

A study on Korean children living in France and becoming bilingual : Prosodic & pragmatic aspects

Yumi HAN-PEJAUDIER

Laboratoire Études Coréennes, CNRS UPRES-A 8033,
Université Paris 7 & EHESS
agnesyumi@yahoo.com

Abstract

The present article is devoted to the study conducted on two Korean children, aged from two and 6 months old to 3 years and 10 months old, faced with the simultaneous acquisition of the Korean language and French language following their families' move to France. The corpus analysis obtained throughout this study permits us to clarify the specific role of the prosodic realization during this period between 3;1 and 3;2 years old, a period when two distinct types of two-element utterances (each from its own prosodic system, one Korean, the other French) are established. In fact, this capacity of prosodic differentiation is based on the knowledge of the pragmatic conditions of language interaction. We can observe in this study how, in the early period of Korean-French bilingualism, the capacity to differentiate languages stems from prosodic-pragmatic mastery.

1. Introduction

It is established that the mother tongue can have an influence on prosody when learning a second language at an adult age. According to Brown (1973) [1], the rhythm is a guide which gives an information on the oral structure. As with Wenk (1985) [2], when he compares the speech rhythm during the apprenticeship of a second language on subjects learning English and French and situated at different levels of proficiency, he notices that the L1 system can influence the inter-lingual pronunciation along three levels: *level of proficiency, phonetic context, speech style*.

However, the present study is concerned with the a child's precocious apprenticeship of a second language (before reaching the writing and reading phase). We will therefore analyze not only the early acquisition of the prosodic system, but also the use of two specific systems for each language by two bilingual children in a stable environment.

The purpose is to study the production of two-element utterances according to their prosodic realization in order to detect the "marked-element" and the "marker-element". We shall see that each language detains its own prosodic system and that bilingual children can produce precociously and simultaneously each of them within their own specificity.

2. Methodology

Han & Dommergues (1999, 2000) [3] [4] demonstrated in their consecutive articles that there exists a convergence in the prosodic patterns between two bilingual children and a French

monolingual child, as well as a semantic/prosodic correlation. The present study will propose a new approach for comparing the different prosodic realizations in Korean and in French with two acoustical parameters (F0, Duration). Finally, the main discussion will be based on a pragmatic point of view as well as a prosodic one.

2.1. Subjects

The study concerns two Korean children living in France with their parents following their move for business purposes; they are thus exposed to two linguistic systems which they will have to acquire consecutively. First, the Korean language acquired from birth with their Korean parents, and then the acquisition of the French language around the age of two and a half at a day-care center.

During the observation period around the age of 2;6, Korean is clearly the dominant language, as far as the ease and the length of utilization. However, it is noticed that approximately from age 3;1, the production in French increases, in quantity (around a two-element dominant and that the MLU between French and Korean becomes more or less similar). In addition to these two main children, we observed two monolingual children, one Korean and one French aged respectively 2;5 and 2;3.

2.2. Choice of corpus

It was thus decided to concentrate on only two-element utterances as produced by two bilingual children and a monolingual French child, as far as production in French is concerned, then by the same children and a monolingual Korean child, as far as production in Korean is concerned.

Each recording was carried out in the family environment during an hour-long interview. The conversation was centered on questions such as "What is this?", "Tell me what you see in these pages?", "Who is it?", etc. while expecting a free and spontaneous answer from the child. We eliminated all responses given in imitation or echo as well as all "yes/no" answers or appellative forms such as "mummy!" to keep only the autonomous responses and the spontaneous explanations.

These prosodic study corpuses were limited to a one-month period for each subject. We based ourselves exclusively on two-element utterances, the criterion being the average length of each utterance (MLU : 2,2 in French / 2,3 in Korean).

3. Analysis

3.1. Analysis 1 (semantic aspect)

If the production of the first words can be explained to the fact that the children attribute properties to a concept (Culioli, 1985) [5], the two-element utterances indicate that they are able to localize a term in relation to another within an utterance. It is not yet a case of grammatical structures resembling those of an adult but rather a case of new semantic relations. It is the first predication operation that highlights the "Cognitive notions reflecting what they are learning of the world" (Bloom & Lahey, 1978) [6].

As such, we were able to classify these utterances along the eight semantic categories proposed by Petit (1992) [7] for French and Korean.

- Category 1: Action + Object
- Category 2: Agent + Action
- Category 3: Attribute + Entity
- Category 4: Owner+ Owned object
- Category 5: Entity + Locative
- Category 6: Action + Locative
- Category 7: Demonstrative + Entity
- Category 8: Agent + Object

Each language respects a specific order: for example, as far as category 1 is concerned, the French order is "action+object" of the type 'verb+noun', whereas in Korean we have "object+action" of the type 'noun+verb'. Similarly in category 4 in French, the order is "owned+owner", whereas in Korean it is "owner+owned". The fact that the elements respect the specific wording order of each language gives an indication as to the apprehension of grammatical properties. Thus, we found from the the early two-element utterance period, a specific diagram for each language.

