

The Acquisition of Focus Constructions in American Sign Language and Língua de Sinais Brasileira

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1. Goal Of This Study

The goal of this study is to use acquisition data from focus constructions in American Sign Language (ASL) and Brazilian Sign Language (Língua de Sinais Brasileira, LSB) to evaluate competing analyses of these structures. We show that the timecourse of acquisition provides support for analyses that treat 'doubling' and 'final' constructions as related, such as our analysis of them involving emphatic focus (Lillo-Martin and Quadros 2004). On the other hand, information focus is acquired separately, and thus should be analyzed as a distinct phenomenon.

A side point of our study is the support it provides to claims that children are sensitive to at least some aspects of information structure from an early age (De Cat 2003, 2004). In our study, children appropriately used information focus and emphatic focus constructions before the age of three years.

2. Focus in ASL and LSB

Recent theories have identified differences between at least three kinds of 'focus' (see, among others, Erteshik-Shir 1997, Vallduví 1996, and Zubizarreta 1998). The terminology varies greatly across different approaches to focus. We will use the following distinctions, following in general a categorization based

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on discourse structure. Information focus (or non-contrastive focus) is used to introduce new discourse information. It can be identified by considering the form of an answer to a question such as (1). The placement of the word referring to the entity read shows the placement of information focus in the language.

- (1) Q. What did you read?
A. I read A BOOK.

Contrastive focus, on the other hand, is used to negate information previously given in the discourse, as illustrated in (2). We will not be discussing contrastive focus in this paper (cf. Lillo-Martin and Quadros 2004).

- (2) Q. Did you read Chomsky's book?
A. No, I read KAYNE's book.

Finally, emphatic focus, or simply emphasis, can be used to negate or affirm information previously given. An example is given in (3).

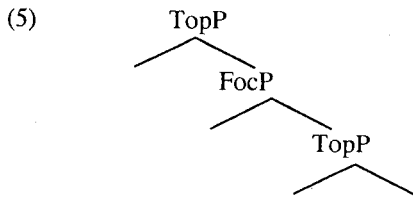
- (3) Q. You read both books?
A. Yes, I read BOTH books.

In Lillo-Martin and Quadros (2004), we show some of the structures used in ASL and LSB for these kinds of focus. Here we review some of the conclusions of that report.

In both ASL and LSB, new information can occur in the sentence-initial position or in its sentence-internal, in situ position, as illustrated in (4).

- (4) Q: What did you read?
 I-focus
A: BOOK JAIRO I READ
A: I READ BOOK JAIRO
 'I read Jairo's book.'

In Lillo-Martin and Quadros (2004), we analyze examples with sentence-initial new information as involving movement to the Specifier of Focus Phrase, as shown in (5). This proposal is part of a more detailed proposal regarding the finer structure of the left periphery, following essential ideas by Rizzi (1997). Neidle (2002) independently proposes a projection for focused elements above TP and below TopP in ASL, though details of her analysis differ from ours. Hers appears to be the first claim that ASL uses a sentence-initial position for focus. However, she utilizes the sentence-initial focus position for conditional clauses, when clauses, and correlatives, and not for new information. Instead, she places new information in the Topic phrase. (See Lillo-Martin and Quadros 2004 for a more detailed comparison of these approaches.)



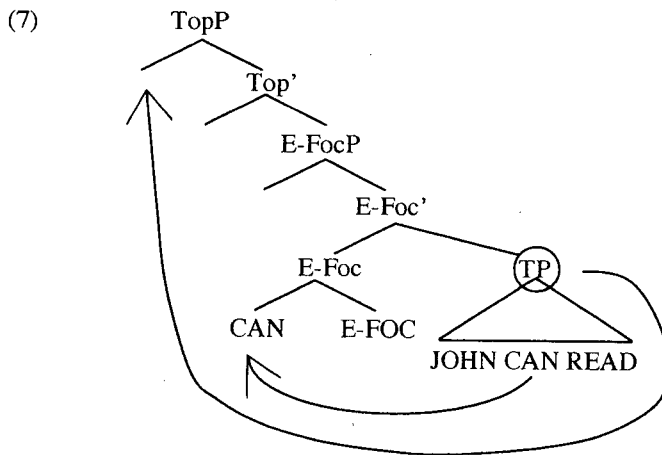
Both ASL and LSB display two kinds of emphatic focus. In one, the emphasized element is duplicated in both its in situ position and the sentence-final position, as illustrated in (6).¹ Examples like these have been discussed by Petronio (1993), Petronio and Lillo-Martin (1997), and Wilbur (1997), among others.² We call such examples ‘focus doubling’.

