

Cross-linguistic prosodic influence in bilingual language acquisition: a qualitative case study

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ABSTRACT

This paper reports on cross-linguistic prosodic influence in bilingual language acquisition, based on a case study of one French-Spanish bilingual child of whom 3,340 utterances between 2;0 and 3;0 years of age are analyzed. Numerous studies on bilingual acquisition of phonology have uncovered interaction between the two linguistic systems involved; this study aims at motivating the direction of influence by language-specific prosodic properties. Results for lexical stress, prosodic phrasing and intonation indicate possible negative transfer from French onto Spanish, which is explained by prosodic variability and its consequences for acquisition. Even though these findings are only exploratory, they are intended to serve as a predictor for other language combinations in multilingual language acquisition. Other (extra-linguistic) types of influence like language dominance and methodological issues are discussed.

Keywords: bilingual language acquisition, negative transfer, prosody, French, Spanish.

1. INTRODUCTION

Bilingual language acquisition is defined as the simultaneous acquisition of two languages from birth ([16]). The relevant principle in the case study is the “one person – one language” method ([19]), frequently employed in Europe and elsewhere, according to which both parents speak different native languages (L1) and each speaks his/her L1 with the child who is then bilingual (2L1).

The theoretic debate in bilingual language acquisition research is whether the child starts off with one single linguistic system, much like in monolingual language acquisition, or whether both languages are separated from early on. The former perspective is the traditional analysis (e.g. [23]), while the latter is by now the standard assumption, though mainly based on studies of (morpho-)syntactic phenomena (e.g. [15]). Successful separation of two systems notwithstanding, bilingual language acquisition must not be equated with doubly monolingual language acquisition because there is influence between the two linguistic systems

involved, such as acceleration, delay or transfer (e.g. [18]; [12] for influence in phonology).

An important aspect in multilingualism is language dominance as bilinguals may not be balanced across their languages ([2]). Dominance is measured in terms of MLU (mean length of utterances in words/morphemes), upper bound, number of utterances or development of noun and verb types ([16]). Studies on the acquisition of syntactic phenomena have shown that dominance has an effect on mixing but is independent of the aforementioned types of influence (e.g. [9]).

2. BILINGUAL ACQUISITION OF PHONOLOGY

Like research on syntax, work on bilingual acquisition of phonology has established that children are able to acquire and to separate two different phonologies from early on. On the segmental level, [7] shows in three German-Spanish bilinguals that acquisition is delayed with respect to the more marked vowel system of German. Voice onset time (VOT) was investigated by [8] for the same language combination in four bilinguals, finding influence in some children (delay in German, bidirectional transfer). For prosodic criteria, [14] describe delay for two German-Spanish bilinguals regarding the acquisition of pitch accents when compared to monolinguals, and [13] find evidence of interaction between German and Spanish in the intonation of yes/no questions in two bilinguals. Finally, [17] investigates 17 English-French bilinguals and their syllable truncation in quadrisyllabic words as a function of lexical stress; she also finds interaction in the way that French influences the acquisition of English which is explained by the fact that English allows for greater variability (cf. section 3).

As this brief literature survey shows, the best-studied language combination in bilingual acquisition of phonology is German-Spanish. Phonologically, this is a very interesting combination as there are many segmental and suprasegmental differences between the two languages, which stem from different linguistic groups within the Indo-European family, the Germanic and the Romance one. The same pertains to Paradis's [17] French-English bilingual subjects. The present case study takes two

Romance languages with a high degree of genealogic relationship into account. This language combination is particularly interesting because despite their close relation, French differs highly from all other Romance varieties when it comes to the prosodic parameters studied here.

As a consequence from detailed phonological analyses, all studies (perhaps with the exception of [17]) can only analyze a very low number of individuals. Importantly though, the studies contrast the findings with monolingual control data, either collected for the same purposes or taken from the relevant literature.