3.2. Analysis 2 (prosodic aspect)

From the semantic categorization carried out in Analysis 1, the utterances in this test will be analyzed using the sound wave analysis program called "Signalize" along two prosodic parameters: the duration (measured in delivery) and the fundamental frequency (culminating point in Hz), based on the following presumption: the child, lacking well rooted linguistic systems, will use the sequences made up of two elements between them using a pragmatic intonative grammar.

We can thereby highlight intonative structures belonging to each language along a specific mechanism. These structures can be detected in the two-element utterances and seem to be already mastered at this point in time, whereas the morpho-syntactic or lexical systems have not yet been mastered.

The aim of this analysis is two-fold: on one hand, to clarify the specificity of the prosodic realization revealed in the two-element utterances in the two Korean children in order to better grasp their precocious acquisition of the prosodic system of each language; on the other hand, to demonstrate the similarities between a French- monolingual child and a Korean monolingual child. In order to study the acquisition process at work, we will first look, particularly in the case of the two-element utterances, at the manifestation of the use of grammar by the child.

3.2.1. Delivery in French

We will study the articulation speed regarding the number of syllables uttered per second so as not to be influenced by the by the measure of duration which must account for segmental characteristics. For instance, in the utterance /chat-dodo/, if we measure the bi-syllable /dodo/ in 625ms, we deduct that the child pronounces 3,2 syllables per second.

We have thus measured the delivery for each element produced in an utterance. The more the figure is small and the more the syllable is pronounced slowly, which brings us to consider it as a prolongation of the concerned element.

-Comparison of delivery between two elements :

Is there a difference between the delivery of the first and that of the second element in these children ?

The results of a *test-T* are the following:

French Child (thereafter "FC"): Element 1 \neq Element 2:

DF (60), $p=0.0005$ 4,6 \neq 3,1

Korean Child 1 ("KC1"): Element 1 \neq Element 2

DF (52), $p=0.0028$ 5,2 \neq 3,5

Korean Child 2 (EC2): Element 1 \neq Element 2

DF (40), $p=0.0001$ 5,3 \neq 3,1

Statistically, in the case of all these children, the element 2 is pronounced more slowly than the element 1.

-Comparison of delivery between the children as measured on the elements in two-element utterances :

Is there a difference between the delivery of two bilingual children and a monolingual child?

The results of a one-factor factorial Anova are the following :

For the first element: $F(2,76)=0,8$, $p>0,4398$

For the second element: $F(2,76)=2,2$ $p>0,1129$

We notice therefore that there is no significant difference between these three children regarding the slowing down of delivery in the second element of the utterances produced.

-Comparison of the culminating point (F0 en Hz) between two elements :

The aim is to see whether there is any culminating point difference between the first and the second elements in these children. If there is, the interpretation can then be made in the sense that the highest point is an element considered by the children to be more important is the utterance (*test-T*).

FC: Element 1 = Element 2 (372Hz=362Hz)

DF(60), $p=0,5001$ denotes a non-significant difference

KC 1: Element 1 = Element 2 (306Hz=293Hz)

DF(52), $p=0,5561$ denotes a non-significant difference

KC 2: Element 1 = Element 2 (450Hz=430Hz)

The results reveal that there is no significant difference in lever of Hz between the two elements, whereas element 1 is higher than element 2.

-Comparison of the culminating point (F0) between children :

Since the F0 value is not comparable between speakers, based upon the characteristics of each speaker's voice, we have taken a the culminating point of the first element in a two-point element, then the second in order to measure the spread between the two points in quarter tones. Once

measured, a *factorial Anova* was carried out to evaluate the difference between the three children.

The following results were obtained:

For the quarter tones: $F(2,76)=0,1$, $p=0,8797$
(Average: FC (1), KC1: 1,5, KC 2: 1,6)

We notice that there is no contrast in fundamental frequency F0 between the three children ($p>,05$): FC (-1), KC1 (-1,5), KC2 (-1,6).

3.2.2. Delivery in Korean

-Comparison of delivery between two elements :

Is there a difference between the delivery of the first and that of the second element in these children?

In the Korean child production, the first word delivery is faster than the second one: for a Korean monolingual (thereafter "KM") (3,8 : 3,4), for KC1 (4,1 : 3,9), for KC2 (4,2 : 3,9). Is this prolongation of the second element in French as well as in Korean statistically significant?

The results of a *test-T* are the following:

KM: Element 1 = Element 2: $DF(34)$, $p=0,125$

KC1: Element 1 = Element 2: $DF(18)$, $p=0,5637$

KC2: Element 1 = Element 2: $DF(36)$, $p=0,3113$

Contrary to delivery contrast obtained between the 1st and the 2nd elements, the results in Korean do not reveal a significant difference.

