Questions, Relatives, and Minimal Projection

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This article examines the acquisition of *wh*-questions and relative clauses in Sesotho, a language with no *wh*-movement in either questions or relatives, and in which *wh*-questioned subjects must be clefted. It shows that, even though children use and understand relative and cleft constructions between the ages of 2 and 3, relative complementizers are frequently missing or they surface in a form that is ambiguously either a subject agreement marker or a head-noun modifier. This raises the possibility that children are treating relative clauses as IP rather than CP structures until sufficient learning of lexical features has taken place. The article concludes with a discussion of Grimshaw's notion of extended projection and minimal projection, showing how it might be adapted to account for the Sesotho findings and extended to acquisition theory more generally.

1. INTRODUCTION

Much of the recent literature on the acquisition of syntactic structure has centered around the development of both lexical and functional projections. Various proposals have been made, with some arguing for the early impoverishment of functional projections (e.g., Guilfoyle and Noonan (1988), Lebeaux (1988), and Radford (1990)), and others arguing for the full instantiation of functional projections, even when left lexically unfilled (e.g., Demuth (1992; 1994), Hyams (1992)). In this article I argue that a phrase will not be projected unless children have learned the grammatical features of its lexical/functional head (cf. Clahsen and Penke (1992), Clahsen, Eisenbeiss, and Penke (1994)).

Of particular import here is the acquisition of CP structure, with specific

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reference to the acquisition of relative clauses, cleft constructions, and the relative complementizer (Rel). Researchers have long debated over how and when relative clauses are acquired: Some have argued that, cross linguistically, children's use of relative clauses is well developed from an early age, and that children are cognizant of the structural properties of the construction (e.g., English—Goodluck and Tavakolian (1982), Solan and Roeper (1978); Korean—Lee, Lust, and Whitman (1990); Italian—Crain, McKee, and Emiliani (1990), Lust (1994)). Others, however, have emphasized the incomplete nature of English-speaking children's use of relative clauses before the age of 6, arguing that these are conjoined or flat rather than embedded structures (e.g., de Villiers, Tager-Flusberg, Hakuta, and Cohen (1979), Flynn and Lust (1980), and Tavakolian (1981)). In this article I examine Sesotho-speaking children's spontaneous use of relative constructions, showing that, although not entirely adultlike in structure, these are nonetheless fully functioning relative clauses.

Recent studies of question formation in languages like English indicate that English-speaking children have access to CP structure even while IP remains unarticulated (Radford (1994)). Evidence for CP structure becomes more problematic, however, in languages with neither *wh*-movement nor subject–auxiliary inversion—languages like Chinese and Japanese, or Bantu languages, where *wh*-questions only occur *in situ*. In Bantu languages like Sesotho, evidence for CP structure must come from relative clauses and cleft constructions, or from embedded CP complements. Although Sesotho-speaking children between the ages of 2 and 3 years productively use relative clauses and clefts, including cleft questions, I show that relative complementizers are generally ambiguous in form or missing, raising the possibility that these may be IP rather than CP structures. The study raises several issues regarding the mechanisms behind the building of syntactic projections in early grammars including possible implications of Grimshaw's (1991; 1993; 1994) work on *extended projection* and *minimal projection* for understanding how phrase structure develops. In particular, it explores the notion that a functional projection can only be projected if there is lexical material to fill its head, where the lexical material can be realized by either an overt lexical item, appropriate features, or a trace.

The article proceeds as follows: Section 2 outlines the basic structure of Sesotho yes–no questions, *wh*-questions, relatives, and clefts. Section 3 examines the acquisition of Sesotho relative constructions in children's spontaneous speech, focusing specifically on the use of relative complementizers, then looking briefly at embedded complements and infinitives. Section 4 includes a theoretical discussion of the findings and some specific proposals for understanding the development of phrase structure, with concluding remarks in section 5.
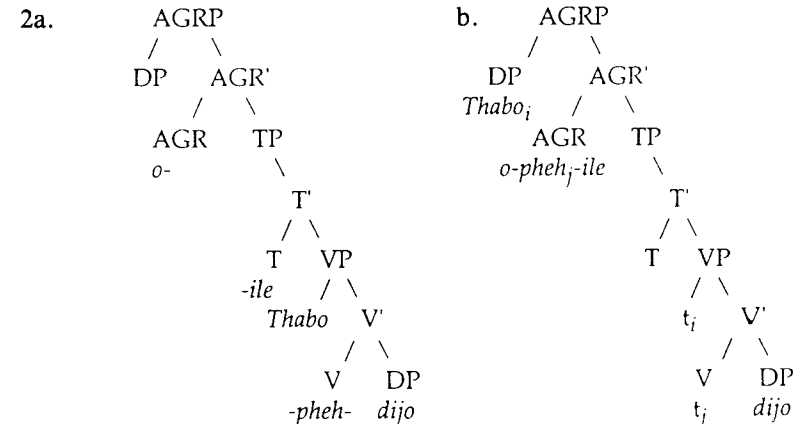
2. SESOTHO QUESTIONS AND RELATIVES

2.1. Basic Sesotho Phrase Structure

Sesotho is a Bantu language with basic SVO word order and Null Subjects. An obligatory subject Agr cliticizes to the verb, as shown in (1).[1]

(1) (Thabo) ó-pheh-ílé   dijó.   (S) V O
     (1T)   1Agr-cook-Perf 8food
     '(Thabo) cooked the food.'

