

Underspecified Verb Forms and Subject Omission in Nairobi Swahili

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1. Introduction

Omission of verbal inflectional affixes is very common in the acquisition of various languages. Examples 1-4 show that children acquiring morphologically and typologically different languages omit verbal affixes.

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|-----|-------------|---|------------------------------------|
| (1) | a. | It only write on the pad | Eve, 2;0 (Brown, 1973) |
| | b. | Cromer have some | Adam, 2;7 (Brown, 1973) |
| (2) | | pii!
Piiq – Ø
Remove–no.infl.
'(you) get off.' | Inuktitut
(Swift & Allen, 2002) |
| (3) | adult form: | a lahlile
ke – di – láhl – íl – e+
SA _{1s} –OA ₁₀ –throw away–PERF–MOOD
'I threw them away.' | Sesotho
(Demuth, 1992) |
| (4) | adult form: | Zanele lala
Zanele u–ya–lala
Zanele SA–ya–sleep
'Zanele is sleeping.' | Siswati
(Kunene, 1979) |

This is obviously not an exhaustive list, but it serves to illustrate that the omission of inflection is not limited to particular language groups. The omission of verbal inflection in English has been linked to the well known Root Infinitive (RI) phenomenon in various European languages (exemplified in 5) by various authors, e.g., Wexler, 1994; 1998; Schütze & Wexler, 1996, a.o.:

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|--------|---|----|--|--------|
| (5) a. | Thorstn das haben
Thorstn that have-inf
'Thorstn has that.' | b. | Zahne putzen
teeth brush-inf.
'(Someone) brushes (his) teeth.' | German |
| c. | Ik ook lezen
I also read-inf.
'I also read.' | d. | Papa schoen wassen
daddy shoes wash-inf.
'Daddy washes (the) shoes.' | Dutch |
| e. | Fermer yeux
close-inf. Eyes
'(I have) closed (my)
eyes' | f. | 'Tasha ouvrir
Natasha open-inf.
'Natasha is opening/ going to
open/wants to open it.' | French |

Several proposals have been made to account for the omission of inflection and other functional material in child language, including phonological accounts such as the Metrical Omission Model (Gerken, 1991; Gerken & McIntosh, 1993, looking at determiners in English); processing accounts (e.g., P. Bloom, 1990; Valian, 1991, looking at the omission of subjects); Truncation accounts (Rizzi, 1994; Haegeman, 1995; accounting for Root Infinitives); and a host of feature underspecification accounts, including the underspecification of T (Wexler, 1994), the underspecification of IP (Clahsen *et al.* 1996), the underspecification of Agr and T (Schütze & Wexler, 1996), and the underspecification of Number (Hoekstra & Hyams, 1998).

In this paper I present evidence from child Nairobi Swahili which supports the Agreement-Tense Omission Model (Schütze & Wexler's, 1996 ATOM). Moreover, I show that the omission of inflection in Swahili is essentially a syntactic process, and not due to phonological or processing factors. I first present an outline of the relevant Swahili morphosyntax (section 2) followed by an analysis of the omission of subject agreement in adult Nairobi Swahili (section 3), suggesting that it involves a topic-null constant construction (Rizzi, 1992). Moving on to the child data, I show that in child Nairobi Swahili the omission of inflectional affixes is very prevalent and that the patterns of omission support ATOM (sections 4 and 5). In section 6 I show that these omissions are correlated with the occurrence of subjects and topics, suggesting that the omission of inflection in child Swahili is of a syntactic nature and not purely the result of phonological processes or processing constraints.

