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Noun Class Prefixes in Sesotho Child-Directed Speech

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Introduction

The omission of grammatical morphology by children in the early stages of language acquisition is a phenomenon which has long been recognized in the literature (e.g., Bloom, 1970; Brown, 1973). While the explanation for this phenomenon is still widely debated, it has generally been accepted that the appearance of grammatical morphemes in early child speech is independent of the input itself (Brown, 1973). However, more recent studies of the acquisition of prepositions indicate a direct correlation with input (Peters & Menn, 1993). In this study we reexamine the issue of input in relation to the acquisition of noun class prefixes in Sesotho, a southern Bantu language.

The acquisition of Bantu nouns and their class prefixes is a particularly interesting case for examining the effects of input. Cross-linguistic study of children's initial production of nouns shows cases of unprefixing stems in languages such as Setswana (Tsonope, 1987), Zulu (Suzman, 1980, 1991), Siswati (Kunene, 1979), and Sesotho (Connelly, 1984; Demuth, 1988; for a review see Demuth, 1992). For example, the nominal stem *-eta* 'shoe' takes a class 7 prefix, *se-*, in the singular to produce the prefixed full nominal form, *se-eta*. Children's initial productions, however, sometimes consist of the underlying stem only, although children do seem to be aware of the prefix, as demonstrated by the use of phonologically identical agreement markers on demonstrative and possessive pronouns (Connelly

1984; Demuth 1988, 1992). The problem, then, is to account for children's production and awareness of the underlying prefixes when their productions contain only the nominal stem.

The theoretical linguistic literature poses several possible explanations for the early lack of grammatical morphemes. For example, recent literature on the acquisition of syntax has proposed that grammatical function items such as agreement morphemes are omitted due to a lack of syntactic sophistication (e.g. Radford, 1990). Others propose prosodic or metrical explanations for early omission of functional morphology in general (e.g., Gerken, 1993; Gerken & McIntosh, 1993), as well as Sesotho noun class prefixes (Demuth, 1994). In this paper we consider the effects of child-directed speech following the suggestion by Tsonope (1987) that Setswana-speaking adults omit noun class prefixes in their speech to children. Other support for this approach comes from Connelly's (1984) finding that Basotho children as young as 25 months delete plural morphemes in speech to younger infants. This paper will present an analysis of naturalistic nominal input to two Sesotho-speaking children from a rural mountain village in Lesotho. The work attempts to provide both an empirical study of caregiver speech in a non-Western culture and a possible explanation for how Sesotho noun class prefixes are acquired.

The Sesotho Noun Class System

The Sesotho noun class system contains 11 classes, signaled by a noun class prefix attached to the nominal stem, with corresponding agreement markers on adjectives, possessives, demonstratives, independent pronouns, relatives, verbs, and object pronouns (Doke & Mofokeng, 1957). These classes occur in singular/plural pairs, as shown in Table 1. All but two of the noun classes (1a, kinship terms, and 9, the default class) take a noun class prefix; however, this prefix is optionally dropped in adult speech in classes 5,7,8,10, and 14 in the presence of a modifier (Doke & Mofokeng, 1957).

Singular		Plural		
Class	Example	Class	Example	Gloss
1	mo-tho	2	ba-tho	'person'
1a	∅-rakhadi	2a	bo-rakhadi	'aunt'
3	mo-se	4	me-se	'dress'
5	le-tsatsi	6	ma-tsatsi	'day/sun'
7	se-eta	8	di-eta	'shoe'
9	∅-ntho	10	di-ntho	'thing'
14	bo-phelo			

Table 1. Noun Class Prefixes in Sesotho

Agreement morphology is for the most part phonologically transparent and regular, as shown in (1).

- (1) *ba-tho ba-na ba-rekile khomo e-kholo*
 2-people 2-those 2AGR-bought 9cow 9-big
 'Those people bought a big cow.'

Demuth (1988) discusses several paths of development children might use in acquiring Bantu noun class systems. For example, the acquisition of noun class prefixes may present a problem due to their lack of perceptual salience; i.e., location in unstressed syllables, low tone, and low semantic content. Or, children's tendencies towards regularization and overgeneralization of paradigms may cause them to collapse certain classes or generalize markers from one class to another, e.g., in the case of plurals, following Slobin's (1985) Operating Principle of form-function mapping.

