

## Cross-modal bilingualism: language contact as evidence of linguistic transfer in sign bilingual education

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New positive attitudes towards language interaction in the realm of bilingualism open new horizons for sign bilingual education. Plaza-Pust and Morales-López have innovatively reconceptualised a new cross-disciplinary approach to sign bilingualism, based on both sociolinguistics and psycholinguistics. According to this framework, cross-modal bilingualism within the deaf community is a natural, dynamic phenomenon, where *code mixing* and *code switching* between languages of different modalities – signed or spoken/written – are often a pragmatic choice of the signer/speaker that serves specific purposes in specific contexts. Following this line of thought, cross-modal contact situations may be viewed as a sign of sophistication, as in any bilingualism, and a fundamental, transitory phase of bilingual language acquisition. Transfer from a sign language to a written second language has been put into question in the sign bilingual education literature. This project intends to address that question through the investigation of cross-modal contact categories found in the written productions of 15 deaf students in a bilingual secondary school in Barcelona. We argue that the *pooling of resources* that makes deaf students use structures from Catalan Sign Language in written English is suggestive of linguistic transfer at a *morphosyntactic* level and that language contact is positive to students' bilingual development in this specific context. The impact of this finding for language teaching policy, practice and research in deaf education will be discussed. This study is part of a larger study to further analyse these contact phenomena according to milestones in second language acquisition of written English, Catalan and Spanish, and seeks to establish parallels between the bilingual acquisition development of these deaf students and that of their hearing counterparts.

**Keywords:** cross-modal bilingualism; language interaction; language contact; code mixing; code switching; linguistic transfer

### 1. Introduction

Attention from researchers in bilingualism and bilingual education needs to be directed to the way language interaction has dominated the debate around sign bilingual education over the last decade. By *language interaction* we understand, in this article, the continuum of language contact that may take place under a *plurilingual* conception of language knowledge organisation versus previous *multilingual* conceptions, as advised in the Common European Framework proposed by

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the Council of Europe (2001). If multilingualism has traditionally been understood as the simple addition of different languages, just as if they were saved in different mental compartments, plurilingualism is here conceived in relation to a continuous interaction of the different languages involved in plurilingual knowledge all through a life span. *Language contact* is the evidence of language interaction that can be found when analysing the oral, written or signed discourse of plurilinguals. It can either take the form of *code mixing* – if it includes elements of both languages, or *code switching* – if the code is commuted at a certain point. *Cross-modal bilingualism*<sup>1</sup> would be an accurate linguistic term to refer to bilingualism involving two languages of different modalities, i.e. signed or spoken/written. It is here defined as a dynamic phenomenon, whereby language interaction plays a relevant role, responding to a complex set of ecological and psycho-social factors.

It was not until the late 1980s that sign bilingual education was proposed, with the aim of promoting the role of natural sign language (SL) as the language of instruction to explore the potential of linguistic transfer from SL to oral/written language as described by Cummins' Linguistic Interdependence Theory (1989).

Against the applicability of Cummins' theory to promote the role of SL in sign bilingual education, Mayer (Mayer and Akatamasu 1999, 2000; Mayer and Wells 1996) published a very influential set of articles. With these articles, Mayer contributed a third view of language interaction in the realm of deaf education. On one hand, the philosophy of promoters of oral/aural education had always been congruent with the *interference hypothesis* (Maeder 1995), which considers linguistic transfer from SL to written as being negative, therefore defending the exclusion of SLs from deaf education. On the other, proponents and promoters of the bilingual method have worked, and continue to do so, on the *hypothesis of a positive interaction* between SL and written language. This promotes the role of natural SL and the benefits of potential linguistic skills transfer from the former to the latter, on the basis of Cummins' model (Chamberlain and Mayberry 2000; Dubuisson, Parisot, and Vercaigne-Ménard 2008; Hoffmeister 2000; Niederberger 2008; Padden and Ramsey 2000; Plaza-Pust and Morales-López 2008; Strong and Prinz 1997). Mayer and Wells (1996, 94) rejected any direct transfer of SL skills during the acquisition of written language. She considered linguistic transfer to be neither negative, nor positive, but rather impossible and therefore non-existent. Reasons adduced to fundament her view were primarily related to the difference in modality, namely the lack of a written form of SL and an alleged requirement of the oral pathway for the transfer to take place (Mayer and Akatamasu 2000, 339), thus working on what has been called the *double discontinuity hypothesis* (Niederberger 2008, 31). Mayer therefore suggested the use of artificial English-language-based signed systems as an educational tool to acquire literacy (Mayer and Akatamasu 1999, 3, 2000, 400).

With linguistic transfer put into question in the realm of sign bilingual education, this article aims to further clarify that question through the investigation of language contact categories between Catalan Sign Language (LSC) and written English as evidence of linguistic transfer. The following sections include a literature review of previous research in deaf literacy and language interaction, the framework for a dynamic view of cross-modal bilingualism within the broader realm of bilingualism and an empirical study carried out in a bilingual secondary school in Barcelona, Spain, which provides evidence of linguistic transfer at lexical, morphological and syntactic levels. We are presenting a contrastive analysis of both grammars implied, conducing to a proposal of language contact categories and their confirmation or not

in a linguistic corpus formed by the English written productions of 15 deaf students. The study intends to draw conclusions affecting research, policy and practice.

## **2. Is linguistic transfer from sign language (SL) to written language possible?**

Literacy research in the realm of deaf education previous to the founding of the first bilingual schools does not consider language interaction. For instance, Taylor (1969) suggested that the analysis of 16 deaf teenage students' written productions revealed a lack of correspondence between their syntactic structures and those of standard English. However, he limited his study to the description of the *problems*<sup>2</sup> and *omissions* in the students' writings, concluding they presented *confusion* of word order, problems with auxiliary systems and further morphology problems. In the 1980s, several other studies in this line concurred that deaf students rarely acquired a literacy level comparable to their hearing counterparts (Bishop 1982; Quigley and King 1980; Quigley and Paul 1984). In 1988, Taescher, Devescovi, and Volterra found deaf students to produce shorter sentences, avoid complex structures and have a more reduced and rigid vocabulary use, as well as make phonetic and morphologic *errors* related to addition, substitution or omission.

Language interaction as a concept only became a concern with the development of sign bilingual education, especially in relation to the use of the Linguistic Interdependence Theory (Cummins 1989) as an argument to promote the role of natural SL in supporting literacy development. In the USA, dissatisfaction with continued low reading levels of deaf students by the late 1980s prompted Johnson, Liddel, and Erting (1989) to develop their paper, 'Unlocking the curriculum: Principles for achieving access to the curriculum', in which they stated educators of deaf students and English-based signing systems were responsible for the deceiving literacy results of deaf students, whose reading levels were essentially the same as they had been prior to the creation of the manually coded English (MCE) systems in the early 1970s (LaSasso 2003, 80). According to LaSasso, who has rigorously cartographed sign bilingual education in the USA, in the most prevalent view of bilingual-bicultural education, four types of support are typically offered for SL as L1: (1) the perceived naturalness of American Sign Language (ASL); (2) apparent literacy superiority of deaf children of signing Deaf parents; (3) research supporting the theory that deaf students have superior spatial memory abilities needed to process ASL compared to sequential memory abilities needed to process English; and (4) Cummins' Linguistic Interdependence Theory (for specific information on the basis of UK sign bilingual policy see Swanwick and Gregory 2008; in Spain, *El Libro Blanco de la Lengua de Signos Española en el Sistema Educativo* 2003).

