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THE ACQUISITION OF HUNGARIAN PHONOLOGY BY TRILINGUAL CHILDREN

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SUMMARY

The main question of this paper is whether the phonological development of bi - or trilingual children is occurring in a common place, whether they share one common phonemic set which is later separated according to languages or the phonemic systems are separated from the very first moment of acquisition. I am most interested in the way trilingual children acquire Hungarian phonology, and in the order of the acquisition of phonemes. The subjects are a trilingual pair of sibling7s whose Hungarian phonological development will be under investigation. Underextension can be observed since there is no conscious discrimination in the usage of the allophones. Some phonetic/phonological peculiarities are identical with the ones made by Hungarian monolinguals, others are strange to the Hungarian ear and, as a result, a certain accent can be felt in the children's speech.

Key words: *language acquisition, VOT, tringualism, phonology, Hungarian*

INTRODUCTION

The present paper will attempt to describe the acquisition of Hungarian phonology by two trilingual children. The question is whether the phonological development of bi-or trilingual children is occurring in a common place, whether they share one common phonemic set which is later separated according to languages or the phonemic systems are separated from the very first moment of acquisition.

Proponents of the Unitary System Hypothesis (Vihman, 1982; Volterra and Taeschner, 1978, etc.) in child language literature claim that there is one commonly shared language centre and that the languages of the bi- or multilingual child are not distinguished, not differentiated. First, they share the languages at the lexical, syntactic levels.

Presumably, at the phonetic/phonological level, there is one common unit for all the phonemes acquired by the child, and this one unit serves all the different languages spoken by the person. Vogel (1975) supports this hypothesis in his study on a Romanian-English two-year old child's phonological development.

Supporters of the Separated Systems Hypothesis (Lanza, 1997; De Houwer, 1990; Meisel, 1989; etc), on the contrary, claim that lexical, grammatical units of each language are separated from each other from the very first; consequently, we may assume that there are strictly separated phonemic centres for each language spoken by the child.

In this paper, I will try to find evidence for either the unitary or the separated phonemic systems in the spontaneous speech of trilingual siblings.

Besides the above mentioned concern I am most interested in the following questions which have arisen in the course of this study:

(i) how do the two children acquire Hungarian phonology, and what is the order of the acquisition of phonemes,

(ii) the nature of interference (unidirectional or bidirectional).

SUBJECTS

Nabil and Nasim are brother and sister born in Canada in a family where the mother is Persian and the father is Canadian English. The mother is bilingual, she left Iran about 20 years ago, and till 1994 she lived in English-speaking countries. Since the father's Persian is very poor at the production level, the language of the family is English. The children (Nasim, a girl, born in Canada, on September 22, 1991; and Nabil, a boy, born in Canada, on October 4, 1992) were raised bilingually since birth. The parents did not follow the one parent – one language principle and spoke only English to the children. However, the mother taught them Persian, and, obviously, there were moments when she used Persian with her children for different reasons. The exposure to Persian was regular but rare, the amount of input in English to a great extent overwhelmed that of Persian.

The mother's language use was not consistent at all, and the language input in Persian was much less frequent than that in English. In this respect, we can speak of something similar to Bilingual First Language Acquisition (De Houwer, 1995) in terms of English and Persian.

The family arrived in Hungary in August 1994, when Nasim was 2;11, and Nabil 1;10. Very soon after their arrival the children started attending a Hungarian monolingual nursery school. The acquisition of Hungarian became vital and inevitable for them. At the time of their arrival the children were normally developed bilingual children, their language competence in English was equal to that of English monolingual children. Their Persian was, however, far behind their Persian monolingual peers, as they had little exposure. Since, as far as I know, there is no literature available on Persian child language, I cannot compare their language use with native Persian children's, and it is only the mother who tells me something about the children's command of Persian.

As far as Hungarian is concerned, it is an early second language acquisition process (or Bilingual Second Language Acquisition as De Houwer would call it) which started when the girl (Nasim) was 2;11 and the boy (Nabil) 1;10 years of age.

