

# Perception in bilingual children learning English as a foreign language

## A pilot study

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The aim of this study is to explore the acquisition of the phonology of a foreign language in young bilingual children. It focuses on how English sounds and sound categories (phonemes) are perceived and acquired using a narrowly controlled input. We would like to verify the generally accepted claim according to which young children are very good at perceiving foreign sounds, and we also want to find out to what extent unconstrained, naturalistic observation can be an appropriate method to study perception in young children. Laboratory research traditionally focuses on synthetic speech segments and minimal pair contrasts, which is a highly powerful, objective and concretely measurable method but one that could hardly be efficient with young subjects in a meaningful environment. Also, such investigations tend to focus on tiny sections of the whole process of acquisition and/or perception.

Thus, trying to endorse a natural setting as opposed to artificial laboratory research, but at the same time exploring its limits, constitutes our primary objective. But it is probably very difficult to measure the exact role perception plays along with L1 transfer and diverse inherent factors such as Universal Grammar (UG) and developmental processes in the child. It is not the direct scope of this study to give a synthetic analysis of the complex interaction of these different levels of internalising a foreign language (several succinct introductions and critical overviews are available on language acquisition and second language acquisition, e.g. recent textbooks by Saville-Troike, (2006) and Hansen Edwards & Zampini, (2008)). We aim to focus on perception and the limits of measuring its effects. Our conclusions are therefore mostly methodological; we want to expose the potential weaknesses of any experiment dealing with perception in a non-laboratory setting.

The original motivation for this study came from the accessibility of the subjects of the experiment, their being the children of the author. It is rare to have both a hundred per cent control of input material and a nearly total control of the subjects' output (i.e. hearing what they produce). The target language being English, accidental exposure to it cannot be easily avoided, even with very young children. Unless being a parent, one simply cannot have an exclusive control of what the subjects are exposed to. In addition, children have to be very young, not attending large communities at school or pre-school structures. In the same way, observing spontaneous speech produced by children can only be truly carried out in the home.

Therefore, it seemed an exceptional opportunity to exploit my children's first exposures to English in a scientific manner. Bilinguals learning English at the ages of two and three in an instruction-free environment is perhaps not uncommon but an analysis of what is going on and how they acquire English phonology is certainly rarer. The interaction between three languages, the impact of L1s on the newly introduced foreign language, and the insights that can be gained as to perceptual categorisation constituted a promisingly rich soil for research.

## Perception and transfer

Impossible as it is to address the acquisition of the phonological system of a foreign language and the role of perception in the process in a short article, terminological questions and concepts related directly to the framework of our study will be discussed as briefly as possible.

It is perhaps not necessary to define perception, but transfer and transfer-related phenomena should, at least to some extent, be mentioned here. Transfer is used to refer to any evidence of the native language influencing the target language. It can be positive and negative; and it can be other than phonological. Transfer of syntactic structures between the two L1s happens regularly in the speech of the children participating in the study, as well as direct transfer of individual words inserted from one of the languages while speaking the other one.

Originally, transfer is considered to be interacting with both perception and production, listening and speaking, the native phonological system acting as a 'sieve'<sup>1</sup> on L2 sounds (this is widely researched and tested (especially with synthetic speech segments); cf. Kroll, Gerfen & Dussias p. 118-121 for references). But while considerable amount of research is available on adults, less is known about transfer in children both in second language acquisition and in the field of bilingualism in general (Romaine, 1995: 182, Kroll, 2005: 116).

The reason why children are less studied is probably because age is a significant factor in language transfer phenomena: young acquirers are less likely to draw on

1 An idea originating from the structuralists (cf. e.g. Major (2008)).

their L1 than adults (Selinker 1984). This is especially true for pronunciation. At an early age L2 acquisition is considered to be a lot like L1 acquisition. We can accept this based on innumerable cases of children acquiring a new language without a foreign accent, which is rare for adults. Yet it is regrettable that almost nothing is available on phonological transfer in young bilinguals and especially in their learning a new language without being immersed in it.

