THE ACQUISITION OF PALATALIZATION IN RUSSIAN

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The paper treats the acquisition of palatalization for dental and labial stops in prevocalic environments in Russian using data from the 1927 longitudinal study of A.N. Gvozdev which describes the early stages of phonological acquisition by his son. The initial goal was a reanalysis of Gvozdev's data to provide a description of the phonemic as well as phonetic facts in the data. That is, not merely to describe the acquisition of individual sounds, but to describe the child's pre-adult phonological system(s).

To provide a general framework for the acquisition of palatalization by the child, Gvozdev's own explanations as well as previous explanations in the early stages of phonological acquisition in Russian[7], as well as studies of palatalization in Slavic languages are examined.

Finally, it is shown that the facts and issues in the child's acquisition of palatalization can best be explained by showing which phonemic contrasts have been acquired and by relating the child's acquisition to specific phonetic properties and ambiguities, e.g. formant frequencies of vowels, of the adult system.

INTRODUCTION

This paper treats the acquisition of palatalization for dental and labial stops in prevocalic environments in Russian. The data used is from the 1927 longitudinal study of A.N. Gvozdev[7], in which he describes the early stages of phonological acquisition by his son, Zena.

I will argue that in order to best explain the facts and problems of the acquisition of palatalization, it is necessary to understand the child's pre-adult phonological system(s).

Phonology of Russian

The Russian phonological system includes five vowel phonemes, the front vowels /i e/, the back vowels /a o u/, and a series of consonants which fall into classes according to place and manner of articulation. These consonants may utilize palatalization either contrastively or as an obligatory feature. This paper will examine the dental stops /t d n/ (and their palatalized counterparts /t' d' n'/) and the labial stops /p b m/ (and their palatalized counterparts /p' b' m'/). Palatalization functions distinctively for dental and labial stops in Russian before the phonemes /l a o u/ and in final position. Before the phoneme /e/ in native Russian words the phonemic distinction is neutralized. Only the palatalized variant of the consonant appears. There is therefore an asymmetry in the distribution of phonemic palatalization before different vowel phonemes in Russian.

The effect of palatalization on vowel phonemes in Russian is very strong. Even though there are only five vowel phonemes, it is traditional to distinguish at least two phones for each phoneme conditioned by the presence or absence of palatalization of the surrounding (especially preceding) consonants.[4] [15]

DATA

The source for the data in this paper is the diary of Gvozdev, a Russian philologist who observed his son from the age of one year and seven months until eight years of age. I will be concerned with data relevant only to the acquisition of dentals and labials in prevocalic position, for the time period one year seven months (1.7) to two years four months (2.4). Behaviour of the segments in final position was not considered because final segments are often treated in a special way or omitted in the early stages of acquisition.[9] The data will be presented in phonetic transcription.

At the stage 1.7-1.9, sequences where a non-palatalized labial should appear before a phonemic back vowel are produced correctly by the child [mas'a] ([masla] 'butter') [pat'] ([spat'] 'to sleep'). Where a palatalized labial should appear before the vowels /i/ and /e/, the child pronounces the sequences correctly [p'is'i] ([p'isi] 'write'). For nonpalatalized labial before phonemically front /i/ (phone [i]), the child produces a palatalized labial and the front allophone ([m'is'ka] for [miska] 'mouse' (dim)). For palatalized labial before phonemic back vowel the child produces the palatalized labial and the front allophone ([m'is'ka] for [miska] 'mouse' (dim)). For palatalized labial before phonemic back vowel the child produces the palatalized labial and a front vowel [p'et'] for [pet' /p'at'/ 'five'. Palatalized dentals before phonemic back vowels are produced correctly [t'ot'a] ([t'ot'a] 'aunt'). None of the sequences of nonpalatalized dental and phonemic back vowel are correct. The palatalized dental occurs instead [t'am] ([tam] 'there'). Palatalized dentals before /l/ or /e/ are correct: [c'ip] ([lip] 'go!'). Nonpalatalized dentals
which should occur before /s/ is mispronounced by the child. The adult [s] sequences appear instead of [t] before /a o u/ as well as [n] and [m] before /i e/. However, now [t] may now occur because of /a o u/. The child has begun to adopt contrastive palatalization before /e/ in native Russian words—[t'] 'water' gen. sg. shows alternating forms [d'im]—[dim] 'smoke'. Explanations for palatalization patterns...
dentals in two different ways, but does not use palatalization distinctively. The acoustic and articular characteristics of the following vowel, rather than the acoustic and articular characteristics of the consonant, now come to determine whether dentals are palatalized or not. The pattern for the dentals at the second stage is therefore the same as that for the labials.

In the third stage, there is no change for the labials or dentals before front vowels. Dentals before back vowels now may occur as palatalized or nonpalatalized. Palatalization causes a high second formant, while back vowels have a low second formant. Palatalization will therefore cause a steep downward glide of the second formant. In the absence of palatalization this very steep glide will not occur. Therefore, the distinction between palatalization and nonpalatalization should be highly audible before back vowels. It thus seems logical for the child to develop the contrast first for dentals before back vowels.

The fact that back vowels allow more phonemic palatalization, and that dentals utilize phonemic palatalization to a greater degree than labials, is true also of adult Russian and other Slavic languages. The adult asymmetries and the child's acquisition patterns are both subject to the same phonetic constraints. (For further discussion of parallels in child and adult systems see [6].)

To return to our original question, given that the vowels are potentially ambiguous, what would lead Zenja Gvozdev to divide the vowel continuum into the groups front/back. Fant's analysis, utilizing maximum constriction and second formant height, shows that the Russian vowels really can be divided naturally into these groups. Therefore, it is not surprising that the child does so.

The substitutions made by the child become clear within Fant's framework. The child hears the adult sequence [C ] and produces [ C 'i ]. As indicated in tables I and II above, [ i ] can be grouped with [ e ] on the basis of both articular and acoustic factors (the point of maximum constriction and the height of the second formant). Furthermore, [ i ] is an allophone of / i / in the adult language. This apparently leads the child to reinterpret [ i ] as [ i ].

The problem with palatalized labials before back vowels is more complex. As pointed out in literature on child language, children often deal with difficult combinations by avoiding them. [13] Zenja produces only one example of / p ' e c ' / before the back vowels [ p ' a t ' ] (adult [ p ' a t ' ] from / p ' a t / ). He maintains the correct palatalization but fronts the vowel. Although Fant does not include [ a ] in his tables, he does say that "the centralization of / u / / o / / a / phonemes in positions between two sharp [ pal] consonants resulting in the allphones [ y ] [5] and [ a ] is manifested by a higher F2."[5]. Since a raised F2 is a cue for front vowels and palatalization, it is not surprising that the child reinterpret the combination of a palatalized labial and the front allophone of a back vowel as palatalization plus a front vowel.

**CONCLUSION**

This paper has presented the facts of acquisition of palatalization for dental and labial stops in prevocalic environment for one Russian child. It showed that the general facts of acquisition can best be explained not only by showing which phones have been acquired, but by showing which phonetic contrasts and syntagmatic constraints are relevant to the child's system. The child's development of palatalization has been shown to be related to the articular and acoustic properties of the adult system.

**REFERENCES**