At the beginning of the investigation the family used English at home, so the dominant language for the children was English. However, as it was mentioned above, the mother felt responsible for teaching her first language to the children. When the children were alone with their mother, they learnt Persian. However, according to the mother, this usage was very restricted. The acquisition of Persian is still proceeding through instruction; nevertheless, the children seem to be very successful: they are able to answer most of their mother's questions in Persian, they can retell stories, recite poems and say prayers in Persian.

In the first year of the observation (1994) the children attended a Hungarian nursery school three times a week. Every Monday, Wednesday and Friday from 9 a.m. to 4 p.m. they were among Hungarian monolingual children. There were two nursery school teachers, both were monolingual Hungarians. This way the children were biologically and psychologically highly motivated to acquire Hungarian as quickly as possible, and so they became very good subjects for an investigation of the language development of trilingual children, with respect to Hungarian.

In the second and third year they went to a kindergarten three times a week, their peers were also Hungarian monolinguals. It is essential to know that the children were always together in the same group in the nursery and in the kindergarten.

DATA COLLECTION

I observed the children from October 1994 to April 1997, from the ages 2;11 to 5;7 and 1;10 to 4;6, respectively. Audio and video data were collected quite frequently and regularly during the first year of their stay. After one year I

continued to have access to the children at two or three month intervals. This yielded 21 hours of audio and 9 hours of video recordings.

The recordings are transcribed orthographically, using the letters of the Hungarian alphabet, with the exception of utterances which are phonetically weird or unintelligible. These utterances are transcribed with the symbols of the International Phonetic Alphabet.

Grosjean claims (1995) that bilinguals, depending on the situation and the language command of the pearson they are with, move on a certain continuum whose one end is the monolingual and the other end is the bilingual speech mode.

It is interesting to note that in conversations whose Matrix Language (the term is used after Myers-Scotton, 1993) was Hungarian, these children tried to stay at the monolingual end of the continuum even if they knew that the interlocutors spoke English too. There is just a small number of code-switchings in the conversations with their mother too, and Persian is used only when it is elicited. What is most interesting is that in the recordings, where there is no interlocutor present at all, i.e. the children are playing together and there is no third person, they use only Hungarian except for a very few code-switchings to English and it only happens when either of the parents enters the room.

RESULTS AND DISCUSSION

Watson believes (1991) that bilinguals, like monolinguals, simplify their phonological processes, but do so cross-linguistically in each language separately. According to Fantini (1985), the developing bilingual has to learn processing skills which are unnecessary for the monolingual. Bilinguals have to recognize that a sound system is entirely arbitrary, in that it is possible to use more than one to communicate. They must, therefore, learn to assign similar physical events to different systems of oppositions according to the linguistic context. However, each phonological system is not necessarily acquired in a way analogous to monolingual acquisition. Fantini also finds that one system will dominate the other, so that the child fails to make some oppositions in one language, or at least produces some sounds in a foreign way, due to interference.

The sound realization of phonemes making up the English, Persian, and Hungarian phonological systems are present in the children's speech; when they speak English they use the English sounds, when they speak Hungarian, the Hungarian sounds and when Persian – the Persian sounds are used by them. Phoneme mixing and changes will be analyzed later. The phonetic level of their speech is in accordance with the average level of children of their age. I have compared their speech with Hungarian monolingual children of their age. The ontogeny of the Hungarian language and Hungarian child language is thoroughly analyzed by Lengyel (1981) and Gósy (1984). Referring just to two languages spoken by the children from this point on, namely to Hungarian and English, we can state that the children's speech is understandable, no radical deterring is observed comparing them to native speakers in respect of both perception and

production. There are a lot of elements of Hungarian child language in their speech.

At first, the main concern of the investigation was the extent to which their speech is understandable for native speakers. I have asked native speakers of Hungarian to judge whether their speech sounds Hungarian or, whether they can feel some foreign accent in the children's Hungarian speech. The native speaker judges were Hungarian children of 10-12 years of age, university students and middle-aged adults, mostly university professors.

Since the opinions were all the same, namely that they basically articulate the sounds well, although in the pronunciations of certain sounds (especially those of stops) the native speakers could hear some deviances, I have decided to measure the VOTs of the stops uttered by the children in spontaneous speech at the Phonetic Laboratory of the Institute for Linguistics at the Hungarian Academy of Sciences. I have used oscilloscopes and spectograms to define the Voice Onset Time characteristics of my subjects.