Therefore, instances of transfer cannot be ruled out altogether in the study. It is clear that in *natural* second language acquisition at such an early age phonological transfer should not interfere at all or only marginally, yet we might find mother tongue influences when learning a *foreign* language at the same age. This can happen for a number of reasons: because the exposure to the target language is much shorter, because there is no communicational value attached to the new language (it is not used at home nor at school), and because the input is less varied and native-speaking models are restricted, in our case, to a few cartoon characters. Therefore, possible indications of phonological transfer will be taken into account for each feature under scrutiny.

## Learning vs. acquisition, EFL vs. ESL

These considerations bring up a few related concepts from the field of language acquisition that are used in this study.

First, *learning* English as a foreign language as opposed to *acquiring* English as a second language probably involves a lot of dissimilarities, even at a very young age. Learning English in a classroom setting is potentially very different from acquiring English in a naturalistic setting, i.e. living in the same linguistic environment as the target language, learning school subjects in the target language, etc. This study uses an undirected, naturalistic setting, watching DVD, which could eventually be used in a classroom setting.

Secondly, and more importantly, there are differences in *second* as opposed to *foreign* language learning, although they are, arguably, less relevant in acquisition (or learning) at an early age. Still, English for my subjects cannot be a second language since it is not spoken in France and neither of the parents uses English in their everyday life at home. In the context of this study English is a foreign language to the children, they have had no other access than via the cartoon characters presented to them on DVD.

## Bilingualism

Finally, the term bilingual is used to cover various degrees of bilingual proficiency and types of acquisition. It is used here to mean infant bilingualism: the children in the experiment have been exposed to two languages from their birth.

Literature on different types of bilingualism, on different strategies adopted by parents, on different methods used in bilingual research is abundant (Romaine (1995), Kroll & de Groot (2005), Wei & Moyer (2008) among many others). It lies beyond the scope of this paper to present current tendencies, to argue for or to refute theoretical models. What is presented here is original work from a pilot study without pursuing to compare the findings to previous ones, or to expose specific theoretically bound claims. We want to raise questions and to urge to bring young bilinguals in the focus of research studies.

## Methodology

We are going to approach perception in a very specific context of foreign language acquisition: young bilingual learners during their first six months of exposure to English. This protocol was set up in an attempt to observe perception on various levels and linked to different types of phonological interaction between the two mother tongues, French and Hungarian, on the one hand, and between L1s and English, on the other.

Our hypothesis was that perception was the single most important factor in the acquisition of English phonology in very young learners. Perception might be guided by UG markedness, it can be influenced by the maturation of the articulatory system, and it can eventually be affected by phonological transfer from L1. The question we wanted to answer within this complex domain was 1) whether or not it is possible to see perception at work in a non-laboratory set up, and 2) if and how transfer-related phenomena can be seen to modify perception. This would help in establishing more clearly the exact role of perception in young EFL acquisition, while as regards to looking at the nature of transfer, the bilingual native system of the subjects seemed an advantageous factor.

## The subjects of the study

Two children participated in the study: a boy aged 2 years 5 months and a girl aged 3 years 6 months at the beginning of the experiment. Both spoke Hungarian and French fluently according to the capabilities of their age. Both have lived in France and in Hungary all their lives, the proportion of the time spent in these countries being approximately 80 per cent in France and 20 per cent in Hungary. Their father is French their mother is Hungarian and they have been raised in a bilingual environment from their birth mainly but not exclusively following the 'one person – one language' principle (one may wonder who and where other than in textbooks can maintain this rather artificial constraint; cf. Romaine 1995: 183-186). Hungarian was the dominant language for both children during the period of the experiment.

The acquisition of French and Hungarian phonemes was complete for the older child, and only partially so for the younger one. Difficulties in the acquisition of Hungarian centred around the habitually problematic trill /r/, as well as voicing of plosives and fricatives leading to frequent misunderstandings in his everyday speech. Both problems were clearly inherent to production; his perception of the features was unproblematic.

