

# **Sign Bilingual Education and Inter-modal Language Contact: On the Relation of Psycholinguistic and Pedagogical Factors in Deaf Bilingualism**

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## **1 Introduction**

Several "continua" have been proposed in the description of the variation which characterises the outcome of situations in which two languages are in contact (cf. Grosjean 1982, Romaine 1996, Tracy 1996). The different types of bilingualism encountered at the individual level, for example, are commonly described in terms of a continuum ranging from the type of a balanced bilingualism to the type of a partial or semi-bilingualism (cf. Grosjean 1992, Romaine 1996). In view of the variety of acquisition types and competence levels achieved, bilingualism has been defined as the regular use of more than one language (cf. Grosjean 1982, 1992, Romaine 1996). Following this broad definition of bilingualism, most members of the deaf communities are bilingual even though their competence in and use of sign language and oral/written language varies substantially. The reasons for this variation relate to such diverse factors as the age at which the hearing loss has taken place, the degree of deafness, the age of exposure to the respective languages, the hearing status of the parents, and, most significantly, schooling (cf. Fischer 1998, van der Bogaerde & Baker 2002). Sign language and oral/written language do not represent equal codes for deaf individuals. Deaf children may acquire sign language naturally and spontaneously. In contrast, deaf children can only perceive the oral/written language in the visual, i.e. the secondary modality. Thus, its acquisition will consist of a long and arduous process which crucially depends on supportive teaching. The advantage of sign language in terms of accessibility contrasts with its status at the level of parent-child transmission. More than 90 % of deaf children are born to hearing parents. Thus, the natural acquisition of sign language *viz* the availability of natural sign language input remains a privilege of deaf children born to deaf parents. Consequently, early access to sign language by deaf children of hearing parents is bound to appropriate supportive measures.

The data gathered in the context of a recent study on the status of sign language in deaf education in Europe (cf. Plaza Pust, submitted) depict a situation which is characterised by a high degree of variation. The diversity of available education methods including sign language to a greater or lesser extent indicates that the strictly oralist method has definitely lost its longstanding exclusivity. So far, however, the bilingual option in deaf education continues to be the exception rather than the norm in most of the European countries. Whilst the overall situation is still unsatisfactory, the significance of the bilingual education programs implemented thus far needs to be emphasised. In recognising the relevance of sign language for the cognitive and communicative development of the deaf child the bilingual/bicultural approach to deaf education marks a change in the history of deaf pedagogy (cf. Johnson *et al* 1989, Prillwitz 1991). From a psycholinguistic perspective the question arises as to the potential promoting function of sign language in the bilingual development of deaf children. Following current assumptions in the area of child bilingual and adult second language acquisition language contact phenomena provide unique evidence for the relevance of integration and differentiation processes in the organisation of language (cf. Leuninger *et al* 2002, Plaza Pust 2000, 2003, Tracy 1991, Tracy & Gawlitzek-Maiwald 2000). The relevance of these processes in the bilingual acquisition of sign language and oral/written language is explored on the basis of a collection of narratives of bilingually educated deaf children.

## 2 Deaf bilingualism and deaf education

### 2.1 Oralism: the monolingual view

Until recently the educational institutions' answer to the intricacy of deaf bilingualism was simply to ignore it. Prejudices against bilingualism, more specifically, against sign bilingualism have a longstanding tradition in deaf pedagogy which adhered to the oralist method as of the end of the 19th century (cf. Prillwitz 1991). This method which is based on a medical understanding of deafness is exclusively oriented towards the monolingual acquisition of the spoken and the written language. Sign language contact is believed to have negative effects on the deaf child's language development. So far, however, no more precise indications as to what these negative effects would consist of have been provided (cf. Fischer 1998). In contrast, the low academic achievements of exclusively orally educated deaf children have been extensively documented (cf. Berent 1996, Bochner & Albertini 1988, Wudtke 1993). The outcomes of monolingual education have not met the expectations. Problems arising from the oralist orientation in deaf education point to the relevance of a bilingual educational framework for a successful linguistic and cognitive development of the deaf child (cf. Johnson *et al* 1989, Fernández Viader 1996). Whether deaf children raised under the oralist method acquire sign language as a second language successfully depends on multiple factors. The natural acquisition of a language in the sensitive period for language acquisition represents a fundamental prerequisite for the acquisition of a language at a later age (cf. Bochner & Albertini 1988, Fischer 1998, Lenneberg 1967, Leuninger 2000, Plaza Pust 2000). Many orally educated deaf students only acquire a partial competence in their first language which has lasting effects on the acquisition of sign language at a later age (cf. Fischer 1998, Morford & Mayberry 2002).

