



Language Development: One Grammar, Two Grammars

Some children are exposed to two or more languages from birth – what are the consequences for the path of language acquisition for each?

Bilinguals' language development is often delayed in a variety of domains, while they possess certain cognitive abilities to a greater degree than monolinguals.

In the domain of syntax, cross-linguistic interference [CLI] is subject to two conditions, according to Müller & Hulk (2001):

- CLI occurs at the syntax-pragmatics interface, where extra-linguistic constraints interact with elements of the syntactic structure. [see Box 2]
- CLI occurs when there is a certain overlap of surface forms, which causes an analysis of some form in one language to be *inappropriately* applied to utterances of a similar surface form in the other language.

Narrow question

Are the predictions of the CLI hypothesis borne out in Spanish-English acquisition data of *wh*-questions? If not, can an alternative hypothesis, the 'Transfer/Conflict' hypothesis, account for the data?

Why wh-questions? They satisfy CLI constraints and are acquired differently by Spanish and English monolinguals:

Monolingual Spanish-speaking children produce flawless 'adult-like' wh-questions from the first time they ask them.

Monolingual English-speaking children make systematic errors:

- (1) omitting the auxiliary verb (*aux*)
'who Mommy talking to?'
- (2) doubly inflecting *aux* and the lexical verb
'where's the bed goes?'
- (3) omitting the subject and *aux*
'why taking cake away?'

Broader questions

1. Is the transfer of linguistic structure possible in early bilingualism? Can it *accelerate* language acquisition?
2. Can the resolution of these questions shed light on theories of grammatical development for other varieties of normal language acquisition, including monolingual language development?
3. What is the role of the input in language acquisition, and how do early abstractions arise?

The Transfer/Conflict Hypothesis [TC]

Cross-linguistic interference is due to contrasting pragmatic constraints in a 2L's language pair – syntactic structures do not condition interference.

Cross-linguistic facilitation is due to syntactic structural bootstrapping – pragmatic conditions do not contribute.

Specifically, accelerating transfer is only possible when the child's grammar of one language contains the structure that the other language requires

→ The structure is used by both languages, giving bilinguals an advantage over monolinguals in syntactic development

Methodology

Comparative analysis of spontaneous child & adult speech from CHILDES corpora (MacWhinney 2000):

- Bilingual Spanish-English [2L-Eng & -Spa][†]**
 María (Deuchar & Quay 2000)
 Leo & Simón (Licerias *et al.* 2008)
- Monolingual English [1L-Eng]**
 Becky (Theakston *et al.* 2001)
- Monolingual Spanish [1L-Spa]**
 Koki (Montes 1987)

Quantifying child-directed speech [CDS] (Tomasello 2006):
In bilingualism, necessarily limited input in each language slows lexical development; its effect on syntactic development is unclear.

Comparing predictions of CLI and TC.

[†] 2L = 'bilingual'; 1L = 'monolingual';
 -Eng = 'English'; -Spa = 'Spanish'

Results & Analysis

Study 1: Subject use in *wh*-questions. Overt subjects are required in virtually all English sentences, while, in Spanish, subject realization depends on discourse-pragmatic constraints. Licerias *et al.* (2006) observe that 2L-Spa/Engs do not use more or fewer overt subjects than 1Ls, over all sentence types, while Paradis & Navarro (2003) note that a 2L uses the right proportion of overt subjects but sometimes in the wrong pragmatic contexts.

CLI predicts: surface overlap (subject following lexical verb) should lead to increased subject use in Spanish or decreased subject use in English because pragmatic constraints *and* surface similarity are present. TC predicts: subject realization in both languages spoken by bilinguals will not differ from that of controls' (either parental or 1L) because there is no conflict in pragmatic constraints and the hierarchical structure is shared.

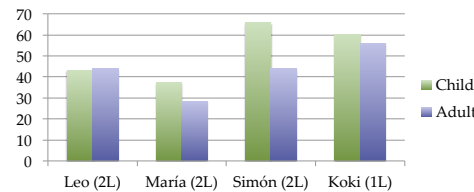


Figure 1. % of null subjects in Spanish *wh*-question productions

Bilingual children do not differ from their parents in null-subject use in Spanish *wh*-questions; in English *wh*-questions, they do not differ from monolinguals (0 errors in 2L-Eng; 3.3% errors in 1L-Eng).

Result 1: Bilingual children's subject use in *wh*-questions is the same as controls, showing no sign of interference.

Study 2: Auxiliaries. Monolingual Spanish-speaking children never make *wh*-question errors in spontaneous productions; monolingual English-speaking children often do, due to auxiliary-related errors. Spanish input provides sufficient evidence to activate a complete structure, while English does not.