2.1. Consonants

Contrary to Fantini's findings (1985), these children can pronounce all the sounds characteristic of Hungarian, not used in English (i.e. the sounds /dj/, /o/, /ü/), correctly, without any accent. What causes the problem are the sounds existing in both languages (i.e. /p/, /t/, /k/). This is when a kind of a foreign accent can be felt in their Hungarian speech.

2.1.1. Consonant sounds identical with Hungarian monolingual children's child language consonant sounds

(i) In the process of phonological acquisition Hungarian children (Lengyel, 1981; Gósy, 1984) often change the voiced bilabial plosive /b/ for the voiceless bilabial plosive /p/, as did my subjects in the very beginning (*'basa' – pata)*.

(ii) The bilabial plosive /b/ and the labio-dental fricative /v/ are often confused by Hungarian children, and Nabil's speech also contained this phonetic mistake. This change always goes from the direction of /v/ to /b/ and never the reverse way: *bonat – 'vonat'*, *ban – 'van'*.

(iii) One of the commonest mistakes made by Hungarian children is the omission of /l/ preceding a consonant. This phenomenon occurs independently of the position or the quality of the consonant coming after the sound /l/. This was also found to occur in my subjects' speech (*etünt – 'eltünt'*, *aszik – 'alszik'*, etc).

(iv) The Hungarian /r/ is a post-alveolar trill, which is a big trouble-maker in the acquisition process. There are different stages in the ontogenesis of oral language when Hungarian children either simply ignore this sound, or substitute it for other sounds. Very few children are able to utter it correctly before the age of five. The majority of tongue-twisters in Hungarian are based on the pronunciation of this trill. The subjects of this study sometimes omitted it (*bana – 'barna'*), other times pronounced /j/ or /l/ instead (*sájga – 'sárga'*, *vijág, világ – 'virág'*), in

the manner of Hungarian children, and occasionally substituted it for the English /r/.

2.1.2. Consonant sounds in the children's speech which are strange to the Hungarian ear

(i) Aspiration

Hungarian and English consonants differ from each other greatly in respect of voice onset time. VOT is defined as the timing between the onset of phonation and the release of the primary occlusion of the vocal tract. Phonation of stops in initial position can start coincident with the release of the stop, after the release of the stop or before the release of the stop. According to Lisker and Abramson (1964) the exact time intervals vary from language to language. They present their findings for the initial stops of isolated words and sentences in eleven languages studied (Hungarian and English included). The following table shows Lisker and Abramson's findings concerning English and Hungarian stop consonants VOT in isolated words. Since the data related to Hungarian are a bit out of date, I also enclose the latest findings concerning the Hungarian stop consonants VOTs measured by Mária Gósy (1997)

Table 1. VOTs in ms in isolated words
Tablica 1. Vrijeme uključivanja glasa (u milisekundama) u izoliranim riječima

	Lisker and Abramson (1964)		Gósy (1997)
	English Engleski	Hungarian Madarski	Hungarian Madarski
bilabial /p/	20 - 120	0 - 10	13 - 34
dental /t/	30 - 150	10 - 25	15 - 37
velar /k/	50 - 135	20 - 35	32 - 64

The following is the same measured in spontaneous speech, in word-initial positions (the average is given in Table 2.):

Table 2. VOTs in ms in spontaneus speech
Tablica 2. Vrijeme uključivanja glasa (u milisekundama) u spontanom govoru

	Lisker and Abramson (1964)		Gósy (1997)
	English Engleski	Hungarian Madarski	Hungarian Mađarski
bilabial /p/	28	0	18,51
dental /t/	39	20	26,59
velar /k/	43	28	35,31

I have measured the plosive sounds of my subjects since these were the sounds that made their speech in Hungarian a bit 'strange', 'unusual'. Table 3 presents my results compared with those of Gósy which she got when testing Hungarian children's plosives (1997):

Table 3. VOTs in ms in the children's spontaneus Hungarian speech
Tablica 3. Vrijeme uključivanja glasa (u milisekundama) u dječjem spontanom govoru na madarskom.

