QUESTIONS, RELATIVES, AND MINIMAL PROJECTION

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This paper examines the acquisition of wh-questions and relative clauses in Sesotho, a language with no wh-movement in either questions or relatives, and where wh-question 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 surface in a form that is identical with subject agreement or a nominal modifier. This raises the possibility that children are initially treating relative clauses as IP rather than CP structures. The paper 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 to a theory of acquisition in general.

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, some arguing for the early impoverishment of functional projections (e.g. Guilfoyle and Noonan 1988, Lebeaux 1988, Radford 1990), others arguing for the full instantiation of functional projections, even when left lexically unfilled (e.g. Hyams 1992, Demuth 1992, 1994). In this paper I argue that both positions are correct to a certain degree. In so doing, I focus on the development of morpho-syntactic features and its implications for the acquisition of phrase structure.

Of particular import here will be the acquisition of CP structure, with specific 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 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 in several languages (e.g. English - Goodluck and Tavakolian 1982, Solan and Roper 1978,
Korean - Lee, Lust, and Whitman 1990, Italian - Crain, McKee, and Emiliani 1990). Others, however, have emphasized the incomplete nature of English-speaking children’s use of relative clauses before the age of six, arguing that these are conjoined or flat rather than embedded structures (e.g. Tavakolian 1981, Flynn and Lust 1980, and de Villiers, Tager-Flusberg, Hakuta and Cohen 1979). In this paper I examine Sesotho-speaking children’s spontaneous use of relative constructions, showing that, although not entirely adult-like 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-aux 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 2-3 years productively use relative clauses and clefts, including cleft questions, this paper shows 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, and discusses the implications of Grimshaw’s (1991, 1993) 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 paper 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. The paper concludes in Section 4 with a theoretical discussion of the findings and some specific proposals for understanding the development of phrase structure.
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).²

(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 (1994) posit 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.

(2) a. AGRP b. AGRP
 / \ / \ DP AGR' DP AGR'
 / \ / \ Thabo Thabo
 / \ / \ AGR AGR
 o- o- 
 T' T' 
 / \ / \ 
 T VP T VP
 -ile -ile 
 / \ / \ Thabo V' t t V'
 / \ / \ V DP V DP
 -pheh- dijo -pheh-
 t j dijo

² Glosses are as follows: AGR = subject clitic, APL = applicative, CAUS = causative, COMP = complementizer, CONJ = conjunction, COP = copula, DEM = demonstrative pronoun, DIM = diminutive, FUT = future, INF = infinitive, LOC = locative, NEG = negation, PASS = passive, PERF = perfective, PN = incorporated or stressed pronominal, POSS = possessive, POT = potential, PREP = preposition, PST/CONT = past continuous, Q = question marker, REL = relative marker, RL = verbal relative suffix, WH = wh-question word, 8 = gender/number class #8, 1s = 1st person singular, ' = high tone, low tone = unmarked. Tone is not marked on children’s utterances. A modified version of Lesotho orthography has been used.
For the purposes of this paper I will refer to AGRP and TP as an unarticulated IP, and will treat the surface realization of simple sentences as having the structure in (3).

\[
\text{(3)} \quad [\text{IP} \ (\text{Thabo}_i) \ o\text{-pheh}_j \text{-ile} \ [\text{VP} \ t_i \ t_j \ \text{dijo}]]
\]

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.\(^3\) However, yes/no questions optionally take a question formative \(\text{náa}\) either preceding or following the IP. Consider the yes/no question in (4).

\[
\text{(4)} \quad (\text{Náa}) \ \text{Thabo o\text{-pheh-ílé}} \ \text{dijó} \ (\text{náa})? \quad (Q) \ S \ V \ O \ (Q) \\
(Q) \ 1T \ 1\text{AGR-cook-PERF 8food (Q)} \\
'\text{Did Thabo cook the food?}'
\]

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 \(\text{hore}\).

\[
\text{(5)} \quad \text{Ha ké-tsébé} \ \text{hore náa di-beh-il-wé} \ \text{káe} \\
\text{NEG 1sAGR-know COMP Q 10AGR-put-PERF-PASS where} \\
'I \text{don't know where they have been put.}'
\]

The embedding complementizer \(\text{hore}\) 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).

\[
\text{(6)} \quad [\text{IP} \ \text{Naa} \ [\text{IP} \ (\text{Thabo}_i) \ o\text{-pheh}_j \text{-ile} \ [\text{VP} \ t_i \ t_j \ \text{dijo}]]]
\]

\(^3\) 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).
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).