### 2.2 Communicative approach: diversification of educational methods

The feedback obtained in the context of a recent survey on the status of sign language in deaf education in Europe (cf. table 1) depicts a situation which is characterised by a high degree of variation (cf. Plaza Pust, submitted).

	sign language is not/hardly ever used	sign language is used as a supportive means of communication	sign language and oral/written language are the languages of instruction	sign language is the language of instruction
Austria	●			
Belgium	●			
Denmark			●	●
Finland			●	●
France		●		
Germany	●	●	●	
Greece	●	●		
Ireland	●	●		
Italy		●		
Norway			●	●
Spain	●	●	●	●
Sweden			●	●
Switzerland		●	●	
The Netherlands		●	●	
United Kingdom	●	●	●	●

Table 1. General status assigned to sign language in schools with deaf students.

That sign language is not or hardly ever used in schools with deaf students in many European countries points to the prevailing predominance of the oralist method. At the same time, however, many participants also hinted at the availability of education methods including sign language to greater or lesser extent. There is an increasing tendency to include sign language as a "supportive means of communication". This development, however, needs to be evaluated with caution. Unfortunately, there is still much confusion concerning the linguistic status of sign language as opposed to other forms of manual communication (i.e. signed variants of the oral/written language). Whatever the apparent advantage of communication by means of manual codes, such artificial systems do not represent independent linguistic systems and therefore cannot serve as a proper basis for the development of the deaf child's language faculty (cf. Drasgow 1993, Fischer 1998, Johnson *et al* 1989). The second critical aspect concerns the lack of well-defined didactic conceptions. Some professionals in the field of special education seem to favour an individual promotion of communicative skills in view of the increasing diversity of the needs and abilities of deaf students (cf. Kaul & Becker 1999). However, the diversification of didactic priorities often results in a deliberate mixture of codes. It is unclear how natural language development should occur on such a basis (cf. Bochner & Albertini 1988). The preceding observations allow for the conclusion that the use of sign language as an additional means of communication in the classroom represents a first but insufficient step on the side of the hearing community towards the needs and abilities of deaf individuals (cf. Drasgow 1993, Mohay *et al* 1998).

Fortunately, educational conceptions which clearly include sign language in their program have been implemented in Europe in the course of the last two decades. In this regard, the Nordic countries, more specifically Sweden and Denmark, pioneered a change in European deaf pedagogy (cf. Bergman 1994, Davies 1991, Gericke 1998, Hansen 1991, Svartholm 1993).