Originally developed for minority languages versus majority English in North America, Cummins' Linguistic Interdependence Theory has been applied to the deaf population by proponents of sign bilingual education, arguing this group could be considered a linguistic minority. This theory, used therefore on the basis of the *hypothesis of a positive language interaction* between SL and reading/writing development, explains the transfer of cognitive/academic and literacy-related skills from a minority language to a majority language due to a cognitive Common Underlying Competence. According to Cummins, linguistic and cognitive skills developed in the L1/minority language of the students would promote the proficiency of the L2/majority language. Cummins focuses on the importance of academic skills in school achievement. He argues that academic skills (literacy-related skills, reading

and writing) are similar across languages (Common Underlying Proficiency) and that once developed in L1 they could be transferred to L2.

Mayer and Wells (1996) and Mayer and Akatamasu (1999) have strongly criticised the applicability of this theory within sign bilingual policy as an argument for the role of SL supporting literacy development, by using the so-called *double discontinuity hypothesis* (Niederberger 2008, 31–2). She basically argues that there are two conditions that are not met (hence the double discontinuity) for linguistic transfer from SL to written language to take place. She suggests that linguistic transfer, as described by Cummins, can only happen via:

- (1) Oral L1 – written L1 – written L2.
- (2) Oral L1 – oral L2 – written L2.

It is argued that due to the different modality of SLs, neither of these two pathways are available given the facts that: (1) SLs don't have a written form, and (2) profoundly deaf students do not acquire a sufficiently high level of oral language for transfer to take place. Mayer concludes that the applicability of Cummins' theory to sign bilingual education is therefore based on a false analogy and that linguistic transfer is therefore impossible in this case. To bridge the gap between SL and written, she proposes the use of artificial sign systems, such as signed English, based on the oral language syntactic structures, rather than natural SLs, with syntactic structures of their own.

Mayer's approach has been criticised for its lack of empirical support by authors defending the positive role of natural SL (Hoffmeister 2000; Mason 1997). These authors have pointed out that Mayer's approach is primarily theoretical and her hypothesis lacks data support. However, linguistic transfer from SL to written language, put into question by Mayer, has largely remained unexplored until now.

More recent studies related to language contact in the realm of bilingualism in general (Bhatia and Ritchie 2004), and sign bilingualism in particular (Plaza-Pust and Morales-López 2008), offer new frameworks and empirical data to argue Mayer's perspective. The latest empirical data published in the area of language contact lead us to suggest that the double discontinuity hypothesis might be based on the false assumption of the oral path requirement for the linguistic transfer to take place and on too narrow a conception of literacy, which places too much emphasis on the phonological level. This disregards potential linguistic transfer at morphosyntactic, semantic and pragmatic levels, which would not require a written form of SL for transfer to take place.

The importance of phonological awareness in reading comprehension and word recognition is currently under scrutiny (Clark et al. 2008). Studies that support phonological awareness skills as prerequisites to becoming a skilful reader (Colin et al. 2007; Hanson, Goodell, and Perfetti 1991; Luetke-Stahlman and Nielsen 2003; Perfetti and Sandak 2000) can now be contrasted with others that question the need for phonological skills (Izzo 2002; McGuinness, McGuinness, and Donohue 1995; Miller 1997). The latter draw on the morphographic model (Ehri 1992), which relies on visual aspects, such as logographic cue reading, alphabetic element by element analysis, and most importantly, on morphemes/word structure orthographic analysis; the combination of 12 Latin roots and two Greek roots with 20 prefixes and suffixes lead to the creation/decoding of 100,000 words (Kelly and Barac-Cikoja 2008). In conclusion, the latter studies reveal that there is much more to reading literacy than just phonological awareness.

In North America, Wilbur (2000, 92) suggested that deaf children may transfer their narrative skills and story grammar developed in ASL into written English, such as when creating settings or introducing characters. This assumption was recently supported by Niederberger (2008), in a study that focused on narrative and morphosyntactic skills between French Sign Language (LSF) and written French in Geneva, demonstrating that these two linguistic levels were definitely involved in an interaction. The results of Niederberger's study highlight the role of SL narrative and comprehension skills in SL/written language interaction, confirming the findings of Chamberlain and Mayberry (2000) and Prinz, Kuntze, and Strong (2001) for ASL/English.

In Germany, Günther et al. (2004) reported that deaf children in a Hamburg bilingual programme benefited from their advanced proficiency in German Sign Language (DGS) in two ways. On one hand, they obtained general knowledge, namely world knowledge, and also knowledge of story grammar. On the other, they borrowed SL structures to compensate for temporary gaps in written German. In analysing a nationwide sample of written data, Schäfke (2005) provided a complete panoramic view of the writing performance of German deaf students and reported DGS borrowings decreased with time as participants' levels of written German increased. Finally, Plaza-Pust (2008, 73) presented data from a broader longitudinal study in Berlin's bilingual school regarding language contact phenomena, concluding that: 'the lexical and structural borrowings identified occur at specific developmental phases whereby structural borrowings decrease as learners progress in their development of the L2'.

In Quebec, Dubuisson, Parisot, and Vercaigne-Ménard (2008) established statistical correlations between deaf students' ability to use space in Quebec Sign Language and their reading comprehension of written French. This study is of special relevance in the realm of linguistic transfer due to the fact that the use of space has been attributed a similar cohesive role to that which oral/written languages attribute to connectors, given the fact that it is the means by which SL establishes relations between lexical elements (Barberà 2007, for LSC; Morgan 1999, for BSL; Winston 1995, for ASL).

### **3. Framework: cross-modal bilingualism as a dynamic phenomenon**

The definition of cross-modal bilingualism as a dynamic phenomenon, whereby language interaction plays a relevant role, is in tune with wider European frameworks. The Council of Europe (2001) has proposed a Common European Framework for language teaching, emphasising the *dynamic* aspect of plurilingualism versus multilingualism, whereby the learning of more than one language needs to be viewed as a continuum of interaction among the different languages involved in plurilingual knowledge, as opposed to the traditional conception of a simple addition of different languages (multilingualism).

In this sense, the latest trends in bilingualism state that although bilinguals are often defined as individuals or groups of people who obtain the knowledge and use of more than one language, bilingualism is a much more complex psychological and socio-cultural dynamic linguistic behaviour with multidimensional aspects (Butler and Hakuta 2004, 114). Moreover, new trends in bilingualism assert that, 'language mixing reflects a natural and universal aspect of bilingual verbal behaviour', although: 'the long history of prescriptivism and foreign language teaching has resulted in severe

negative societal evaluation of this speech form, which is ironically capable of unlocking new dimensions of human linguistic creativity' (Ritchie and Bhatia 2004, 351).

Cross-modal bilingualism within the deaf community needs to be embedded in this wider framework of bilingualism. A successful reconceptualisation of cross-modal bilingualism in this sense has been offered by Plaza-Pust and Morales-López (2008). According to this cross-disciplinary approach based on psycholinguistics and sociolinguistics, cross-modal bilingualism is a natural, dynamic phenomenon, where *code mixing* and *code switching* between languages in different modalities – signed or spoken/written – are often due to a pragmatic choice by the signer/speaker that serves specific purposes in specific contexts. Following this line of thought, cross-modal contact situations are a sign of sophistication, as in any bilingualism (Padden 2008), and a fundamental, transitory phase of bilingual acquisition development.

In the specific context of sign bilingual education, it needs to be clarified that language mixing does not correspond to a voluntary pragmatic choice, but to a *pooling of resources* – a term coined by Gawlitzek-Maiwald and Tracy (1996) – that allows students to use SL structures to fill the gaps in the target oral/written language. Therefore, language mixing in this context needs to be considered as a valuable tool that triggers the engine of bilingual development through metalinguistic reflection, implying contrastive teaching methods and whose explicit statement has relevant implications for research, policy and practice (Menéndez 2009).