The pattern of children's acquisition, however, does not reflect any of the above strategies. Instead, the general trend is one of gradual development from an initial state where few prefixes are used, to the use of a shadow vowel, and finally to the correct use of full prefix forms, without errors of regularization or overgeneralization, as shown in (2).

- (2) dropped prefix *eta*
 shadow vowel *e-eta* 'shoe'
 full prefix *se-eta*

These are not discrete stages; at any given time the child may produce forms from all three (Demuth, 1988). The problem, then, is to account for this pattern of development. In the remainder of this paper, we explore the possibility that there are features in the input which influence this pattern of acquisition. We will refer to different types of nouns in the following manner: 'prefixless' refers to nouns from classes 1a and 9, 'prefixed' refers to nouns from all other classes when the prefix is present, and 'dropped prefix' refers to nouns from prefixed classes which occurred without a prefix. Furthermore, we will distinguish between dropped prefix nouns which are ungrammatical (i.e., all nouns from classes 1,2,3, and 6 as well as unmodified nouns from classes 5,7,8,10, and 14) and grammatical (i.e., nouns from classes 5,7,8,10, and 14 with post-nominal modifiers).

The Study

This study examines the total noun input to two of Demuth's (1984) subjects, H and L, both age 2;1, from the transcripts of four hours of spontaneous speech for each child. Both children were recorded outside their homes in a small mountain village where relatives and friends frequently engaged the children in conversation. The issues examined were: a) the nature of the total noun input to each child classified by both noun class and speaker, b) the possibility that speakers were dropping obligatory prefixes (i.e., prefixes in conditions other than modified classes 5,7, 8, 10, and 14), and c) other linguistic or non-linguistic factors in the discourse which could account for the observed pattern of acquisition (see below for further discussion). The hypothesis was that there might exist certain systematic characteristics in the input, the most obvious being the dropping of noun class prefixes, which could provide an explanation for Sesotho children's acquisition patterns.

Adult Noun Input

Initial examination of the input to H and L at 2;1 years revealed differences in overall quantity, with L receiving approximately one-third more utterances than H (L=2241, H=1541), where an utterance was calculated as containing one

verb or copula at most. The total number of nouns in the input to each child also differed proportionately (L=612, H=424). The frequency of noun use, as calculated by dividing the number of nouns by the number of utterances, was roughly the same (L=27.3%, H=27.5%). Although using data from only two subjects prohibits the use of statistical tests, the differences in frequency of noun input were felt to be small enough for the purposes of general comparison.

With these considerations in mind, several interesting general characteristics were noted. Most striking was the fact that the majority of the input consisted of nouns from the prefixless classes 1a and 9 (L=70.4%, H=69.3%). One might hypothesize that hearing predominantly unprefixing nouns causes children to adopt a zero-prefix strategy during the early stages of acquisition. Both children received some dropped-prefix forms (L=5.4%, H=3.3%); further discussion of this is presented below. Finally, less than a third of the total noun input consisted of prefixed nouns (L=24.2%, H=27.4%), which include most of the noun classes in Sesotho. Part of the reason for the frequency difference between prefixless and prefixed nouns is that there are a few high frequency nouns, such as class 9 *ntho* 'thing' and class 1a *mme* 'mother', in the unprefixing class category.

Further examination of the dropped prefix tokens revealed the surprising finding that over two-thirds (L=61%, H=64%) occurred in strictly ungrammatical contexts (unmodified nouns in classes 5,7,8,10, and 14 as well as modified and unmodified nouns in the remaining four prefixed classes). These dropped prefix tokens occurred in both singular and plural classes to both children, although the majority of tokens were from plural classes. This finding may be biased, however, by a few high frequency plural tokens such as class 10 *di-ntho* 'things'. In general, although the total number of dropped-prefix tokens found was small (L=33, H=14), the fact that the majority of tokens occurred in ungrammatical contexts suggests that by dropping prefixes in speech to young children, adults and older children were using a specific caregiver speech register.

Additional evidence for the existence of a specific speech register comes from an analysis of the variation in prefix-dropping across speakers. The four most frequent speakers to

each child were examined. For both children, the mother and a 5-year-old used dropped prefix forms, indicating that even children have knowledge of and use a caregiver speech register in interactions with younger children. Also interesting was the fact that for child H, the adult with the highest frequency of input, H's grandmother, did not use any dropped prefix forms. One possible explanation for this is that the presence of a tape recorder and researcher gave the situation a sense of formality, causing her to switch into a more 'correct' adult register of speech even when speaking to the child. These data are by speaker in Table 2 in descending order of input quantity. The percent of the total input to each child is given for each speaker in parentheses.

