Argument Structure and the Acquisition of Sesotho Applicatives

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Abstract

One of the long-standing issues in the study of language acquisition has centered
about what is 'innate' and what must be 'learned'. Much of this debate has
focused on structures at the syntax/semantics interface, dealing specifically with
how children acquire the argument structure of verbs. Bantu applicative
constructions present and interesting arena for exploring these issues, where
different verb classes take applicative objects with different thematic properties,
only some of these patterning as true syntactic objects. Sesotho has an especially
interesting system, where the syntax of applicative objects is further complicated
by issues of animacy, raising questions regarding how this system is learned.
This paper outlines the syntactic and semantic structure of Sesotho applicatives
and then examines the spontaneous use of applicative constructions in the speech
of two Sesotho-speaking children between the ages of 2 and 3. It finds that these
children use the applicative with a full range of verb classes, demonstrating
appropriate semantic knowledge of the construction. However, the applicative
structures they use exploit only a small portion of the available syntactic space.
The paper concludes with a discussion of the implication of this study for
learnability issues, and outlines areas for further research.

1. Introduction

The acquisition of argument structure has long been a topic of interest in the language acquisition literature, and continues to be one hotly debated today. Some of the early research looked at the types of verbs which children used with passive constructions, noting that these tended to be action verbs such as hit and kick rather than state verbs like know and believe (Maratsos, Fox, Becker & Chalkley 1985, Pinker, Lebeaux, & Frost 1987). That this appeared to be true not only for the acquisition of English, but also crosslinguistically (e.g. in languages like Sesotho - Demuth 1989, 1990a), provided additional support for the Chomskian position that certain aspects of language, such as basic semantic categories, might be 'innate', and that this might facilitate the acquisition of syntactic structure (e.g. Pinker 1984, 1989). This 'semantic bootstrapping hypothesis' has recently been challenged by Gleitman and colleagues who maintain that it is actually syntax (rather than semantics) that emerges first, where syntactic frames facilitate the acquisition of verb meaning. This has come to be known as the 'syntactic bootstrapping hypothesis' (Gleitman 1990).

   The purpose of this paper is not to provide definitive support for either of these positions, but rather to report on some empirical data which might shed some light on these issues. This study examines the early acquisition of applicative constructions (also known as 'benefactive' constructions) in the southern Bantu language Sesotho. As the name suggests, these are constructions where an additional (often Benefactive) NP is added to the argument structure of the verb. This is illustrated in the examples in (1).[1]

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[1] Glosses are as follows: ADV = adverb, AGR = subject marker, APL = applicative, FUT = future, LOC = locative, NEG = negation, OBJ = object marker, PASS = passive, PERF = perfect, POT = potential, PRES = present, RF = reflexive, REL = relative complementizer, RL = relative suffix, WH = information question word. The vowel at the end of the verb is the 'final vowel' which generally marks mood. Mood, noun class prefixes, agreement, and tone

(1)   a.   Thabo o-tla-pheh-a   dijo
                 Thabo AGR-FUT-cook food
                 'Thabo will cook some food'

       b.   Thabo o-tla-pheh-el-a   bana   dijo
                 Thabo AGR-FUT-cook-APL children food
                 'Thabo will cook the children some food
                                 /some food for the children'

Note that there is no preposition used in forming the applicative, though the English translation is often rendered with the preposition 'for' or 'to', constructions like those in (1b) being akin to English dative-shift constructions. Rather, grammatical function changing operations in Sesotho are morphologically marked on the verb in the form of morphemes called 'verbal extensions'. These include passive, reciprocal, causative, reversive, and applicative morphemes, all of which function to alter the argument structure of the verb (see Demuth (1992) for a fuller descrption of Sesotho morpho-syntax).[2]

    The syntax and semantics of Sesotho applicative constructions has been well studied, both from a descriptive and theoretical perspective, and it is this work that provides the background for the current study (Doke & Mofokeng 1957, Machobane 1989). Although the additional applicative argument is generally a Benefactive, it can have the thematic role of either a Locative or Goal with certain intransitive (unaccusative) verbs. Thus, children must have some knowledge of both semantic verb classes and thematic roles if they are to employ applicative constructions correctly. In addition, Bantu languages differ to the degree to which

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have not been marked in this paper. Lesotho orthography is used throughout, with the exception that glides and [d] are rendered here as such.

