Acquisition of the syntax–discourse interface: The expression of point of view

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ABSTRACT

This study examines the proposal that the syntax–discourse interface is particularly vulnerable, and therefore components of this interface are acquired later than those of the syntax–semantics interface. The proposal is examined using data from the native language acquisition of markers of point of view in American Sign Language and Brazilian Sign Language, known as constructed action (CA). CA was observed in the spontaneous production of two case studies from as early as 1 year, 7 months of age, with the correct eye-gaze, facial expression, and manner of movement. However, the children sometimes failed to indicate the referent whose point of view was being expressed, and were not skilled at maintaining point of view marking across discourse. The results are interpreted as providing support for the vulnerability of the syntax–discourse interface, and for the interpretation of this vulnerability in connection with children's relatively poor ability to assume an identical discourse context with their interlocutor.

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1. Introduction

In this work, we are interested in the proposal that (certain) interfaces may be 'vulnerable' – for example, that various learner groups find particular problems with linguistic structures at the syntax–discourse interface, in contrast to virtually error-free performance on syntax proper, and even quite good performance on syntax–semantics interface phenomena.

Sorace and Serratrice (2009) discuss this proposal including data from bilingual speakers of various ages, second language learners, heritage speakers and cases of L1 attrition as well as first language learners. They cite Tsimpli and Sorace's (2006) evidence for the proposed developmental distinction, based on better performance on syntax–semantics interface phenomena (involving operators), and poorer performance on syntax–discourse interface phenomena (which require cross-sentence integration). According to Sorace and Serratrice (2009:197), "The distinction between the two interfaces is determined by the nature of the interaction between levels of structure: the syntax–semantics interface involves formal features and operations within syntax and Logical Form, whereas the syntax–discourse interface involves pragmatic conditions that determine appropriateness in context."

Sorace and Serratrice discuss several factors which could contribute to this distinction between 'internal' and 'external' interfaces. These factors include the possibility that certain learners have 'underspecified' grammatical knowledge of the

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relevant structures (e.g., discourse requirements for the use of null versus overt pronominal subjects), and processing limitations, which would be relevant particularly if, as the authors suggest, "structures requiring the integration of syntactic knowledge and knowledge from other domains require more processing resources than structures requiring only syntactic knowledge" (Sorace and Serratrice, 2009:199). Both of these factors could contribute to a similar vulnerability of the syntax–discourse interface for young monolingual learners.

The story is likely to be more complex, since some researchers have claimed that language learners do succeed early on discourse-related phenomena. For example, De Cat (2003, 2009) studied dislocated topics in French. She analyzed the spontaneous production of 4 children (1;10-3;6), and found early success with the appropriate use of topics. She also conducted an experimental study of 45 children (2;6-5;6), again finding early correct use. She summarized her study as follows (De Cat, 2009:237): "This study clearly shows that preschool children as young as 2;6 already possess the discourse/pragmatic competence necessary to encode topics. This requires them to be able to evaluate the information status of discourse referents (are they new or given), their relevance (does it make sense to predicate something about the chosen topic), and, up to a point, their salience (are they identifiable in the context)." However, De Cat found that even children over the age of 4 years frequently used clitics rather than full NPs in subtle salience conditions in which the use of a clitic makes reference ambiguous. She argued that this is because "children rely maximally on joint attention to minimize what to express with overt syntax" (De Cat, 2009).

If performance at less than ceiling level reflects vulnerability, then De Cat's results might also be taken to indicate some weakness at the syntax–discourse interface, but on her account this is due entirely to children's non-adult ability to assess exactly what is salient to their interlocutor. Note that this is more subtle than lack of Theory of Mind. De Cat assessed participants' understanding of others' knowledge state using a relatively simple Theory of Mind test (based on O'Neill, 1996). Even those children who clearly passed this test over-used clitics in contexts having three potential target referents. We interpret this result as indicating that even when children do understand aspects of others' mental states, they may still choose a different (often, more narrow) contextual domain from their interlocutor for interpreting linguistic expressions (see Rakhlin, 2007 for extensive evidence for this possibility). For this reason, we suggest that imprecise 'mind-reading' ability be added to the factors potentially contributing to vulnerability of the syntax–discourse interface. Another way to put this is that children are not as adept as adults are at calculating what is in the Common Ground, that is, "the mutually recognized shared information" of a discourse situation (Stalnaker, 2002:704).

Our study addresses the hypothesis of selective vulnerability at the external interfaces using data from a source different to those previously discussed. In particular, we examine the development of a certain device in sign languages used to convey the point of view of someone other than the signer. This device is known as role shift (RS) or constructed action (CA). As described in section 2, RS uses a particular grammatical structure which can be analyzed at both the sentence level and the discourse level. Hence, it is possible to use this structure to separate out sentence-level versus discourse-level accuracy in language development. Role shift is often considered a highly complex structure which is acquired quite late by native signing children (summarized in section 3). Thus, it is an appropriate structure to test theories of delayed acquisition at the interfaces.

2. Role shift/constructed action

2.1. Basic description

Role shift (RS) is a device for showing events through a particular character's point of view (Padden, 1986). It has both quotative uses and non-quotative uses. Here we describe the basics of RS as it is found in both American Sign Language (ASL) and Brazilian Sign Language (Libras), the languages whose acquisition is investigated in this study. Very similar (though possibly not identical) observations have been made about RS in other sign languages, including British Sign Language (Morgan, 1999), Catalan Sign Language (Quer and Frigola, 2006), Danish Sign Language (Engberg-Pedersen, 1995), Italian Sign Language (Zucchi, 2004), Nicaraguan Sign Language (Pyers and Senghas, 2007), Quebec Sign Language (Poulin and Miller, 1995), and Swedish Sign Language (Ahlgren, 1990; Nilsson, 2004).