Of special relevance for this framework is the *one system versus separation hypothesis*, according to which both languages implied in the bilingual acquisition develop separately at an early stage and bilinguals' acquisition doesn't differ qualitatively from that of monolinguals (Genesee 2002, for French and English; Meisel 1989, for German and French; Plaza-Pust 2006, 2008, for DGS and written German).

From the three possible attitudes towards language interaction mentioned so far, this framework works on *the hypothesis of a positive language interaction*, drawing on Cummins' model to recommend instruction in L1/minority language to ensure a better mastery of L2/majority oral–written language and future academic achievement.

Considering SL as a minority language, it becomes crucial within this framework to make use of the linguistic ecosystem metaphor, as described by Nettle and Romaine (2000), which provides an explicit link between language survival and environmental issues, whereby the survival of endangered languages lies at the intersection of ecology and politics. The defence of a sign bilingual education model promoting the role of natural SL as a minority language acquires therefore the ecological and political dimensions of language planning.

#### 4. The study

The present study is part of a broader investigation intending to explicitly describe language contact categories between LSC and written English, Spanish and Catalan obtained through analysis of the written productions of deaf students attending an experimental bilingual high school in Barcelona. Deaf students attending this secondary school, where the author of this article was the English teacher between 2007 and 2009, are integrated with their hearing counterparts. Each language teacher is accompanied in class by a speech therapist – not an interpreter – with LSC proficiency, who interprets/adapts the teacher's explanations to LSC, which is the language of instruction for the deaf students. Deaf students are separated from their

hearing counterparts for the English classes, but not for the Spanish and Catalan classes, where they are fully integrated. Subject teachers are accompanied in class by an educational psychologist, also with LSC proficiency, who adapts/interprets the teachers' explanations for deaf students. In the last two years of high school, all teachers are accompanied by an LSC interpreter, who interprets – not adapts – teachers' explanations both in language classes and in subject matter classes.

#### 4.1. Participants

From the total of 15 students participating in the study, aged 13–17, five of them are of deaf parents and 10 have hearing parents. They were selected for this study as they did not present any additional learning problems. Table 1 provides information about: (1) age; (2) their plurilingual tagging; (3) deafness type; (4) hearing aid information; (5) hearing/deaf parents and/or deaf siblings; (6) years of exposure to LSC previous to secondary education; and (7) previous schooling information.

Table 1. Participants.

	L1	L2.1	L2.2	L2.3	Deafness	Hearing aid implant	Parents	Previous schooling: previous exposure to LSC
Marlon (14)	LSC	CAST	CAT	ENG	Profound	None	Deaf	All-deaf pre-school/bilingual primary ed.: 9 years
Paul (15)	LSC	CAST	CAT	ENG	Profound	None	Deaf	All-deaf pre-school/bilingual primary ed.: 9 years
Lina (14)	LSC	CAT	CAST	ENG	Profound	None	Hearing	Bilingual pre-school/bilingual primary ed.: 9 years
Marlene (13)	CAT	CAST	LSC	ENG	Severe	Recent implant	Hearing	Oralist school
Fergus*(15)	LSC	CAT	CAST	ENG	Severe	Hearing aid	Hearing	Oralist pre-school+bilingual school: 5 years
Sandy (15)	LSC	CAT	CAST	ENG	Profound	Implant refusal	Hearing	Oralist pre-school+bilingual school: 5 years
Edmon (16)	LSC	CAST	CAT	ENG	Profound	Hearing aid No use/identity	Hearing Deaf sister	Oralist pre-school+bilingual school: 6 years
Dan (15)	CAT	CAST	LSC	ENG	Profound	Hearing aid	Hearing	Oralist school
Betty (15)	LSC	CAST	CAT	ENG	Profound	None	Deaf	All-deaf pre-school/bilingual primary ed.: 9 years
Merryl (15)	LSC	CAST	CAT	ENG	Profound	Hearing aid No use/identity	Deaf	All-deaf pre-school/bilingual primary ed.: 9 years
Criselda (16)	LSC	CAT	CAST	ENG	Profound	Unsuccessful implant	Hearing	Bilingual pre-school+primary ed.: 9 years
Peter (15)	LSC	CAT	CAST	ENG	Profound	None	Hearing	Oralist pre-school+bilingual school: 6 years
Madhavi** (15)	LSC	CAST	CAT	ENG	Profound	None	Deaf	Georgian pre-school+all-deaf school: 6 years
Myrtha (17)	LSC	CAST	CAT	ENG	Profound	None	Hearing	All-deaf pre-school/bilingual primary ed.: 9 years
Ismael (17)	LSC	CAST	CAT	ENG	Profound	Hearing aid	Hearing	All-deaf pre-school/bilingual primary ed.: 9 years

\*Acquired oral/written as L1, but nowadays LSC L1 signer of use and communication.

\*\*Native signer on Georgian Sign and LSC L1 signer of use and communication.

#### 4.2. Method

The empirical base of the ongoing investigation consists of the written stories in English, Catalan and Spanish of the deaf students, who were asked to freely narrate three well-known childhood tales, in order to minimise possible influences on their linguistic input: (1) *Sant Jordi's Legend*; (2) *Cinderella*; and (3) *The Three Little Pigs*. English written narratives were completed during the 2007–2008 school year, whereas

Spanish and Catalan narratives were collected during the following academic year. A descriptive framework of the divergent grammatical properties of LSC grammar and English grammar resulted in the development of first language contact categories as an explanation for the language behaviours observed in pupils' writing. A qualitative analysis of the linguistic corpus has led to the confirmation of the contact categories proposed. Data are currently being entered into the CHILDES Computerised Language Analysis (CLAN) database (MacWhinney 2000), with the intention of establishing correlations with the factors described in Table 1, which might affect the linguistic input, as well as with the results obtained in future analysis and contact categories specification for Catalan and Spanish.

#### 4.3. Contrastive analysis: proposed language contact categories

The language contact categories proposed in this study were based upon a contrastive analysis of the divergent grammatical properties of LSC and written English. Figure 1 summarises this process.

The following section is dedicated to a brief description of the contrast areas relevant for the elaboration of the language contact categories proposed in this study and evidence from the corpus of their existence.

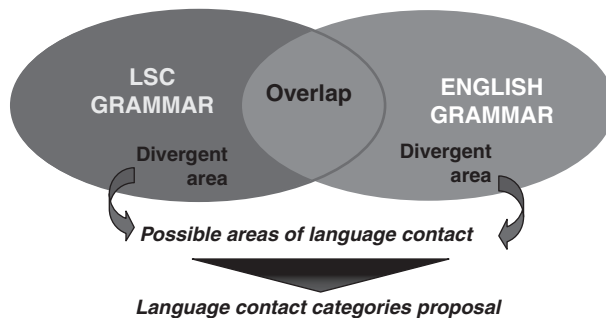


Figure 1. Contrastive analysis: language contact categories proposal.

##### 4.3.1. The verb: verb uninflexion

In LSC, the verb remains primarily uninflected in number and person, except for the deictic explicit statement of the subject. Tense information is structured along three major referential axes (Quer and Barberà 2005). Information relating to present, past and future is indicated by the explicit presence of deictic tense makers allocated in a *basic axis*: a referential time line for chronological expression that departs from behind the dominant shoulder of the signer to the front, subsequently representing past, present and future. When referring to a series of events, an *anaphoric axis* is used instead in a diagonal line configured by the signer's non-dominant arm within the signing space to express 'BEFORE THAT/AFTER THAT'. Finally, there's a *sequential axis* from left to right within the signer's neutral space, an area located in front of the signer, for temporal units: weeks; hours; and months. In LSC, aspect, as a grammatical concept related to how the action takes place, is often expressed by the repetition of the verb sign for continuative and durative aspect or by the sign



already for perfect aspect (Quer and Barberà 2005; see also Gras 2004, for a more detailed description of the LSC verbal system).