[2] See Baker (1988a, 1988b) and Marantz (1984) for morpho-syntactic analyses of Bantu applicatives which entail the notion of nominal 'incorporation' into the verb.

both objects of a ditransitive applicative construction are treated as full-fledged syntactic objects, that is, being able to occur adjacent to the verb, triggering object agreement, and becoming the subject of a passive. Children learning Bantu languages must therefore determine whether the language they are learning is a <u>symmetrical</u> language (which treats both objects the same), or an <u>asymmetrical</u> language (where only one object has true 'object' properties). Sesotho is particularly interesting in that it has a 'mixed' system, showing symmetrical properties with respect to postverbal word order when the animacy of both objects is constant, and asymmetrical properties when animacy differs. In all other respects, however, it behaves symmetrically. Sesotho therefore presents both semantic and syntactic challenges for the language learner.

   In this study we examine the spontaneous use of applicative constructions by two 2-3-year-old Sesotho-speaking children, noting the verb types with which the applicative is used, and the syntactic constructions in which it appears. First, however, we turn to a syntactic and semantic description of applicative constructions, and the phenomena which make Sesotho especially interesting for acquisition.

2. The Syntax and Semantics of Sesotho Applicative Constructions

The syntax and semantics of Sesotho applicative constructions has been extensively studied by 'Malillo (Morolong) Machobane, and much of the following description of these constructions in based on her work (Morolong & Hyman 1977, Machobane 1989). In the following discussion we first present the use of the applicative with different semantic verb classes, noting the different types of applicative objects each takes and the resultant semantic interpretation of these constructions.[3] We then examine the syntax of these constructions, focusing on the object properties shown by different applicative arguments.

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[3] For the purposes of this paper we leave aside discussion of verbs of perception such as <u>bona</u> 'see', psych-verbs such as <u>tsosa</u> 'frighten', and verbs that take clausal objects or prepositional phrases.

2.1. Verb Classes and Applicative Arguments

Machobane (1989: 5-25) observers that both intransitive and transitive verbs can cooccur with the applicative. With intransitive verbs the NP which is added can be either a Locative NP (in the case of unaccusative/ergative verbs such as kulela 'be ill in/at Loc', belela 'boil at/by Loc', fihlela 'arrive at Loc') or a Benefactive NP (in the case of unergative verbs such as ela 'go to', emela 'wait for' (< ema - 'stand'), hobela 'dance for'). This is illustrated in (2) and (3) respectively.

(2) Unaccusative Verbs
      a.   Dintja di-hol-a   kapele
                 dogs   AGR-grow fast
                 'Dogs grow fast'

      b.   Dintja di-hol-ela-a   kapele serob-eng
                 dogs   AGR-grow-APL fast   barn-LOC
                 'Dogs grow up fast in the barn'

(3) Unergative Verbs
      a.   Banna ba-lwan-a ka-matla
                 men   AGR-fight with-strength
                 'The men are fighting fiercely'

      a.   Banna ba-lwan-el-a   bashanyana
                 men   AGR-fight-APL boys
                 'The men are fighting for the boys'

Verbs like mathela 'run in/for', lwantsa 'fight for', fokela 'blow onto + NP/LOC', and nela 'fall onto + NP/LOC (rain)' show 'mixed' properties, taking either a Locative or Benefactive NP, as shown in (4).

(4)   a.   Banana ba-math-a lebal-eng

                girls   AGR-run playground-LOC

                'The girls are running in the playground'

        b.   Banana ba-math-el-a   bashanyana

                girls   AGR-run-APL boys

                'The girls are running for the boys'

   Transitive verbs, on the other hand, tend to encode Agent-Patient relations, where an Agent subject volitionally affects the object of the action verb. With an applicative these transitive verbs take an additional Benefactive NP - those in (5) corresponding to English dative-shift constructions. Other verbs of this type include balla 'read X for Y', ngolla 'write X for Y", bopela 'mold X for Y', binela 'sing X for Y', rekela 'buy X for Y', chwatlela 'break Y's X', betlela ' shape X for Y', hlabela 'slaughter X for Y'.