In order to describe RS, it is first necessary to give a brief summary of the use of spatial loci for pronouns and verb agreement in sign languages. In ordinary lexical elements, the location of a sign is part of its phonological description (e.g., MOTHER[ASL] is signed on the chin). This is also the case for first-person pronouns and verb agreement, where the signer's chest is the lexically-specified locus (Meier, 1990). However, non-first-person pronouns and verb agreement[1] make use of loci in the signing space, generally described as a half-circle in front of the signer on a horizontal plane about waist high (see illustration in Fig. 1). A referent can be 'associated' with a locus arbitrarily; then, pronouns picking out this referent (or verbs agreeing with it) will be directed toward the same locus. It is also possible to use the actual or imagined location of a referent as its locus, for example, when referring to an addressee, a non-addressed third person, or an object. Because pronouns point to abstract or real-world locations, it is necessary to separate consideration of referential loci – which necessarily tap the language-gesture interface – and referential indices – which are abstract and contribute to interpretation (Lillo-Martin, 2002; Lillo-Martin and Klima, 1990).

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[1] We adopt Meier's (1990) view that ASL (and presumably other sign languages, including Libras) makes a grammatical distinction between first- and non-first person, but not between second and third.
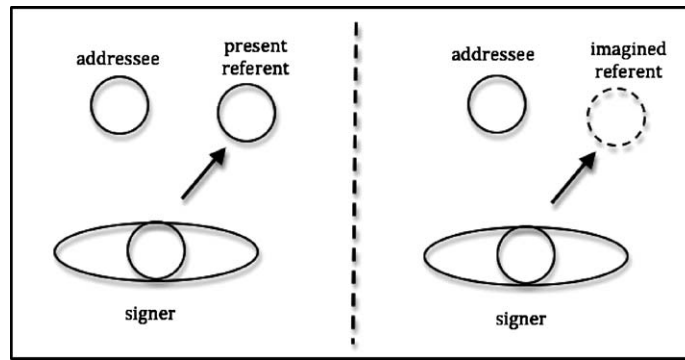
Fig. 1. Use of real-world (left) or abstract/imagined (right) loci.

WIFE   **SAY**   **<YOU**   RS:wife / **FINE>**

The wife said, "You're fine!"

Fig. 2. Direct discourse role shift example [ASL].

At the sentence level, sign language pronouns are subject to constraints such as the binding principles; since ASL and Libras allow null arguments, various constraints on the use of null versus overt pronouns will also apply (Lillo-Martin, 1986; Quadros, 1997a,b). At the discourse level, overt and null pronouns are subject to several additional conditions. As with spoken languages, pronouns are felicitous only after their antecedents have been introduced. Unlike spoken languages, sign languages also require consistent maintenance of loci associated with referents. For example, if in a story Baby Bear is associated with a locus on the signer's right, that locus will generally be maintained without explicit mention until such time as the association needs to change.
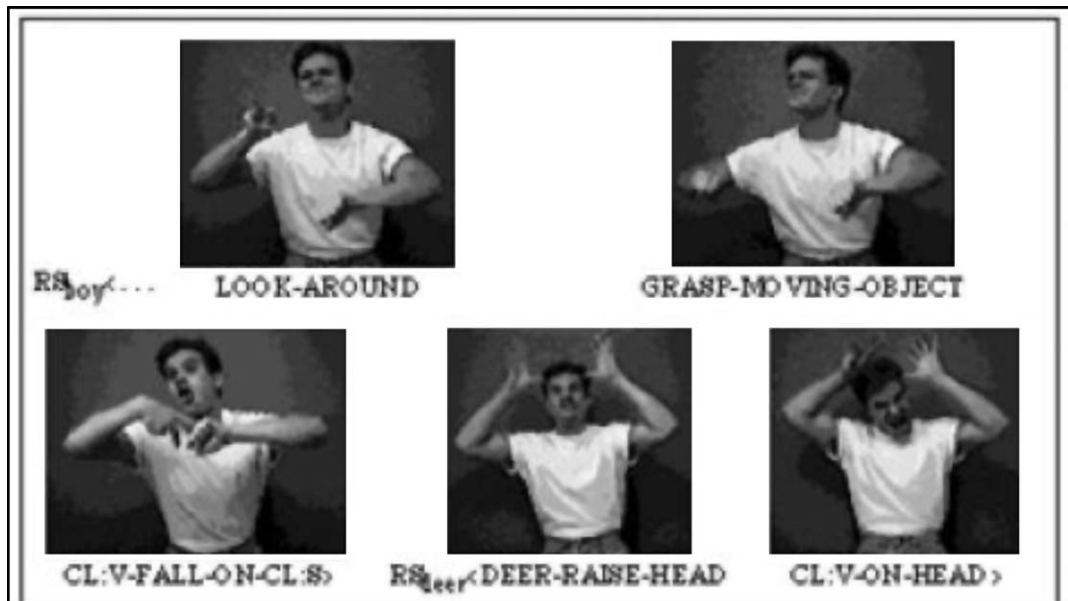
Role shift makes use of the loci established for pronouns and verb agreement, and is one of the mechanisms used for maintaining cohesion in discourse anaphora. The quotative (direct discourse) use of RS is illustrated in Fig. 2. In this example, the main components of RS can be seen. These include a shift of the body toward the locus associated with the quoted speaker, and the use of facial expressions to 'take the role' of a particular referent. During this kind of RS, the signer quotes the character's words or thoughts.

It is important to note that the quotation in a RS need not be verbatim. This is also true for quotations in spoken languages (Clark and Gerrig, 1990). In colloquial spoken English, comparable quotations are often introduced by a form of *be+like*, as in example (1). In these examples, the facial expression and intonation reflect the speaker, just as the non-manual markers do in the sign language examples.

(1)   She was like, "I can't believe you said that!"