In English, the verb admits number/person inflection only in the singular third person of the present tense (she plays). The English verb is further inflected in past simple (played), past participle (have played) and gerund (playing). Future and conditional tenses are marked by auxiliary verbs (she *will/would* play).

Proposed contact category: *Verb uninflexion* [ØINFLV]; *Aspect expression* [REPLASPEX]; *Auxiliary verb omission* [ØAUXV].

#### 4.3.2. *The copula: non-verbal predicability*

The copula is characterised as having no meaning, and simply being a grammatical element. In SL, the copula is often dropped. These constructions are often referred to as non-verbal predicability structures (Herrero Blanco 2003, about Spanish Sign Language – LSE). There are mainly four cases: attributive sentences (LOUIS ILL: *Louis is ill*); equative sentences (DOCTOR WHO? LOUIS: *the doctor is Louis*; CAT ANIMAL: *the cat is an animal*); locative sentences (LOUIS BARCELONA THERE: *Louis is in Barcelona*; BOOK TABLE ON TOP: *the book is on top of the table*); and possessive sentences (BOOK THAT OWNER LOUIS: *That book is Louis'*; LOUIS BOOK THERE IS: *Louis has got a book*). This isn't the case in English grammar, where the copula is always explicitly stated with the verb *to be*, which does have a conjugation (am/is/are), and as opposed to LSC, it's also used for existential sentences (*there is a book/there are three*). Proposed categories: *copulative ellipsis in existential sentence* [ØCOPEX]; *verbless possessive clause* [ØV]; *copula drop in attributive sentence* [ØCOPAT]; *copula drop in locative sentence* [ØCOPLOC]; *copula drop in possessive sentence* [ØCOPPOS]; and *copula drop in equative sentence* [ØCOPEQ].

#### 4.3.3. *The noun: morphology*

In SL, the expression of plural is done by the sign triple repetition with a lateral trajectory along the horizontal plane (Herrero Blanco and Peidro 2007, about plural varieties in LSE; Quer and Barberà 2005, for LSC). However, LSC doesn't mark noun gender (Herrero Blanco 2003, for LSE), not to be mistaken by sex, present in personal signs, marked by the sign MAN or WOMAN preceding the noun. In English, the plural is obtained through the addition of the suffix -s or -es, except for irregular plurals (mouse/mice). There's no gender inflexion in English.

Proposed category: *uninflected noun* [ØINFLN].

#### 4.3.4. *The determiner: determiner ellipsis*

There aren't determiners in SLs. The function of the determiner might be implemented by other words, such as demonstratives or indefinite articles (Herrero Blanco 2003, for LSE). However, indefinite articles are expressed through the use of numeral signs, e.g. ONE for the indefinite articles in the singular form. In the plural, LSC uses quantifier signs such as SOME (affirmative) or NONE and NOTHING (negative).

English uses the determiner *the* for male/female and for singular/plural. Indefinite articles are *alan* for singular and *somelany* for plural/questions and negatives, all embedded in an idiosyncratic classification of countable versus uncountable nouns.

Proposed category: *determiner ellipsis* [ØDET].

#### 4.3.5. *The pronoun: interchangeability of pronouns and pronoun ellipsis*

In SL, pronouns are primarily deictic, since they're carried out as indices pointing at the referents present or towards the points in space associated with the absent referents (Quer and Barberà 2005), and anaphoric, in the sense that they refer back to previous reference. There are subject pronouns and possessive pronouns in LSC. Subject pronouns may be elided if allowed by previous mention (Quer and Barberà 2005). Possessives may be replaced by subject pronouns in the case of inalienable possession (Neidle et al. 2000, for BSL and ASL).

English pronouns are neither interchangeable, nor elliptical. There are subject pronouns, object pronouns, possessive pronouns and possessive adjectives.

Proposed categories: *subject pronoun ellipsis* [ØSUBJPRON]; *possessive pronoun replacement* [REPLPOSPN]; and *object pronoun replacement* [REPLOBJPN].

#### 4.3.6. *The adjective: adjective location*

In SL, the adjective is usually placed after the noun (Herrero et al. 2005–2008, for LSE; Quer and Barberà 2005, for LSC). In English, it precedes the noun. Proposed category: *adjective+noun word order*<sup>3</sup> [WOA].

#### 4.3.7. *The prepositions: prepositional ellipsis*

SL may present prepositional ellipsis. In English, prepositions are never elliptical. Proposed category: *prepositional ellipsis* [ØPREP].

#### 4.3.8. *Deixis: deictic structures*

Deixis plays a central role in SLs. Deictic elements adopt the form of the index finger and acquire significance depending on the situation (Barberà 2007). Deixis can be personal, temporal or spatial. Personal and temporal deixes have already been considered when referring to the pronouns and the verb tense expression. As for spatial deixis, deictic structures have previously been described as locative sentences, whereby referring to a place, the signer would first locate it in the signing space with his/her index finger and then continue the sentence with its necessary copula drop. In English, the role of deixis is limited to some locative words, personal pronouns, adverbs and verb tenses. Proposed category: *copula drop in locative sentence* [ØCOPLOC].

#### 4.3.9. *Connectors: cohesion and the use of space*

Cohesion in SL is expressed through the use of spatial reference, which allows for the relating of sentences (see Barberà 2007, for LSC; Morgan 1999, for BSL; Winston 1995, for ASL). However, the sign END can sometimes be used as a connector to move from one sentence to the next. In English, cohesion is established through connectors. Category proposed: *cohesive calque* [REPLCOH].

#### 4.3.10. *Word order*

In SL, word order is quite flexible. However, in spite of several nuances, the basic word order is Subject Object Verb (SOV) (Quer and Barberà 2005), when information is

presented in a neutral manner without highlighting any specific element. Sometimes Object Subject Verb (OSV) is also found. Moreover, there are topic/comment structures, where the theme, containing already known information about which something is to be said, is placed at the beginning of the sentence (Quer and Barberà 2005; Wilbur 1996), and there are also locative anteposition structures described (see Jarque et al. 2007, for discussion of the multiple varieties of word order in LSC). In English, SVO is the most common word order for the declarative sentence. Proposed category *word order* [WO], with the following variations: *word order SOV* [WOSOVI]; *word order OSV* [WOOSVI]; and *locative information anteposition* [WOLA].

#### 4.3.11. *Role shift versus direct/indirect speech*

Role shift is a particular phenomenon specific to SLs, which attributes speech to third persons through a slight turn of the signer's head or body to represent the referent's actions or quotes (Taub 2001). In LSC, Frigola and Quer (2005) have described role shift in great detail.

In written English, other people's quotes are represented either through direct speech (He *said*: 'Hello') or through indirect speech (He *said that* he was ill).

Proposed categories: *verb ellipsis in direct speech* [ØVDS]; *punctuation ellipsis in direct speech* (:') [ØPUNCTDS]; and *double ellipsis in direct speech* [ØV+PUNCTDS].

#### 4.3.12. *Lexical calque*

SL allows lexical borrowings often in verbless sentences that imply word category change in the borrowing, so for example a noun might be used as a verb: 'CLOCK 3' would stand for, 'It's 3 o'clock', whereby clock is used as a verb. This category has been previously described for language contact between DGS and written German by Plaza-Pust (2006, 520), who calls it lexical borrowing. Category proposed: *lexical calque* [REPLLEX].