(5) Transitive Verbs

        a.   Bana   ba-pheh-a nama

                children AGR-cook meat

                'The children are cooking meat'

        b.   Bana   ba-pheh-el-a   'me   nama

                children AGR-cook-APL mother meat

                'The children are cooking meat for my mother'

Other transitive verbs that cooccur with the applicative include verbs such as utswetsa 'steal X for/from Y', batela 'hit X for Y', otlela 'beat X for Y', tselela 'cross over X for Y', and kenela 'attend X on behalf of Y', where the additional NP may be either a Benefactive or Malefactive - that is, suffering the consequences of the action, as in (6).

(6) a.   Barutuwa ba-bu-a   sekhowa
            students   AGR-speak English
            'The students are speaking English'

     b.   Barutuwa ba-bu-el-a   ntate   sekhowa
            students   AGR-speak-APL father English
            'The students speak English for/to my father'

   The semantics of the applicative, although often straightforward, can at times be
subtle and not entirely predicable. For example, the applicative can introduce a
Benefactive argument, but it may also bear the thematic role of either a Locative
or Goal, as shown below.

(7) a.   Banna ba-pheh-el-a   nama khotla (Locative)
            men   AGR-cook-APL meat courtyard
            'Men cook meat in the courtyard'

     b.   Pula e-n-el-a   ditulo-ng   (Locative)
            rain AGR-fall-APL chairs-LOC
            'Rain is falling on the chairs'

     c.   Pula e-n-el-a   ditulo   (Goal)
            rain AGR-fall-APL chairs
            'Rain is falling on the chairs'

Machobane finds that Locative arguments can control object agreement, whereas
Goal arguments cannot, and uses this as a justification for regarding the two as
different syntactic structures. This is a distinction which children must also learn.
   With intransitive verbs of motion, the semantics is often one of 'motion
towards' or 'in' (8b). With the addition of another NP, the semantic interpretation
becomes one of 'on behalf of' or 'towards' (8c).

(8)　　a.　　Banana ba-math-a lebal-eng

　　　　　　girls　　AGR-run　playground-LOC

　　　　　　'The girls are running in the playground'

　　　　b.　　Banana ba-math-el-a　　lebal-eng

　　　　　　girls　　AGR-run-APL playground-LOC

　　　　　　'The girls are running to/in the playground'

　　　　c.　　Banana ba-math-el-a　　ntate　lebal-eng

　　　　　　girls　　AGR-run-APL father playground-LOC

　　　　　　'The girls are running for/to my father in the playground'

The above examples demonstrate that the applicative in Sesotho can be derived from most intransitive and transitive verbs. With an intransitive verb, the applicative object may be either a Benefactive, Locative, or Goal depending on the class of verb. With a transitive verb the applicative object may be either a Benefactive or a Locative. Children must therefore learn not only which verbs can take an applicative argument, but also the thematic role of the argument allowed. Machobane (1989) assumes (along with Jackendoff 1972 and others) the following thematic hierarchy for Sesotho, where minor differences from other proposed hierarchies entail the ranking of Experiencer after Benefactive, and distinguishing animate from inanimate Goals.

(9)　　Thematic Hierarchy for Sesotho

　　　　Causer > Agent > Benefactive > Experiencer > Goal (animate) >

　　　　　　　　Theme > Goal (inanimate) > Locative > Instrument

In the next section we show that an understanding of thematic roles is needed not only for creating appropriate semantic relations, but also plays a role in the syntax of Sesotho applicatives. We turn now to a discussion of the syntactic properties of applicative arguments, focusing specifically on their object properties.

2.2. Object Properties of Applicative Arguments

Researchers have long noted the regular occurrence of object properties in Bantu languages (cf. Duranti & Byarushengo 1977, Gary & Keenan 1977, Hyman & Duranti 1982, Dryer 1983, Bresnan & Moshi 1990, Alsina & Mchombo 1990, 1993, Harford 1993). These include 1) the appearance of the applicative object immediately after the verb, 2) its ability to trigger object agreement, and 3) its ability to become the subject of a passive.

  Machobane (1989) shows that in Sesotho, the Benefactive object must appear in the position immediately following the verb: The reverse order is unacceptable, as illustrated in (10).