3. CONTRASTING FRENCH AND SPANISH PROSODY

Unlike Spanish or German, French does not exhibit lexical stress, i.e. in groups of words stress invariably falls on the final full (non-schwa) syllable (the same pertains to single words produced in isolation). The basic prosodic domain is the Phonological Phrase or the Accentual Phrase (PP/AP; *le mauvais garçon* ‘the bad boy’) with an obligatory final accent and an optional initial accent, typically on the first syllable of the first content word (*mau-*). The next unit is the intermediate phrase (ip), which corresponds to particular syntactic constructions like dislocations or enumerations, in which the AP- and the ip-final accents fall together. Finally, the Intonational Phrase (IP) generally coincides with sentences/utterances. In addition to the IP-final accent, IPs in French are marked by final lengthening and may be followed by a pause ([_{IP}[_{AP}*Le mauvais garçon*] [_{AP}ment à sa *MÈRE*]]. ‘The bad boy lies to his mother.’; e.g. [6], for a more general overview of the prosodic hierarchy cf. [21]).

In contrast, Spanish displays variable word stress. Even though 80% of the Spanish lexicon carry penultimate (trochaic) stress ([10]), it is not regular. Lexical stress in Spanish also follows morpho-phonological tendencies (*término* ‘(the) end’/*termino* ‘I end’/*terminó* ‘he ended’). In Spanish ips and IPs, nuclear pitch accents are of major importance. These accents are most prominent and are typically found on the last lexical item in neutral contexts ([_{IP}*Quiero una gaLLEta.*] ‘I want a cookie.’). French and Spanish therefore display differences not only with respect to lexical stress, but also with respect to the distribution of accent types. Stress and prosodic phrasing are generally less variable in French when compared to Spanish.

Consequently, the intonational repertoire in terms of pitch accents and nuclear configurations, which express certain pragmatic contexts like broad and narrow focus constructions etc., is much larger in

Spanish than in French ([3], [5]). While there are six basic nuclear pitch configurations in French, Spanish has 19. What must be borne in mind, however, is that there is much dialectal variation when intonation is considered and that prosodic labels are not categorical but dynamic. Lexical stress, phrasing and intonation are more variable in Spanish when compared to French, where they may therefore be possibly relatively more easily acquired.

4. METHODOLOGY

Research has established that (i) bilingual children separate their phonological systems from early on and that (ii) there is phonological interaction during the process of language acquisition (cf. sections 1, 2). The present study aims at finding causes for the direction of prosodic influence in a given language combination. In line with [17], it is expected that influence will be in the direction from French, the less variable system with respect to stress, phrasing and intonation, onto Spanish with relatively more prosodic variability. The basic assumption underlying these expectations is that variable systems should be more difficult to acquire than less variable systems within one individual. The argumentation of [7] and [10] in terms of complexity and markedness makes the same predictions. Notwithstanding these generalities, individual factors will also play a role in the acquisitional process, for example language dominance, which is not analyzed in detail here.

The child investigated was recorded every fortnight in a natural interactive setting for approximately half an hour in each language. The mother is Spanish-speaking, and the father is French-speaking; the family resides in France. Data were extracted and prosodically coded with *Praat* ([1]) and *ToBI* (Tones and Break Indices; [3], [5]). Table (1) presents the recordings analyzed thus far, including information on age, MLU (mean length of utterance in morphemes) and the total number of utterances:

Table 1: Data

French			Spanish			total
age	MLU	utt	age	MLU	utt	utt
2;2,15	3.29	145	2;2,0	2.98	406	
2;3,6	3.30	332	2;3,29	3.31	288	
2;8,1	4.26	292	2;7,25	3.90	503	
2;11,19	7.34	196	3;0,13	4.41	645	
3;1,24	5.63	195	3;1,23	4.51	338	
total		1160	total		2180	3340

The MLU shows that the child is slightly dominant in French. Since this paper presents first exploratory and cursory results of only one case study, no statistical measures have been implemented yet.

5. RESULTS

In what follows, it is argued that differences in the phonological systems influence acquisition in the expected direction from French onto Spanish. However, these examples are few as they present exceptions to the rule. The results are not quantified and statistically analyzed yet and therefore need to be interpreted with caution.

5.1. Lexical stress

Variable lexical stress seems to pose a problem even within one language and within one lexical type. Examples (1-6) show that target-like iambs in Spanish are produced as unmarked trochees in four out of six cases in one recording (3;1,23):

- (1) *Ese es tu café.* ‘This is your coffee.’
- (2) *Ese es el café.* ‘This is the coffee.’
- (3) *Un café.* ‘A coffee.’
- (4) *Hay algo del café.* ‘Here is some coffee.’
- (5) *Mh, café.* ‘Mh, coffee.’
- (6) *Quieres la cuchara aquí como tomas el café?*
‘Do you want the spoon here to drink coffee?’