- (6) a. JOHN CAN READ CAN
 ‘John really CAN read.’
 b. MARY FINISH GO SPAIN FINISH
 ‘Mary ALREADY went to Spain.’
 c. I LOSE BOOK LOSE
 ‘I did LOSE the book indeed.’
 d. BABY CRY BABY
 ‘The BABY is the one crying.’
 e. JOÃO BUY WHAT YESTERDAY WHAT
 ‘WHAT was it that John bought?’
 f. WHAT JOÃO BUY WHAT?
 ‘WHAT was it that John bought?’

Following Nunes and Quadros (2004a, b), we analyze examples with emphatic doubling in the following way. The focused element moves to the head of a projection we call E-Foc. The TP remnant moves to [Spec, TopP]. According to the principles of linearization described by Nunes (2004), morphological fusion of the focused element and the E-Foc head prevents the deletion of the lower copy. Thus, both the in-situ and final copies are realized. We illustrate this analysis in (7).

1. In the case of doubled WH-elements, one appears in the sentence-final position (E-Foc), while the other appears either in situ or in the sentence-initial position, which we take to be [Spec, CP]. In general, WH-elements may optionally remain in situ in ASL and LSB.

2. Kegl (1977) observed the existence of ‘bracing constructions’ in which a question word or other element may occur twice in one sentence. Some of her examples are of the type we include as focus doubling.



In the second type of emphatic focus, the emphasized element appears only in the sentence-final position, as illustrated in (8). We call such examples 'focus final'. As indicated by our notation, we take these examples to be just like focus doubling, except that the sentence-internal copy is not realized. According to the analysis of Nunes and Quadros, this is because morphological fusion of the focused element and the E-Foc head is optional. When it does not occur, the chain formed by the two copies must be linearized by the realization of only one copy, the one which appears in the sentence-final position.

- (8) a. **JOHN CAN READ CAN**
 'John really CAN read.'
- b. **MARY FINISH GO SPAIN FINISH**
 'Mary ALREADY went to Spain.'
- c. **I LOSE BOOK LOSE**
 'I did LOSE the book indeed.'
- d. **BABY CRY BABY**
 'The BABY is the one crying.'
- e. **JOÃO BUY WHAT YESTERDAY WHAT**
 'WHAT was it that John bought?'
- e. **WHAT JOÃO BUY WHAT?**
 'WHAT was it that John bought?'

An alternative view of doubling and final constructions in ASL is that presented by Neidle, Kegl, MacLaughlin, Bahan and Lee (2000). According to them, there is no systematic relationship between doubling and focus final constructions. They suggest that in some examples, doubling constructions involve 'tags', noting that, "In ASL, as in many other languages, sentence-final tags (consisting of a repeated but reduced version of basic material from the main clause) occur productively" (Neidle et al. 2000, p. 56). On their analysis,

no focus or emphasis is involved. There is no discussion of non-WH examples of what we consider focus final.

Neidle et al. provide a more extended discussion of doubled and final WH-elements. On their analysis, unlike ours, [Spec, CP] is on the right in ASL. Thus, WH-elements may appear in sentence-final position through regular WH-movement. WH-doubles occur when the WH-element also appears as a base-generated topic. Another type of WH-double can be generated when the WH-element appears in both its in situ position and as a tag.

3. Acquisition of Focus Constructions

Given the conflicting analyses proposed for examples like those in (6) and (8), we examine the acquisition of such constructions for evidence bearing on this debate. Acquisition data can be used to provide additional evidence for one analysis over another when analyses make different predictions regarding the time-course of acquisition. We consider the present example such a case. Acquisitional predictions of our analysis and the competing analysis are given in (9)-(10).

(9) Predictions of our Analysis

I-focus and E-focus are distinct constructions, so
they are not expected to be acquired at the same time

E-focus doubling and final constructions are related, so
they are expected to be acquired at the same time

(10) Predictions of Competing Analyses

I-focus and E-focus are not differentiated, so
they are expected to be acquired at the same time

E-focus doubling and final constructions are unrelated, so
they are not expected to be acquired at the same time

3.1 Methods

The data used for the present study come from an ongoing collection of cross-linguistic longitudinal spontaneous production data under construction at the University of Connecticut and the Universidade Federal de Santa Catarina. Participants are videotaped in naturalistic play situations at home (or in one case, at the mother's workplace). Both the child's own toys and books and a selection of common toys and books brought by the experimenters are included in the sessions. Deaf children of Deaf, signing parents are filmed interacting with their parents and/or fluent signers.

