʎ/, /ʎ/ sounds; and if it helps, how and in which sense, in order to improve their pronunciation in the L2.

We must emphasize that the difficulties that the late bilinguals have with Basque sounds are the result of processes, exactly the ones that they keep in their L1 (Spanish) and that their L2 (Basque) asks them to overcome. Depending on the steps each speaker had taken in order to overcome the aforementioned phonological processes, their pronunciation in L2 will be closer to that of a native Basque speaker.

Therefore, taking into account that the difficulties the late bilinguals encounter in order to learn the pronunciation of the L2 are the result of the phonological system they have set up for their L1, it is important to point out that difficulties arise from the universal processes that L1 has kept, but not from those that have been suppressed.

Depending on how different these two phonological systems are, the effort a bilingual must make in order to learn the sounds of the L2 will be greater. Specifically, the effort to overcome the processes underlying these sounds will be bigger; it must be remembered that NP classifies sounds in terms of the processes that would eliminate a given feature combination.

⁹ There are many works that analyze and confirm this claim. For L2 development, J. Flege's work is especially interesting.

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