The non-quotative use of RS reconstructs not the words/thoughts, but the actions of a particular referent. It has come to be known as constructed action (CA) (Liddell and Metzger, 1998). Portions of an example from Emmorey and Reilly (1998) are reproduced in Fig. 3, with Emmorey and Reilly's rough English translation. Such examples often combine lexical signs, classifier signs, and (non-sign) mimics and gestures, along with facial expressions and body positions to represent those of the character whose actions are being described. The non-manual markings generally include mimicking the facial expression of the character; an actual shift of the position of the shoulders may or may not be seen. The shoulder shift is most likely to appear in quotational RS.

Tannen (1989:99), discussing quotation in spoken languages, argues that "even seemingly 'direct' quotation is really 'constructed dialogue,' that is, primarily the creation of the speaker rather than the party quoted." With this in mind, both the

"The boy looked around while holding onto a branch.
The branch suddenly started to move!
He fell over onto something.
An angry deer raised his horns.
The deer had the boy on his head."

Fig. 3. Constructed action role shift example [ASL].

quotative and non-quotative uses of RS can be seen as sub-cases of constructed action; hence, we use the terms interchangeably.

However, there are important differences between quotative and non-quotative uses of RS. In the quotative usage, like spoken language direct quotation, first-person pronouns and other indexicals are used with shifted reference. That is, in the English example given above in (1), the pronoun *I* refers to the speaker of the quoted material, not the current speaker. The same is found in quotative RS, as illustrated in (2). (Note that the line above the gloss indicates the extent of non-manual markings, which include the markings for role shift or constructed action, glossed here RS. We also indicate the extent of the RS within the gloss line using angle brackets. See the Appendix for additional notational conventions.)

<pre>
                                RS:student
(2)   STUDENT (SAY)   <IX(self) PASS TEST>
</pre>
        'The student was like, "I passed the test!"'

In both the quotative and the non-quotative usages of CA, a similar shift can be seen with first-person verb agreement, as shown in example (3).

<pre>
                                                RS:friend
                                top
(3)   a.   FRIEND (SAY)   <b-OLYMPICS,   IX(self) 1-WATCH-b>
</pre>
              'My friend was like, "The Olympics, I watch."'

<pre>
                                        RS:friend
                            top
        b.   FRIEND,   b-OLYMPICS   <1-WATCH-b>
</pre>
              'My friend was watching the Olympics.'

However, there is no first-person pronoun shift in non-quotative constructed action, as previously noted by Engberg-Pedersen (1995) for Danish Sign Language. This observation can be related to a more general difference between quotative
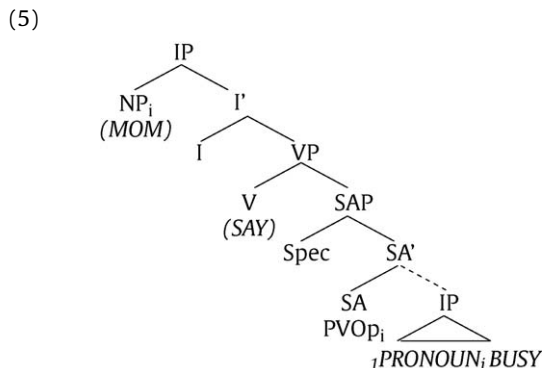
and non-quotative constructed action. In quotation, the quoted element can be of any syntactic length, be it a full sentence or fragment (de Vries, 2008). On the other hand, in non-quotative constructed action only the 'action' is 'constructed.' This action may be expressed through classifier predicates and lexical predicates (verbs and adjectives), with the gestures and facial expressions associated with CA. Noun phrases naming the actor or other participants can be expressed outside of the shift, as shown in (3b) and in (4a). For this reason, when a pronoun or noun phrase naming the person whose point of view is being expressed is included within constructed action, it must be interpreted as quotation (of words or thoughts), as shown in (4b).

$$\overline{\hspace{2cm}\text{RS:boy}\hspace{2cm}}$$

(4) a. $\sqrt{}$BOY <LOOK-AROUND>

'The boy was looking around.'

$$\overline{\hspace{3cm}\text{RS:boy}\hspace{1cm}}$$

b. #<BOY/IX(self) LOOK-AROUND>

This example cannot be interpreted as:

'The boy/I was looking around.'

This example can be interpreted as:

'(Someone) was like, "The boy's/I'm looking around."'

For more discussion of non-quotative CA, see Dudis (2004), Metzger (1995), and Quinto-Pozos (2007).

2.2. Analysis

Most formal analyses of RS have focused on the issue of accounting for the shifting reference for first-person pronouns and verb agreement. In this paper, we will assume the analysis of Lillo-Martin (in press), which is based on the proposal by Quer (2005) (itself inspired by the proposal made by Lillo-Martin, 1995). Quer (2005), supporting his analysis using data from Catalan Sign Language (LSC), proposes that role shift involves a covert Point of View Operator (PVOp), which is an operator over contexts a là Schlenker (2003), sitting in a high functional projection in the left periphery of the clause (illustrated in (5)). In (5), an example of quotative RS, this functional projection is labeled SAP for Speech Act Phrase (Speas, 2000, 2004). In cases where the RS is introduced by an explicit propositional attitude verb (such as SAY), the operator and the verb would need to "compose semantically as a result of the incorporation of PVOp into the lexical verb" (Quer, 2005). The operator induces a shift in the interpretation of indexicals, including first-person pronouns (and agreement), as well as temporal and locative adverbials.

(5)

Although Quer's main concern was the shifting of indexicals, Lillo-Martin (in press) extends his analysis to constructed action more generally. This extension is intended to account for the interpretation of constructed action as providing (the speaker's version of) the shifted character's point of view.

Given the use of an operator–variable relationship, it is clear that RS involves sentence-level phenomena at the syntax–semantics interface. At the syntax–discourse interface, that is, looking across sentences, RS is part of discourse anaphora. In order to correctly interpret utterances with RS, signers usually must refer to the loci associated with different referents, and the discourse-level conditions for the use of full noun phrases, overt pronouns, and null pronouns. RS is frequently employed in narratives, where a particular character's point of view is expressed across multiple sentences; an exchange between two characters might employ multiple shifts back and forth, with no explicit naming of the change in characters (cf. the example in Fig. 3).