Following Belletti (1990), Chomsky (1989), and Sportiche (1988), Demuth and Gruber (1995) posited the following articulated structure for Sesotho IPs: Subject Agr is a function head which undergoes Spec–Head agreement with the lexical subject that has raised from VP-internal position. The verb also raises from the head of VP to Tense and then to Agr. Base and surface structures are provided in (2a) and (2b), respectively.

For the purposes of this article, I refer to AgrP and TP as an unarticulated IP and treat the surface realization of simple sentences as having the structure in (3).

(3) $[_{IP}$ (Thabo$_i$) o-pheh$_j$-ile $[_{VP}$ t$_i$ t$_j$ dijo]]

2.2. Yes–No Questions

The word order in Sesotho yes–no questions is the same as that of declaratives; only prosodic phenomena serve to distinguish the two.[2] However, yes–no questions optionally take a question formative *náa* either preceding or following the IP. Consider the yes–no question in (4).

(4) (Náa) Thabo ó-pheh-ílé   dijó (náa)?   (Q) S V O (Q)
     (Q) 1T   1Agr-cook-Perf 8food (Q)
     'Did Thabo cook the food?'

If the question marker (Q) were in C, and children productively used it, this might provide evidence for a CP in Sesotho. However, Q also appears in embedded questions preceded by the complementizer *hore*.

(5) Ha ké-tsébé   hore náa dí-beh-íl-wé   káe
     Neg 1SgAgr-know Comp Q   10Agr-put-Perf-Pass where
     'I don't know where they have been put.'

The embedding complementizer *hore* is presumably in the head of a CP. This means that Q could be in one of two positions—either in the head of a second (lower) CP or adjoined to the embedded IP. Given that Q can precede or follow an IP, much as do other adjuncts (but unlike other complementizers), I assume an IP adjunction analysis for Q, as shown in (6).

(6) $[_{IP}$ Naa $[_{IP}$ (Thabo$_i$) o-pheh$_j$-ile $[_{VP}$ t$_i$ t$_j$ dijo]]]

Thus, children's use of Q might tell us about the existence of IP, but not CP.

2.3. *Wh*-Questions

What about *wh*-questions, or information questions? The basic strategy used in most Bantu languages, including Sesotho, is that question words are found *in situ*. This is the case for both objects (7a,b) and adjuncts (8a,b).

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(7) a. Thabo ó-pheh-ílé   éng?   S V Wh
        1T   1Agr-cook-Perf 9what
        'What did Thabo cook?'
     b. Thabo ó-bón-é   máng?   S V Wh
        1T   1Agr-see-Perf 1who
        'Who did Thabo see?'

(8) a. Thabo ó-pheh-ílé   dijó káe?   S V O Wh
        1T   1Agr-cook-Perf 8food where
        'Where did Thabo cook the food?'
     b. Thabo ó-pheh-ílé   dijó néng?   S V O Wh
        1T   1Agr-cook-Perf 8food when
        'When did Thabo cook the food?'

Interestingly, subjects cannot be questioned *in situ*, as shown by the ungrammaticality of (9). The only possible interpretation for (9) is as an echo question.[3]

(9) *Mang o-pheh-ile   dijo?   *Wh V O
     1who 1Agr-cook-Perf 8food
     'Who cooked the food?'

"Logical" subjects can be questioned when they have not raised to Spec IP—that is, in expletive or locative inversion constructions where the subject remains in Spec VP (10), as the object of a by-phrase in passive constructions (11), or in a cleft construction (to be described in section 2.3.). (Machobane (1987), Demuth (1989; 1990)).

(10) Ho-phéh-ílé   máng?   Explt-V Wh
      17Agr-cook-Perf 1who
      'It was who that did the cooking?'

(11) Dijó   dí-pheh-íl-wé   ké máng?   S V-Pass by-Wh
      8-food 8Agr-cook-Perf-Pass by 1 who?
      'Who cooked the food?'

In short, question formation in Sesotho matrix clauses never involves syntactic movement of a question word to a CP projection. Given

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[2]Declarative sentences are characterized by penultimate lengthening at the end of a phonological phrase, and downdrift between successive High tones. Neither is present in yes–no questions (Doke and Mofokeng (1957)).

[3]It is not entirely clear why Bantu languages (with the possible exception of Kiswahili) show this constraint. A possible explanation would be in terms of Bresnan and Mchombo's (1987) argument that subjects are grammatical Topics, and Topics are incompatible with the Focus function of question words.

Grimshaw's (1991; 1993) notions of extended projection and minimal projection, where only the structures needed for a given construction are projected, Demuth and Machobane (1994) argued that both Sesotho yes–no questions and *wh*-questions are only composed of an IP. Cleft questions, however, do involve a relative complementizer. I therefore turn to an examination of Sesotho relative clauses and clefts, both of which have CP structure.

2.3. Relative Clauses and Clefts

Relative clauses in Sesotho are restrictive relatives which modify the head noun in much the way that an adjective would. Given that Bantu languages have few adjectives, relative clauses play an important grammatical function. In Sesotho, relative clauses are formed with a relative complementizer (Rel) that agrees with the head noun of the matrix clause. They also exhibit the use of resumptive pronouns (PN), indicating that relatives in this language are formed through adjunction of a CP rather than by movement (cf. Sells (1984), Shlonsky (1992)). Demuth and Machobane (1994) showed that relative clauses do not differ from topicalization in terms of weak crossover effects and island constraints: Both apparently function as predicates rather than operator–variable constructions. Thus, although an examination of children's acquisition of Sesotho relative clauses will not provide evidence for the acquisition of movement, it will tell us about the type of clause adjoined, and whether that clause is a VP, IP, or CP.