(7) a. Thabo ó-pheh-ilé 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-ilé dijó káe? S V O WH
   1T 1AGR-cook-PERF 8food where
   'Where did Thabo cook the food?'

   b. Thabo ó-pheh-ilé 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.4

(9) *Mang o-pheh-il-e dijó? *WH V O
   1who 1AGR-cook-PERF-M 8food
   "Who cooked the food?"

---

4 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.
‘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) (Machobane 1987), as the object of a by-phrase in passive constructions (11) (Demuth 1989, 1990), or in a cleft construction (described in section 2.3).

(10) Ho-phéh-il-é máng?
    Explt - V WH
17AGR-cook-PERF-M 1who
'It was who that did the cooking?'

(11) Dijó di-pheh-il-wé ké máng?
    S V-PASS by-WH
8-food 8AGR-cook-PERF-PASS by 1who?
'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 Grimshaw’s (1991, 1993) notion of extended projection and minimal projection, where only the structures needed for a given construction are projected, Demuth and Machobane (1994) argue 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) which 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) show that relative clauses do not differ from topicalization in terms of weak cross-over 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.

(12a) batho\textsubscript{i} bá\textsubscript{p}-pēhā-ng dijó
2person 2REL+2AGR-cook-RL 8food
'People that cook food.'

(12b) batho\textsubscript{i} báo\textsubscript{i} ké-ba\textsubscript{i}-rātā-ng
2person 2REL 1sAGR-2PN-like-RL
'People that I like.'

(12c) batho\textsubscript{i} báo\textsubscript{i} ké-batlā-ng pere yá-bona
2person 2REL 1sAGR-want-RL 9horse 9POSS-2PN
'People whose horse I like.'

All of the relative clauses in (12) take a relative complementizer REL, as well as a relative suffix -\textit{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-*\textsubscript{di}-pēhā
8-food 1T. 1AGR-PRES-8PN-cook
‘Food, Thabo is cooking it.’

REL markers are historically derived from demonstrative pronouns, and are actually identical to a demonstrative. 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\textsubscript{i} báo\textsubscript{i} kajéno bá-pēhā-ng dijó
2person 2REL today 2AGR-cook-RL 8food
'People that today cook food.'
Given that RELs in object relatives look like demonstrative pronouns, 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 máŋi yá-e-pheh-ilé-ng dijó?
   COP 1who 1REL+1AGR-cook-PERF-RL 8food
   'It's who that cooked the food?'

b. Ké éngi yéo Thabo á-ei-pheh-ilé-ng?
   COP 9what 9REL 1T. 1AGR-9PN-cook-PERF-RL
   'It's what that Thabo cooked?'

c. Ké káei móo Thabo á-pheh-ilé-ng dijó téng?
   COP where REL 1T. 1AGR-cook-PERF-RL 8food where
   '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) argue that this is not the case in Sesotho. Rather, the structure is as in (15):

(15) $[[\text{IP Ké éngi} \ [\text{CP yéo Thabo á-ei-pheh-ilé-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 three 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 one boy - H (2;1-3 yrs.), and two girls - L (2;1-3;2 yrs.), and T (3;8-4;1 yrs.). Both of the younger children use object and adjunction wh-questions by the age of 2;6 years. 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 one 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 following sessions.

TABLE 1
Relative Constructions and Total Number of Utterances
(where Utterance = clause containing a verb)

<table>
<thead>
<tr>
<th>Child</th>
<th>Age/yrs.</th>
<th>Subject</th>
<th>Object</th>
<th>Total Utt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>2;6</td>
<td>7</td>
<td>2</td>
<td>496</td>
</tr>
<tr>
<td></td>
<td>3;0</td>
<td>15</td>
<td>2</td>
<td>582</td>
</tr>
<tr>
<td>L</td>
<td>2;6</td>
<td>5</td>
<td>2</td>
<td>504</td>
</tr>
<tr>
<td></td>
<td>3;2</td>
<td>14</td>
<td>1</td>
<td>550</td>
</tr>
<tr>
<td>T</td>
<td>4;0-1</td>
<td>17</td>
<td>11</td>
<td>516</td>
</tr>
</tbody>
</table>

Three observations can be made concerning the frequency of relative construction use in early Sesotho. First, both of the younger children doubled their use of relative constructions between 2;6 and 3 years. Second, the younger children’s use of subject relative constructions around 3 years approaches the frequency in use of subject relatives
by of the older child at 4 years. 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, where object relative constructions constitute around 40% of all relatives used. It therefore appears that there are at least three identifiable stages of development over time, from few relatives, to an increase in subject relatives, to an increase in object relatives.\(^5\)

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), where OS and SS constructions are the most frequently used by children under the age of three. The following examples are typical of Sesotho relative constructions used at 2;6 years.\(^6\)

(16)  (H 2;6 yrs.)
Pompom e sa bulang ke ela
(pompong  e-sa-bula-ng  ke  ela)
9sweet  9REL+9AGR-NEG-open-RL COP 9DEM
‘The candy that won’t open (unwrap) is this one.’