2. Swahili Morphosyntax

Swahili is an eastern Bantu language spoken in Kenya, Tanzania, and parts of neighboring countries. Swahili exhibits typical Bantu agglutinative morphology, with the minimal indicative verbal complex shown in (6):

- (6) The Swahili Verbal Complex:
Subject Agreement – Tense – Verb – Indicative Mood

In addition to these affixes, object agreement occurs between tense and the verb root when the object is specific, and there are several grammatical function changing suffixes that occur between the verb root and the mood final vowel. OA and the suffixes are irrelevant to the rest of this paper, and so I will limit myself to the prefixes shown in (6). Subject agreement marks person and number (table 1) and there are several tense markers (table 2):

Table 1. Subject Agreement Paradigm in Nairobi Swahili

Specification	
1 st person singular	Ni-
2 nd person singular	U-
3 rd person singular	A-
1 st person plural	Tu-
2 nd person plural	Mu-
3 rd person plural	Wa-

Table 2. Some Tense / Aspect markers in Nairobi Swahili

T/A marker	Meaning
li	past
na	pres. on-going
ta	future
ka	narrative, resultative
me	pres. perfect
sha	pres. perf. completive
ki	conditional
nga	hypothetical
ku	infinitival

The verbal complex schematized in (6) occurs in an SVO configuration, as exemplified in (7). The subject (in this case *Juma*) occurs before the verbal complex, and the object occurs after the verbal complex. The subject may occur optionally null as exemplified in (8) – a fact that is consistent with Rizzi's (1982) identification requirement of null *pro*. In other words, null subjects in Swahili are permissible because they are identified by the rich subject agreement. Thus Swahili is a null subject language similar to Italian or Spanish in this respect.

- | | Subject | Verbal Complex | Object |
|-----|---------|---|--------|
| (7) | Juma | a - na - m - pend - a | Mariam |
| | Juma | SA _{3s} -Pres- OA _{3s} - like - IND | Mariam |
| | | 'Juma likes Mariam' | |
| (8) | A | - na - m - pend - a | Mariam |
| | | SA _{3s} - Pres- OA _{3s} - like- IND | Mariam |
| | | 'He likes Mariam' | |

3. SA Omission in Nairobi Swahili

Nairobi Swahili diverges from Standard Swahili in several interesting ways. I will focus on one such difference - adult Nairobi Swahili speakers allow the omission of SA. I investigated this possibility in a naturalistic corpus of adult-

child interaction, looking at all the indicative clauses that occur in the speech of adults.

Table 3. Proportion Of Omission Of Prefixes In Adult Swahili

Full Clauses	[-SA] clauses	[-T] clauses	Bare Stems	Total
1380 (93.9%)	72 (4.9%)	14 (0.9%)	4 (0.3%)	1470

(9)	Full Clause:	SA – T – V – IND
	[-SA] Clause:	Ø – T – V – IND
	[-T] Clause:	SA – Ø – V – IND
	Bare Stem:	Ø – Ø – V – IND

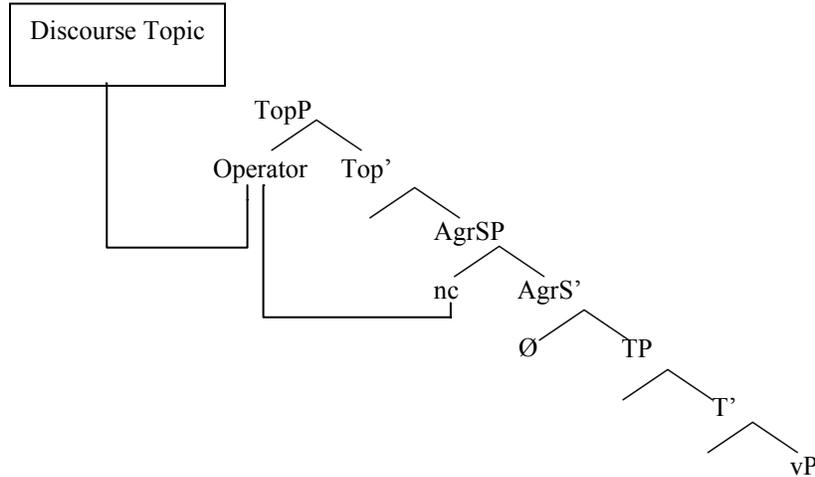
In table 3 I present results of the analysis of the naturalistic adult-to-child interaction. The data come from recordings of children, details of which will be described shortly. We see that of the 1470 indicative clauses in the naturalistic adult data, a total of 1380 occur as full clauses, i.e., they have both SA as well as T. SA omission occurs in clauses that I call [-SA] clauses, which occur 72 times in the corpus. The remaining two cells show that the omission of Tense in [-T] clauses is rare, as is the omission of both the SA and T prefixes.