Consider the relative clauses in (12): The word order is identical to that of a matrix clause, but is tonally in the participial mood rather than the indicative.

(12) a. batho   bá-phehá-ng   dijó.
      2person 2Rel + 2Agr-cook-RL 8food
      'People that cook food.'
   b. batho   báo ké-ba-rátá-ng.
      2person 2Rel 1SgAgr-2PN-like-RL
      'People that I like.'
   c. batho   báo ké-batlá-ng   pere   yá-bona.
      2person 2Rel 1SgAgr-want-RL 9horse 9Poss-2PN
      'People whose horse I like.'

All the relative clauses in (12) take a relative complementizer Rel, as well as a relative suffix -*ng* on the verb. The object and oblique relatives in (12b) and (12c) both take a resumptive pronoun (PN), as do topicalization structures (13).

(13) Dijó,   Thabo ó-á-*(di)-phéha.
      8-food 1T   1Agr-Pres-8PN-cook
      'Food, Thabo is cooking it.'

Rel markers are historically derived from demonstrative pronouns and object Rel markers are actually identical to Dems of the same noun class. However, the surface realization of the subject Rel (12a) differs slightly from that of the object/oblique Rel ((12b,c); see Appendix). In subject relatives Rel and Agr have coalesced to form a portmanteau morpheme; it is only when an adverbial is topicalized in the embedded clause (12a') that both Rel and Agr components of the portmanteau become visible.

(12a') batho   báo kajéno bá ᵢ-pheh'a-ng   dijó.
      2person 2Rel today   2Agr-cook-RL 8food
      'People that today cook food.'

Given that Rels in object relatives look like Dems, and Rels in subject relatives look like subject Agrs (in all but Classes 1, 8, and 10), we might expect problems of analysis for the language learner. In section 3, I show that this is the case.

Cleft constructions, including cleft questions, are formed in exactly the same way as relative clauses, except that the head noun is always the complement of the copula. Note that this means that question words are also always in object or oblique position in the matrix IP.

(14) a. Ké máng yá-pheh-ílé-ng   dijó?
      Cop 1who 1Rel + 1Agr-cook-Perf-RL 8food
      'It's who that cooked the food?'
   b. Ké éng   yéo Thabo á-e-pheh-ílé-ng?
      Cop 9what 9Rel 1T   1Agr-9PN-cook-Perf-RL
      'It's what that Thabo cooked?'
   c. Ké káe   móo Thabo á-pheh-ílé-ng   dijó téng?
      Cop where Rel 1T   1Agr-cook-Perf-RL 8food there
      'It's where that Thabo cooked the food?'

Though some have argued that the fronting of question words in languages like Japanese may actually be a case of *wh*-movement (e.g., Takahashi (1993)), Demuth and Machobane (1994) argued that this is not the case in Sesotho. Rather, the structure (for (14b)) is as in (15):

(15) [[ᵢₚ Ké éng] [꜀ₚ yéo [ᵢₚ Thabo á-e-pheh-ílé-ng?]]]

In this section I have reviewed the structure of Sesotho yes–no questions, *wh*-questions, relative clauses, and clefts. I have shown that neither Sesotho yes–no questions nor *wh*-questions involve movement, but are simple IP structures. Furthermore, I have shown that, although Sesotho relative clauses and cleft constructions (henceforth, *relative constructions*) involve neither variable binding nor movement, both contain a relative complementizer which is structurally in the head of CP. In the next section, I examine the development of relative constructions (both relative clauses and clefts) in early Sesotho, focusing specifically on the realization of Rel as evidence for the presence of CP structure.

3.   THE ACQUISITION OF RELATIVE CONSTRUCTIONS

The data examined for this study come from a longitudinal study of 3 Sesotho-speaking children's spontaneous interactions collected at monthly intervals over a 12-month period (Demuth (1984)). The children were audio recorded during conversations with family and peers in rural Lesotho, and included 1 boy—H (from ages 2;1 to 3;0), and 2 girls—L (2;1 to 3;2) and T (3;8 to 4;1). Both younger children used object and adjunction *wh*-questions by the age of 2;6. The most frequently used constructions are object -*eng* 'what', adjunct *kae* 'where', and -*ng* 'why' questions. Recall that Sesotho subjects cannot be questioned *in situ*. Yet the younger children did not use many of the alternatives: H used only 1 inverted subject (expletive) question, and L used 3 by-phrase questions (in conjunction with a passive verb) in the entire corpus. The most frequent mechanism for questioning subjects is the cleft construction, which constituted approximately one third of all the subject relative constructions used by each of the children, regardless of age.