Interestingly, today (a year after the experiment) he has more or less mastered voicing, at least sufficiently to avoid repeated questions for clarification from her mother, but has developed another ‘irregularity’ in his articulatory mechanisms replacing the Hungarian /h/ by its closest French equivalents /ʀ ʁ/ when speaking Hungarian. It has also become apparent that he does not separate French back nasal vowels although it is not clear whether this is related uniquely to production or to the phonemic system as well. At three and a half, his acquisition of L1s is clearly not over yet.

The importance of this on-going maturation of the phonetic and phonological systems in the child is not negligible. Our study claims to focus on perception and L3 acquisition trying to see the eventual extent of influences from L1s, yet it has to be kept in mind that deviations from adult norms are not always due to inferences between languages – be that between two ‘competing’ mother tongues or between L1s and L3 – but “to more general processes of simplification and substitution that are systematically found in the speech of monolingual children” ((Romaine 1995: 190), see also 1995: 218 on developmental errors).

## The phases of the experiment

There are hundreds of different ways one can teach English, even if we reduce the field to very young beginners. The method we applied was very simple: the children watched 2 to 5 episodes of *Peppa Pig* on a daily basis without any attempt to direct the process by instructions. There were 39 episodes in all and each time they were selected at random. Whenever spontaneous production of English occurred, there was no correction from the observer. The rare exception to this unobtrusive setting amounted to a repetition of a sentence, or providing translation when (rarely) it was explicitly asked for.

There were two phases of the experiment. First, a six-month-long observation of spontaneous English performance (children playing together or on their own), and second, at the end of the experiment, there were three eliciting sessions, eliciting specific words after watching an episode. It was not a repetition task, questions were asked at the end of each episode, in Hungarian or in French, and the children produced English responses (when they could). No written input was used in the experiment.

The investigator was not a native speaker of English, the use of English on her part was therefore avoided during the experiment altogether. This was an artificial constraint that had to be applied since I did not want them to mistake me and my speech for a good English model and thus produce Hungarian-influenced English in their speech.

There were no pre-defined phonological variables to focus on. Setting a pre-defined group of variables would have been already presupposing the type of findings there are to discover. This makes the experiment more difficult to carry out but maintaining a global overview of how English phonology is being acquired seemed crucial.

## The linguistic characteristics of the input

*Peppa Pig* features different anthropomorphic animal families living human-like lives with familiar, everyday adventures. The characters are drawn which means that the articulatory cues children could rely on were heavily reduced; schematic labialisation and degrees of aperture result most probably in distorted visual perception.

Characters speak with different accents but the protagonists, the pig family, use RP. There are three generations: very young, adult and elderly speakers, with slight accent differences within RP.

## Findings

A selection of the available findings will now be discussed; first, vowel sounds (diphthongs and open vowels), then consonants ('th', 'r').

Other features that have been observed will not be included in the present discussion. Selection was necessary not only due to practical space limitations but also in order to focus on one single aspect of the study, perception, trying to put aside other not *directly* relevant findings and observations. Syllable structure, allophonic processes such as aspiration and voicing, as well as different prosodic features (such as stress, vowel reduction, word boundaries and intonation) revealed interesting patterns of acquisition. The acquisition of syllabic structures, for instance, seemed to be subject either to heavier transfer from L1s or to developmental influences, while stress and intonational patterns showed successful, inference-free perception.

## Perception and acquisition of vowel sounds

The acquisition of the vocalic inventory of English would be much too complex not only to fit into this short paper but also to properly observe and adequately test

in the framework of the experiment. After a careful selection of data, two variables or rather groups of variables are to be presented: open vowels and diphthongs. Below is a visual comparison of the French, the Hungarian and the English vowel systems (with comments restricted to what is strictly necessary).

It is impossible to dissociate the perception of phonetic details from the perception of phonological attributes relating to the system of vowels. A late learner, arguably at around the age of puberty and later,<sup>2</sup> would heavily rely on native phonemes and would, at least at the beginning of the learning process, filter information available in the perceived acoustic package according to his L1 system configurations. While, as it was posited earlier, given the age of the children in the study such transfer is not likely, the different vowel charts bring out some essential dissimilarities between L1s and English that are worthy of note.