The data are transcribed in the labs by Deaf signers. Along with the notation of utterances signed by the child, adults, and the actions of all involved,

transcripts are marked with time code indicators so that the analysis can be done based on both the transcript and a visual re-viewing of the scene. All relevant utterances are collected and counted, according to the needs of the analysis. Information about the participants, their ages, and the sessions analyzed is provided in Table 1.

Table 1. Participants and Sessions Analyzed

Language	Pseudonym	Analysis Begins	Analysis Ends	# Sessions Analyzed	# Child Utterances
ASL	ABY	1;9	2;7	14	3926
	SAL	1;7	2;3	10	2803
LSB	ANA	1;1	3;0	31	560
	LEO	1;9	2;4	21	1028

3.2 Analysis

For the present analyses, we considered the earliest consistent use of a type the age of 'acquisition' (sporadic early examples excluded). For our analysis of the acquisition of Information Focus, we searched for all adult question - child answer pairs. If the child response includes both Old and New information, we determine the order of Old and New.

For our analysis of the acquisition of doubling and final constructions, we collected child utterances containing a verb and a potentially doubled element (modal, tense, negative, verb, WH). We used prosody to assist in the determination of utterance breaks. We excluded from our analysis of focus final constructions elements potentially base-generated in the sentence-final position (e.g., in situ object WH-words). Also, since verbs may end up in the sentence-final position due to topicalization of the object or other processes, we could not clearly identify focus final verbs in the children's data, so such examples were excluded.

3.3 Results

Information Focus

We found that all four children used both Old-New and New-Old orders in their answers to adult questions from the first transcripts (or the first transcripts with multi-word responses). The examples are acceptable from the point of view of the adult grammar. Thus, we conclude that these children acquired I-focus from a very early age. Examples of children's use of I-focus are given in (11).

(11) Children's use of I-focus

ABY 1;9 (first transcript)

O-N GVM: WHO IX(picture) 'Whose is this?'

ABY: IX(picture) IX(GVM) 'This is yours.'

N-O MOT: WHERE GRANDMOTHER WHERE
'Where is Grandma?'

ABY: BABY IX(GRA) 'With the baby, she is.'

SAL 1;7 (first transcript)

O-N MOT: COLOR IX(shape) 'What color is this?'

SAL: IX(shape) YELLOW 'This is yellow.'

N-O MOT: IX(book) 'What is this?'

SAL: ELEPHANT IX 'This is an elephant.'

ANA 1;6-1;7 (first transcripts with multi-word responses)

O-N LOD: IX(book) WHAT 'What is this?'

ANA: IX(book) PAINT 'This is painting.'

N-O ANA: IX(this) 'This.'

LOD: WHAT 'What?'

ANA: MAN IX(man) 'This is a man.'

LEO 1;10 (first transcript)

O-N TIB: THANK-YOU. IX(cookie) WHAT 'What is this?'

LEO: IX(cookie) FOOD 'This is food.'

N-O TIB: WHAT? IX(shelves) TAKE-A-SHOWER

'What do you want from there for your shower?'

LEO: SOAP IX(shelves) GIVE-ME

'Give me the soap from there.'

Doubling

All four children used doubling constructions from a fairly early age. Doubled elements included modals, tense signs, negatives, verbs, and WH-elements. Examples of children's use of doubling are given in (12).

(12) Children's use of doubling

ABY 2;1

NO YOU GO NO

'DON'T leave!'

DRIVE HOME DRIVE, IX(there)

'(She) DROVE home over there.'

SAL 1;9

FINISH DRIVE FINISH

'(I) DID drive (to the store).'

WAIT COME-HERE WAIT

'WAIT til (Dad) comes back.'

ANA 2;0

IX(telephone) NO CL:PRESS NO

'DON'T press (the buttons) on the telephone, '

NO TALL NO

'(It's) NOT tall.'

LEO 2;1

SEE IX(Tibi) SEE

'(I want to) SEE Tibi.'

WHERE PIU-PIU WHERE

'WHERE is Piu-Piu?'

Focus final

All four children produced focus final constructions, involving modals, tense signs, and negatives. Examples of children's use of focus finals are given in (13).

(13) Children's use of focus finals

ABY 2;0-2;2

PUT-IN-MOUTH NO

'DON'T put (that toy) in your mouth!'