3.1.   Subject Relative Constructions

Data specifically addressing the acquisition of relative constructions was drawn from the sessions summarized in Table 1. Three observations can be made concerning the frequency of relative-construction used in early Sesotho. First, both younger children doubled their use of relative constructions between ages 2;6 and 3. Second, the younger children's use of subject relative constructions around age 3 approaches the frequency in use of subject relatives by the older child at 4. Third, the younger children use hardly any object relatives at 2;6 years, and this situation has not significantly changed by the age of 3. This contrasts with the older child, for whom object relative constructions constitute around 40% of all relatives used. It appears, therefore, that there are at least three identifiable stages of

TABLE 1
Relative Constructions and Total Number of Utterances

Child	Age	Subject	Object	Total Utterances
H	2;6	7	2	496
	3;0	15	2	582
L	2;6	5	2	504
	3;2	14	1	550
T	4;0–1	17	11	516

Note.   Utterance = clause containing a verb.

development over time, from few relatives, to an increase in subject relatives, to an increase in object relatives.[4]

These factors are interesting in light of findings from the experimental literature, where *parallel functions* (SS and OO) were thought to be the easiest to process (Sheldon (1974)). The Sesotho data appear to be more consistent with proposals by de Villiers et al. (1979), wherein OS and SS constructions are the most frequently used by children under age 3. The following examples are typical of Sesotho relative constructions used at 2;6 years.[5]

(16)   Pompom e sa bulang ke ela.
    (pompong e-sa-bula-ng   ke ela)
    9sweet 2Rel+9Agr-Neg-open-RL Cop 9Dem
    'The candy that won't open (unwrap) is this one.'
    (H, 2;6)

(17)   Ma tatang tshepe ena yaka wena?
    (ke mang ya-thetha-ng   tshepe ena ya-ka wena)
    Cop 1who 1Rel+1Agr-touch-RL 9iron 9Dem 9Poss-my 2SgPN
    'Who's touching this piece of iron of mine, you?'
    (H, 2;6)

(18)   . . . a bebutseng.
    (a-ebo-tse-ng)
    6Rel+6Agr-peeled-Perf-RL
    '. . . the one/that is peeled.'
    (L, 2;6)

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[4]Even at age 4, few object clefts are used. The lack of object clefts may be due to discourse factors: Object position in declarative sentences is generally used for the introduction of new information, and objects can also be questioned in that position directly. In contrast, subject position cannot be used for either new information or questions; thus, a subject cleft must be used.

[5]The first line of each example is the child's utterance; the line below it (in parentheses) represents the grammatical equivalent.

(19)   . . . khomo e sule . . . entsileng.
       (khomo e-shw-ile-ng)
       9cow   9Rel + 9Agr-die-Perf-RL
       '. . . the cow that died.'
       (L, 2;6)

Several observations can be made. First, the verbal relative suffix -ng is present in approximately 90% of all H's relative constructions at 2 indicating that he distinguished these constructions from both matrix clauses and other embedded clauses. This does not differ significantly from the presence of -ng in T's speech at age 4. The relatively consistent appearance of -ng in H's early relative constructions may be due in part to its invariant form, unlike Rel which must agree in class with the head noun. However, the full acquisition of -ng is nontrivial; it suffixes to the highest verbal element — either an auxiliary, if there is one, or to the main verb, except when the verb takes a tense marker of motion (e.g., -tla - 'come' [future marker]) or the potential marker -ka -. This may account for the less-than-perfect production of -ng even in 4-year-old T's speech.[6] Child L showed use of -ng in 50% of her early relatives. Some of her "omissions" may have resulted from a lack of being able to produce word-final syllabic nasals at this point (18), or they may point to confusion in when and where to attach -ng, a possible factor involved in the recast in (19).

The second observation is that Rel, or a reduced (vowel) form of Rel, is present in 100% of L's subject relative constructions. Recall that subject Rel is a portmanteau morpheme, composed of Rel + Agr morphemes. Furthermore, this portmanteau morpheme is identical in form to subject Agr in all but Classes 1, 8, and 10. The Rels in both (18) and (19) are therefore ambiguous between Rel and Agr (see Appendix). Furthermore, many of the children's Class 1 Rel forms are reduced from ya- to -a, making them identical with the subordinate form of the third-person/Class 1 Agr. To complicate issues, many of the subject Agrs in children's speech before age 3 neutralize to an a- form, even in the case of 1Sg subject Agr ke- (Demuth (1992)). In short, at 2;6 none of L's Rel forms were unambiguously Rel; all can be interpreted as Agr. That is, none of L's early subject relative constructions are unambiguously CP structures.

H's Rel forms show a similar pattern. Again, none of H's subject Rel forms are unambiguously Rels at 2;6 years. Furthermore, in the cleft cases (e.g., (17)) Rel is missing altogether. It appears, therefore, that H has no Rel

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[6]Correct placement of -ng may also be confounded by the fact that some auxiliaries (plus suffixed -ng) coalesce with the following subject clitic: . . . o-ne-ng o-mo-bona . . . > . . . o-n'o-mo-bona . . . '. . . you saw him/her . . .', rendering -ng opaque.

forms at this point, but like L, may be treating Rel as subject Agr. In sum, there is no overt evidence that either H or L are treating Rel as a CP complementizer at 2;6. Rather, I suggest that they have only an IP analysis of relative constructions at this point. Further support for this position comes from occasional examples after 2;6 years, where Rel takes the actual shape of the 2Sg indicative Agr (20). Such forms are considered a "grammatical" option, but are used infrequently (Doke and Mofokeng (1957)).

(20)   ko ona o tabwileng, q!
       (ke   wena ya-e-tabo-tse-ng)
       Cop 2SgPN 1Rel + 1Agr-9PN-tear-Perf-RL
       'It's you that tore it!'
       (L, 2;8)

By 3 years both of the younger children use -ng appropriately in 90% of their forms, and subject Rels are consistently present (H had one omission). However, the forms that can be interpreted as being unambiguously Rels and not Agrs are still few: One third of both H's and L's Class 1 Rels take the full and unambiguous ya- form ((21) and (23)), and H has two unambiguous Rel forms of Class 10 (e.g., (22)).