### 2.3 Bilingual education: the inclusion of sign language as a language of instruction

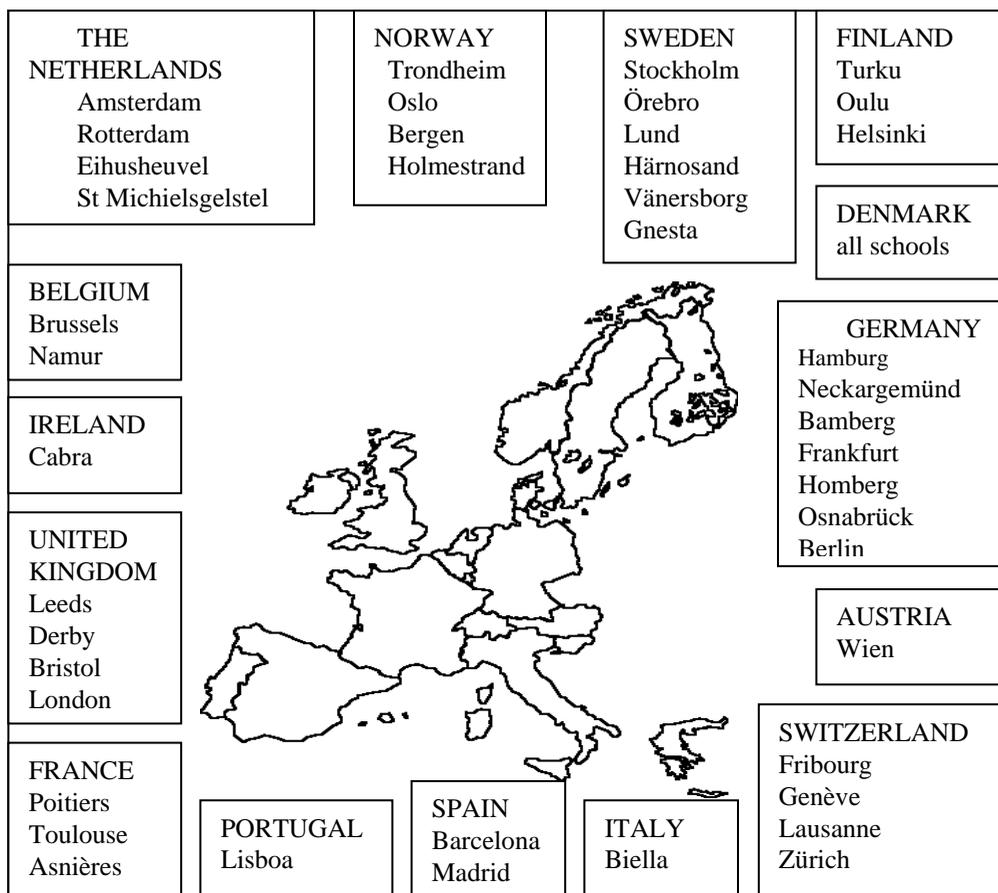


Figure 1. Allocation of bilingual education programs with deaf students

Figure (1) provides an overview of the allocation of bilingual education programs with deaf pupils which are currently run in Europe. These programs have the common aim of promoting sign language in the education of deaf children. Yet they differ as to *where*, *when* and *how* deaf children are exposed to sign language and oral/written language respectively.

Variation as regards the **institutional framework** to bilingual education (cf. table 2) relates to different priorities in deaf education.

country	institution	bilingual school	special school	integration /ordinary school
Belgium	Kasterlinden, Brussels		●	
Belgium	Centre Comprendre & Parler, Brussels		●	●
Denmark	all schools	●		
Finland	C.O. Malm School, Turku	●		
France	2LPE, Poitiers			●
Germany	Samuel-Heineke Schule, Hamburg			●
Germany	Kath. Gehörlosenseelsorge, Frankfurt			●
Norway	Bjökasen ViD Skole, Bergen		●	
Spain	Escuela "CRAS", Sabadell	●		
Spain	Inst. Hisp.-americano de la Palabra, Madrid	●		
Spain	CEIPM Tres Pins, Barcelona			●
Sweden	Manillaskollan, Stockholm	●		
Sweden	Östervandskolan, Lund	●		
Switzerland	CESM, Geneva	●		
Switzerland	Kantonale Gehörlosenschule, Zürich		●	
The Netherlands	Inst. voor Doven, St Michielsgestel		●	
The Netherlands	NSDSK, Amsterdam	●		
United Kingdom	Royal School for the Deaf, Derby	●		

Table 2. *Bilingual education programs: institutional framework.*

Consider, for example, the inclusion of bilingual education in mainstream schools by means of the provision of sign language interpreter services as is the case in Poitiers or Frankfurt. This type of bilingual education aims at ensuring the deaf child's access to the general curriculum. And it also pursues the social integration of deaf children into the hearing community. In contrast, special schools defining themselves as clearly bilingual have the advantage of bringing together deaf children of all ages thus promoting their deaf identity and their socialisation in the deaf community. Bilingual education is also being offered in terms of a pilot project in some special schools. Following the pressure of mainstream schooling towards their closure, these schools have opted to vary their offer thus including bilingual teaching whilst specialising on the additional needs of deaf children with other difficulties. However, this type of bilingual education often remains a temporary option tailored to the specific needs of individual children.

Programs also vary with respect to the choice of the **language of instruction**. Table (3) provides an overview of the language or languages which are considered to be the main language of instruction in the respective institutions.