#### 4.3.13. *Focus clauses: rhetorical questions*

Wilbur (1996) published a study about focus structures in ASL, where she described the use of rhetorical questions and their placement in the sentence as a theme/rheme anteposition. In LSC, this type of rhetorical question has been addressed by Quer and Barberà (2005), who define them as complex structures intended to emphasise a constituent. They are used to build the subordinate sentence in the way described by Wilbur. When used with speech verbs, they correspond to the use of indirect speech in written English. For instance, where written English would use: 'John said (that) he was ill', an LSC signer would sign: JOHN SAY WHAT? ILL. When used with other verbs, they have a cataphoric value, which establishes a forward reference to a subsequent utterance. An example could be: JOHN DID WHAT? PLAY FOOTBALL.

Proposed categories: *indirect speech focus clause rhetorical question* [WOISFCLAUSERQ], and *indirect speech focus clause cataphoric rhetorical question* [WOISFCLAUSECATRQ].

#### 4.4. CHILDES Computerised Language Analysis (CLAN) codes proposal

Due to the fact that the language contact categories resulting from the previous contrastive analysis primarily have to do with (1) ellipsis, (2) divergent word choice and (3) divergent word order, CHILDES CLAN codes proposed for their future systematic analysis have been arranged around these three types of categories (Figure 2).

[Ø] Ellipsis	[REPL] Replacement	[WO] Word order
[ØCOPAT]	[REPLEX]	[WOSOV]
[ØCOPLOC]	[REPLCOH]	[WOSV]
[ØCOPEQ]	[REPLPOSPN]	[WOLOCA]
[ØCOPPOS]	[REPLBJPN]	[WOA]
[ØCOPEX]	[REPLASPEX]	[WOD/ISFCLAUSERQ]
[ØCOPTEMP]		[WOFCLAUSECATRQ]
[ØDET]		
[ØPREP]		
[ØVPOS]		
[ØSUBJPN]		
[ØINFLV]		
[ØINFLN]		
[ØVDS]		
[ØAUXV]		
[ØPUNCTDS]		
[ØV+PUNCTDS]		

Figure 2. CHILDES CLAN codes proposal.

## 5. Results

All language contact categories resulting from the previous contrastive analysis of both grammars implied have been confirmed in the linguistic corpus object of study, except for one: [*WOSOV*] *SOV* word order. In this section, we are presenting evidence from the corpus of those contact categories, whereby each example is identified with a false name attributed to each student, followed by a number, referring to the specific written production it was extracted from: (1) *Sant Jordi's Legend*; (2) *Cinderella*; and (3) *The Three Little Pigs*. Data are currently being introduced in a CHILDES-CLAN database with the codes proposed for future analysis, in order to be systematically quantified and to establish relations between language contact categories and the factors affecting the participants' linguistic input as presented in Table 1.

The recognition of the positive effect of language interaction in this study implies a change of perspective from previous literacy studies in the realm of deaf education, whereby old terminology such as *error*, *lack* or *problem* has been replaced by the use of a new terminology to refer to language contact phenomena. From this new perspective, coherence calls for an adaptation to expressions such as *divergent structures (DS)* which do not conform to the *goal structures (GS)*.

### 5.1. Ellipsis language contact categories [Ø]

#### [ØCOP] Copula drop in a copulative sentence

Divergent Structures (DS): Cinderella [ØCOP] sad (Marlene: 2)  
 Goal Structures (GS): Cinderella *was* sad

DS: three pigs, [ØCOP] already old enough (Marlene: 3)  
 GS: *The three pigs were already old enough*

#### [ØCOPEQ] Copula drop in an equative sentence

DS: She [ØCOP] Queen (Madhavi: 2)  
 GS: *She was the Queen.*

#### [ØCOPDEI] Copula drop in a temporal sentence

DS: [ØCOP] already midnight (Paul: 2)  
 GS: *It was already midnight*

DS: Cinderella run because [ØCOP] midnight (Paul: 2)  
 GS: *Cinderella ran because it was midnight*

#### [ØCOPEX] Copula drop in an existential sentence

DS: Once upon a time there [ØCOPDEX] three little pigs (Marlon: 3)  
 GS: *Once upon a time there were three little pigs*

DS: There [ØCOPDEX] one chimney (Marlon: 3)  
 GS: *There was one chimney*

#### [ØCOPDEI] Copula drop in a locative sentence

DS: here [ØCOPDEI] one rose (Marlon: 1)  
 GS: *There was a rose here*

DS: one day here [ØCOPDEI] one dance party for the prince (Marlon: 2)  
 GS: *one day there was a dance party for the prince in the castle*

#### [ØDET] Determiner ellipsis

DS: [ØDET] Wolf go down [ØDET] chimney (Betty: 3)  
 GS: *The wolf went down the chimney*

DS: [ØDET] mother of [ØDET] three pigs say (Lina: 3)  
 GS: *The mother of the three pigs said*

DS: [ØDET] dragon live in [ØDET] lake (Madhavi: 1)

GS: *The dragon lived in **the** lake*

DS: [ØDET] Second pig build [ØDET] wooden house (Marlon: 3)

GS: *The second pig built **a** wooden house*

DS: But suddenly appear one boy with [ØDET] horse and with [ØDET] sword.

(Merryl: 1)

GS: *There suddenly appeared a boy with **a** horse and **a** sword.*

### [ØPREP] Prepositional ellipsis

DS: Cinderella stay [ØPREP] house (Marlon: 2)

GS: *Cinderella stayed **in** the house*

DS: Pig small go [ØPREP] house of hir brother (Fergus: 3)

GS: *The small pig went **to** his brother's house*

DS: there is a princess what live [ØPREP] a small village. (Merryl: 1)

GS: *There was a princess who lived **in** a small village*

### [ØV] Verbless clause

DS: First pig [ØV] a stray house (Betty: 3)

GS: *The first pig **built** a straw house*

### [ØSUBJPN] Subject pronoun ellipsis

DS: [ØSUBJPN] take profit to free time (Marlon: 3)

GS: ***I** took profit out of my free time*

DS: But the wolf went to a house and said: Hello!, can [ØSUBJPN] go in the house (Peter: 3)

GS: *Can **I** go in the house?*

DS: [ØSUBJPN] is shoe of Cinderella (Marlon: 2)

GS: ***It** is Cinderella's shoe*

### [ØINFLV] Uninflected verb

- [ØINFLVTS] Verb tense uninflexion:

DS: one day then suddeny father suffer [ØINFLVTS] attack and die [ØINFLVTS] (Marlene: 2)

GS: *Then suddenly, one day the father suffered an attack and died.*

**[ØINFPVPS] Verb person uninflexion**

DS: then wolf blow [ØINFPVPS] (Marlon: 3)  
 GS: *then the wolf blows*

**[ØAUXV] Auxiliary verb ellipsis**

DS: And wolf Not go away (Marlene: 3)  
 GS: *And the wolf didn't go away*

**[ØINFLN] Uninflected noun**

DS: three pig [ØINFLN] say ok (Marlon: 3)  
 GS: *The three pigs say: 'OK'.*

DS: three pig [ØINFLN] is brother [ØINFLN] (Marlon: 3)  
 GS: *The three pigs are brothers*

**[ØVDS] Verb ellipsis in direct speech**

DS: There pigs [ØVDS] 'Yes, mum' (Lina: 3)  
 GS: *The three pigs said: 'Yes, mum'.*

**[ØPUNCTDS] Punctuation ellipsis in direct speech (:“)**

DS: Pig say outside (Marlene: 3)  
 GS: *The pig said: 'Go outside'.*

**[ØV + PUNCTDS] Double ellipsis in direct speech**

DS: One day, one pig [ØVDS] [ØPUNCTDS] look there is stray with the house.  
 One pig already built the house of stray. (Edmond: 2)  
 GS: *One day, a pig said: 'Look! There's a straw house'. One of the pigs had already built a straw house.*