(17)  (H 2;6 yrs.)
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 2sPN
‘Who’s touching this piece of iron of mine, you?’

\(^5\) Even at 4 years, 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.

\(^6\) The first line of each example is the child’s utterance, while the line below (in parentheses) represents the grammatical equivalent.
There are several observations to be made. First, the verbal relative suffix -ng is present in approximately 90% of all H’s relative constructions at 2;6 years, indicating that he distinguishes these constructions from both matrix clauses and other embedded clauses. This is not significantly different from the presence of -ng in T’s speech at 4 years. 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 non-trivial; 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 - (see Demuth and Gruber 1994). This may account for the less than perfect production of -ng even in 4-year-old T’s speech. Child L shows use of -ng in 50% of her early relatives. Some of her ‘omissions’ may be due to 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 reduce (vowel) form of REL, is present in 100% of the 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 class 1, 8, and 10. The RELs in both (18) and (19) are therefore ambiguous between REL and AGR (see Appendix).

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7 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.
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 the age of three neutralize to an a- form, even in the case of 1st person singular subject AGR ke- (Demuth 1992). In short, at 2;6 years none of L’s REL forms is unambiguously REL; all can be interpreted as AGR. In other words, 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 would therefore appear that H has no REL 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 years. 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 2nd person singular indicative AGR (20). Such forms are considered a ‘grammatical’ option, but are infrequently used (Doke and Mofokeng 1957).

\[
(20) \quad (L \ 2;8 \ yrs.)
\]
\[\text{ko ona o tabwileng, q!} \]
\[\text{(ke wena ya-e-tabo-tse-ng)} \]
\[\text{COP 2sPN 1REL+1AGR-9PN-tear-PERF-RL} \]
\[\text{‘It’s you that tore it!’} \]

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), though 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 ya- form (21 and 23), and H has two unambiguous REL forms of class 10 (e.g. 22).

\[
(21) \quad (H \ 3 \ yrs.)
\]
\[\text{Ya-thetsa-ng moo o-tla-cha} \]
\[\text{1REL+1AGR-touch-RL here 1AGR-FUT-burn} \]
\[\text{‘Whoever touches here will burn (herself/himself).’} \]
(22)  (H 3 yrs.)
Sheba dipere tse-tswana-ng
look at 10horses 10REL+10AGR-resemble-RL
‘Look at the horses that are alike.’

(23)  (L 3;2 yrs.)
Ya kenang ka tlung a a mmate?
(ya-kena-ng ka tlu-ng ha o-mo-rate)
1REL+1AGR-enter-RL PREP 9house-LOC NEG 2sAGR-1PN-like
‘The one that’s entering the house, don’t you like her?

However, well over half of both children’s forms still remain ambiguous between a REL and AGR interpretation. It would therefore appear that, around the age of three, both children are beginning to analyze the portmanteau morpheme into its component parts of both REL and AGR features, but that the process is not yet complete. It is only once this featural decomposition has taken place that a CP analysis for subject relative constructions is possible.

In contrast, half of 4-year-old T’s RELs are unambiguously REL+AGR. Although one of her two class 1 REL forms is reduced to -a, she has six unambiguous class 10 RELs, and the first person singular form which could optionally take the AGR form ke- takes the unambiguous REL form ya (24).

(24)  (T 4 yrs.)
ke nna ya-sila-ng poone
COP 1sPN 1REL+1AGR-grind-RL 9corn
‘It’s me who’s grinding the corn.’

It would therefore appear 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.

| TABLE 2 |
| Characteristics of Subject Relative Constructions |
In sum, it seems that the increase in frequency of subject relative use by 3 years does not necessarily correspond to an increase in grammatical complexity. Although both of the 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 three years, and seems to be systematically present by the age of 4. We might therefore conclude that children have an IP analysis for relative constructions at 2;6 years, and a CP analysis at 4 years, with the status at 3 years being unclear. I turn now to a consideration of object/oblique relative constructions, where the structure of children’s relatives at the age of 3 is more transparent.