In some programs all curriculum subjects are taught in sign language. In this case the oral/written language is clearly defined as a subject in itself and taught in terms of a second or foreign language.

country	institution	sign language	oral/written language	both
Belgium	Kasterlinden, Brussels			●
Belgium	Centre Comprendre & Parler, Brussels		●	
Denmark	all schools			●
Finland	C.O. Malm School, Turku	●		
France	2LPE, Poitiers			●
Germany	Samuel-Heineke Schule, Hamburg			●
Germany	Kath. Gehörlosenseelsorge, Frankfurt			●
Norway	Bjökasen ViD Skole, Bergen	●		
Spain	Escuela "CRAS", Sabadell	●		
Spain	Inst. Hisp.-americano de la Palabra, Madrid	●		
Spain	CEIPM Tres Pins, Barcelona			●
Sweden	Manillaskollan, Stockholm	●		
Sweden	Östervandskolan, Lund	●		
Switzerland	CESM, Geneva			●
Switzerland	Kantonale Gehörlosenschule, Zürich		●	
The Netherlands	Inst. voor Doven, StMichielsgestel			●
The Netherlands	NSDSK, Amsterdam			●
United Kingdom	Royal School for the Deaf, Derby			●

Table 3. *Bilingual education programs: main language of instruction.*

Some other programs (as for example the Hamburg project or the bilingual school in Madrid) opt for a so-called "continuous bilinguality" in the classroom in terms of "team-teaching" (cf. Günther 1999). Such programs, follow the one person-one language principle and aim at promoting both languages from the beginning. And there are even some programs in which the oral/written language is given prominence as a language of instruction.

Variation with regard to the language of instruction is mirrored in the **age of exposure** to the respective languages. In Scandinavian programs exposure to sign language occurs from the beginning. The teaching of the oral/written language as a second language begins as of age 6 years onwards. In most other European programs, exposure to both languages is scheduled at the same time. In a few cases, deaf children are exposed to sign language only at a later point in time.

Diverging views with regard to a parallel or successive promotion of both languages determine the timing of the teaching of literacy. Some professionals argue that deaf children should have a firm competence in sign language before acquiring any other language (cf. Svartholm 1994). According to some other professionals, however, a parallel promotion is more suitable given the restricted access to the oral/written language.

To conclude, this brief overview of the bilingual education programs which are currently run in Europe shows that programs differ as to the type of (sign) bilingualism they envisage. In general terms, as is known from other sociolinguistic contexts, controversies pertaining to bilingual education relate to many different ways of understanding biculturalism and integration on the individual and the societal level (cf. Grosjean 1982, Romaine 1996). So far, the institutionalisation of the bilingual option in deaf education is the case only in the Nordic countries. In all other countries, educational institutions with

deaf students have provided individual solutions to the task of reconciling diverse and often contradicting demands pertaining to the heterogeneity of the deaf communities. On a more general level, the diversification of the available educational methods allows for the conclusion that deaf education in Europe is in a phase of transition. Often this diversity is given within the bounds of an individual school. What needs to be considered additionally is that many deaf children are exposed to different methods in the course of their development. As a result deaf bilingualism is characterised by a high degree of variation.

### **3 Language contact in the bilingual acquisition of sign language and oral/written language**

#### *3.1 Bilingual education and the promoting function of sign language*

Studies concomitant to bilingual education programs with deaf students generally agree on the promoting function of sign language for the cognitive and communicative development of the deaf child (cf. Günther 1999). On psycholinguistic grounds, the relevance of an early promotion of sign language needs to be emphasised in view of the sensitive period for language acquisition (cf. Fischer 1998, Leuninger 2000). What needs to be considered additionally is that the natural acquisition of a language during the sensitive period represents a fundamental prerequisite for the acquisition of a language at a later age (cf. Bochner & Albertini 1988, Fischer 1998, Lenneberg 1967, Plaza Pust 2000).

Following current hypotheses in the areas of child bilingual and adult second language acquisition (cf. Plaza Pust 2000, 2003, Tracy & Gawlitzek-Maiwald 2000) there is an additional dimension to be considered with respect to a potential promoting function of sign language in the bilingual development of the deaf child. Over the last two decades, studies in the area of child and adult bilingualism have sought to clarify the status of language contact in language development. The evidence gathered in the context of recent studies suggests that language acquisition is characterised by integration and differentiation processes within a linguistic systems and across linguistic systems (cf. Gawlitzek-Maiwald & Tracy 1996, Hohenberger 2002, Plaza Pust 2000, Tracy 1996, Tracy & Gawlitzek-Maiwald 2000). Such processes lie at the heart of language contact phenomena commonly referred to as code-switching, transfer or cross-linguistic influence.