	Gósy (1997)	Navracsics	
	Hungarian/Madarski	Nasim	Nabil
bilabial /p/	13 - 34	109	
dental /t/	15 - 37	35	38 - 166
velar /k/	32 - 65	42 - 131	47

As it is clear from the table 3, Nasim uses the aspirated bilabial and velar voiceless plosives. Nabil uses only the dental voiceless plosive aspirated.

In Hungarian there is no significant aspiration. In Persian, on the other hand, all voiceless consonants are aspirated in different positions. English uses aspiration word initially in voiceless bilabial plosive /p/, voiceless dental /t/ and voiceless velar /k/.

In my data there are examples of all aspirated plosives irrespective of their positions:

(i) word-initial (the data in parentheses are the average milliseconds of Hungarian speakers's VOTs in spontaneous speech):

Table 4. The children's VOT's concerning plosive consonants in world-initial positions
Tablica 4. Vrijeme uključivanja glasa za okluzive u inicijalnom položaju u djece (u zagradi su prosječne vrijednosti za odrasle Madare)

	Nabil:			Nasim:	
/t/	*t*eja	38 ms	**(26,59)**	*t*eja	35 ms
	*t*ül	73 ms	**(26,59)**		
	*t*udom	92 ms	**(26,59)**		
/k/	*k*icsi	47 ms	**(35,31)**	*k*ell	42 ms
			(35,31)	*k*érsz	60 ms
			(35,31)	*k*acsa	68 ms
			(35,31)	*k*icsi	58 ms
/p/			**(18.51)**	*p*ersze	109 ms

(ii) in mid-positions

Table 5. The children's VOT's concerning plosive consonants in mid-position

Tablica 5. Vrijeme uključivanja glasa za okluzive u medijalnom položaju u djece (u zagradi su prosječne vrijednosti za odrasle Madare)

	Nabil:			**Nasim:**	
/k/	ak*k*or	42 ms	**(35,31)**	ak*k*or	131 ms
/t/	raj*t*a	166 ms	**(26,59)**		

(iii) word-ending positions.

In these examples all plosives are strongly aspirated whether or not they are in word-initial or interinvocalic position. It is crucial to underline, moreover, that the [k^{h}it$\int^h$i] example provides the clearest evidence that the aspiration does not concern merely the plosive consonants, it is extended to the affricate [t$\int$], due to which it is also aspirated.

(ii) Opposition according to voice

The opposition of voiced and voiceless sounds is exhibited to a lesser degree in English than in Hungarian. English [g] (17 to - 45 ms) is closer to English [k] (43 ms) than to the Hungarian [g] (-61 ms). (The VOT of English consonant sounds are taken from Lisker and Abramson (1964), and given in parentheses). This may be the reason why voiced and voiceless consonants were sometimes confused by the children in their Hungarian speech, e.g. *kitar*. (k^{h}itar) (correct: *gitár*). However, the data contain a number of examples where /g/ preserves its voiced quality and is pronounced correctly.

A rather unusual change /g/-/k/ according to voice can be observed in the following example where neither of the solutions is correct, since they are both to stand for the sound /dj/, which is a voiced alveolar plosive, and, is, by the way, one of the most difficult sounds for English learners of Hungarian. On numerous occasions the children utter this sound correctly, without any accent or strangeness in their articulation. However, in the following example Nasim has some problems with it:

(1) **Nasim**: *Itt? Mondd, hogy gere* [gere] (correct: *gyere*).
Here? Say *gere*.
Judit: *Bemegyünk?*
Are we going in?
Nasim: *Nem. Mondd, gele* [gele]. *Mondd gele* [gele], *mondd kele* (k^{h}ele].
No, say *gele*.

Judit: *Mi az a kele* [kele]*?*
What's *kele*?
Nasim: ***kele*** [k^{h}ele] *ide mondd.*
Kele here, say.
Judit: *Mondjam neki, hogy gyere* [dyere] *ide?*
Shall I tell him to come here?
Nasim: *Igen. Jó?*
Yes, OK?