The data is naturalistic data of adult-child interaction, and so this quantitative data represents child-directed Nairobi Swahili. It is possible that the omission of SA is not peculiar to Nairobi Swahili, but rather it is a general property of child-directed Swahili. This may be seen as an attempt by adults to simplify the language that they use towards children so as to facilitate acquisition. However, if SA omission is not a possibility in the adult grammar, it would be highly unusual for adults to violate the grammar of their language when speaking to children. Additionally, it would not be a constructive simplification strategy because the child would then have to retreat from the assumption that SA can be omitted. It is unclear what would constitute negative evidence for such a move on the part of the child. Thus the explanation of SA omission in the adult speech being a ‘Motherese effect’ is unlikely. Moreover, judgments have been elicited from native Nairobi Swahili speaking adults which confirm that full clauses and [-SA] clauses are possible under certain conditions, but [-T] clauses and bare stems are completely ungrammatical. This contrasts starkly with speakers of dialects more closely linked to Standard Swahili such as speakers of *KiMvita*, spoken in Mombasa. I will present some of this evidence very shortly. First, let’s look at some examples of the omission of SA in (10):

(10)	a.	Ø na – tak – a ch-ai? pres – want – IND 7-tea ‘(Do you) want tea?’	Present tense (Hamisi, HAW05)
	b.	Ø ta – ku – chun – a fut-OA _{2s} – pinch-IND ‘(I) will pinch you’	Future tense (Mot, MUS10)

occupied. Thus I conclude that [-SA] clauses in adult Nairobi Swahili involve a null constant-topic operator construction.

(11)



- (12) a. I did everything
 b. *Everything, I did (it)

- (13) a. Kila mw-anafunzi a – na – som – a ki – tabu
 Every 1-student SA_{3s}-pres-read-IND 7-book
 ‘Every student is reading a book.’
 b. *Kila mw-anafunzi Ø-na – som – a ki – tabu
 Every 1-student Ø-pres-read-IND 7-book

- (14) a. a – li – ni – ambi-a [kwamba a – ka – kimbi – a]
 SA_{3s}-past-OA_{1s}-tell-IND that SA_{3s}-cont-run-IND
 ‘He told me that he then ran off’
 b. ?? a – li – ni – ambi-a [kwamba Ø ka –kimbi-a]¹
 SA_{3s}-past-OA_{1s}-tell-IND that Ø cont-run-IND
 ‘He told me that (he) then ran off’

4. The Acquisition Data

The child data come from four Swahili speaking children recorded longitudinally during the year 2000. The ages, beginning/ending MLUs, and

1. My consultants consider this sentence ungrammatical. My judgment is somewhat less clear, but certainly degraded.

Verb ratios² are shown in table 5. The data collection was conducted over a period of 11 months in Nairobi, Kenya. Biweekly recordings were made of naturalistic speech in the homes of these four children. The data were audio recorded and transcribed using CHAT format (MacWhinney, 2000)

Table 5. Subject information

Child	Haw	Mus	Fau	Has
Age range	2;2 – 2;6	2;0 – 2;11	1;8 – 2;2	2;10 – 3;1
No.of recordings	7	23	10	5
MLU	1.54–2.46	1.52–3.57	2.97–3.93	3.15–4.23
V Ratio	.07-.14	.05-.17	.20-.36	.30-.40