Keeping both quotative and non-quotative uses of CA in mind, what, then, does the child need in order to use CA in an adult-like way? The essential pieces are given in (6).

(6)   a.   First, the child needs to know that her target language uses a PVOp to portray the point of view of another. She needs to know that non-manual markings and manner of movement can be used for this effect.

        b.   The child needs to know that the PVOp is a quantifier over contexts which binds variables in its scope. When she knows this, she will be able to use indexicals such as first-person pronouns or verb agreement with shifted reference.

        c.   For the quotative use of RS, the child needs the full gamut of linguistic and social/pragmatic/cognitive resources involved in quoting another. This will include knowledge of the syntactic structures used for direct versus indirect reports, metalinguistic ability to report on speech acts, and memory of the form of a quoted utterance (Ely and McCabe, 1993; Goodell and Sachs, 1992; Özyürek, 1996).

        d.   Because full adult-like use of CA also involves introduction of the referent whose point of view is being expressed, as well as cross-sentential maintenance of loci to consistently pick out the same referent, the child will need to have the appropriate discourse and memory resources to keep track of referents across sentences.

        e.   Finally, the child will need to have the cognitive resources to understand that others may have a different point of view on an event. This understanding is one part of the general concept *Theory of Mind (TOM)*. Although passing False Belief tests of TOM generally takes place only around the age of four years, it has also been observed that children develop other aspects of TOM at earlier ages (see Flavell, 2004 for a review, and Caron, 2009 for evidence of much earlier understanding of false belief itself).

Given these requirements, RS would appear to be relatively complex and thus it might be expected to develop rather late. Previous research has in general supported this conclusion.

3. Development of role shift in sign languages – previous research

Very few studies have investigated the development of RS in sign languages. However, most existing previous research shows prolonged acquisition.

Emmorey and Reilly (1998) investigated the use of direct quotation and reported action in stories elicited from native signing Deaf children ages 3;0-3;11, 5;0-5;8, 7;0-7;10, and adults. They looked at selected episodes from children's retellings of the Three Bears story, and the story *Frog, Where Are You?* (Mayer, 1969).

In this study, only one 3-year-old produced direct quotation, while the 5- and 7-year olds, as well as the adults, produced many examples of direct quotation. The younger children were inconsistent in their use of appropriate facial expressions. Two of the five 3-year olds used reported action. However, these uses were frequently unclear – the character whose point of view was reported was not clearly identified through non-manual or manual marking. Even the 5- and 7-year olds were not adult-like in their use of reported action.

Emmorey and Reilly (1998:89) summarize the results of their study as follows:

Children master the linguistic mechanisms of direct quotation before reported action. By seven, deaf signing children were able to use referential shift to indicate quotation, and correctly produced shifted facial expression. However, at seven children had not completely mastered the use of reported action, producing many predicates where the facial expression was unclear and using reported action with a different distribution than adults.

Reilly (2000) investigated the development of the non-manual marking that accompanies direct quotation RS (see also Reilly et al., 1994; Reilly, 2006). She studied the Three Bears stories elicited from 28 Deaf children of Deaf parents, ages 3;0-7;5. She reports that even some of the 3-year olds studied produced some direct quotes; however, the manual and non-manual signals were not mastered until around age 6. She found that shifting the eye-gaze away from the addressee is the first marker of RS to be acquired, used by two-thirds of the 3-year olds and all of the 4-year olds. Representing the facial expressions of the quoted character is also done by about two-thirds of the 3-year olds. However, Reilly reports that the use of these non-manual markings is always inconsistent and non-adult-like. This inconsistency is found in the timing of the non-manual marking, and in failure to use distinct expressions for different characters.

Morgan and Woll (2003) investigated the use of 'perspective shift,' particularly within what they called AB verb constructions, in children acquiring British Sign Language (BSL). The AB verb constructions use two verbs to convey a single event from two different points of view, first that of the agent, followed by that of the experiencer. Morgan and Woll found that 90% of the elicited productions from children in the 3;0-5;11 age group consisted of the B verb only. Although such responses are non-target from the perspective of the desired AB form, they do seem to indicate that the youngest children can use RS with single verbs (in single sentences). However, Morgan and Woll do not specify whether the examples were produced grammatically, with appropriate non-manual marking.

Overall, these studies indicate protracted development of RS by children age 3 years and older. On the other hand, Schick (2006:116) claims that "What limited evidence we have suggests that the concept of assuming the role of another character does not seem to be difficult for children to understand." In support of this claim, she cites an example given by Morgan and Woll (2002:263) of a child (age 2;01) acquiring BSL who used what Morgan and Woll called 'a holistic (whole-body) gesture' to show the reaction of a girl who was bitten. The child signed BITE in the citation form, followed by a body and facial mimic of the bitten girl's reaction. Schick also cites an example from Loew (1984), who observed role play in the narration of a child age 2;11 (the youngest age she studied). Schick reports that Loew concluded that children are able to use role play by age 3;1-3;4.

However, Schick (2006:119) also points out that "early evidence of the use of frames of reference and role shift during narration does not translate into early mastery." She summarizes, "children seem to acquire the concept of role play and direct quotation early in acquisition, by assuming first person in reported action and discourse. They have much more difficulty with the more abstract concepts of discourse cohesion and the use of mental space through out the discourse." This points to a possible difference in acquisition between sentence-level and discourse-level phenomena. However, with the dearth of evidence on this topic from signing children younger than three, the present study investigates the early use of role shift in children's spontaneous production.

4. Development of constructed action in spontaneous production

4.1. Methods

We investigated the use of constructed action in the spontaneous productions of two Deaf children, SAL and LEO. Both children have two Deaf parents, and are acquiring a sign language as their native language. SAL is acquiring ASL and LEO is acquiring Libras.