#### *3.2 The outcome of sign language contact situations*

The outcome of language contact situations is commonly described in terms of a "contact continuum" (cf. Grosjean 1982, Romaine 1996). Contact phenomena in this continuum range from the shift or switch to another language, the borrowing of an element from an other language, the integration of loan vocabulary, the development of contact varieties, and language change on the diachronic level (cf. Brentari 2001, Grosjean 1982, Romaine 1996, Myers-Scotton 2002). Different structural and functional criteria are applied in the differentiation of these phenomena such as the type of elements mixed (i.e. functional *vs* content words), the switch point (i.e. intra-sentential *vs* inter-sentential code-switching) or the language competence level achieved (i.e. code-switching *vs* code-mixing) (cf. Grosjean 1982, Romaine 1996, Meisel 1994, Myers-Scotton 2002, Tracy & Gawlitzek-Maiwald 2000).

A further differentiation pertains to the modality of the languages involved in a situation of contact (i.e. visual-gestural for sign language, and aural-oral for the spoken language). The notion of *intra-modal language contact* refers to a situation in which two oral/written languages or two sign languages are in contact. *Inter-modal language contact*, in contrast, refers to contact situations involving a sign language and an oral/written language in its primary modality (spoken language) or secondary modality (written language) or in its representation in the visual-gestural modality (signed systems). This differentiation derives the following typology of contact situations involving a sign language:

- *Sign language - spoken language contact.*

This type of inter-modal language contact includes the sequential alternation of sign language and spoken language as well as the simultaneous production of sign language and spoken language elements (*mouthing*).

- *Sign language - manual code contact.*  
Language contact involving a sign language and a signed variant of an oral/written language represents a borderline case of inter-modal language contact. The mixing of sign language and manual code elements in one utterance, for example, involves two different grammars whilst it occurs within the same, i.e. the visual modality.
- *Sign language - written language contact.*  
Inter-modal language contact in this case involves a language in its primary modality (sign language) and a language in its secondary modality (written language). The outcomes of this contact situation are subtle and intricate. Contact phenomena include the alternation of sign language and elements of a manual alphabet based on the written language (*fingerspelling*). Contact involving a sign language and a written language may also derive a more subtle mixing of lexical and morphosyntactic features in the written language production.

### 3.3 *Inter-modal language contact and the acquisition of the written language*

Deaf children acquire written language without having access to the primary modality it relates to. The low reading and writing level of many orally educated deaf children is related to the restricted access to language input in early language acquisition. Bilingually educated deaf children acquire the written language on a different linguistic and communicative basis. The question which imposes itself at this stage is whether bilingually educated deaf children may profit from their more advanced competence in sign language in the acquisition of the written language in terms of a temporary "pooling of resources" (cf. Gawlitzek-Maiwald 1996). Studies on child bilingual acquisition of two spoken languages indicate that children are able to separate both systems at the early age of 2 years (cf. Köppe 1997, Lanza 1997, Meisel 1994). However, the differentiation of both languages seems not to occur in all children in the same way. Inter- and intra-individual variation in the learner languages points to the possibility of a temporary integration of both systems where children are confronted with ambiguous input or as a result of developmental asynchronies (cf. Hulk & Müller 2000, Tracy & Gawlitzek-Maiwald 2000). Where both languages do not develop at parity, children may resort to a temporary "borrowing" of structural properties of one language into another. The more advanced language may thus fulfill a "booster function" in the sense of "bilingual bootstrapping" (cf. Gawlitzek-Maiwald and Tracy 1996). Evidence for the use of this strategy in the learner data of bilingually educated deaf children may therefore provide unique insights into the potential promoting function of sign language in the acquisition of the written language (cf. Günther 1999).