**5.2. Replacement language contact categories [REPL]**

**[REPLLEX] Lexical calque**

DS: clook [REPLLEX] is 12:00 p.m (Marlon: 2)  
 GS: *It's 12:00 p.m.*

DS: Panic [REPLLEX] 12 o'clock (Marlene: 2)  
 GS: *She panicked at 12 o'clock*

**[REPLCOH] Cohesive calque**

DS: **end** [REPLCOH] dance with prince but already midnight Cinderella run because midnight **end** [REPLCOH] princep look for Cinderella **end** [REPLCOH] have find Cinderella **end** [REPLCOH] got married. (Paul: 2)  
 GS: *First, . . . Then . . . , Later . . .*

**[REPLPOSPN] Possessive pronoun replacement**

DS: she [REPLPOSPN] name is Ashley (Edmond: 1)  
 GS: *her name is Ashley*

DS: He [REPLPOSPN] name's Johnny (Edmond: 1)  
 GS: *His name's Johnny*

DS: one day it was he [REPLPOSPN] turn (Marlon: 1)  
 GS: *One day it was his turn*

DS: iam blow you [REPLPOSPN] house (Marlon: 3)  
 GS: *I'm about to blow on your house.*

**[REPLOBJPN] Object pronoun replacement**

DS: because wolf flow iam [REPLOBJPN] (Marlon: 3)  
 GS: *because the wolf is following me*

**[REPLASPEX] Aspect expression replacement**

DS: frist pig run, run, run (Marlon: 3)  
 GS: *the first pig started running like crazy*

**5.3. Word order language contact categories [WO]****[WOSOV] Word order SOV**

Unconfirmed category.

**[WOOSV] Word order OSV**

DS: until brick house wlof blow (Marlon: 3)  
 GS: *until the wolf blew on the brick house.*

DS: Brick house, wolf a blow (Betty: 3)  
 GS: *the wolf blew on the brick house.*



**[WOLOCA] Locative information anteposition**

DS: palace big [WOLOCA] here 3 lives (Marlon: 2)

GS: *There were three people living **in the palace**.*

DS: Path there [WOLOCA] theree Path separate. (Lina: 3)

GS: *There were three separate paths coming **from the same path**.*

DS: Once upon a time one castle **in** [WOLOCEX] there are people (Marlon: 1)

GS: *People lived **in the castle**.*

DS: There was or palace **in** [WOLOCEX] family of king and prince live (Ismael: 3).

GS: *The king's family and the prince lived **in the palace**.*

DS: there was an castle **in** [WOLOCEX] lives step-mother (Madhavi: 2)

GS: *The step-mother lived **in the castle**.*

**[WOA] Adjective position within the noun phrase**

DS: pig small [WOA] escape (Fergus: 3)

GS: *the **small** pig escaped*

DS: [the wolf] hide nexto tree green [WOA] (Marlon: 1)

GS: *The wolf hid next to the **green** tree.*

DS: The day following [WOA] the prince search (Dan: 2)

GS: *The **following** day, the prince searched...*

DS: There is one dragon green and red [WOA] (Marlon: 1)

GS: *A **green and red** dragon*

DS: Pig small [WOA] go house of hir brother. (Fergus: 3)

GS: *The **small** pig went to his brother's house.*

**[WOD/ISFCLAUSERQ] Direct/Indirect speech focus clause rhetorical question**

DS: grandmother of pig **say what** [WOD/ISFCLAUSERQ] you, and you and yoy leave my house beacuse is old enough (Marlon: 3)

GS: *the pigs' grandmother **said**: 'You, you and you leave my house, because you're old enough!'*

DS: The mother's three pigs was fed up because they is old enough. **say what** [WOD/ISFCLAUSERQ] go alone and made a house. (Criselda: 3)

GS: *She **said**: 'Go live on your own and make yourselves a house!'*

DS: king of castle **say what** [WOD/ISFCLAUSERQ] here one lottery for one people of town (Marlon: 1)

GS: *The king of the castle said that there would be a raffle among the people in town.*

#### [WOFCLAUSECATRQ] Cataphoric focus clause rhetorical question

DS: first pig open door and **look what** [WOFCLAUSECATRQ], there wolf (Marlon: 3)

GS: *the first pig opened the door and he saw that the wolf was there.*

DS: King idea what [WOFCLAUSECATRQ], a person go (Ismael: 1)

GS: *The king had the idea that every person went...*

### 6. Conclusion and implications for research, policy and practice

The specification of cross-modal language contact categories and their confirmation in the linguistic corpus analysed – all categories were confirmed except for one – have serious implications for *research*, *policy* and *practice*, which necessarily need to be interconnected and inform each other for a correct implementation and improvement of sign bilingual education.

Research in the realm of deaf education should take account of language interaction. Empirical data provided in this study show evidence of linguistic transfer from SL to written at the lexical, morphological and syntactic levels. Other data presented in the literature review show linguistic transfer at a pragmatic level (story grammar, narrative and cohesion) and again at the lexical and morphosyntactic levels. These empirical data seem to suggest that Mayer's theoretical framework rejecting any possibility of language transfer due to difference in modality might be based on the false assumption that an oral/aural pathway is needed for the transfer to take place. Therefore, Cummins' Linguistic Interdependence Theory is here supported as being correctly applied to sign bilingual education. The investigation of language interaction offers broad possibilities for decision making as for methodologies' improvement (practice), teachers' profile redefinition (policy) and research attitudes towards language contact phenomena. For this reason, research should continue to further explicitly state language contact categories from all SLs to all oral/written languages implied in every sign bilingual programme.

*Educational practice* should take into account the language contact categories presented, which need to be included in contrastive teaching methodologies in order to foster metalinguistic reflexion and to trigger the engine of bilingual development. In other words, if bilingual development is conceived from the plurilingual perspective proposed in the Common European Framework, language interaction should be considered by contrastive teaching methodologies. This would foster the proper unfolding of bilingual development, given the adequate conditions to reflect on the linguistic commonalities and divergences (metalinguistic awareness) among the languages involved in plurilingual knowledge. These language contact categories, which may in some cases overlap with learner errors described in the literature for second language acquisition, under previous multilingual conceptions failing to consider language interaction, may seem to imply the use of L2 teaching methodologies, especially in the case of students with no useful hearing. However, there is a particular need for the correct tagging<sup>4</sup> of the oral/written languages for

each individual, whereby L1 teaching methods may be applied for those students whose remaining hearing allows them to acquire language orally. L1 teaching methods differ from L2 teaching in the linguistic input. Since the former presuppose the oral input in language acquisition as L1, they tend to concentrate more on other aspects such as literature genres, registers or discourse analysis. However, L2 teaching methodologies don't count on previous language knowledge and so they tend to plan the linguistic input, organised and presented to the student through communicative situations. The latter would seem like a more adequate methodology for deaf students for whom SL is the preferred language, since they need to *learn* – as opposed to *acquire* – oral/written languages as L2.

*Policy* needs to redefine the profile of language teachers dealing with deaf students in sign bilingual education. The explicit statement of language contact categories implies these teachers need to have expertise in Sign Language Linguistics. Secondly, the confirmation of cross-modal categories also implies the need for policies to adopt the plurilingual perspective proposed by the Council of Europe (as opposed to multilingualism), which takes into account the continuum of language interaction all through the life span. Moreover, reflection on the difference between L1 and L2 teaching methodologies affects educational policy-making regarding the need for sign bilingual education to adapt to advances in modern technology in relation to cochlear implants. Given the fact that severely and profoundly deaf students are the traditional targets of sign bilingual education, and the exact same targets of cochlear implants, policies need to be open to the inclusion of cochlear implanted students, whose parents may opt for this type of education either as a temporary measure up until the point at which the implant becomes effective or as a way of fostering the child's development of his/her deaf identity and cultural heritage. In these cases, correct tagging of languages may vary from initial L2 to final L1, implying differences in teaching methodology and group placement.