The data reported here come from samples of spontaneous production collected by filming the children interacting with their parents and other fluent signers, in naturalistic activities such as playing with toys and looking at books. The videos were transcribed and checked by fluent signers. All analyses are based on viewing of the video together with the transcript.

We selected observations for analysis between the ages of 1;07 and 2;05, as summarized in Table 1. For each session, we calculated the total number of signed utterances produced by the child, excluding fully unintelligible utterances, exact imitations of the interlocutor's immediately preceding utterance, and utterances consisting of a routine, gesture, or point alone or in combination with each other (pointing is used for personal and locative pronouns in ASL and Libras, but may also be used as a gesture).

We also calculated the mean length of utterance in morphemes (MLUm) for each session. MLUm was based on the list of analyzable utterances excluding partially unintelligible utterances and utterances that have been interrupted. Non-manual marking was not included as morphemic, but spatial loci and repetitions contributing to aspectual or emphatic interpretation were.

Finally, each analyzable utterance was reviewed for the presence of constructed action. We hand-searched each session, reviewing the video in conjunction with the transcript for the use of facial expressions and movement of the body to re-construct that of the character whose point of view is being expressed (including self at a different time). We also searched for the use of shifted indexicals, particularly first-person verb agreement or pronouns. We excluded from analysis cases in which the child simply mimicked others' body posture or facial expression without signs, as this is a clearly non-linguistic version of constructed action.

Table 1
Spontaneous production data from SAL (ASL) and LEO (Libras).

	Total # of Utt's	MLU(m)	# CA	Prop. CA	Eye-gaze	Face Expr.	Manner
SAL							
1;07	94	1.4	3	0.03	1.00	1.00	1.00
1;08	229	1.9	13	0.06	.54	1.00	.77
1;09	356	2.2	20	0.06	.80	.80	.90
1;10	124	1.5	0	0.00	–	–	–
1;11	154	1.5	1	0.01	1.00	1.00	1.00
2;00	267	1.9	6	0.02	.50	.33	.83
2;02	397	2.1	41	0.10	.71	.98	.93
Overall	1621		84	0.05	.70	.89	.89
LEO							
1;11	64	2.0	8	0.13	.88	.88	.75
2;01	195	1.9	17	0.09	.82	1.00	1.00
2;02	175	2.3	4	0.02	.75	1.00	1.00
2;04	48	1.8	4	0.08	1.00	1.00	1.00
2;05	118	2.2	4	0.03	.75	1.00	1.00
Overall	600		37	0.06	.84	.95	.97

4.2. Results

The number of utterances containing constructed action at each session is given in Table 1.

We found that the earliest uses of CA were signaled by eye-gaze, facial expression and other non-manual marking, and modification of the sign's movement to indicate manner. The proportions of each of these markers out of all instances of CA for each session are given in Table 1.

All of the children's uses of CA had some type of marking (this was how we identified them), and the vast majority (90% for SAL, 100% for LEO) had at least two of these three types of markers. We observed no clear changes over time in the use of these three types of markers. All were present in the earliest sessions, and were used throughout the observation period. For SAL, eye-gaze was used to mark 70% of the uses of CA overall, and non-manual marking and manner of movement were each used to mark 89% of the uses of CA overall. For LEO, eye-gaze was used to mark 84%, non-manual marking was used to mark 95%, and manner of movement was used to mark 97% of the uses of CA overall. (Note that in some cases, the child's eye-gaze was already away from the addressee before the CA started, so the eye-gaze did not change; such cases were conservatively counted as not using eye-gaze to mark CA.)

Some examples of the children's earliest uses of CA are given in (7)–(9) below.[2]

(7)	SAL (1;08) describing a picture in a book

<div style="margin-left:3em">

```
                    RS:char
TELEPHONE      <TALK[+]>
```
(S/he) is talking on the phone.
</div>

(8)	SAL (1;08) describing her own action just completed

<div style="margin-left:3em">

```
    RS:self
<DRIVE>      FINISH[+]
```
(I'm) all done driving!

(repeated several times)
</div>

(9)	LEO (1;11) describing his mother's reaction to his playing around in the shower

<div style="margin-left:3em">

```
                        RS:MOT
e(olhar)    IX(mãe)    <BRAVO>    IX(mãe)
look        MOT        angry      MOT
```
Look, Mom is angry!
</div>

LEO's use of facial expression in CA during example (9) is illustrated in Fig. 4. In the first panel, LEO mimics his mother's annoyance at his actions, but he does so without signing. In the second panel, he signals for his mother's attention. Then he describes his mother's reaction, breaking eye-gaze with his addressee and using CA in the sign BRAVO 'angry' (second panel of the second row) to show his mother's angry facial expression.

Starting at 1;09, SAL uses the first-person form of verb agreement to refer to others within her CA. An example is given in (10).

(10)	SAL (1;09) wants MOT to throw a ball to DLM (NB: she confuses the signs MAN and WOMAN occasionally during this age period)

<div style="margin-left:3em">

```
        RS:MOT
<1-THROW-loc>      BALL        MAN
```
'Throw the ball to the man.'

```
        RS:MOT
<1-THROW-loc>      NS(Diane)      IX(DLM)
```
'Throw (it) to Diane.'
</div>