Table 6. Staging information

	Data from files
Stage 1	Hawa 2;2-2;6; Mus 2;0-2;3
Stage 2	Mus 2;4-2;8
Stage 3	Fau 1;8-2;2; Mus 2;9-2;10
Stage 4	Has 2;10-2;11

Each of the children was assigned to a particular stage or stages according to 3 measures of grammatical development: MLU, verbs per utterance (Valian 1991) and proportion of filler syllables/ protosyntactic devices (Bottari, Cipriani, and Chilosi 1993/1994; Peters, 1993, 2001). I then pooled the data from each stage. According to these measures these children represent 4 developmental stages with one of the children passing through more than one stage during the time of the study (see Deen 2001, 2002a for further details).

5. Results

I first identified all the indicative clauses in each stage, excluding subjunctives (which do not obligatorily require SA and T), imperatives (which occur as bare stems), repetitions, imitations and formulaic utterances. I found that Swahili children produce verbal complexes of the kinds listed in (15a-d). They produce full clauses and [-SA] clauses just like adults, but unlike adults they also produce the other two logically possible underspecified verb forms: [-T] clauses which are missing only Tense, and bare stems which are missing both Tense as well as SA. Swahili does have a true infinitival marker which occurs in the position of tense. However, RIs occur very infrequently in child Swahili. A total of 14/2600 tokens were found, most of which were either

2. V ratio refers to the proportion of verbs to overall utterances; this measure was used by Valian (1991), among others.

unclear in reference or more consistent with ellipsis or the homophonous OA marker. So I conclude that RIs are not part of the grammar of child Swahili.

- | | | | |
|------|---------------------|------------|---------------------------|
| (15) | a. Full Clause | SA – T – V | Both SA and T prefixes |
| | b. [-SA] Clause | ∅ – T – V | Only T prefix |
| | c. [-T] Clause | SA – ∅ – V | Only SA prefix |
| | d. Bare Stem | ∅ – ∅ – V | Neither SA nor T prefixes |
| | (e. Root Infinitive | INF – V | Infinitival prefix) |

Thus in Swahili, agreement and tense may be independently and optionally omitted, consistent with the ATOM model proposed by Schütze and Wexler (1996) and Schütze (1997). However, the relative proportions of each clause type differ markedly, as shown in figure 1 and table 7 on the next page. For example, in stage 1, all four clause types occur at between 20 and 30%, approximately. Bare stems and [-T] clauses diminish in stage 2, and by stage 3 occur at less than 10%. Full clauses on the other hand, unsurprisingly increase in proportion from stage 1 to stage 4 from under 20% to over 60%. [-SA] clauses, however, do not show a developmental change between stages 1 and 4. While there is fluctuation between stages 1 and 4, the overall proportion of [-SA] clauses is approximately 28% in stage 1 and 28% in stage 4. So the children show developmental maturity in the omission of these prefixes, converging on the adult norm, with the exception of [-SA] clauses.