## 4 **The study**

### 4.1 *Participants and method*

The present study is part of an ongoing investigation into language contact in the bilingual acquisition of sign language and oral/written language. The empirical part of this research project consists of a cross-sectional data collection of test groups of different education programs with deaf pupils. The following discussion focuses on the data of the Spanish sample. The data of this sample were produced by Spanish-Spanish Sign Language (LSE) bilingual deaf students ( $n = 8$ ). All subjects attend one of the special schools in Spain which clearly defines itself as bilingual. As the production task consisted of a written narrative it was decided to include students with an age ranging from 9 to 12 years. Written narratives were elicited on the basis of Mercer Mayer's (1969) picture story "Frog, where are you?". The so-called "frog story" consists of an elaborate series of events (a boy has a frog pet which runs away; the boy and the dog search for the missing frog; during this search they encounter a series of events until they eventually find the frog family). The "frog story" has been used in a broad study on narrative development in different spoken and signed languages including Spanish (cf. Berman & Slobin 1994). Thus, the choice of this story does not only provide for the possibility of a comparison of narratives based on the same content. The data collected in this study may also be contrasted with the evidence gathered in studies on the monolingual development of Spanish by hearing children.

## 4.2 Results

### 4.2.1 Narrative level

The overall linguistic creativity in the narratives of this sample varies substantially. Table (4) provides an overview of the linguistic profiles in relation to the available linguistic means in the written language. The overall length of the narratives ranges from 31 to 75 clauses per text.

child	EA	EB	EC	ED	EE	EF	EG	EH
age	11;04	11;03	12;02	9;00	11;02	12;00	12;01	12;02
level	inter- mediate	low	good	good	good	low	inter- mediate	inter- mediate

Table 4. *Written language competence level.*

Inter-individual variation in the narrative elaboration of written texts (cf. Berman & Slobin 1994) ranges from rudimentary stories with little or no narrative structure at all to stories with a sophisticated hierarchical narrative structure. As illustrated in examples (1) and (2) produced by ED and EC respectively picture describing *vs* narrative texts differ with respect to the type of linguistic devices used for the purpose of cohesion and coherence (cf. Berman & Slobin 1994). Low level texts (cf. (2)) are characterised by a local organisation proceeding utterance by utterance. In contrast, advanced level texts are characterised by a global, text-level organisation. The latter implies the ability to conceptualise a number of single events as parts of complex overall events on the basis of their temporal relations. In other words, these texts are organised along a narrative thread.

- (1) **09;00ED** *(engl. translation)*
- |  |  |                         |
|--|--|-------------------------|
| Raul grito                               | <i>Raul cried</i>                                | <i>[Raul = the boy]</i> |
| ¡Milu ten cuidado!                       | <i>Be careful, Milu!</i>                         | <i>[Milu = the dog]</i> |
| y se oyó ¡craaasc!                       | <i>and a 'craaasc' could be heard</i>            |                         |
| el frasco se habia roto.                 | <i>the bottle was broken.</i>                    |                         |
| Y Raul salto de la ventana               | <i>And Raul jumped out of the window</i>         |                         |
| pero muy enfadado                        | <i>but really angry</i>                          |                         |
| y Milu ladra muchisimo a la cara de Raul | <i>and Milu barked a lot to the face of Raul</i> |                         |
| porque esta contento                     | <i>because he is happy.</i>                      |                         |
- (2) **12;02EC** *(engl. translation)*
- |   |   |  |
|---|---|--|
| Julio está mirando y buscando sus botas | <i>Julio is looking and seeking his boots</i> |  |
| y perro esta caido por la ventana       | <i>and dog is fallen through the window</i>   |  |

Variation concerning the overall organisation of a narrative is commonly reflected in the choice of the **dominant tense** (cf. Berman & Slobin 1994:131). The narratives of the subjects EA, EC, ED, EE show a clear choice of a dominant tense (either present or past as illustrated in the examples (3) and (4)).

- (3) **11;04EA** *(engl. translation)*
- |                             |                                    |  |
|-----------------------------|------------------------------------|--|
| el niño y perro va a bosque | <i>the boy and dog go to woods</i> |  |
| no esta                     | <i>[the frog] is not there</i>     |  |
| y el niño pregunta a topo   | <i>and the boy asks a mole</i>     |  |

In contrast, the narratives of EB, EF, EG and EH are characterised by "oscillations". Note that these oscillations do not only consist of the alternate use the past and the present tense but also of target-like and target-deviant forms. Example (5) illustrates the type of intra-individual variation which is characteristic of this second group.