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[2] Note that the scope of the non-manual marking used by the children corresponds to the predicate ('action') being described ('constructed'), as in the adult grammar described in section 2.
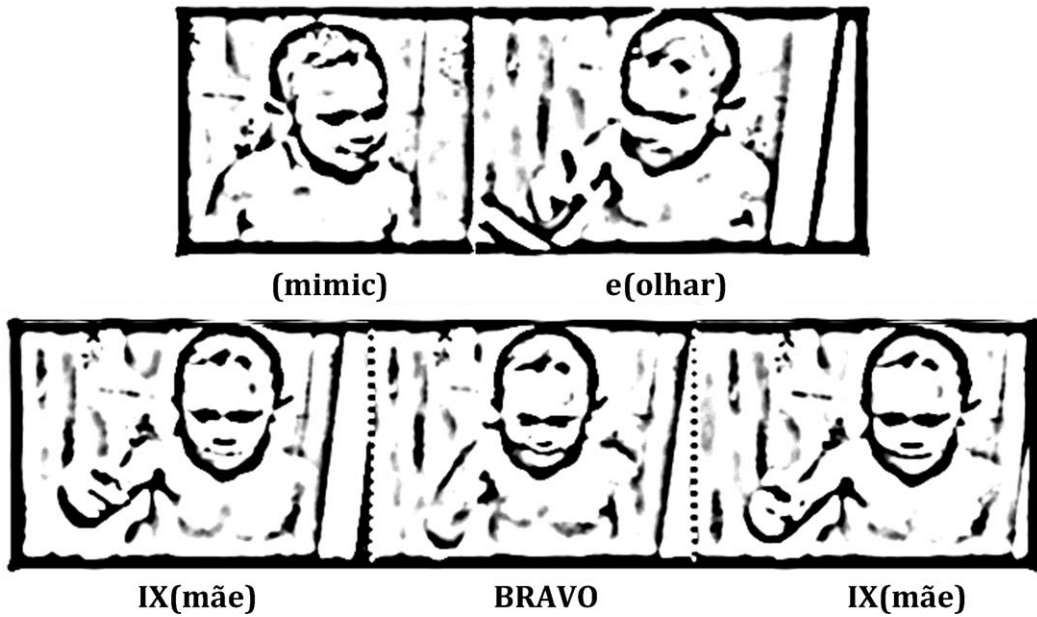
Fig. 4. Use of facial expression in CA [Libras].

Fig. 5. Use of first-person verb agreement in CA [ASL].

The use of RS with first-person verb agreement can be seen in Fig. 5. In the first panel, SAL looks at her mother sitting on the couch to her left. Mother has the ball SAL has just thrown to her, and SAL wants her mother to throw it to Diane, who is sitting across from SAL. In the second panel, SAL shifts her head and eye-gaze toward Diane while signing THROW, then (in the third panel) shifts back toward Mother, her addressee. In contrast to the actual form, the utterance signed without CA would maintain eye-gaze toward Mother, and the sign THROW would move from the space SAL's hand occupies in the first panel, agreeing with Mother's locus.[3]

Another example of the use of first-person verb agreement in CA is given in (11). SAL's facial expressions make it clear that she is using CA.

(11)   SAL (2;02) describing an event in a book

         <u>   RS:char   </u>
         <1-PUNCH-b>   IX(book)

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[3] See Quadros and Lillo-Martin (2007) for evidence that these children are virtually always correct in their use of verb agreement, so it is not likely that forms such as the ones in (10)–(11) are simply verb agreement errors. In addition, these forms have markers of CA, including eyegaze, facial expression, and manner of movement.
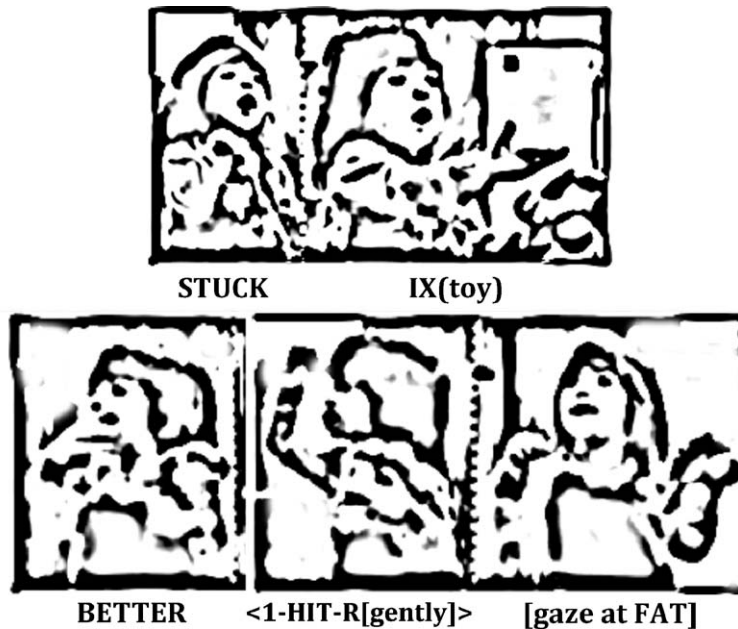
Fig. 6. Use of body shift in CA [ASL].

      <u>   RS:char </u>

<1-PUNCH-b>   IX(book)

'They are fighting.'

SAL's first clear use of body shift to mark CA is produced at 2;02, given in (12). She refers to a toy which is stuck inside a playscape to her left, as illustrated in the top row of Fig. 6. She repeatedly points to the toy on her left. Then she looks at her father who is facing her (second row, first panel) and appeals to him to help out. She turns to her right quite clearly (second row, middle panel) when showing how to tap the stuck toy to release it. Then she turns back to face her father (second row, last panel). Why does she turn to her right when the toy is on the left? Because she is adopting her father's point of view – for him, the toy is on the right.

(12)   SAL (2;02) wants FAT to loosen a stuck toy

        STUCK IX(toy)

        It's stuck!

              <u>   RS:FAT </u>

        BETTER   <1-HIT-R[gently]>

        You'd better give that thing a tap.

5. Discussion

The results of our investigation show that role shift **is** used at a very young age for portraying the actions of others (or self at a different time). Starting at the earliest age observed, and continuing across the sessions coded, SAL and LEO use non-manual marking including eye-gaze and facial expression correctly to indicate another's point of view.