Here, for a different reason she replaces it with /g/ and /k/. The error in pronunciation even disturbs the conversation, which breaks down due to the unintelligible sounds, since the interlocutor herself does not understand what Nasim is trying to say, it is only the communicative situation that allows for the interlocutor to make out what the intention of the utterance is. It is also noticeable that, when the girl wants to emphasize the element which was not understood by the interlocutor, that is when she starts replacing sounds differing from each other just in one phonetic feature, namely the presence or lack of voice in articulation. In this way, the opposition according to voice seems to work in a way that the more stressed elements first become voiceless and then – aspirated. In this relation it is useful to reconsider the status of aspiration concerning the languages in question. Again, we may rightly think that aspiration is not the result of the interference of a language, but it may be a way of correctly expressing emphasis, emotion.

3. Some vowel changes

The Hungarian language has 14 vowel sounds as opposed to English which has 11 monophthongs and several diphthongs depending on the variant of English. There are 6 monophthongs and 4 diphthongs in Persian.

3.2. The problem of /e/ and /ɛ:/ sounds

From among the vowel sounds the most critical for the children in this study proved to be the sound /ɛ:/ which is very close to the English and Persian diphthong /ei/. The tendency in colloquial Persian, namely that vowel /e/ tends to be pronounced as /ɪ/ (Jeremiás, 1986), seems to impact the boy's pronunciation in the English words, too. Data taken from the mother's collections justify the child's pronunciation of *teddy bear* as [tɪ:dɪ beər], *get up* as [gɪt ʌp]. I found a large number of examples where the children used /ɪ:/ instead of /ɛ:/ in the Hungarian corpus too.

Although it is quite questionable to compare children's data with those of adults, I have measured the formants of the /ɛ/ sound of the girl and compared the results with those of Hungarian adults' /ɛ/ and /ɪ: / sounds formant sructures. Here are the results:

F1	473	(data taken from Hungarians: 560-740)
F2	3865	(data taken from Hungarians: 2000-2500)

Native Hungarian adults' /ɪ/ sound formant structure is the following:

F1	450-540
F2	3700-4300.

Nasim's /ɛ/ sounds completely fit into the latter category, so no wonder that /ɪ:/ can be heard in her speech instead of /ɛ/.

The majority of examples show us that the articulation of these vowel sounds are still under development; the children do not feel the difference between the two vowels. In the beginning they never corrected themselves; no matter how many times the interlocutor tried to correct their pronunciation and repeated the words, the children would stick to their own way of pronouncing these sounds. However, as time passed, they have acquired this sound correctly. Consequently, phonemic discrimination is not the question of experience but rather the question of exposure.

3.3. Qualitative and quantitative differences

3.3.1. The problem of /ɔ/ and /a/

The following two examples may be the result of interference due to similar sounding. The word *chocolate* is well-known to the children from the English language. This is probably the reason why they use the same vowel in the Hungarian word as they use in English: *csaki* |tʃɔki| – correct: *csoki* |tʃoki|.

However, in the boy's speech we may discover a great amount of underextensions mixing the two vowel sounds /ɔ/ and /a/.

(2) **Nabil**: *Pijas* (correct: *piros*).
(3) **Nabil**: *Nem ja? Nem ja* (correct: *jó*)*?*

3.3.2. Vowel phoneme discrimination test

In order to find out what the situation really is with the above analyzed sounds, why they are so problematic for the children, I have decided to set up a phoneme discrimination test. Pairs of words differring only in one vowel sound which is usually in a midword position were gathered and the children were asked either to repeat them or to tell whether they heard the same words or different ones. There were word pairs whose meanings were supposedly known for the children. However, sometimes the children were given words which had no meanings at all but could have been possible Hungarian words owing to their phonotactics.

In these sessions the children were separated from each other. They were in separate rooms with one of the interlocutors.

3.3.3. Perception and production of qualitative differences concerning vowel sounds

First the discrimination of the sounds /e/ and /ɛ/ was tested. In the focus of attention was whether they heard the difference between these sounds, and also if they could tell the differences in meanings. The girl can distinguish between the vowels in question and knows the meanings of the words. However, the boy is uncertain. The first imitation was not very successful when he was supposed to pronounce the sound /e/. However, the second vowel, i.e. /ɛ/ pronunciation is correct. He knows the meaning of both words with /e/ and /ɛ/ sounds, respectively.