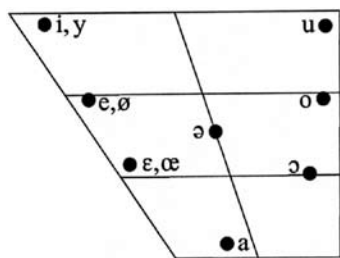


Figure 1: The French vowel system (oral vowels). Based on Fougeron & Smith (1993: 73).

Comparing the French and Hungarian systems (cf. figures 1 and 2) we can anticipate possible difficulties with English sounds. This is most apparent when we look at open vowels; figure 1 shows the last remaining open vowel in French, and figure 2 displays a slightly more diverse group in Hungarian. This suggests that French speakers will have problems with creating categories for the four English vowels, and generally speaking they will

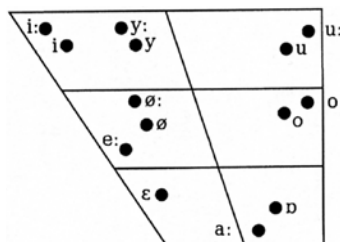


Figure 2: The Hungarian vowel system (all vowels). Based on The Handbook of the IPA, 1999.

equate English /æ/ with French /a/, English /ʌ/ with French /œ/, and are faced with the irresolvable pair of open back vowels surprisingly reluctant to opt for a de-nasalised /a/. Hungarians, on the other hand, will most often create and maintain erroneous correspondences between English /æ/ and Hungarian /ɛ/, English /ʌ/ and Hungarian /a:/, and conflate the two back vowels into one phoneme maintaining a durational difference between the two.

Other than open vowels, another striking dissimilarity is English diphthongs corresponding to a complete lack of gliding vowels in both French and Hungarian (cf. figure 3). Diphthongs are often difficult to acquire both as regards to perceiving the difference between monophthongs and diphthongs (/eɪ/ and /e/, for example) and as to correctly produce a gliding vowel sound.

<sup>2</sup> The Critical Period Hypothesis has been under attack but few would deny its validity in acquisition at least up to a certain point (see Saviile-Troike 2006, or Romaine 1995 for a brief overview).

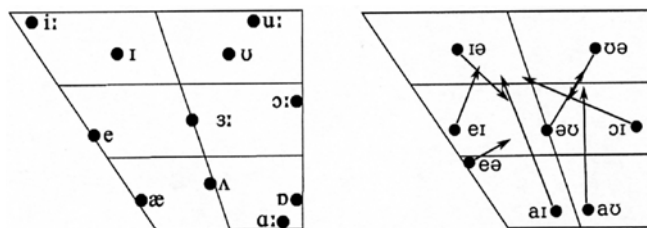


Figure 3. The RP vowel system (monophthongs and diphthongs). Based on Roach (2004).

## Open vowels

The extent to which the four open English vowels have been acquired by the children is uncertain. The uncertainty is due to relative scarcity of relevant, usable data for some of the vowel sounds, as well as to the lack of instrumental confirmation of impressionistic judgements (the author being a non-native speaker of English is not negligible here). Nevertheless, findings are interesting even if slightly tentative.

*/ʌ/* and */ɒ/* seem to be acquired as separate categories since both of them are realised very closely to Hungarian values of */a/* and */ɑ/*, respectively (cf. Figures 2 and 3). */æ/* is variably retracted and/or opener than its habitual RP value, while */ɑ:/* is variably advanced. The latter feature is consistent with the input.

The dominating role of perception over L1 phonology was manifest in the correct processing of the (variably) advanced feature of */ɑ:/* in the cartoon. This was, in fact, surprising for the investigator, especially in an item like *car-wash* where */ɑ:/* is pronounced next to the other back open vowel. Being a relatively late learner of English, I have never picked up this permissible advancing of */ɑ:/*, although it is clearly part of RP (cf. Gimson 1994:107, for example).