(10)   a.   Banana ba-phe-el-a   'me   nama
              girls   AGR-cook-APL mother meat
              'The girls are cooking meat for my mother'

        b.   *Banana ba-pheh-el-a   nama 'me
              girls   AGR-cook-APL meat   mother
              'The girls are cooking meat for my mother'

This is true even when both objects are inanimate:

(11)   a.   Rakhali o-rek-ets-e   dieta tsa-hae pholeshe
              aunt   AGR-buy-APL shoes of-her polish
              'My aunt has bought her shoes polish '

        b.   *Rakhali o-rek-ets-e   pholeshe dieta   tsa-hae
              aunt   AGR-buy-APL polish   shoes of-her
              'My aunt has bought polish for her shoes'

Only when both objects are <u>animate</u> can the order of the objects be reversed:

(12) a.   Sello o-shap-el-a   Dineo bashanyana
               Sello AGR-beat-APL Dineo boys
               i. 'Sello beats the boys for Lineo'
               ii. 'Sello beats Lineo for the boys'

      b.   Sello o-shape-el-a   bashanyana Dineo
               Sello AGR-beat-APL boys   Dineo
               i. 'Sello beats Lineo for the boys'
               ii. 'Sello beats the boys for Lineo'

Interestingly, however, even though the Benefactive functions as the 'primary' object with respect to word order, both the Benefactive and the basic object show the same object properties with respect to triggering object agreement (14) and becoming the subject of a passive (15).

(13)   Banana ba-pheh-el-a   'me   nama
               girls   AGR-cook-APL mother meat
               'The girls are cooking meat for my mother'

(14) a.   Banana ba-mo-pheh-el-a   nama
               girls   AGR-OBJ-cook-APL meat
               'The girls are cooking meat for her'

      b.   Banana ba-e-pheh-el-a   'me
               girls   AGR-OBJ-cook-APL mother
               'The girls are cooking it for my mother

(15) a.   'Me   o-pheh-ets-w-e   nama
               mother AGR-cook-APL-PASS meat
               'The meat has been cooked for my mother'

b. Nama e-pheh-ets-w-e   'me
meat   AGR-cook-APL-PASS mother
'The meat has been cooked for my mother'

That is, except for surface word order, Sesotho treats both objects of an transitive applicative as having full 'object' properties. Interestingly, other Bantu languages treat only the applicative object as a true object (Machobane 1989). Bresnan & Moshi (1989) refer to this difference in Bantu languages as one of parametric variation, with languages like Kinyarwanda and some dialects of Chichewa showing symmetric object properties, and languages like Kiswahili and other dialects of Chichewa showing asymmetric object properties. The chart below shows where various Bantu languages fall along this line, with Sesotho and Chishona showing 'mixed' properties.

(16) Symmetrical vs. Asymmetrical Object 'Parameter'

Symmetrical	*Asymmetrical*	*'Mixed'*
Kinyarwanda	Kiswahili	Sesotho
Kihaya	Chimwini	Chishona
Kimeru	Hibena	
Mashi	Chichewa-A	
Luya		
Chichewa-B		

Machobane (1989) proposes that these differences can be captured by appealing to thematic relations, where languages differ slightly in the relative ranking of Experiencer and Benefactive, and where languages like Sesotho distinguish animate from inanimate Goals.[4]

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[4] Crosslinguistic findings from the syntax of 'locative inversion constructions provides further support for the view that Bantu languages vary slightly in the

Thus, even if general properties of the Thematic Hierarchy are given as part of a general language capacity, language particular instantiations of the thematic hierarchy must be learned, and these have implications for the syntax as well as the semantics. Although the applicative can be used with most verb types, the arguments they introduce (Benefactive vs. Locative vs. Goal) differ with the class of verb. Furthermore the symmetric versus asymmetric properties of Bantu languages must be learned, and in the case of Sesotho this is particularly complex: Surface word order differs depending on the animacy of the object NPs - if both objects are animate, word order is flexible, either NP acceptable immediately adjacent to the verb. However, if both arguments are inanimate, or if only one is animate, the Benefactive argument must immediately follow the verb. In all other respects, however, Sesotho shows symmetric object relations: Regardless of animacy, either object can trigger object agreement and become the subject of a passive. Thus, learners of Sesotho cannot use only word order or control of object agreement as a diagnostic for determining the syntactic structure of Sesotho applicative constructions. Rather, children must also learn that animacy interacts with the syntax and semantics of these constructions.