CLI predicts: surface overlap (given the low phonological saliency of *aux* in English) gives rise to cross-linguistic interference, with fewer auxiliaries including in 2L-Eng *wh*-questions than 1L controls). TC predicts: structural similarity between English and Spanish *wh*-questions causes 2Ls to produce more adult-like utterances of this type than English 1Ls.

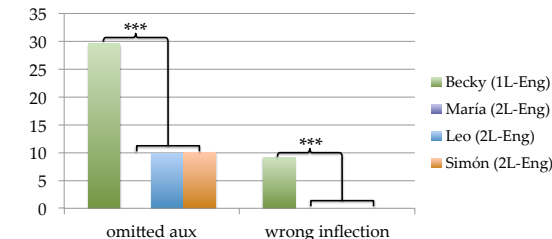


Figure 2. % of auxiliary-related errors in English *wh*-questions.

Result 2: Bilingual children produce adult-like *wh*-questions in Spanish and in English from their first productions of this type, signaling that the simultaneous acquisition of Spanish and English facilitates bilinguals' acquisition of English.

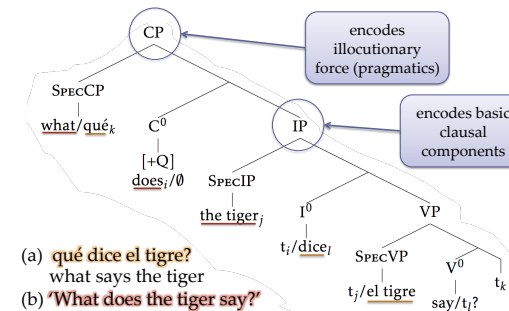
Overlap at the Syntax-Pragmatics Interface

Interrogative illocutionary force (pragmatics) is represented as a layer of structure (CP) whose 'head' (C) is endowed with a [+Q] feature, which *types* the structure as a question.

In addition, in *wh*- 'information' questions, like "What did you have for breakfast?" the [Q] feature is set to 'on' – [+Q] – by the *interrogative* illocutionary force:

In English, this triggers movement of the auxiliary verb to C⁰: see (a) below
In Spanish, this triggers movement of the lexical verb to C⁰: see (b) below

Though the surface forms of Spanish and English *wh*-questions differ, resulting in different positions of the subject relative to the main verb, their hierarchical structures are the same.



Conclusions and Implications for Studies of Language Acquisition

A new bilingualism proposal

Structural transfer can facilitate bilingual acquisition

However, conditions underlying facilitation are presented in the Transfer/Conflict hypothesis, but why structural transfer doesn't occur more frequently remains to be explained

A new set of predictions

The TC hypothesis points toward a unified account of cross-linguistic influence in bilingual first-language acquisition

- TC generates predictions borne out in the literature
 - Spontaneous child productions
 - Interference when pragmatics conflict (cf. Müller & Hulk 2001)
 - **Now**, acceleration when structure matches
 - Spanish-English bilinguals reach adult-like copula use faster than English monolinguals (Licerias *et al.* 2010) – this can be explained by the Transfer/Conflict hypothesis: mastered structural constraints from characteristics of Spanish transfer to English
- Experimental data
 - Fully mature grammars interact in late bilinguals
 - Controlled structural priming (Hartsuiker *et al.* 2004; Shin & Christianson 2007) suggests *shared* structures
 - It should also be possible to elicit priming effects in early bilinguals

Similarities to second-language learning

Recent accounts have stressed the *difference* between early language acquisition and second-language learning, but the structural bootstrapping proposed here is common in second-language contexts (Genesee *et al.* 2008)

The developmental question

The gradual structure-building hypothesis of syntactic development (e.g. Radford 1996) and others that place emphasis on the role of the input support this finding

- Minimal structure gives way to rich representations activated by linguistic experience

Future Directions

Experimental studies with early Spanish-English bilinguals

- Head-turn preference [HPP]: is *awareness* of grammatical *wh*-questions greater in bilinguals?
- Pointing tasks and intermodal preferential looking [IPLP]: are bilinguals and monolinguals different in their use of morphosyntactic cues to make sound-image mappings?
- Priming tasks with young early bilinguals: by activating shared structure, can priming elicit grammatical utterances rarely found in child-directed speech?

Computational models capturing structural interactions

- Models serve to test hypotheses' predictions
- 'Bilingual' Bayesian learning models should build more structure *faster* than 'monolingual' ones
- Compare how different priors give rise to facilitation/interference