(21)   Ya-thetsa-ng   moo o-tla-cha.
       1Rel + 1Agr-touch-RL here 1Agr-Fut-burn
       'Whoever touches here will burn (herself/himself).'
       (H, 3;0)

(22)   Sheba dipere   tse-tswana-ng.
       look at 10horses 10Rel + 10Agr-resemble-RL
       'Look at the horses that are alike.'
       (H, 3;0)

(23)   Ya kenang ka tlung a a mmate?
       (ya-kena-ng   ka tlu-ng   ha o-mo-rate)
       'Rel + 1Agr-enter-RL   Prep 9horse-Loc Neg 2SgAgr-1PN-like
       'The one that's entering the house, don't you like her?'
       (L, 3;2)

However, well over half of both children's forms still remain ambiguous between a Rel and Agr interpretation. Apparently, around the age of 3,

both children are beginning to analyze the portmanteau morpheme into its component parts of both Rel and Agr features, but the process is not yet complete. Once this featural decomposition has taken place, a CP analysis for subject relative constructions becomes possible.

In contrast, half of 4-year-old T's Rels are unambiguously Rel + Agr. Although 1 of her 2 Class-1 Rel forms is reduced to -a, she has 6 unambiguous Class 10 Rels, and the 1Sg form, which could optionally take the Agr form *ke-,* takes the unambiguous Rel form *ya-* (24).

(24) Ke nna ya-sila-ng   poone.
      Cop 1SgPN 1Rel+1Agr-grind-RL 9corn
      'It's me who's grinding the corn.'
      (T, 4;0)

It seems, then, that T has realized that subject Rels are composed of both Rel and Agr features, and is projecting a CP for subject relatives. The characteristics of subject relatives for each of the children are summarized in Table 2.

In sum, the increase in frequency of subject relative use by age 3 does not necessarily correspond to an increase in grammatical complexity. Although both younger children are beginning to produce some unambiguous Rel forms, many Rels still take the shape of Agr. The lexical decomposition of Rel into Rel + Agr features is underway at age 3 and seems to be systematically present by age 4. We might, therefore, conclude that children have an IP analysis for relative constructions at 2;6 and a CP analysis at 4, with the status being unclear at age 3. I turn now to a consideration of object/oblique relative constructions, in which the structure of children's relatives at age 3 is more transparent.

TABLE 2
Characteristics of Subject Relative Constructions

Child	Age		Realization of Rel			Presence of -ng	Total
		φ	Dem	Agr	Rel		
H	2;6	2	1	4		6	7
	3;0	1		10	4	13	15
L	2;6			5		3	5
	3;2			10	4	13	14
T	4;0-1	1		8	8	13/16[a]	17

[a]*-ng* was obligatory in only 16 of T's 17 relatives.

3.2. Object/Oblique Relative Constructions

By 3 years the younger children used subject relative constructions with about the same frequency as 4-year-old T. However, the younger children hardly ever used object relatives. When they did (H twice at 2;6 and 3, L twice at 2;6 and once at 3;2), *-ng* was always present, except in L's forms at 2;6. All 4 of H's object relatives were locatives, where Rel was the locative form *moo* 'where', and no resumptive pronoun is required (though *teng* 'there' is optional).

(25) Ka kana ka mo e rekuang.
      (ka kwana ka moo e-rek-ua-ng   (teng))
      Prep there Prep Rel 9Agr-buy-Pass-RL (there)
      'Over there where it is bought.'
      (H, 2;6)

(26) Mo ke rotetseng
      (moo ke-rot-etse-ng (teng))
      Rel 1SgAgr-urinate-Apl/Perf-RL (there)
      'There/where I urinated.'
      (H, 3;0)

From these few examples it is difficult to tell if H knows how to formulate object as well as oblique relatives, complete with resumptive pronouns. Examples drawn from elsewhere in the corpus indicate that he does not. Most notably, Rel is completely missing. In (27) the resumptive pronoun is also missing, though it is present in (28).

(27) Tsi ntho a rekileng.
      (ke ntho yeo a-e-rek-ile-ng)
      Cop 9thing 9Rel 1Agr-9PN-buy-Perf-RL
      'It's the thing that she/he bought.'
      (H, 2;5)

(28) Tlia lebokos la:ka ke le fuweng.
      (tl-isa   lebokose la-ka   leo ke-le-f-il-we-ng)
      come-Caus 5box   5Poss-my 5Rel 1SgAgr-5PN-give-Perf-
      Pass-RL
      'Bring my box that I was given.'
      (H, 2;9)

Note further that a possessive *laka* 'mine' (underlined) modifies the head noun in (28). H may be interpreting Rel, which looks like a Dem, as an optional nominal modifier, rather than as a subordinating complementizer.

Further support for such a proposal comes from L's examples. In all 3 cases Rel is missing, but a nominal modifier (underlined) is present in 2 of them: a (singular rather than plural) modifier in (30), and a Dem in (31).