Most importantly, the verification of Cummins' model's applicability to sign bilingual education through the explicit statement of a linguistic phenomenon, as is the case of linguistic transfer from SL to written language, has further ecological and political implications. If SL is certainly considered a minority language as proposed by Cummins' model, it becomes crucial that policy-makers establish here a link with the linguistic ecosystem metaphor (Nettle and Romaine 2000). Such a link would be aimed at providing sign bilingual education with the linguistic planning maintenance role of preserving the deaf community's natural language. In this sense, the recent passing of a law proposal in the Catalan Parliament in July 2009, which intends to establish a legal framework for LSC use and education, might provide the Catalan signing deaf community not only with a policy–research–practice based linguistic argument to defend sign bilingual education, but also with the legal framework needed to claim the right to demand, through ecological language planning policies, the maintenance of their natural way of expression.

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## Notes

1. In Europe, the less accurate *sign bilingualism* is commonly used to refer to this concept, whereas *bimodal bilingualism* seems to be the term preferred in the USA.
2. Some terminology present in the previous literature, such as *error*, *problems* and *confusion*, has been replaced in this study for coherence with the new plurilingual perspective and the recognition of the positive role of language interaction. This issue is further addressed in Section 5.
3. This language contact category could also be the result of contact between Spanish/Catalan and English. However, its description is in any case useful to include in future contrastive methodologies.
4. Tagging here refers to the need to label correctly SL and oral/written languages as the L1 or L2 for each student. These labels might change with time in the case of successful cochlear implanted students.

## References

- Barberà, G. 2007. La cohesió discursiva i l'espai en la llengua de signes catalana. Tesis doctoral del programa de Ciencia Cognitiva y Lenguaje, Universidad Pompeu Fabra, Barcelona.
- Bhatia, T., and W.C. Ritchie, eds. 2004. *The handbook of bilingualism*, 406–36. Oxford: Blackwell.
- Bishop, D.V.M. 1982. Comprehension of spoken, written and signed sentences in childhood language disorders. *Journal of Child Psychology and Psychiatry* 23: 1–20.
- Butler, Y., and K. Hakuta. 2004. Bilingualism and second language acquisition. In *The handbook of bilingualism*, ed. T. Bhatia and W.C. Ritchie, 406–36. Oxford: Blackwell.
- Chamberlain, C., and R. Mayberry. 2000. Theorizing about the relation between American Sign Language and reading. In *Language acquisition by eye*, ed. C. Chamberlain, J. Morford, and R. Mayberry, 222–59. Mahwah, NJ: Lawrence Erlbaum.
- Clark, D., J. Begue, G. Gilbert, and B. Weber. 2008. The guessing game: The effect of morpho-graphemic organization on word attack skills. Paper presented at the 2nd International Forum of the Deaf, October 7, in Fez, Morocco. Gallaudet's VL2 website: <http://vl2.gallaudet.edu/assets/section7/document40.pdf> (accessed October 15, 2008).
- Colin, S., A. Magnan, J. Ecalte, and J. Leybaert. 2007. Relation between deaf children's phonological skills in kindergarten and word recognition performance in first grade. *Journal of Child Psychology and Psychiatry* 48, no. 2: 139–46.
- Council of Europe. 2001. *Common European framework of reference for languages: Learning, teaching, assessment*. Cambridge, UK: CUP.
- Cummins, J. 1989. A theoretical framework of bilingual special education. *Exceptional Children* 56, no. 2: 111–9.
- Dubuisson, C., A. Parisot, and A. Vercaigne-Ménard. 2008. Bilingualism and deafness: Correlations between deaf students' ability to use space in Quebec Sign Language and their reading comprehension in French. In *Sign bilingualism: Language development, interaction, and maintenance in sign language contact situations*, ed. C. Plaza-Pust and E. Morales-López, 29–50. Amsterdam: John Benjamins.
- Ehri, L.C. 1992. Reconceptualizing the development of sight word reading and its relationship to recoding. In *Reading acquisition*, ed. P. Gough, L.C. Ehri, and R. Treiman, 107–43. Hillsdale, NJ: Erlbaum.
- El Libro Blanco de la Lengua de Signos Española en el Sistema Educativo. 2003. Official report. Madrid: Ministry of Education/CNSE.
- Frigola, S., and J. Quer. 2005. Discurso (in)directo y deicticos en estructuras de cambio de rol en Lengua de Signos Catalana [In/direct speech and deictics in role swift structures in Catalan sign language]. II Congreso Nacional de Lengua de Signos Española, Septiembre 15–17. Valladolid: Universidad de Valladolid.
- Gawlitzeck-Maiwald, I., and R. Tracy. 1996. Bilingual bootstrapping. *Linguistics* 34, no. 5: 901–26.
- Genesee, F. 2002. Portrait of the bilingual child. In *Portraits of the L2 user*, ed. V. Cook, 167–96. Clevedon, UK: Multilingual Matters.

- Gras, V. 2004. El sistema verbal en la lengua de signos catalana (LSC) [The verbal system in Catalan Sign Language]. *Actas del VI Congreso de Lingüística general (Santiago de Compostela, 3-7 de mayo de 2004)*, 4 vols, pages 3848. Madrid, Spain: Arco Libros.
- Günther, K-B., I. Schäfke, K. Koppitz, and M. Matthaei. 2004. Vergleichende Untersuchungen zur Entwicklung der Textproduktions- und Erzählkompetenz [Comparative research on the development of written productions and narrative skills]. In *Bilinguale erziehung als förderkonzept für gehörlose schülerinnen: Abschlussbericht zum hamburgener bilingualen schulvesuch*, ed. K-B. Günther and I. Schäfke, 189–267. Hamburg: Signum.
- Hanson, V.L., E. Goodell, and C.A. Perfetti. 1991. Tongue-twister effects in the silent reading of hearing and deaf college students. *Journal of Memory and Language* 30: 319–30.
- Herrero Blanco, A. 2003. *Gramática visual de la Lengua de Signos Española* [Visual grammar of Spanish sign language]. <http://www.cervantesvirtual.com/seccion/signos/> (accessed August 15, 2009).
- Herrero Blanco, A., and A. Peidro. 2007. Los tipos de plural en la Lengua de signos española [The types of plural in Spanish Sign Language]. *Actas del VI Congreso de Lingüística general*, 1051–64. Madrid: Arco Libros.
- Hoffmeister, R. 2000. A piece of the puzzle: ASL and reading comprehension in deaf children. In *Language acquisition by eye*, ed. C. Chamberlain, J. Monford, and R. Mayberry, 143–64. Mahwah, NJ: Lawrence Erlbaum.
- Izzo, A. 2002. Phonemic awareness and reading ability: An investigation with young readers who are deaf. *American Annals of the Deaf* 147, no. 4: 18–28.
- Jarque, M.J., M. Massone, M.P. Fernández Viader, M. Bosch, and J. Segimon. 2007. Orden básico de los constituyentes en la Lengua de Signos de Catalunya [Basic order of the components in Catalan Sign Language]. *Actas del Congreso de Lingüística General. II. A Las Lenguas y su estructura*, 1065–74. Madrid: Arco/Libros.
- Johnson, R., S. Liddel, and C. Erting. 1989. Unlocking the curriculum: Principles for achieving access in deaf education. Working Paper 89–3, Gallaudet University Research Institute, Washington, DC.
- Kelly, L., and D. Barac-Cikoja. 2008. Elements of skill crucial for deaf readers. Paper presented at the Conference at the Gallaudet Research Institute, February 13, in Washington, DC. Gallaudet's VL2 website: <http://vl2.gallaudet.edu/assets/section7/document22.pdf> (accessed September 15, 2009).
- LaSasso, C. 2003. Survey of residential and day schools for deaf students in the United States that identify themselves as bilingual-bicultural programs. *Journal of Deaf Studies and Deaf Education* 8, no. 1: 79–91.
- Luetke-Stahlman, B., and D. Nielsen. 2003. The contribution of phonological awareness and receptive and expressive English to the reading ability of deaf students with varying degrees of exposure to accurate English. *Journal of Deaf Studies and Deaf Education* 8, no. 4: 464–84.
- MacWhinney, B. 2000. *The CHILDES project: Tools for analysing talk*. Mahwah, NJ: Lawrence Erlbaum.
- Maeder, C. 1995. Interférences entre LSF et français dans l'expression des notions spatiales et temporelles. *Glossa* 49: 38–43.
- Mason, D. 1997. Response to Mayer and Wells: The answer should be affirmative. *Journal of Deaf Education* 2, no. 4: 277–9.
- Mayer, C., and C.T. Akatamasu. 1999. Bilingual-bicultural models of literacy education for deaf students: Considering the claims. *Journal of Deaf Studies and Deaf Education* 4, no. 1: 1–8.
- Mayer, C., and C.T. Akatamasu. 2000. Deaf children creating written texts: Contributions of American Sign Language and signed forms of English. *American Annals of the Deaf* 145, no. 5: 394–403.
- Mayer, C., and G. Wells. 1996. Can the linguistic interdependence theory support a bilingual-bicultural model of literacy education for deaf students? *Journal of Deaf Studies and Deaf Education* 1, no. 2: 93–107.
- McGuinness, D., C. McGuinness, and J. Donohue. 1995. Phonological training and the alphabet principle: Evidence for reciprocal causality. *Reading Research Quarterly* 30, no. 4: 830–52.