*/æ/* on the other hand, tends to converge with */ʌ/* in the children's production, which is *not* consistent with the input. A number of questions remain unanswered. Does perception fail, and can we test it if it fails? If it does fail, why? We must not forget that visual input for vowel sounds is extremely important and that this was highly distorted in the perceptual input. Also, six months seem a long period, was the exposure not intensive enough? Is input data not sufficiently varied for the children to realise that */æ/* is distinct from */ʌ/*?

Solutions to these questions cannot be established from the pilot study. If there was to be a variable-based follow up then open vowels would certainly be among the features to survey. The most important finding to retain then is the acute tuning to the acoustic features of */ɑ:/* and the correct articulatory production thereof, which supports the already established perceptual keenness of young learners.



## Diphthongs

As it was pointed out earlier, there are no gliding vowels in French and in Hungarian. Findings show indubitable acquisition of English diphthongs as far as their gliding nature is concerned, with rare and limited modifications of starting or target points. These modifications include the use of /e/ rather than /ə/ in centring diphthongs and the openness of /e/ in /ɛɪ/ but both features are more or less consistent with variation present in the input.

It would be helpful to be able to compare such productions to acquisition studies in order to dispose of a clearer view of the developmental path of diphthongs in young native speakers or learners of English. All in all, deviances are minor, signs of transfer do not appear in our study.

## Perception and acquisition of consonants

Among consonants, two variables will be presented: the pair of voiced and voiceless interdental fricatives /θ ð/, and the post-alveolar approximant /ɹ/.

### Interdental fricatives

The acquisition of /θ/ and /ð/ was one of the most obvious processes to monitor. These sounds are missing from both French and Hungarian, thus perception was crucially important.

Equally important to re-emphasize is the poverty of facial articulatory cues in the presentation of the material. Without visual cues, the acoustic noise one perceives when hearing 'th' sounds resembles that of labiodental fricatives, /f/ and /v/. Much more so, as a matter of fact, than /s z/ used by French learners or /t d/ used by Hungarian learners. One might add that /t d s z/ are all dental in Hungarian and French, which makes it easier to generate the mistake.

Findings come from spontaneous speech as well as from elicited production; also, it was during the eliciting session that I could observe the children's articulation of these sounds (by actually looking at their tongue and teeth to determine where they place the tongue tip). As it turns out, since interdentals are missing from the native system, since the input was in several ways particular, and especially since the acquisition of the phonemes was only partially successful, /θ/ and /ð/ proved to be very instructive for the study.

The two subjects adopted apparently different strategies in producing the sounds. The boy used an interdental fricative for /θ/, while the girl used a clearly dental stop followed by /h/, the latter being the dominating sound. On the other hand, both of them used /v/ for /ð/.

A number of remarks are due before assessing the implications of these findings. First, the production of /ð/ was very difficult to test. This sound did not occur in spontaneous speech from the children. /ð/ is a very common English sound but its frequency is mainly due to function words. Obviously, it is impossible to elicit words such as 'this', 'these' or 'that' at the level of proficiency of our young subjects. Thus, while the voiced fricative was frequent enough it was contained in only one, though re-occurring, lexical item that the children could understand easily: *this is my little brother George*. Therefore, the acquisition of /ð/ was tested on this single item.

Two important corollary repercussions are that 1) function words are rarely stressed and thus clear and unambiguous perception is greatly hindered, and 2) they are probably much more difficult to grasp than are lexical, meaningful words (especially because we are dealing with children who are two and three years old watching a cartoon in a foreign language) and consequently are perhaps more readily 'put aside' in their acquisition process.

Secondly, lispings cannot entirely be ruled out for the younger boy. He does not lisp but during the experiment he started using occasional inter-dental and not dental fricatives for the /s/ phoneme in Hungarian. This can be a natural part of the ongoing maturation and the acquisition process of L1s, it can also be an effect of the experiment occasioning transfer coming from L3.

Thirdly, there was an exception for /θ/ with the girl: the high frequency and easily acquired item *thank you*. One occurrence in one episode pronounced with /s/ by Daddy Pig results in the girl producing /s/ systematically in *thank you* despite the other occurrences of the same item with /θ/.