### 3.2. Object/Oblique Relative Constructions

Unlike subject relative constructions, where by 3 years the younger children approached the same frequency of use as 4-year-old T, the younger children hardly ever use object relatives. When they did (H twice at 2;6 and 3 years, L twice at 2;6 and once at 3;2 years), -ng was always present, except in L’s forms at 2;6 years. All four of H’s object relatives took the form of a locative, where REL was the locative form moo, and no resumptive pronoun is required (though teng is optional).

\[(25) \quad \text{(H 2;6 yrs.)} \]
\[
\text{Ka kana ka mo e rekuang} \\
\text{(ka kwana ka moo e-rek-ua-ng (teng))} \\
\text{PREP there PREP REL 9AGR-buy-PASS-RL (there)} \\
\text{‘Over there where it is bought’}\]
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)  (H  2;5 yrs.)
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 s/he bought.’

(28)  (H  2;9 yrs.)
Tlia lebokos la:ka ke le fuweng
(tl-isa lebokose la-ka
come-CAUS 5-box 5POSS-my
leo ke-le-f-il-we-ng)
5REL 1sAGR-5PN-give-PERF-PASS-RL
‘Bring my box that I was given.’

Note further that a possessive *laka* ‘mine’ (underlined) modifies the head noun in (28). It would appear that H may be interpreting REL, which looks like a demonstrative pronoun, as an optional nominal modifier, rather than as a subordinating complementizer.

Further support for such a proposal comes from L’s examples. In all three cases REL is missing, but a nominal modifier (underlined) is present in two of them, a (singular rather than plural) modifier in (30), and a demonstrative in (31).
Even though an resumptive pronoun is present, along with -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 would appear that Sesotho-speaking three-year-olds either do not know what REL is, do not know how to use it, or do not have the CP structure needed to utilize it. Given that REL is derived from the series of demonstrative pronouns, it is possible that children assume that relative clauses are actually IPs, and that REL is a demonstrative pronoun which 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 demonstratives rather than REL. Furthermore, Doke and Mofokeng (1957) report that the third position demonstrative 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 demonstrative or possessive was used in conjunction with REL, rather than as a substitute for it, in three of her 11 object relatives (e.g. 32), though one also had only a demonstrative and no separate REL (33).

(32) (T 4 yrs.)
Papi tsaka tse ke neng ke di tsetse ka moo di kae?
(dipapi tsa-ka tse ke-ne-ng
10corn kernels 10POSS-my 10REL 1sAGR-PST/CONT-RL
ke-di-se-tse ka moo di kae?)
1sAGR-10PN-cut-PERF PREP here 10COP where
‘Where are my corn kernels that I cut over here?’

(33) (T 4;1 years)
...masale ... ane o no be ... o nreketse ona ...
(masale ane a o-ne-ng
6earrings 6DEM 6REL 2sAGR-PST/CONT-REL
o-be o-n-tek-etse ana)
2sAGR-COP 2sAGR-1sPN-buy-PERF 6PN
‘...those earring that you had been going to buy me ...’

It would therefore appear that child T is treating REL as a complementizer, and relative constructions as CPs.

Table 3 summaries the characteristics of object/oblique relatives for the three children.

| TABLE 3 |
| Characteristics of Object/Oblique Relative Constructions |
Realization of REL Presence of -ng Resumptive PN Total

<table>
<thead>
<tr>
<th>Child</th>
<th>Age/yrs.</th>
<th>DEM</th>
<th>LOC</th>
<th>REL</th>
<th>-ng</th>
<th>PN</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>2;6</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0/0</td>
<td>2</td>
<td>2</td>
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<tr>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>0/0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>L</td>
<td>2;6</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3;2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>T</td>
<td>4;0-1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>16/7</td>
<td>18/8</td>
</tr>
</tbody>
</table>

Note: -ng was obligatory in only 7 out of T’s 11 object relatives, and resumptive pronouns were required in only 8.

Why, then, do 2-3-year-olds have such 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-speaking children between the ages of 2;8 and 3 years 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 2;8-3 years, complete with well-formed complementizers like the ‘if/when’ marker ha.

(34) (L 2;8 yrs.)
A o shapa ha o chatla lemati wena
(ke-tla-o-shapa          ha            o-pshatla        lemati wena)
1sAGR-FUT-2sPN-lash if/when 2sAGR-break 5door 2sPN
‘I’ll lash you if you break the door, you.’

(35) (H 3;0 yrs.)
U mpone ha re a ka sekolong?
(o-m-pone            ha            re-ya          ka       sekolo-nga)
2sAGR-1sPN-see-PERF if/when 1pAGR-go PREP 7school-LOC
'Have you seen me when we go to school?'