Speakers (% Total Input)	Noun Input Types		
	<i>%prefixless</i>	<i>%prefixed</i>	<i>%dropped</i>
<u>Child H</u>			
grandmother (40.3)	78.3	21.7	0
mother (25.8)	63.3	29.3	7.3
other adult (13.2)	56.8	43.3	0
5-yr-old cousin (12.3)	57.4	27.3	9.1
other speakers combined (8.4)	72.5	22.5	5.0
H combined results	69.3	27.4	3.3
<u>Child L</u>			
mother (46.2)	69.6	24.7	5.8
17-yr-old cousin (36.5)	76.9	21.1	2.1
5-yr-old brother (7.1)	55.4	25.0	19.6
other adult (3.7)	64.7	32.4	2.9
other speakers combined (6.5)	62.2	32.4	5.4
L combined results	70.4	24.2	5.4

Table 2. Noun Input Type by Speaker

To summarize briefly, this examination of the nominal input revealed several interesting features which might help explain children's acquisition patterns. First, the majority of the input contained prefixless tokens. Second, dropped prefix tokens were used in ungrammatical contexts. Finally, the use of

dropped prefix forms across speakers of different ages suggests the use of a specific caregiver speech register.

Children's Acquisition of Nouns and Prefixes

Given this picture of the input to children, the next logical step is to examine more closely what the children themselves are producing at this stage. Both children produce approximately the same number of nouns (L=186, H=196), and like the adult input, the majority of the children's nouns at 2;1 years are from the two unprefixing classes (L=59%, H=61%). Over time, children show a gradual increase in the use of prefixing class nouns. With the increase in use of prefixing class nouns, children also exhibit a corresponding decrease in the amount of prefix dropping over time. These data are represented in Figures 1 and 2 below.

There was, however, an inverse relation between the two children's use of prefixes and the adult input at 2;1: H dropped twice as many prefixes than L (L=16%, H=31%), but received a slightly lower percentage of dropped prefix tokens in the input (L=15%, H=10%). Several additional aspects of the children's productions in relation to the input were examined in an attempt to explain this pattern. First, the type-token ratios for both input and productions were examined to determine if the inverse relation was merely due to differences in the relative type/token ratios of prefixing versus prefixless classes. However, this was not found to be the case, as L both received and produced slightly higher type/token ratios than H (L=.25 and .27, H=.21 and .24 for input and production, respectively). A second hypothesis was that the increase in the child's use of prefixing is a function of the increase in the number of prefixable nouns in the child's lexicon, and that a certain threshold of nominal input is needed for nominal prefixing to occur consistently.