3.3.4. The distinction of long and short vowels: quantitative difference

The quantitative difference makes a change in the meaning of the words. In the Hungarian language almost all vowel sounds have a short and a long variant. This phenomenon is not present in either English or Persian.

Both children think that the long vowel sounds and the short vowel sounds are the same. They cannot feel the difference and they do not even think that the difference in the sounds can result in a totally different meaning.

In the majority of cases even this task proved to be too difficult for the children. They cannot hear the quantitative differences, consequently they cannot produce them.

CONCLUSIONS

1. From among the allophones of the phonemes /p/, /t/, /k/ it is the aspirated allophone which is the most frequently occurring variant in the children's speech. In this way, it is the more strongly marked allophone and it plays an overemphasized role.

2. There is an obvious underextension in the case of allophones since there is no conscious discrimination in the usage of the allophones. The children seemed not to pay attention to whether aspiration happens according to any rules related to any particular language. Aspiration, therefore, must have a cross-linguistic character, and is not limited to the language in which it is appropriate but is also extended to another language or languages.

3. There is an obvious overgeneralization, too, regarding the position of the aspiration. In the Hungarian phonological system there are no examples of aspiration except in emotional, emphatic expressions. Aspiration at the end of the word is not acceptable. However, we found several examples where these children transferred aspiration into the syllable-final position.

4. Since some features are partly identical with the ones made by Hungarian monolinguals, we can assume that the order of acquisition of sounds

coincides with that of the Hungarian children. Concerning the other types of peculiarities, namely aspiration: it is an unusual phenomenon in Hungarian, and apart from emotionally overburdened situations there is no aspiration at all. However, even having spent more than four years in Hungary now, the children still aspirate their voiceless plosives giving thus a special accent to their Hungarian speech.

5. In summary of the phonetic-phonological changes concerning the vowel sounds the following can be stated: phoneme discrimination causes some problems due to different reasons. First of all, it is probably due to the Persian influence that they tend to pronounce the sound /ɛ/ as /ɪ:/. Secondly, as the sound discrimination test showed, they could not hear the differences in respect of the quantitative features of the Hungarian sounds. This phenomenon is entirely new for them since it does not exist in their other two languages.

6. Based on all the peculiarities of the children's speech discussed thus far, we propose the following: there is a very loose set of phonemes, shared by all the languages spoken by the child, in which there are allophones used irrespective of the actual language for which it is intended, and other language specific phonemes. With language development the phonemes get separated according to the actual language in use.

The analysis at the phonetic level tends to support the theory that there is one common centre for all the phonemes which is built up according to the distinctive features of the allophones. The ones being close to each other are tightly linked irrespective of the language in which the phoneme actually exists. More distinct phonemes, however, are separated and more language specific.

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USVAJANJE FONOLOGIJE MAĐARSKOG JEZIKA U TROJEZIČNE DJECE

SAŽETAK

Glavno pitanje postavljeno u ovom radu tiče se fonološkog razvoja dvo- i trojezične djece. Pitamo se razvijaju li se fonološki sustavi tih jezika na zajedničkome mjestu: imaju li jedan zajednički fonemski sustav koji se poslije razdvaja za svaki jezik posebno, ili su fonemski sustavi odvojeni od prvih početaka usvajanja. U ovom je istraživanju najveća pozornost posvećena načinu usvajanja fonologije mađarskog jezika u trojezične djece i redoslijedu usvajanja fonema. Ispitanici su dvoje trilingvalne djece, brat i sestra. Razvoj njihove fonologije mađarskoga jezika predmet je ovoga rada. Uočena je redukcija, budući da u uporabi nema svjesnog razlikovanja alofona. Neke fonetske i fonološke pojedinosti identične su onima koje čine jednojezični govornici mađarskoga, ali ima i onih koje su za mađarski neuobičajene, pa je posljedica strani naglasak u govoru te djece.

Ključne riječi: *usvajanje jezika, trilingvizam, fonologija, mađarski jezik*