This result is corroborated by other studies ([11] on Spanish-German bilingualism) and seems to be independent of the second language involved. In fact, French as a language with invariable final stress should facilitate the acquisition of iambs.

A possibly negative influence from French onto Spanish can be observed at and above the word level in ips and IPs, which yields ungrammatical structures in Spanish:

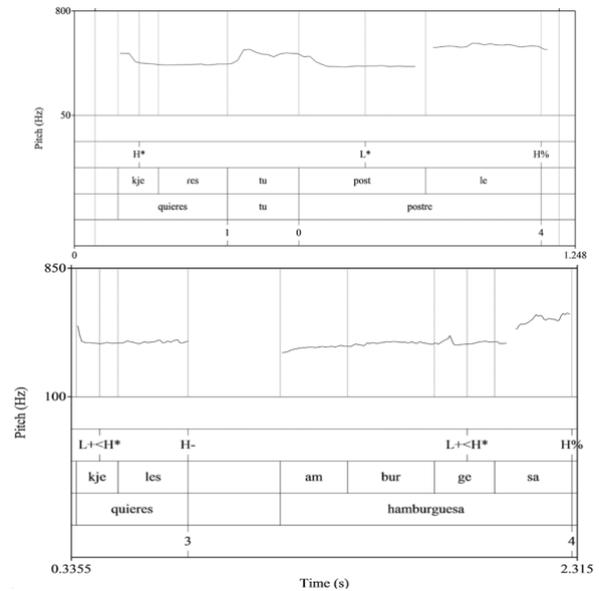
- (7) *en una camiseta* ‘on a t-shirt’ (2;2,0)
- (8) *vídeo* ‘video’ (2;2,0)
- (9) *El señor está mirando a MI.* ‘The man is watching me.’ (2;2,0)
- (10) *El señor no habLA.* ‘The man does not talk.’ (2;2,0)

In examples (7-10), final syllables are stressed, which cannot be explained by a trochaic bias along the lines of examples (1-6). Rather, a French phrase-final accent as a truly negative transfer must be concluded from these data.

5.2. Prosodic phrasing

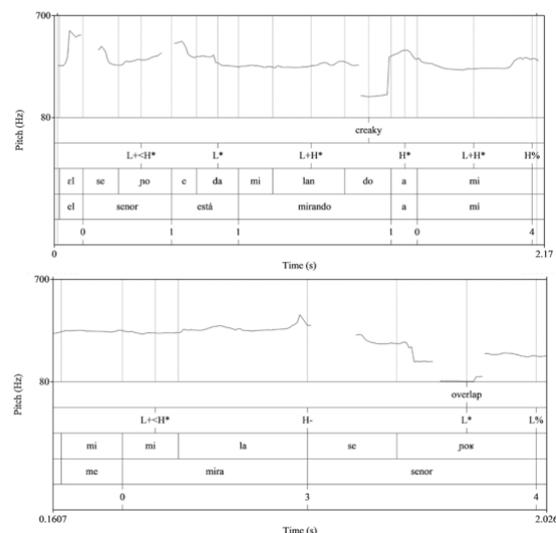
The Spanish data display inconsistencies with respect to intermediate phrasing which may be explained by negative transfer from French where prosodic boundaries are found in larger units than words (cf. section 3). Interestingly, unexpected ip boundaries seem to interact with other grammatical domains: They frequently appear where determiners are omitted illegitimately and may also be related to noun length and subject position:

Figure 1: Grammatical prosodic phrasing (top) vs ungrammatical ip boundary and noun length (bottom)



The top part of Figure (1) displays the expected intonational contour of the absolute question *Quieres tu postre?* ‘Do you want your dessert?’ without any unexpected phrasing. The bottom part, by contrast, illustrates the syntactically identical structure *Quieres hamburguesa?* ‘Do you want (your) hamburger?’ where the determiner is missing and where phrasing is target-deviant: The verb is followed by an intermediate H- boundary tone and a pause, which is unexpected in adult Spanish in this specific context. The H- tone appears in specific syntactic constructions, e.g. appositions, enumerations and long subjects or in hesitations. Presumably, one reason for this particular prosodic phrasing is the length of the noun in terms of number of syllables. Quadrisyllabic items are rare in the Spanish lexicon.

Figure 2: Grammatical prosodic phrasing (top) vs ungrammatical ip boundary and post-verbal subject (bottom)



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