Children learning Sesotho must therefore determine, at some point in the course of acquisition, if the language they are learning has symmetrical or asymmetrical object properties, and/or if they are learning a 'mixed' system like that of Sesotho. We might then predict that children learning Sesotho would make errors of commission when animacy is not equal, treating both NPs as fully fledged objects and ordering them freely after the verb. Alternatively, we might expect children to be conservative, only allowing the Benefactive argument to show full object properties, regardless of animacy conditions. Under such a scenario we might also expect children to begin making errors of commission later around the age of 4 and 5, as was found in the acquisition of English causatives (Bowerman 1974, 1982, 1990) and Sesotho passives (Demuth 1989, 1990a). What follows is therefore an exploratory study - the first of its kind to examine the acquisition of

relative ranking of thematic roles (cf. Bresnan & Kanerva 1989, Harford 1990, 1993, Demuth 1990b, Machobane 1995, and Demuth & Mmusi - in press).

applicative constructions in a Bantu language. We hope that it will address not only the specific issues regarding Bantu applicatives discussed above, but will also shed some light on children's more general acquisition strategies at the syntax/semantics interface.

3. The Acquisition of Sesotho Applicative Constructions

The data examined in this paper are drawn from the Sesotho Acquisition Corpus - a set of 98 hours of children's spontaneous speech productions during interactions with parents, siblings, and other family members in a rural village in Lesotho (Demuth 1984). Audio recordings were transcribed in broad phonemic transcription by the author in conjunction with the mother and/or grandmother of the child, and independently checked by a trained Sesotho speaker at the National University of Lesotho. The data examined here include three 3-4 hour speech samples from two children (H is a boy, L is a girl) at 2;1, 2;6, and 3/3;2 years.

  Applicatives in this study were identified by considering both morphophonological and discourse/pragmatic evidence. Applicative morphology may occasionally be missing or imperfectly realized when the pragmatic intent of the utterance clearly requires this form. These were counted as applicative constructions. In other cases either the Locative, the Theme, or occasionally the Benefactive argument of the morphologically inflected applicative verb is missing: These are also coded as applicative constructions. Any verbs which are questionable as to their applicative status have been omitted from the present analysis. Interestingly, the most frequently omitted argument is the 'unspecified object' Theme of transitive applicatives, a phenomenon found in adult speech as well.

  In the following sections we first examine the children's problems with the morphophonology of the applicative. We then investigate the syntax and semantics of the applicative constructions they use.

3.1. The Morphophonology of the Applicative

Although it might be thought that the applicative morpheme would be easy for a
child to recognize, and therefore easy to acquire and use, this may not be the case.
The basic form of the applicative is -el-, but it also surfaces with the
morphological variants -l-, and -ets- (e.g. pheha > phehela 'cook > cook for',
rwala > rwalla 'carry > carry for', rekisa > reketse 'sell > sell for'). Thus,
children must first learn to identify the morphophonological variants of the
applicative as encoding the same grammatical function, and then learn to produce
the appropriate morphophonological form with the appropriate verb stem. This
may be further complicated by the possibility of having two applicative
morphemes used with one verb. Consider the following examples from child L
(recorded on the same day), where she correctly makes a morphological
distinction between the two forms, though the first is missing the initial
applicative -l-.[5]

(17)   L 3 yrs.
        a.   ko-kwalela
                (ke-o-kwal-l-el-a)
                AGR-OBJ-close-APL-APL
                'I'm closing [it] up for you'

        b.   ke-ka-e-kwalla
                (n-ka-e-kwal-l-a)
                AGR-POT-OBJ-close-APL
                'I can close it up'

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[5]   The first line encodes the child's utterance, and the second line (in parentheses)
is the grammatical adult equivalent. The square brackets [] include material such
as unspecified objects which have been omitted from the child's utterance.

Here we see that L makes a both a semantic and a morphophonological distinction between these two utterances despite the fact that the morphological realization of the applicative in (17a) is imperfect. Note that this does not appear to be a problem with producing a long (syllabic) <u>ll</u> (she does so in (17b)), but rather a problem with figuring out the correct surface morphological form of the double applicative for the verb <u>kwala</u> 'close'.