Returning to the list of ingredients for successful use of RS given above in (6), we see that both SAL and LEO appear to have (6a), knowledge of the existence of a PVOp in their sign languages, along with the use of eye-gaze, facial expression, and manner of movement, from the earliest ages observed (1;07 for SAL and 1;11 for LEO). Although they did not use both eye-gaze and facial expressions in every instance, they used both of these markers from early on and their usage was appropriate. We think our finding of much earlier accurate use of eye-gaze and facial expressions to mark CA, as compared with that of Emmorey and Reilly (1998) and Reilly (2000), is due to the very low demand of our data collection situations, which involved very natural interactions with very well-known interlocutors.

SAL showed evidence of her knowledge of (6b), shifted interpretation of indexicals, as early as 1;09. This was limited to non-quotative cases of CA, however, and therefore to first-person verb agreement only.

Thus, our study provides evidence in support of Schick's (2006) claim that children understand the concept of RS at a very young age. However, as Schick also said, "early evidence of the use of ... role shift during narration does not translate into early mastery." What aspects of RS are missing from the youngest signers?

In our observations of children's spontaneous productions, we found no use of direct discourse, and therefore no use of shifted overt first-person pronouns in direct discourse. Thus, SAL and LEO did not provide evidence regarding knowledge of (6c). This is somewhat surprising, in view of the finding by Emmorey and Reilly (1998) that direct quotation was 'mastered' before reported action. However, recall that in Emmorey and Reilly's study, only one 3-year-old produced direct quotation. Furthermore, in previous research, Ely and McCabe (1993) found that the earliest instances of reported speech for three English-speaking children from the CHILDES database (MacWhinney, 2000) were at 2;00 (Naomi), 2;05 (Adam), and 2;06 (Sarah). In their elicitation study with 4–9-year olds, only three of eight 4-year-old girls, and one (of eight) 4-year-old boy produced reported speech. Thus, our failure to observe direct discourse in SAL and LEO may reflect age-appropriate development in the metalinguistic understanding of speech acts or in other factors related to the emergence of direct quotation. Since the syntactic requirements of direct quotation are not different from non-quotative CA, however, the lack of quotation does not imply non-acquisition of the relevant syntax.

An alternative view would interpret our results, as well as those of Emmorey and Reilly, as an argument against a unified analysis of what we have been calling quotative and non-quotative CA. If children produce these at different ages (plausibly beginning non-quotative earlier, from our data, but 'mastering' it later, from the data of Emmorey and Reilly), perhaps this is because they require different types of linguistic knowledge – or possibly, that what we have been calling non-quotative constructed action is fully gestural, while quotation involves linguistic components (see Liddell and Metzger, 1998, and Quinto-Pozos, 2007, for discussion of different views on the linguistic nature of CA). We recognize that both quotative and non-quotative role shifts involve gesture, but we also interpret both as displaying a combination of gestural and linguistic components. We have focused here on the aspects that the two have in common, as listed above in (6). Should our acquisition data be taken as support for a non-unified analysis?

We have suggested that the lack of quotative RS in the children's productions is similar to the lack of direct quotation in English-speaking children at comparable ages from Ely and McCabe's (1993) study. Further support for this interpretation could come from an examination of the children's productions at slightly older ages (2;06-3;00), when quotation in general might be expected to be present. Once the signing children start to use quotation, we can ask whether their quotation includes RS or not. Our prediction would be that it would: there should be no stage during which the children are able to produce quotation but do so without RS.

In addition to the lack of direct quotation, the young children's use of CA is different from adult expectations in another way. In some cases, the children do not make explicit who the referent is whose point of view is being expressed, and they do not regularly maintain a particular referent's point of view across sentences. In other words, the children are not fully adult-like in the requirements of (6d).

This issue is most frequently observed in narratives produced by SAL, which are primarily prompted through looking at books. (LEO does not tell such stories in his sessions.) In some cases, the stories told by SAL may have been influenced by her previous experiences with her parents looking at these storybooks with her. However, we coded her utterances as long as they were not immediate imitations of parental utterances, and we note that SAL was not shy about using her own versions of these stories.

SAL's stories often involve CA, with dramatic use of facial expressions, body positioning, and manner of movement. It is in these stories that we see her only cross-sentential uses of CA. However, she frequently omits mention of the name of the character whose point of view she is expressing. Since ASL permits null arguments, the sentences she produces are grammatical at the sentence level even with the referents omitted. However, it is very difficult for the naïve viewer to understand who did what.

This characteristic of SAL's stories is well known from the literature on the development of narratives in both spoken languages and sign languages. For example, Karmiloff-Smith (1981) found that young French-speaking children use referring expressions deictically, referring to pictures in a book shared with the experimenter, rather than following discourse-internal constraints. Hickmann et al. (1996) found that children speaking English, French, German, and Mandarin Chinese fail to systematically use obligatory newness markings for referent introductions until quite late (7–10 years). This is not to say that children are completely insensitive to discourse constraints on referring expressions. Hickmann and Hendriks (1999) found that even the youngest children they tested, 4-year olds, showed sensitivity to referential continuity versus discontinuity, and they emphasized that children are more apt to use appropriate newness forms in contexts where the addressee does not share knowledge of the story/picture with the child. Song and Fisher (2007) also found that 2.5-year olds, like older children and adults, are sensitive to discourse prominence effects in their interpretation of pronouns.

Morgan (2006) summarized a range of studies on the development of narratives in children acquiring British Sign Language. He concluded, "Children start to link sentences together in narrative only after a prolonged period of mastering the sentence-level linguistic devices of their language" (Morgan, 2006:314). Morgan investigated two essential components of narrative: (i) use of appropriate reference forms; and (ii) controlling the sequence of episodes.

Morgan found that at 3–5-years old, children's stories were vague and not well constructed; the referents were often unclear. At 5–6-years old, children commanded a basic story grammar; but the referents were often unnecessarily repeated. Only after age 6 did children's stories display plots, character development, details, and consideration of what is coming.