(29) Mane enkile teng.
    (mane moo ke-e-nk-ile-ng   teng)
    Loc   Rel 1SgAgr-9PN-take-Perf-RL there
    'Over there where I took it.'
    (L, 2;6)

(30) Ke tseno engwe a ntsetse tcheng.
    (ke tseno tse-ding tseo ke-di-tse-tse-ng   teng)
    Cop 10PN 10-others 10Rel 1SgAgr-10PN-pour-Perf-RL there
    'It's these others that I poured in there.'
    (L, 2;6)

(31) Nthwe ke-e-ratang.
    (ntho ee   yeo ke-e-rata-ng)
    9thing 9Dem 9Rel 1SgAgr-9PN-like-RL
    'This thing that I like.'
    (L, 3;2)

Even though a resumptive pronoun is present, as is *-ng,* Rel seems to be absent, or reinterpreted as an optional head-noun modifier. This is especially interesting because object Rel is a well-formed prosodic word — not a clitic that might be subject to prosodic reduction (Demuth (1994)). Thus, it appears that Sesotho-speaking 3-year-olds: (i) do not know the featural content of Rel, (ii) do not know how to use it, or (iii) do not have the CP structure needed to utilize it. Given that Rel is derived from the series of Dems, it is possible that children assume that relative clauses are actually IPs, and that Rel is a Dem that modifies the head noun. There is, in fact, some evidence that adult speakers of closely related Sepedi (Kosch (1981)) and Setswana (Cole 1955) optionally use Dems rather than Rel in relative clauses. Furthermore, Doke and Mofokeng (1957) reported that the third-position Dem is sometimes used as Rel (see Appendix). Although a study of Sesotho caregiver use of Rel is yet to be conducted, I suggest that there may be enough variability in the input such that children tend to treat Rel as optional and/or determine that a head-noun modifier may be used instead. In either event, relative clauses could then be constructed as IPs

rather than CPs, and might persist as such until children have enough evidence to the contrary.

Object Rel is more consistently used by 4-year-old T; of her 11 object relatives only 1 had a missing Rel. Interestingly, a Dem or Poss was used *in conjunction* with Rel, rather than as a substitute for it, in 3 of her 11 object relatives (e.g., (32)), though 1 also had only a Dem and no separate Rel (33).

(32) Papi tsaka tse ke neng ke di tsetse ka moo di kae?
    (dipapi   tsa-ka   tse   ke-ne-ng
    10 corn kernels 10Poss-my 10Rel 1SgAgr-Pst/Cont-RL
    ke-di-tse-tse   ka   moo di   kae?)
    1SgAgr-10PN-pour-Perf Prep here 10Cop where
    'Where are my corn kernels that I poured over here?'
    (T, 4;0)

(33) . . . masale . . . ane o no be . . . o nreketse ona . . .
    (masale ane   a   o-ne-ng
    6earrings 6Dem 6Rel 2SgAgr-Pst/Cont-RL
    o-be   o-n-tek-etse   ana)
    2SgAgr-Cop 2SgAgr-1SgPN-buy-Perf 6PN
    '. . . those earrings that you had been going to buy me . . .'
    (T, 4;1)

It, therefore, appears that child T is treating Rel as a complementizer, and relative constructions as CPs.

Table 3 summarizes the characteristics of object/oblique relatives for the 3 children. Why do 2- to 3-year-olds have so few object relatives, and why do they tend to omit object Rel in the few object relatives that they do use? Do they not have access to CP structure at this point? Or is the featural status of Rel unclear? In the following section, I show that Sesotho-

TABLE 3
Characteristics of Object/Oblique Relative Constructions

Child	Age	Realization of Rel				Presence of -ng	Resumptive PN	Total
		φ	Dem	Loc	Rel			
H	2;6			2		2	0/0	2
	3;0			2		2	0/0	2
L	2;6		2			1	1	2
	3;2		1			1	1	1
T	4;0-1	1	1	3	6	6/7[a]	8/8[b]	11

[a]*-ng* was obligatory in only 7 of T's 11 object relatives. [b]Resumptive pronouns were required in only 8 of T's object relatives.

speaking children between the ages of 2;8 and 3 *do* use CP complements, indicating that the lack of Rel in relative clauses is not due to a constraint on the building of CP structure per se.

3.3. CP Complements

Embedded CP complements begin to appear around ages 2;8 to 3, complete with well-formed complementizers like the 'if/when' marker *ha*.

(34) A o shapa ha o chatla lemati wena.
      (ke-tla-o-shapa   ha   o-pshalta   lemati wena)
      1SgAgr-Fut-2SgPN-lash if/when 2SgAgr-smash 5door 2SgPN
      'I'll lash you if you smash the door, you.'
      (L, 2;8)

(35) O mpone ha re a ka sekolong?
      (o-m-pone   ha   re-ya   ka   sekolo-ng)
      2SgAgr-1SgPN-see-Perf if/when 1PlAgr-go Prep 7school-Loc
      'Have you seen me when we go to school?'
      (H, 3;0)

Infinitival markers (Infin) also appear around 2;8 with the well-formed Infin *ho-*.

(36) A hana ho-tloella manena waka.
      (o-hana   ho-tlohella   ngwana enwa wa-ka)
      2SgAgr-refuse Infin-leave alone 1child   1Dem 1Poss-my
      'You refuse to leave this child of mine alone.'
      (L; 2;8)

(37) E batla ho enlom.
      (e-batla   ho-n-toma)
      9Agr-want Infin-1SgPN-bite
      'It wants to bite me.'
      (L, 2;8)

(38) Ke-batla   ho-ya   kantle.
      1SgAgr-want Infin-go outside
      'I want to go outside.'
      (H, 2;8)

(39) Ere ke bule ke tseba ho nka ntho aka.
      (ere ke-bule   ke-tseba   ho-nka   ntho ya-ka)
      say 1SgAgr-open 1SgAgr-know Infin-take 9thing 9Poss-my
      'Let me open (it) so I'm able to take out my thing.'
      (H, 2;8)

Such constructions are used with appropriate verbs and appear to be productive constructions, indicating that children at this age have the linguistic ability to formulate CP complements.