- (8) después Perro y Ricardo **van** a dormir (12;01EG\_02\_009)  
*afterwards dog and Ricardo go-3PL to sleep*
- (9) por la mañana Ricardo y perro **mirar...** (12;01EG\_03\_014)  
*by the morning Ricardo and dog look-INF*
- (10) El perro esta mirando a la rana y Julio tambien (12;02EC\_01\_003)  
*the dog is watching to the frog and Julio too*
- (11) Un dia Julio esta durmiendo (12;02EC\_02\_005)  
*one day Julio is sleeping*
- (12) Julio esta gritando (12;02EC\_08\_013)  
*Julio is crying*
- (13) Pepe vistio y salio de casa sin (11;02EE\_00\_020)  
*Pepe clothed and he-left of house without*
- desayunar, corria a toda velocidad,  
*to-breakfast he-ran to all speed*

A different type of learnability problem arises with regard to the sequential ordering of the elements in a clause. Word order in LSE and Spanish follows different requirements (cf. FESORD 2000, Morales López *et al* 2002). The canonical word order of Spanish is SVO. Alternative word orders as, for example, subject verb inversion are required in interrogations or as an expressive means related to discourse requirements (cf. Sebastián & Slobin 1994). Word order in LSE, in contrast, is determined by a complex interplay of grammatical and spatial requirements (cf. Freire 2000, FESORD 2000, Morales López 2002). Sensitivity to movement complexity, to the figure-ground principle, and the allocation of personal and temporal reference (sentence-initially) derives a diversity of different word order patterns.

In the case of sequentially expressed grammatical information, learners may well resort to a "pooling of resources" and temporarily borrow the structure of one language into another. Subsequent development, however, requires restructuring towards the target-like order once a minimal structure is available. The relevance of these processes is illustrated in examples (14) - (22). Inter-individual variation in this case includes (a) the total absence of syntactic patterns (cf. (14) and (15)) (the stories of these children basically consist of unstructured word strings), (b) the use of a default word order pattern (cf. (16) and (17)), (c) the borrowing of sign language patterns (cf. (18) and (19)) and the creative use of a diversity of target-like sentence types for the purpose of creating a narrative structure (cf. (20), (21) and (22)).

- (14) mañana rana bote (11;03EB\_03\_004)  
*morning frog jar*
- (15) nino grito rana ventana perro (11;03EB\_05\_011)  
*boy shout frog window dog*
- (16) después Ricardo coger su botas (12;01EG\_03\_22)  
*after Ricardo to-take his boots*
- (17) y Perro esta caer con pecera (12;01EG\_06\_024)  
*and dog is to-fall with fishbowl*
- (18) perro, niño ver un vantena (11;04EA\_05\_007)  
*dog child see a window*

- (19) el suelo del jardín muy grande busca (11;04EA\_08\_009)  
*the floor of-the garden very big (looks-for)*
- (20) se preocupó y preguntó a su madre: (11;02EE\_00\_017)  
*he worried and asked to his mother*
- (21) Mama, has visto a mi rana preferida. (11;02EE\_00\_018)  
*mum have seen to my frog favourite*
- (22) Y su madre respondió que no había visto. (11;02EE\_00\_019)  
*and his mother answered that not had seen*

## 5. Discussion

To conclude, much like in other types of language acquisition (cf. Tracy 1991, Tracy 1994/5, Plaza Pust 2000) inter-individual variation in the acquisition of the written language by bilingually educated deaf children points to the relevance of structure-building processes. Upon the availability of a minimal structure, children take advantage of their more advanced knowledge in another language (LSE in this case) by means of a structural borrowing. In the case of two languages of different modality, however, additional restrictions on such a structural borrowing result from the different organisation of both languages.

The potential promoting function of sign language in a broad sense can be observed in the data of the children with an advanced level in the written language. Their narratives clearly mirror an enhanced formal and expressive creativity which is commonly lacking in the written language of monolingually educated deaf children. Thus, the evidence gathered in the context of this study is in line with the positive results which have been reported in other studies on sign bilingual education (cf. Chamberlain & Mayberry 2000, Günther 1999, Heiling 1998, Hoffmeister 2000, Padden & Ramsey 2000, Pinter 1992, Poppendieker 1992, Strong & Prinz 2000).

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