MANY SPREAD FINISH

'Many (toys) DID spread out.'

SAL 1;9

GO FINISH
'(I) DID go.'

DRIVE FINISH
'(I) DID drive.'

ANA 2;1

DIRTY NO
'(It is) not dirty.'

ANA 2;3

IX(picture) SHOW CAN
'The other page, (you) CAN show (me).'

LEO 2;1

I-GO-bathroom NO
'I DON'T go to the bathroom.'

IX(turtle) SWIM IX(there) FINISH
'The turtle DID swim there.'

Summary

The age of first consistent use of each construction for each child is given in Table 2.

Table 2. Summary of acquisition results

Child	I-focus	Doubling	Final
Aby	1;9 ***	2;1	2;0
Sal	1;7 ***	1;9	1;9
Ana	1;6 **	2;0	2;1
Leo	1;10 ***	2;1	2;2

** $p < .005$

*** $p < .001$

To test the predictions of the two competing hypotheses, we compared the age of acquisition of I-focus and E-focus, and we compared the age of acquisition of doubling and final, using Binomial Exact Probability. We found that there is a significant difference between the age of acquisition of I-focus and E-focus for each of the four children, as noted in the table. There is no

significant difference between the age of acquisition of doubling and final for any of the children.

4. Discussion and Conclusion

To summarize the results of our acquisitional study, we found in the child language data no relationship between the acquisition of I-focus and E-focus. However, we also found that child language data show a strong relationship between the acquisition of doubling and final constructions. Thus, child language data provide additional support for syntactic analyses such as ours, which connect doubling and final through E-focus.

It is important to consider what the signing child has to learn about ASL or LSB in order to use the constructions discussed here successfully. One very broad characteristic of ASL and LSB (and other sign languages) is that they are 'discourse oriented' – in the sense of Huang (1984) and the more general usage. Thus, syntactic movement is employed for information structure purposes. More particularly, the child must discover that ASL and LSB use a sentence-initial position for information focus. Independently, the child must learn that ASL and LSB use the sentence-final position for prominence. Both doubling and final constructions will be available once the child learns that there is optional morphological fusion of an element adjoined to the E-focus head.

A clear consequence of our study is that it provides evidence for the claim that children are able to represent at least some aspects of Information Structure from a very young age. Although children may have a different view of a situation from that of adults, their linguistic abilities appear to emerge very early, even in the domain of discourse structure. In this, we agree with De Cat (2003, 2004), who also found early emergence of aspects of Information Structure in children acquiring French.

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It has been claimed that in American Sign Language (ASL), the sign glossed as IX is used for a variety of functions, including personal pronouns, locatives, and determiners (Meier and Lillo-Martin 2013). We propose to unify these more. It has been claimed that in American Sign Language (ASL), the sign glossed as IX is used for a variety of functions, including personal pronouns, locatives, and determiners (Meier and Lillo-Martin 2013). Focus Constructions in American Sign Language and Língua de Sinais Brasileira more. by Diane Lillo-Martin. Research Interests Gesture and the Acquisition of Verb Agreement in Sign Languages more. by Diane Lillo-Martin. Research Interests The acquisition of focus constructions in american sign language and Língua brasileira de sinais. In Language development conference on Boston university (Vol. 29, pp. 365-375).Google Scholar. Michael, N., Metaxas, D., & Neidle, C. (2009). Spatial and temporal pyramids for grammatical expression recognition of american sign language. In Proceedings of the 11th international ACM SIGACCESS conference on computers and accessibility (pp. 75-82). ACM.Google Scholar. Mitchell, T. (1997). Facial expressions in american sign language: tracking and recognition. Pattern Recognition, 45(5), 1877-1891.CrossRefGoogle Scholar. Petridis, S., & Pantic, M. (2011). Focus Constructions in American Sign Language and Língua de Sinais Brasileira Diane Lillo-Martin Ronice Máller de CP 476 Storrs, CT 06269-1145 Florianópolis, SC CEP 88040-970 USA Brazil lillo.martin@uconn.edu ronice@ced.ufsc.br 1 Introduction The goals of this study are to examine structures used for focus in American Sign Language (ASL) and Brazilian Sign Language (Língua de Sinais Brasileira, LSB). We propose an analysis of these structures based on distributional evidence from the adult languages. Secondly, we look at the acquisition of these constructions, using the acquisition data to evaluate competing analyses of the adult data. Numerous types of focus have been identified in spoken languages.