Child L, however, goes through a period of a few months where she occasionally treats infinitival complements as IPs rather than CPs, substituting the 1SgAgr *ke-* in place of the Infin *ho-*.

(40) Ke tseba ke ipotla.
      (ke-tseba   ho-ipotla)
      1SgAgr-know Infin-wash face
      'I know how to wash (my) face.'
      (L, 2;8)

(41) Nna ke tseba ke teraifa.
      (nna ke-tseba   ho-teraifa)
      1SgPN 1SgAgr-know Infin-drive
      'Me, I know how to drive.'
      (L, 2;10)

Such overgeneralizations indicate that L may be grappling with the appropriate IP or CP analysis for infinitival complements (cf. Demuth and Gruber (1995)). The structure of languages like Sesotho, where auxiliaries as well as thematic verbs are all marked for subject agreement (e.g., *ke-ne ke-tsamaya* = Agr-Pst/Cont Agr-leave = 'I left'), may contribute to L's difficulty in constructing the appropriate featural analysis of PRO. Such overgeneralizations indicate that she is aware of the Agr feature, but perhaps confused as to the CP versus IP nature of control structures.

In sum, there is evidence that CP structure is available to Sesotho-speaking children by age 2;8 and that they do exploit CP structure in both infinitival and other embedded complements, but that the featural analysis of PRO (at least for L) is also in progress. I suggest that the same situation holds for the analysis of Rel. The lack of a CP analysis for relative constructions should not then be due to a restriction on the availability of phrase structure. Rather, I suggest it is due to an incomplete lexical analysis of Rel, where its complementizer status has not yet been fully determined.

In this section, I have shown that Sesotho-speaking children at the age of 2;6 productively use relative constructions in semantically and pragmatically appropriate contexts, and that these are morphologically well formed, with the exception of missing or ambiguous Rels. By age 4, object relative constructions have become much more frequent, as has the use of unambiguous Rel forms. It appears that the younger children may be using only IP structures, whereas the older child is using CP structures. However, the structure being used at 3 years is unclear: A few subject Rels take

unambiguous complementizer form, whereas most still appear as Agrs. Is this intermediary stage characterized by a flipping back and forth between IP and CP structure, or maintaining an IP analysis until a CP is clearly required? In the following section, I draw on Grimshaw's (1993) notion of *minimal projection* as a means of thinking about this problem and explore its implications for a theory of acquisition.

4. ACQUISITION THEORY AND MINIMAL PROJECTION

In Grimshaw's (1991) theory of extended projection, lexical heads such as verbs and nouns can be affiliated with greater or lesser amounts of structure, or functional projections, depending on the construction in which they are used. Grimshaw (1993) went further to characterize how much structure is needed for a given construction, suggesting that this is determined by a set of interacting principles, or *constraints.* The view that emerges from this perspective goes counter to the frequently held assumption that linguistic structure is always projected even if not required (e.g., that affirmative declarative structures are CPs rather than only IPs). Rather, the proposal is that speakers utilize only the minimal amount of structure "needed" for a given construction, avoiding projections with empty heads. One can think of this as a form of *economy* (Chomsky (1989; 1993)).

But how do linguists (or speakers and learners) determine how much structure is needed? For this, Grimshaw adopted the *optimality theoretic* (Prince and Smolensky (in press)) assumption that there are a set of structural constraints which are ranked with respect to each other, that individual constraints can be violated, and that the optimal (output) form will be grammatical. We have already discussed one of the constraints Grimshaw proposed, namely Ob-Head.

(42)   Obligatory Heads Constraint (Ob-Head):
       Heads must be filled at S-structure (with lexical material, appropriate features, or a trace).

Such a constraint would rule out the possibility of projecting a CP without filling its head lexically, with appropriate features, or with a trace. Interestingly, for acquisition researchers like Hyams (1992) and Demuth (1992; 1994), who have proposed the early projection of structure even when lexical material is missing, the assumption has always been that the features licensing those projections were present. In other words, Ob-Head is not violated.

What about the intermediary stage discussed here, where subject Rel seems to have Rel features some of the time, but Agr features the rest of the time? Is a CP always projected and Ob-Head sometimes violated? Or is IP used until the analysis of Rel is unambiguously that of a complementizer? Or, as Grimshaw (1994) suggests, is there a shift back and forth between two structures? Although the answer to this question may never be known, I suggest the following as an approach to the problem.

Consider a second constraint proposed by Grimshaw (1993), which basically states that only the minimal amount of structure required should be projected:

(43)   Minimal Projection Constraint (Min-Proj):
       A functional projection must be functionally interpreted (disallows empty projections or unspecified functional material).

Translating this into the Sesotho problem at hand, if Rel is unanalyzed or missing from a relative construction, only an IP will be projected; otherwise, Min-Proj would be violated. In other words, if children are unclear as to the features of Rel at age 3, they could observe both Min-Proj and Ob-Head and project only an IP until the features of Rel have been determined. That is, children could have the capacity to produce CP-structures, but would not do so without the features appropriate for a CP head. The projected structures, along with the development of Rel features, are schematized in Table 4.