Quadros (1997a,b) looked at the development of reference in Brazilian Sign Language (Libras) narratives. She found that 2-year olds produced short sequences, in which referents may be identified by context only. At 3 years old, children's use of verb agreement makes more referents clear, but they rely mainly on the use of real space locations, and it is still necessary to rely on contextual identification for some referents. Finally, she found that 5–6-year olds made good clear use of referential locations, and the referents of null arguments were correctly syntactically identified.

All of these studies of young children's narratives tell us that there is a prolonged difference between the correct sentence-internal use of CA and spatial loci, and a fully satisfying discourse or narrative. In part, this is because of the child's failure to tell each part of the story in the appropriate succession. Such aspects of 'story grammar' are not our focus here. Another reason for children's unsatisfying narratives is their failure to correctly introduce and maintain referents. This is a major component of the observed discourse vulnerability.

6. Conclusions

This study has provided an additional source of evidence for the idea that children's grammars may correctly contain sentence-level elements which children nevertheless fail to use appropriately in specific discourse contexts: in other words, the syntax–discourse interface may be more vulnerable than narrow syntax itself, or the syntax–semantics interface. However, it is important to consider the implications of children's non-target performance for our theories of their mental linguistic competence. In the cases under discussion, why is discourse particularly vulnerable?

Our interpretation is similar to that offered by De Cat (2009) in her study of French-speaking children's use of dislocated topics, summarized in section 1. She found that the children she studied were sensitive to the distinction between new and old information in their use of topics. However, when multiple referents were in the situation, all of whom were given, the children over-used the less informative clitic structures rather than the target full noun phrases. As discussed in section 1, this can be the result of children's less advanced mind-reading ability. Even children who clearly understand that one mind may have a different content from another might be relatively poorer at judging just what is salient for their interlocutor and using this in their own productions.

Schaeffer and Matthewson (2005) proposed something similar in their discussion of children's development of appropriate use of articles in English and St'át'imcets (Lillooet Salish). They argued that the languages differ in their use of articles by making different requirements with respect to common ground (Stalnaker, 2002), the information shared mutually by speaker and hearer. Schaeffer and Matthewson argue that young (2;01-3;10) English-speaking children lack what they call the (pragmatic) Concept of Non-Shared Assumptions (CNSA), i.e., the notion that "speaker and hearer assumptions are always independent." As long as children lack this concept, they will not consistently take their hearer's assumptions to be different from their own, and thus they will sometimes fail to distinguish common ground contexts from speaker beliefs-only contexts, leading to incorrect article use.

Additional evidence for this position comes from the literature on children's perspective-taking in referential communication tasks. In various tasks, researchers assess children's ability to use the interlocutor's perspective on a scene for modifying their own productions or for interpreting a scene. These studies have produced varied results. For the present study, the most relevant studies are those done with the youngest participants. For example, O'Neill (1996) found that 2-year olds adjust their requests to parents for help in reaching a desired object depending on whether the parent had observed the experimenter's placement of the object. Nilsen and Graham (2009) found that 3- and 4-year olds were able to take the speaker's perspective into consideration in their interpretation of utterances, but they still made the 'egocentric' choice in this study about 30% of the time. Furthermore, Nilsen and Graham found that the egocentric interpretations were negatively correlated with inhibitory control skills, emphasizing the processing burden of changing perspective. These studies indicate that while very young children may be able to take another's perspective, they are not always accurate at this.

For the sign language cases under consideration, the children may assume that their interlocutor is aware of the referents involved. Most of the time, these referents are pictured in the books the children and adults are looking at. However, when there are multiple potential referents in the context, adults will typically be more explicit in attributing statements and actions to particular individuals. Children may be focused on certain individuals in the context and therefore fail to explicitly mention them.

We would point out that even adults show considerable variability in their accommodation of the mental state of their interlocutors. Adults are better judges than children of what their interlocutors know and whether particular referents are currently salient for them. However, it is not uncommon for adults to fail to provide relevant background information, charging into a conversation using a pronoun or other less informative structure, leaving the listener wondering who they are talking about.

Other factors may also be relevant to discourse vulnerability. As Sorace and Serratrice (2009) point out, processing factors likely play a role. For sign languages, referent maintenance across a discourse taxes memory and attention resources, possibly more so than for spoken languages. As already mentioned, Nilsen and Graham tested inhibitory control ability, and found it to be related to children's ability to take another's perspective.

This view of children's vulnerabilities has implications for a wide range of research. If children come to an experimental task with a different view of the context from that of the experimenter, the test may fail to show their full competence. Rakhlin's (2007) research provides experimental evidence in support of the idea that children may well focus on a subset of the contextual information provided. Such a difference would affect their responses on tests of quantifiers, definiteness, old

versus new information structure, and many others. It may well be for this reason that providing a richer context, and taking into consideration children's view of the Question Under Discussion, leads to improved performance on a variety of tasks (cf. Crain et al., 1996; Gualmini et al., 2008). Future research continuing to investigate this issue directly would be very welcome.

Acknowledgements

Appendix A

Notational Conventions

SIGN	Signs are glossed using upper-case (near) translation equivalents.
SIGN-SIGN	If the translation equivalent for a single sign requires more than one written word, the words are conjoined with a hyphen.
SIGN[+]	The repetition of a sign is indicated by appending [+] to the gloss.
1-SIGN-b	Spatial loci used to indicate referents are marked as prefixes (for the starting point) or suffixes (for the ending point). '1' is used for first-person locus; different letters stand for different loci in an utterance.
IX(ref)	Pointing signs and gestures are glossed using IX, with the referent of the point indicated in parentheses.
NS(Name)	Name signs are indicated through the use of the abbreviation NS( ), with the full name given within parentheses.
e(emblem)	Emblems are transcribed using e( ), with a (near) translation equivalent within parentheses.
__RS__	The line above sign glosses represents non-manual marking co-occurring with the signs. RS stands for non-manual marking of role shift. Top stands for non-manual marking of topic.
<SIGN>	The extent of RS is indicated within the gloss line using angle brackets.

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