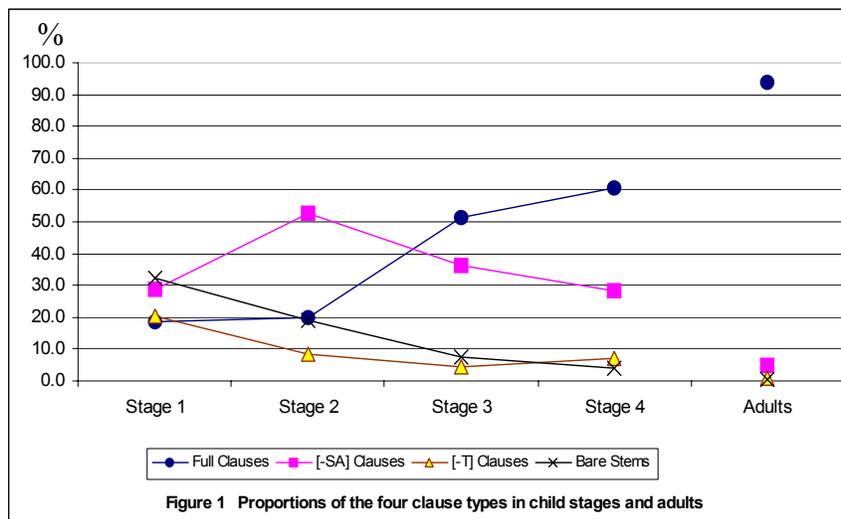


Table 7. Frequency (percent) of indicative clause types in stages 1 through 4

	Stage 1	Stage 2	Stage 3	Stage 4	Total
Full Clauses	39 (18.8%)	58 (19.9%)	235 (51.5%)	225 (60.8%)	557
[-SA] Clauses	60 (28.8%)	154 (52.7%)	166 (36.4%)	104 (28.1%)	484
[-T] Clauses	42 (20.2%)	25 (8.6%)	21 (4.6%)	26 (7.0%)	114
Bare Stems	67 (32.2%)	55 (18.8%)	34 (7.5%)	15 (4.1%)	171
Total	208 (100%)	292 (100%)	456 (100%)	370 (100%)	1326

I've suggested that the omission of prefixes in child Swahili supports Schütze & Wexler's ATOM model simply by noting that SA and T are independently and optionally omitted. But what about the other approaches mentioned in section 1? In Deen 2002a I show that while a metrical solution to the omission of inflectional prefixes in a related language such as Sesotho (see Demuth, 1994) is possible (perhaps even likely), in Swahili it is not tenable. The Swahili verbal complex has primary stress on the penultimate syllable and secondary stress usually on the tense marker in the verbal complex (Barrett-Keach, 1986; Krifka, 1995). The Metrical Omission Model states that unparsed pre-trochaic weak syllables and weak syllables in Iambic feet are subject to omission. With secondary stress falling on the tense marker, this means that the two prefixes (SA and T) always form a trochaic foot (an environment in which omission should not occur, according to the Metrical Omission Model). Thus according to the Metrical Omission Model, the two prefixes should always be immune to omission, contrary to fact. Furthermore, I argued that a processing account is problematic for the omission of prefixes. Not only does a processing account run into problems of explaining the differential omission rates that we see in figure 1, it also must account for the fact that adults in Nairobi Swahili omit SA (a fact that certainly is not due to processing overloads).³ Rather than provide additional details on how such models fail to account for the Swahili omission facts, in the rest of this paper I will provide evidence that shows that the omission of inflectional prefixes in child Swahili must be of a syntactic nature. Specifically, we will now look at the correlations between these underspecified clauses and the occurrence of overt and null subjects.

6. Subjects in Child Swahili Underspecified Clauses

We saw that in adult Swahili, overt subjects occur at a rate of 17% in full clauses and topics occur at approximately 40% in [-SA] clauses – the difference presumably attributable to discourse conditions, which I will not attempt to make explicit here. Table 8 shows the frequency of overt-null subjects in the four underspecified clauses in child Swahili. We see that the frequencies of overt subjects in child Swahili in full clauses and [-SA] clauses are

3. See Deen 2002a, chapter 5 for a fuller discussion of processing accounts and their inadequacies in explaining the omission of SA in child Swahili.

approximately as they occur in adult speech. Full clauses occur approximately 23% of the time with an overt subject. While this is higher than the adult rate, it is not dramatically different. [-SA] clauses occur approximately 26% of the time with overt ‘subjects’, which again is different from the adult rate, but not dramatically so. Please note that I use the term ‘subject’ in table 8 as a cover term for the preverbal DP that is either a topic or a subject.

Table 8. Overt And Null Subjects In The Four Clause Types.