But how would children ever move from Stage II to Stage III—that is, from an IP analysis to a CP analysis for relative constructions? What would be the "trigger" needed to ensure projection of a CP? I suggest that this is an issue of *lexical learning* that proceeds along the following lines: By the age of 3, both younger children showed a substantial increase in both the number of subject relatives used and the types of head nouns used. This included an increase in the number of head nouns drawn from Noun Classes 1 and 10, where Rel is morphophonologically identifiable as Rel and not Agr. I suggest that the increased exposure to and use of relative constructions, especially those of other noun clauses, provides the child with sufficient evidence to discover that Rel is a complementizer.

TABLE 4
Stages in the Acquisition of Sesotho Relative Constructions

	Stage I	*Stage II*	*Stage III*
Subject Rel	Agr	Agr/Rel	Rel
Object Rel	(Dem)	(Dem)	Rel
Structure	IP	IP	CP

The three stages of acquisition can now be characterized as follows: At Stage I Rel has not yet been analyzed, and Min-Proj yields a well-formed IP-structure. Then, around 3 years, the child begins to realize that subject Rel differs slightly from subject Agr, and begins to lexically interpret some Rels as complementizers, still using only an IP. At the same time, the child may begin to realize that object Rel is not a Dem, but continues to treat relative clauses as IPs, omitting Rel from object relatives – or avoiding the construction altogether. This intermediary stage can be thought of as a holding point, where the featural decomposition of functional heads is taking place, but no change in grammatical structure (or ranking of constraints) is required. Perhaps IP is projected as the minimal structural form needed – a structure that requires "minimal effort." The alternative would be to consistently project a CP at this point, but then both Ob-Head and Min-Proj would be occasionally violated. I suggest that it is only at Stage III – with increased exposure to and use of a variety of subject and object relative constructions – that Rel becomes consistently analyzed as a complementizer. Only then can Rel be placed in the head of CP, and Min-Proj and Ob-Head once again satisfied.

A constraint-based approach to developing grammars may therefore prove useful for understanding initial, intermediate, and final states. Constraints are provided as part of Universal Grammar, ensuring "continuity" in the acquisition process. The child strives for maximal linguistic well-formedness and maximal communicative effect with the minimal amount of effort, sometimes violating constraints in the process. Increased exposure to the data (both tokens and types of head nouns) is needed to "trigger" lexical reanalysis, which in turn provides the lexical head necessary to represent the appropriate CP-structure.

5.   CONCLUSION

This article has shown that Sesotho-speaking children use both relative clauses and cleft constructions between the ages of 2 and 3. Yet despite the fact that children's early relative constructions are semantically and pragmatically well formed, and are appropriately marked with the invariant verbal relative suffix -ng by the age of 3, few object relatives are used, and subject relative complementizers (Rels) appear to function as subject agreement markers instead. The simplest explanation for these facts is that children initially treat relative constructions as IPs, and only come to treat them as CPs once lexical analysis of Rel as a relative complementizer is completed around the age of 4.

At the intermediary stage, when the complementizer features of Rel are beginning to emerge, it is unclear whether children flip back and forth

between projecting an IP and a CP, observing Ob-Head and Min-Proj, or if they temporarily maintain an IP analysis and Min-Proj until Rel has been more fully analyzed. In Demuth (in press) I argue for the latter approach – albeit in the prosodic domain. The developmental picture that evolves in both is one of economy or minimal effort, where children actively use the minimal amount of structure needed to satisfy linguistic and communicative needs, while at the same time carrying out further linguistic analysis. The IP stage of Sesotho relative constructions satisfies these requirements, providing the child with time to determine the featural content of Rel. The "trigger" for this lexical learning process lies with the child's eventual increase in exposure to and use of different types of relative head nouns.

One of the problems for language learners, then, is to determine how much structure is *necessary* to represent a particular grammatical construction. But this problem is not restricted to children: Even adults have a tendency to omit certain complementizers, both in Sesotho and in English. What is not clear is whether adults sometimes produce IP relative clauses, maintain a complementizer "feature" in the head of CP, or simply violate constraints like Ob-Head and Min-Proj from time to time, occasionally producing CPs with empty heads. Further research will be needed to explore these issues more fully.

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APPENDIX
Noun Class Prefixes, Subject Agr, Rel, and Demonstrative Formatives

Class	Noun Prefix	Subj Agr	Subj Rel	Obj Rel	Dem1	Dem2	Dem3
1	mo-	o-/a-	ya	eo	eo	eo	elwa
2	ba-	ba-	ba	bao	baa	bao	bale
3	mo-	o-	o	oo	oo	oo	ola
4	me-	e-	e	eo	ee	eo	ela
5	le-	le-	le	leo	lee	leo	lela
6	ma-	a-	a	ao	aa	ao	ale
7	se-	se-	se	seo	see	seo	sela
8	di-	di-	tse	tseo	tsee	tseo	tsela
9	∅	e-	e	eo	ee	eo	ela
10	di-	di-	tse	tseo	tsee	tseo	tsela
14	bo-	bo-	ba	boo	boo	boo	bola
15	ho-	ho-	ho	hoo	hoo	hoo	hola

Note. There are three positions for Sesotho demonstrative pronouns (proximity to speaker, proximity to hearer, and distant from both), each of which have two forms. One form from each is provided here. Rel is derived from Dem2, or occasionally from Dem3.