What is going on here? Despite distorted perceptual cues on a visual level, one of the subjects seems to have successfully perceived and acquired the voiceless interdental fricative. The question is why the other subject has not.

One possible explanation is that the younger boy has a less firmly established native system, and has no problem accepting what must seem to be free variation between /θ/ and /s/. Whether his occasional interdental fricative used for the /s/ phoneme in L1s is the *cause* of his 'success' with /θ/ or the *result* of his contact with English, cannot be established.

Following the same line of reasoning, the older girl has perhaps a more firmly established native system and hence the re-interpretation of the first segment of *thank you* based on one occurrence. Although, /s/ for /θ/ in *thank you* is heard once in the original input, it is in fact a regularly recurring realisation for the subject, as she watches the episode again and again. She might overgeneralise for this one lexical item drawing the conclusion that *thank you* starts with /s/ and the (numerous) other – correctly pronounced – occurrences of the same word are the deviating forms.

Apart from this specific misinterpretation of perceived data on her part, she is equally unable either to perceive or to produce /θ/. The long /h/ signals correct perception of the fricative element, and the dental /t/ as the starting point of her

articulation of the segment suggests a correct evaluation of the place of articulation of /θ/. In any case, the exactitude of her perception cannot be judged here: correct perception followed by incorrect categorisation is just as likely as correct perception *and* correct categorisation but erroneous production (cf. Romaine 1995: 193 on the asymmetry between perception and production of the same pair of phonemes).

Thus, phonological transfer, age and production-related error may all be significant here, but more importantly, why is the *voiced* interdental fricative not acquired? The fact that /ð/ occurs less frequently, especially in stressed position (be that lexical or tonic stress), suggests that perception is indeed crucial in the acquisition. Less input, less well perceivable input due to the unstressed position and opacity of access to meaning of grammatical functions may all make it harder to acquire the phoneme.

Perceptual closeness to labiodental fricatives, however, does not explain the partial success of /θ/ versus the complete failure of /ð/. The perceptual distance, on the other hand, from the dental (or alveolar) fricatives /s z/, is clearly sufficient to avoid the typical French acquisition at a later age (/θ/ - /s/ and /ð/ - /z/).

The asymmetry in acquisition also raises the question of the systemic status of /θ/ for the boy. As has been suggested, time and input were probably not sufficient for a category of interdental fricatives to be created separately. Free variation, /θ/ being an allophone of /s/, is much more likely.

The rather complex case of interdental fricatives points to a range of methodological issues in perception studies. Can we draw an exact line and say where the role played by perception starts and stops in the acquisition of a foreign language? If yes, then how exactly can it be established: perception vs. developmental maturity, perception vs. transfer, perception vs. Universal Grammar and markedness are just a few of the key issues to be eventually considered.

### The approximant /r/

Looking at the acquisition of the rhotic was interesting from several different points of view. Firstly, rhotics are the most heterogeneous natural class one can find across languages. In Hungarian the typical rhotic is an alveolar trill or one-tap trill, in French it is a uvular fricative or approximant. The latter is acquired for both subjects, the Hungarian /r/ is acquired for the girl (quite rare at this early age) but not for the boy. Given such a strong dissimilarity across the native systems and the English post-alveolar approximant, the rhotic seemed an ideal and very frequently occurring phoneme to observe.

The approximant /ɹ/ was one of the first spontaneously produced English phonemes, realised as /m/ by the younger boy in “*Let’s have a race!*”. This is a very neat

example of the reinterpretation of a secondary articulation feature – labialisation – into a primary articulation feature keeping the manner of articulation equivalent (at least as much as reasonably possible: the nasal replaces the approximant). The original sentence was pronounced by a character with a slight London accent /letsævəɹ<sup>w</sup>aɪs/ and the boy's production was /letsavəmaɪs/.<sup>3</sup> Later on, the nasal disappeared and an approximant was used by both subjects with an uncertain, probably variable, place of articulation accompanied frequently by strong labialisation which is consistent with the input.