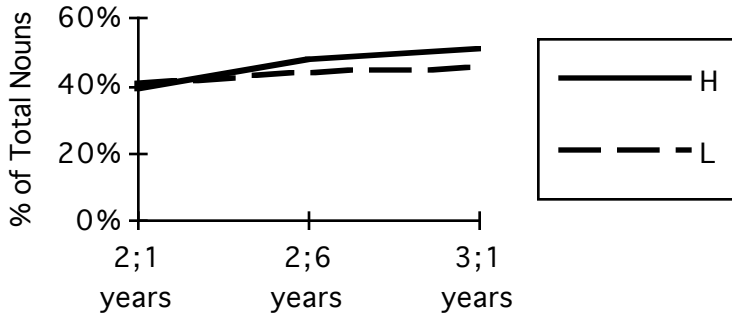


Figure 1. Child Use of Prefixable Nouns

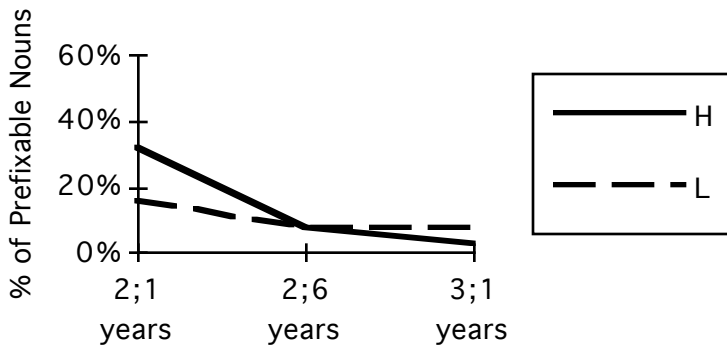


Figure 2. Child Use of Dropped Prefixes

An alternative hypothesis for why child L prefixed more nouns than child H is that at this point in the acquisition process L might be focusing more on nominal structure, and H on syntactic structure. Children's and adults' use of complex grammatical constructions, specifically passives and relatives, was measured as a way of estimating relative grammatical sophistication. Using this measure, H was found to receive and produce a higher percentage of passives and relatives at 2;1 than L (L=4% and 1%, H=5% and 2% for input and production; measured as percent of total utterances). Though the difference in percentages is small, we suggest that this finding may correlate with the fact that H received relatively fewer dropped prefix

forms; both may be considered linguistically more advanced. Thus adults' use of prefix dropping may be more closely related to children's grammatical development rather than morphological development per se.

Conclusions

Based on this preliminary study, several conclusions might be drawn. First, it appears that the global properties of the input shape the course of acquisition: early nominal input to both children consisted of over 70% prefixless and dropped prefix forms, both of which might influence the form of early noun productions. Second, the use of ungrammatical prefix dropping in speech to children appears to be correlated with children's grammatical development, rather than children's relative use of noun class morphology: child H received and produced more grammatically complex constructions than L and received fewer dropped prefix forms. Finally, the early use of nominal prefixes may be a function of the absolute frequency of prefixable nouns in the input, producing a threshold effect: L produced more prefixes at 2;1 years than H and also received about one third more total nominal input. Overall, these findings point to the importance of input and frequency effects for understanding the course of acquisition. Although this study has focused on the acquisition of Sesotho, a morphologically rich language, we suggest that it also holds implications for the acquisition of morphologically impoverished languages such as English.

References

- Bloom, L. (1970). *Language development: Form and function in emerging grammars*. Cambridge, MA: MIT Press
- Brown, R. (1973). *A first language: The Early Stages*. Cambridge, MA: Harvard University Press.
- Connelly, M. (1984). *Basotho children's acquisition of noun morphology*. Unpublished Ph.D. dissertation, University of Essex.
- Demuth, K. (1984). *Aspects of Sesotho language acquisition*. Bloomington: Indiana University Linguistics Club.
- Demuth, K. (1988). Noun classes and agreement in Sesotho acquisition. In M. Barlow and C.A. Ferguson (eds.), *Agreement in natural languages: Approaches, theories and descriptions*, pp. 305-321. CSLI: University of Chicago Press.

- Demuth, K. (1992). The acquisition of Sesotho. In D. Slobin (ed.), *The Crosslinguistic Study of Language Acquisition*, 3, 557-638. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Demuth, K. (1994). On the underspecification of functional categories in early grammars. In B. Lust, M. Suñer, & J. Whitman (eds.), *Syntactic Theory & First Language Acquisition: Cross-Linguistic Perspectives*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Doke, C. M. & Mofokeng, S. M. (1957). *Textbook of Southern Sotho grammar*. Cape Town: Longman.
- Gerken, L. A. (1993). Young children's representation of prosodic structure: Evidence from English-speakers' weak syllable productions. *Journal of Memory and Language*, 32.
- Gerken, L. A. & McIntosh, B. (1993). The interplay of function morphemes and prosody in early language. *Developmental Psychology*, 29:448-457.
- Kunene, E. (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 Ph.D. dissertation, UCLA.
- Peters, A. & Menn, L. (1993). False starts and filler syllables: Ways to learn grammatical morphemes. *Language* 69:742-778.
- Radford, A. (1990). *Syntactic Theory and the Acquisition of English Syntax*. Oxford; Basil Blackwell.
- Slobin, D. I. (1985). Crosslinguistic evidence for the Language-Making Capacity. In D. I. Slobin, (ed.), *The cross-linguistic study of language acquisition*, 2, 1157-1256. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Suzman, S. (1980). Acquisition of the noun class system in Zulu. *Papers and Reports on Child Language Development*. Stanford University, 19:45-52.
- Suzman, S. (1991). *Language acquisition in Zulu*. Unpublished Ph.D. dissertation, Witwatersrand University, Johannesburg.
- Tsonope, J. (1987). *The acquisition of Setswana noun class and agreement morphology with special reference to demonstratives and possessives*. Unpublished Ph.D. dissertation, SUNY Buffalo.