	Full Clauses	[-SA] Clauses	[-T] Clauses	Bare Stems
Overt Subject	119 (23%)	118 (26%)	5 (4%)	27 (14%)
Null Subject	392	342	109	170
	511	460	114	197

Turning to [-T] clauses, we see that children produce almost no overt subjects. This is an unsurprising result, because the absence of T indicates that case may not be assigned, hence no overt subject is possible. We saw earlier that the null constant-topic construction occurs in contexts in which SA is absent, and in [-T] clauses, SA is present. Thus the presence of SA means that the topic-null constant construction is not possible either, barring the occurrence of both subjects as well as topics.⁴

Finally, children allow overt subjects in bare stems approximately 14% of the time. On the assumption that preverbal DPs are all subjects (and not topics), this is *unexpected* because just like [-T] clauses, bare stems are also missing tense. This should rule out all overt subjects, contrary to fact. However, bare stems are also [-SA], which means that the null constant construction is possible for bare stems. Thus the 14% of overt preverbal DPs in bare stems are in fact topics, binding a null constant in subject position. This provides support for the null constant construction in [-SA] contexts in child Swahili. Below is a summary:

- **Full Clauses:** overt and null subjects are possible. Overt subjects are true subjects, while null subjects are *pro*.
- **[-SA] Clauses:** overt topics and null topics occur, both in the configuration given in (11).
- **[-T] Clauses:** overt subjects are blocked by the lack of case (no T); topics are blocked by the absence of a null constant (SA is present, hence no nc). Thus no overt preverbal DP possible.

4. In Deen 2002a I argued that even the 5 tokens of overt subjects in [-T] clauses that are represented in table 8 are in fact not examples of [-T] clauses with overt subjects. Space does not permit me to expound here, but the rate of 4% is clearly the very upper limit.

- Bare Stems: all subjects are blocked because of the lack of case (no T); topics are possible as shown by the presence of SA. Thus preverbal DPs in bare stems are all topics.

7. Concluding Remarks

I've shown that Nairobi Swahili children omit prefixes in a pattern that is consistent with Schütze & Wexler's (1996) ATOM. I showed that children acquiring Nairobi Swahili omit SA, T as well as both SA and T. I argued that the omission of SA in adult Nairobi Swahili occurs in topic-null constant environments and that this same construction accounts for the subject properties of child underspecified clauses. Swahili children show evidence of this construction in [-SA] clauses (just like adults), but more remarkably, they show evidence of this construction in bare stems, *which are not modeled at all in the input*. We see an overgeneralization in the speech of children of the topic-null constant properties of [-SA] clauses to bare stems. Furthermore, the complete absence of subjects or topics in [-T] clauses provides additional evidence for the fact that children have knowledge of the syntactic environments in which the null constant-topic construction may occur. This strongly suggests that the omission of these inflectional prefixes is not purely phonological or a result of processing difficulties, but rather syntactic in nature.

References

- Barrett-Keach, Camilla (1986). "Word Internal Evidence from Swahili for AUX/INFL." *Linguistic Inquiry* 17.
- Bloom, Paul (1990). "Subjectless sentences in Child Language." *Linguistic Inquiry* 21(4, Fall): 491-504.
- Bottari, Piero, Paola Cipriani and Anna Maria Chilosi (1993/1994). "Protosyntactic Devices in the Acquisition of Italian Free Morphology." *Language Acquisition* 3(4): 327-369.
- Brown, Roger (1973). *A First Language: The Early Stages*. London, Allen and Unwin.
- Clahsen, Harold, Sonja Eisenbeiss and Martina Penke (1996). Lexical learning in early syntactic development. *Generative perspectives on language acquisition: empirical findings, theoretical considerations and cross-linguistic comparisons*. H. Clahsen. Philadelphia PA, John Benjamins Publishing Company: 129-160.
- Deen, Kamil Ud (2001). 'The Acquisition of Swahili verbal morphology'. G.A.L.A., Palmela, Portugal.
- Deen, Kamil Ud and Nina Hyams (2002). 'The Form and Interpretation of Finite and non-Finite verbs in Swahili'. Boston University Conference on Language Development, Boston University, Cascadilla.
- Deen, Kamil Ud (2002a). 'The omission of inflectional prefixes in the acquisition of Nairobi Swahili.' Unpublished Doctoral Dissertation, UCLA.
- Deen, Kamil Ud (2002b). 'Agreement-less Declaratives in Nairobi Swahili'. Jason Kandybowicz, (Ed) *UCLA Working Papers in Linguistics-Papers in African Linguistics* 3.