- Meisel, J. 1989. Early differentiation of languages in bilingual children. In *Bilingualism across the life-span: In health and pathology*, ed. K. Hyltestam and L. Obler, 13–40. Cambridge, UK: CUP.
- Menéndez, B. 2009. Bilingüismo intermodal: El contacto de la Lengua de Signos Catalana con el inglés escrito como indicativo de transferencia lingüística en la educación bilingüe-bicultural. Tesis de Master en Comunidad Sorda, Educación y Lengua de Signos. No publicada, Universidad de Barcelona.
- Miller, P. 1997. The effect of communication mode on the development of phonemic awareness in prelingually deaf students. *Journal of Speech, Language, and Hearing Research* 40, no. 5: 1151–63.
- Morgan, G. 1999. Event packaging in British Sign Language discourse. In *A storytelling and conversation: Discourse in deaf communities*, ed. E. Winston, 27–58. Washington, DC: Gallaudet University Press.
- Neidle, C., J. Kegl, D. MacLaughlin, B. Bahan, and R.G. Lee. 2000. *The syntax of American Sign Language: Functional categories and hierarchical structure*. Cambridge, MA: MIT Press.
- Nettle, D., and S. Romaine. 2000. *Vanishing voices: The extinction of the world's languages*. Oxford: University Press.
- Niederberger, N. 2008. Does the knowledge of a natural sign language facilitate Deaf children's learning to read and write? Insights from French Sign Language and written French data. In *Sign bilingualism: Language development, interaction, and maintenance in sign language contact situations*, ed. C. Plaza-Pust and E. Morales-López, 29–50. Amsterdam: John Benjamins.
- Padden, C. 2008. Foreword. In *Sign bilingualism: Language development, interaction, and maintenance in sign language contact situations*, ed. C. Plaza-Pust and E. Morales-López, 29–50. Amsterdam: John Benjamins.
- Padden, C., and C. Ramsey. 2000. American Sign Language and reading ability in deaf children. In *Language acquisition by eye*, ed. C. Chamberlain, J. Morford, and R.I. Mayberry, 165–89. Mahwah, NJ: Lawrence Erlbaum.
- Perfetti, C.A., and R. Sandak. 2000. Reading optimally builds on spoken language: Implications for deaf literacy. *Journal of Deaf Studies and Deaf Education* 5, no. 1: 31–50.
- Plaza-Pust, C. 2006. Bilingual acquisition of German Sign Language and written German: Developmental asynchronies and language contact. In *Theoretical issues in Sign Language research conference, Florianopolis, Brazil, December 2006*, ed. R.M. de Quadros, 497–529. Petrópolis/RJ, Brazil: Arara Azul.
- Plaza-Pust, C. 2008. Why variation matters. In *Sign bilingualism: Language development, interaction, and maintenance in sign language contact situations*, ed. C. Plaza-Pust and E. Morales-López, 29–50. Amsterdam: John Benjamins.
- Plaza-Pust, C., and E. Morales-López, eds. 2008. *Sign bilingualism: Language development, interaction, and maintenance in sign language contact situations*. Amsterdam: John Benjamins.
- Prinz, P., M. Kuntze, and M. Strong. 2001. Variable factors in the relationship between American Sign Language (ASL) proficiency and English literacy acquisition in deaf children. In *Proceedings of the 8th conference of the international association for the child language*, ed. M. Almgren, A. Barrena, M.-J. Ezerzabarrena, I. Idiazabal, and B. McWhinney, 1429–40. Somerville, MA: Cascadilla.
- Quer, J., and Barberà, G. 2005. *Gramàtica bàsica de la llengua de signes catalana*. [Basic grammar of Catalan sign language]. Barcelona: ICREA, Universidad de Barcelona.
- Quigley, S.P., and C. King. 1980. Syntactic performance of hearing impaired and normal hearing individuals. *Applied Psycholinguistics* 1, no. 4: 329–56.
- Quigley, S.P., and D.P. Paul. 1984. *Language and deafness*. San Diego, CA: College Hill Press.
- Ritchie, W.C., and T.C. Bhatia. 2004. Social and psychological factors in language mixing. In *The handbook of bilingualism*, ed. T. Bhatia and W.C. Ritchie, 406–36. Oxford: Blackwell.
- Schäfer, I. 2005. *Untersuchungen zum Erwerb der Textproduktionskompetenz bei hörgeschädigten Schülern* [Research on acquisition of written production skills by deaf students]. Hamburg: Signum.
- Strong, M., and P.M. Prinz. 1997. A study of relationship between American Sign Language and English literacy. *Journal of the Deaf Studies and Education* 2, no. 1: 37–46.

- Swanwick, R., and S. Gregory. 2008. *Sign bilingual education: Policy and practice*. Coleford, Gloucestershire: Douglas McLean.
- Taescher, T., A. Devescovi, and V. Volterra. 1988. Affixes and function words in the written language of deaf children. *Applied Psycholinguistics* 9, no. 4: 385–401.
- Taub, S. 2001. *Language from the body. Iconicity and metaphor in American Sign Language*. Cambridge, UK: Cambridge University Press.
- Taylor, L. 1969. A language análisis of the writing of deaf children. Tesis doctoral no publicada, Florida State University Tallahassee.
- Wilbur, R.B. 1996. Evidence for the function and structure of Wh-Clefts in American Sign Language. In *International review of sign linguistics*, ed. W. Edmondson and R. Willbur, 209–56. Mahwah, NJ: Lawrence Erlbaum.
- Wilbur, R.B. 2000. The use of ASL to support the development of English and literacy. *Journal of Deaf Studies and Deaf Education* 5, no. 1: 81–104.
- Winston, E. 1995. Spatial mapping in comparative discourse frames. In *A language, gesture and space*, ed. K. Emmorey and J. Reilly, 87–114. Mahwah, NJ: Lawrence Erlbaum.