Secondly, rhoticity – the presence or absence of /r/ – in itself was interesting to test. The accents used in the cartoon were not entirely homogeneous but were for the most part RP and therefore non-rhotic. Non-rhoticity is difficult to acquire at later ages because of the influences of the writing system and its dominating role in English teaching. Students actually protest that they can hear /r/ word-finally, especially with centring diphthongs. So one might come to think that, at least for young adults, /ə/ may become perceptually close enough to /ɹ/ to be interpreted as a consonant.

The answer, based on the production of the children, is clearly in the negative. Neither subjects ever thought to produce a rhotic except before a vowel sound. The target of their centring diphthongs is /e/ rather than /ə/ but is clearly a vocalic element.

The first instance of /m/ used for /ɹ/ that was produced after a few days into the experiment, and the satisfactory acquisition of the phoneme as attested by their production later, are clear signs of successful perception. The transitory use of /m/ also shows strategies – it may be transfer or, simply, an independent compensating strategy – in the acquisition of a new sound. Such transfer, if it indeed is inference from L1s, is useful and is abandoned as soon as the articulation of the new sound is mastered.

## Conclusion

This pilot study aimed to test unobtrusive observation and eliciting as methods to study perception in young children beginning to learn English. The limitations of such a non-laboratory approach were to be discovered and instances of transfer as one of the elements interfering with perception were singled out to survey.

Both the non-laboratory framework and the undirected nature of the learning experiment have their greatest advantages in accessibility and simplicity. While the experiment can be said to have certain limitations, it should be noted that, if nothing else, it proved to be efficient in actually *teaching* English. Accessibility and simplicity

<sup>3</sup> These were the very first English words, uttered when playing in the bath, that gave the incentive for this type of study – namely that spontaneous production will occur even at such a very low level of proficiency.

are important when envisaging a large-scale project, yet the following points are to be kept in mind.

There were certain phonemes for which the study successfully showed the overbearing importance of perception for the subjects: in the acquisition of /ɑ:/, the diphthongs in general, /ɪ/, and /θ/ (for the boy). There were others for which we could see perception playing a slightly reduced role: in the acquisition of /æ/, /ð/ for both subjects, and /θ/ for the girl. While we could bring these problems to light we could not offer satisfactory explanations, which shows some of the limitations of the study. Unsuccessful production may hide the non-perception of certain features due to insufficiencies of the input leading to perceptual errors, or simply to scarcity of exposure. Also, a strong link can be envisaged between partial failure in perception and processes related to transfer and/or UG, but these cannot be ascertained.

Remedies for the methodology are not very difficult to find. As far as the questions raised by the fricatives are concerned, a more varied input including real humans with face-to-face communication would help clarify the uncertainty surrounding perception. /æ/ and open vowels in general, however, seem to call for a *combination* of research methods. A global overview of acquisitional processes by observation and eliciting helped focus on a particular group of variables, their study could now be complemented by instrumental analyses and/or by specific tests as to the effect of the intensity of exposure.

The only problem that seems difficult to solve is the testing of perception through production. Although this is how it works in real life, native-sounding production is the result and the proof of good perception, production involves too many other factors besides perception. Thus, while correct production is not possible without correct perception, incorrect production may persist even with correct perception because of problems inherent to articulation or other physical maturational processes.

So, why study perception through production and why not perception proper? One of the reasons has already been stated, our preference for global monitoring instead of using a selection of variables. We have found the spontaneous speech production phase especially productive and revealing (for supra-segmental features, for example, that were not discussed in the paper), although this is not unproblematic since parents cannot always be the investigators. Finally, another reason is that the very low level of proficiency of true beginners would not permit us to establish a protocol for a graded minimal pair sound recognition test.

These various points have summed up the strengths and weaknesses of our approach to study the initial six months of EFL acquisition in two young learners. Perception seems certainly very accurate and less influenced by native phonological categories in younger learners than in older ones. At the same time, young learners at around the ages 2 and 3 are still in the process of building up their phonemic inventories, phonological rule systems and articulatory mechanisms. Further studies

on young bilinguals acquiring a new language – applying different methods and eventually narrowing down their field of interest to specific phenomena – can only be encouraged.

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