- Deen, Kamil Ud (In Submission). The Omission of Agreement in Nairobi Swahili. University of Hawaii.
- Demuth, Katherine (1994). On the underspecification of functional categories in early grammars. *Syntactic Theory and first language acquisition: cross-linguistic perspectives*. B. Lust, M. Suner and J. Whitman. Hillsdale, NJ, Lawrence Erlbaum Associates.
- Gerken, LouAnn (1991). "The metrical basis of children's subjectless sentences." *Journal of Memory and Languages* 30: 431-451.
- Gerken, LouAnn and Bonnie McIntosh (1993). "The interplay of function morphemes and prosody in early language." *Developmental Psychology* 29: 448-457.
- Hoekstra, Teun and Nina Hyams (1998). "Aspects of Root Infinitives." *Lingua* 106(1-4): 81-112.
- Krifka, Manfred (1995). Swahili. *Syntax: Ein Internationales Handbuch Zeitgenössischer Forschung. An International Handbook Of Contemporary Research*. J. Jacobs, A. von Stechow, W. Sternefeld and T. Vennemann. Berlin, Walter de Gruyter. 2: 1397-1418.
- Kunene, Euphrasia (1979). 'The Acquisition of SiSwati as a First Language: A Morphological Study with Special Reference to Noun Prefixes, Noun Classes and some Agreement Markers.' Unpublished Doctoral Dissertation, UCLA
- MacWhinney, Brian (2000). *The CHILDES project: Tools for analyzing talk. Third Edition*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Peters, Ann M. (2001). "Filler Syllables: What is their status in emerging grammar?" *Journal of Child Language* 28: 229-242.
- Rizzi, Luigi (1982). *Issues in Italian Syntax*. Dordrecht, Foris.
- Rizzi, Luigi (1986). "Null objects in Italian and the theory of pro." *Linguistic Inquiry* 17: 501-557.
- Rizzi, Luigi (1992). Early null subjects and root null subjects. *Language acquisition studies in generative grammar*. T. Hoekstra and B. Schwarz. Amsterdam/Philadelphia, John Benjamins: 151-176.
- Rizzi, Luigi (1997). The fine structure of the left periphery. *Elements of grammar. A Handbook of generative syntax*. L. Haegemann. Dordrecht, Kluwer.
- Schütze, Carson and Kenneth Wexler (1996). 'Subject case licensing and English Root infinitives'. 20th Annual Boston University Conference on Language Development, Cascadilla Press.
- Schütze, Carson (1997). 'INFL in child and adult language: Agreement, Case and licensing.' Unpublished Doctoral Dissertation, MIT.
- Swift, Mary & Shanley Allen (2002). Contexts of Verbal Inflection Dropping in Inuktitut Child Speech. Proceedings of the Boston University Conference on Language Development. 26, 2, 689-700. Boston MA; Cascadilla Press.
- Taraldsen, Knut Tarald (1978). *On the NIC, vacuous application and the that-trace filter*. Bloomington.
- Valian, Virginia (1991). "Syntactic subjects in the early speech of American and Italian children." *Cognition* 40.
- Wexler, Kenneth (1994). Optional Infinitives, head movement, and economy of derivation. *Verb Movement*. N. Hornstein and D. Lightfoot. Cambridge, UK, Cambridge University Press: 305-350.
- Wexler, Kenneth (1998). "Very early parameter setting and the unique checking constraint: A new explanation of the optional infinitive stage." *Lingua* 106: 23-79.