-Comparison of the culminating point:

Is there a culminating point F0 difference between the 1st and the 2nd elements in these children? (*test-T*)

MC: Element 1 \neq Element 2: $DF(34)$, $p=0,049$

(342,3 Hz \neq 381,6 Hz)

MC1: Element 1 \neq Element 2: $DF(18)$, $p=0,049$

(381,6 Hz \neq 459,8 Hz)

MC2: Element 1 \neq Element 2: $DF(36)$, $p=0,042$

(400,3 Hz \neq 442,3 Hz)

Each of these three level differences is significant ($p<0,05$)

-Comparison of culminating point (F0) between children:

Same procedure as in French.

The result obtained is the following:

For the quarter tones, $F(2,44)=0,7$, $p=0,5118$

(Average: MC (3,8), MC1 (6,5), MC2 (3,5))

We notice that there is no difference between these three children. We note that the culminating point of the second was higher than that of the first.

3.3. Analysis 3 (perceptive aspect for adult listeners)

The majority of studies on children bear on linguistic production rather than on perception. Regarding perception, the works of Eilers, Gavin & Oller (1982) [8] explain well the perception problems in babies aged 4 to 8 months, raised in a bilingual or monolingual environment, while giving original results: it seems that the children raised in a Spanish-English bilingual environment can better differentiate, not only English-Spanish phonemes, but also foreign phonemes which were not accessible to them. In their case, these results are proof that a linguistic environmental enrichment in the phonetic realm will allow a higher capacity of language

discrimination. There exists a close relationship from an early age between the development of language in a child and the environmental linguistic input.

The perceptive approach will permit to determine an eventual physical common denominator to a number of different stimuli. In addition, the auditive approach is justified by the fact that there are fewer variations at the perceptive level than at the acoustical level, where two natural utterances never have strictly identical properties. In the child, the variability is still stronger than in the adult, and our aim is to understand how the prosody is perceived in two- element utterances produced by the child. According to Rondal, J.A (1981) [9], "there can be more perceptually different melodic outlines than linguistically different intonative patterns, but not less".

From this angle, we carried out a perception test in order to associate an existing link between the acoustical value and the emphasis perceived by the ear.

-Perception test

We conducted a test among two groups of auditors: the 47 two-element utterances in Korean (as produced by the three Korean children, including the two Korean-French bilinguals, and a Korean monolingual) to 11 Korean auditors; then, the 79 utterances in French (as produced by three children including the two Korean-French bilinguals, and a French monolingual) to 11 French auditors. All auditors were volunteers and aged between 25 and 45 years of age. The auditors underwent the test in groups of 3 to 4 persons in a quiet environment, and the same procedure was carried out for all auditors.

The task of each auditor was to decide on which of the two elements the child insisted more during the production of the two-element utterances. The auditors listened to each utterance three times. The Korean test lasted approximately 8 minutes and the French test lasted approximately 15 minutes.

-Relationship between the acoustical values and the emphasis perceived:

• Responses given for the French (11 auditors) : for the French, the answers corresponding to a slowed-down delivery were considered to be "correct" (or congruent) based on the fact that there is no significant difference between the two elements other than the speed (measured by the delivery).

If we observe the responses given by the 11 French auditors, we obtain 64% of congruent responses. It would seem that the French auditors considered the length of the element uttered in French to be a factor of assertion by the child.

• Responses given for the Korean (11 auditors) : for the Korean, the responses corresponding to a high frequency were considered to be correct (or congruent) based on the fact that there is a significant difference between the two elements in terms of F0. We obtained 75% of congruent responses. It would seem that the Korean auditors considered that the children placed the accent on the element they wished to bring out when placing the culminating point F0 on that element.

4. Discussion & conclusion

We observed that the bilingual Korean-French children use two different modes of achieving the prosody for the two-element utterances: one for Korean and another for French.

We also observed that there is no difference to be found as far as the acoustical parameters used by the two bilingual children and the monolingual child. We deduce that our initial assumption on the existence of two linguistic systems (including the prosodic system) at a precocious age seems to be confirmed. In other words, to emphasize a new element, the children use the F0 parameter in Korean, whereas in French, they use the delivery speed.

In both languages, where the two-element utterances are concerned, the element 2 was generally pronounced more slowly than element 1 (delivery measurement). However, in the case of the culminating point (measure of F0 in Hz) element 1 is higher than element 2 in French, whereas in Korean, element 2 stand out more than element 1.

This brings us to the following conclusions:

Before the acquisition (or stabilization) of the syntax and the morphology (in terms of grammatical morphemes: functional particles in the Korean case) the child's utterances seem to be based on the use of a pragmatic intonative grammar. This prosodic-pragmatic acquisition will develop along with the capacity to communicate, as well as the development of the syntax. (Keller 1985) [10]. The lingual development of precocious bilingual speech in our study is achieved in a stable fashion as is demonstrated by the ease in the capacity to differentiate the two languages.

It would seem that this distinguishing capacity between the two prosodic systems lies partly on the knowledge of the pragmatic conditions of lingual interaction: it consists mainly of the apprehension of the speaker and the situation. If the child masters the prosodic systems belonging to each language, it is because the child has acquired a general knowledge of the environment (physical or social) and of the natural order of things; a particular knowledge about the speaker, the social rules linked to the relative status of the partners, etc.

5. References

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