Infinitival markers (INF) also appear around 2;8 years, with the well-formed infinitival marker ho-.
(36)  (L 2;8 yrs.)
A hana ho-tloella manena waka
(o-hana             ho-tlohella           ngwana enwa wa-ka)
2sAGR-refuse INF-leave along 1child     1DEM 1POSS-my
‘You refuse to leave this child of mine alone.’

(37)  (L 2;8 yrs.)
E batla ho enlom
(e-batla           ho-ntoma)
9AGR-want INF-1sPN-bite
‘It wants to bite me.’

(38)  (H 2;8 yrs.)
Ke-batla         ho-ya    kantle
1sAGR-want INF-go  outstide
‘I want to go outside.’

(39)  (H 2;8 yrs.)
Ere ke bule ke tseba ho nka ntho aka
(ere ke-bule ke-tseba ho-nka ntho ya-ka)
say 1sAGR-open 1sAGR-know INF-take 9thing 9POSS-my
‘Let me open (it) so I’m able to take out my thing.’

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 1st person singular AGR ke- in place of the INF ho-.
Such overgeneralizations indicate that L may be grappling with the appropriate IP or CP analysis for infinitival complements (cf. Demuth & Gruber 1994). 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 the age of 2;8 years, 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 years 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 four years object relative constructions have become much more frequent, as has the use of unambiguous REL forms. It would appear that the younger children may be using only IP structures, whereas the older child appears to be using CP structures. However, the structure being used at 3 years is unclear: a few subject RELs take unambiguous complementizer form, while most still appear as AGRs. Is this
intermediary stage characterized by a flipping back and forth between IP and CP structure? 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) goes 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 1991, 1993).

But how do linguists (or speakers) determine how much structure is ‘needed’. For this Grimshaw adopts the optimality theoretic (Prince and Smolensky 1993) assumptions 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 proposes, namely Ob-Head.

Obligatory Heads (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, the Ob-Head constraint is not violated.
What about the intermediary stage discussed here, where subject REL seems to have REL features some of the time, but only AGR features the rest of the time? Is a CP always projected and Ob-Head sometimes violated? Or with every new relative utterance is there a shift between CP and IP structure depending on the form of REL? Or is IP used until the analysis of REL is unambiguously that of a complementizer? 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:

Minimal Projection (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 3 years, they could observe Min-Proj and project only an IP until the features of REL have been determined. This scenario, along with the development of REL features, is schematized in Table 4.

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>Stages in the Acquisition of Sesotho Relative Constructions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stage I</td>
</tr>
<tr>
<td>Subject REL</td>
<td>AGR</td>
</tr>
<tr>
<td>Object REL</td>
<td>(DEM)</td>
</tr>
<tr>
<td>Structure</td>
<td>IP</td>
</tr>
</tbody>
</table>

But how would children ever move from Stage II to Stage III - i.e. from an IP analysis to a CP analysis for relative constructions? What would be the ‘trigger’ needed 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 of the 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 head nouns drawn from noun classes 1 and 10, where REL is morphophonologically identifiable as REL and not AGR. I suggest that
the increase, in both tokens and types, of subject relatives by 3 years, and in object relatives by 4 years, provides the child with sufficient evidence to discover that REL is a complementizer.

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 demonstrative, 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 analysis of functional heads is taking place, but no change in grammatical structure 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 both subject and object relative constructions, and with an increased variety of head nouns, that REL is consistently analyzed as a complementizer and a CP projected. Once REL has been fully analyzed as a complementizer it can be placed in the head of CP, and Min-Proj and Ob-Head are once again satisfied.

A constraint-based approach to developing grammars may therefore prove useful for understanding intermediate 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 features necessary to represent the appropriate CP structure.

5. CONCLUSION

This paper 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 appropriate, 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 constraints, or if they temporarily maintain an IP analysis until REL has been more fully analyzed. In Demuth (in press) I argue for the later approach - albeit in a different linguistic domain. The developmental picture that evolves 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 true nature of REL. The ‘trigger’ for this lexical learning process lies with the child’s eventual increase in the 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.

REFERENCES


APPENDIX

Noun Class Prefixes, Subject AGR, REL and Demonstrative Formatives

<table>
<thead>
<tr>
<th>Class</th>
<th>Noun</th>
<th>Prefix</th>
<th>Subj AGR</th>
<th>Subj REL</th>
<th>Obj REL</th>
<th>DEM1</th>
<th>DEM2</th>
<th>DEM3</th>
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<tbody>
<tr>
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<td>mo-</td>
<td>o-/a-</td>
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<td>hola</td>
</tr>
</tbody>
</table>

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.