   Learning the morphophonemics of the applicative is made even more challenging by the fact that most of the other grammatical function changing morphology (such as the passive, causative, reciprocal, reversive, stative) as well as -<u>il</u>- (the morpheme for perfect aspect) also occur infixed before the stem-final vowel of the verb. Previous findings indicate that Sesotho-speaking 2-year-olds occasionally omit an affix when two or more are required (Demuth 1984, 1990a). Nonetheless, the pragmatic intent of the utterance in most cases clearly involves the grammatical presence of both affixes. This is illustrated in the following example, where child H was eyeing the author's tape recorder, asking her who bought it for her. Note that the applicative is preserved, whereas the passive and perfect morphemes are missing, even though the word order indicates a passive construction, and the context implies a completed/past event. This is a frequently used construction in adult speech - one that children often hear. H has apparently deconstructed the verbal morphology into its component parts, producing only the applicative morpheme. That is, he seems to have carried out some morphological analysis, not producing the verb as an unanalyzed whole (cf. MacWhinney 1978).

(18)   H 2;4 yrs.

        a rekela e mang?

        (u-e-rek-ets-w-e   ke mang)

        AGR-OBJ-buy-APL-PASS-PERF by whom

        'You were bought it by who?'

   Another factor that may make learning the applicative morpheme and its grammatical function somewhat challenging is that many verbs in their base form look like surface applicatives, even though they have no applicative meaning or

concomitant argument structure. This includes common verbs such as lela/lla 'cry', tsela 'pour' and others. Thus, children learning Sesotho cannot simply rely on surface phonological similarity to learn about the syntactic and semantic function of the applicative: A deeper awareness of morphological alternations and how the applicative is variably encoded on the surface is necessary for the applicative to be fully acquired. We might therefore predict (along with Slobin 1985) that the semantic and syntactic nature of the applicative would be difficult to learn, its mastery being prolonged and subject to errors of both commission and omission. It is therefore interesting to find that the two children in this study seem to be using the applicative productively by 2;6 years, with few errors of either commission or omission. Table 1. shows the number (tokens) and percent of applicative verbs used out of the total number of verbs per session for each child. Note that the percentage of applicative verbs constitutes approximately 4-5% of the total number of verbs used by both children, and that this does not appear to increase significantly over time. Further study of both older children and adults will be needed to determine if this accords with percentages found in the input.

	H		L	
Age	APL/%	Total Verbs	APL/%	Total Verbs
2;1	9/4	243	14/4	389
2;6	24/5	496	34/8	504
3/3;2	21/4	582	21/4	550
Total	54/4	1321	69/5	1443

Table 1. Number/Percent of Applicatives vs. Total Number of Verbs

As seen by the total number of utterances containing a verb, child L appears more 'talkative' than H at age 2;1. L tends to repeat herself, thereby also repeating

verbs. This seems to have happened especially at 2;6 years, where the 34 instances of L's applicative tokens include only 14 different verb types. Consecutive repetitions of a given verb which are phonologically or syntactically identical are counted only once. Interestingly, however, many applicative verbs which occur in consecutive utterances often differed in form, with the unspecified object [Theme] being omitted initially, then being included in the following utterance (as shown in 19), or the Benefactive argument being a reflexive in one case and full postverbal NP in the next (20). That is, the children tended to recast their utterances rather than repeating exactly the same utterance twice.

(19)   H 2;1 yrs.

    a.   mmatele
        (n-ngwathel-l-e)
        OBJ-feed-APL
        'Feed me [something]'

    b.   mmatele ijo
        (n-ngwathel-l-e dijo)
        OBJ-feed-APL food
        'Feed me some food'

(20)   L 2;6 yrs.

    a.   e patel
        (ke-i-pat-el-a)
        AGR-RF-hide-APL
        'I'm hiding from myself'

    b.   a patela koko
        (o-pat-el-a   koko)
        AGR-hide-APL chicken
        'She's hiding from the chicken

Thus, from a young age these children seem to be aware of at least some of the thematic and syntactic properties of applicative constructions. We turn now to a closer examination of the semantic classes to which their applicative verbs belong, and the applicative arguments with which these occur.

3.2 The Semantics of Sesotho-Speaking Children's Applicative Constructions

As noted above, the applicative can be used with most semantic verb classes. Both of the children in this study exhibit the use of applicatives with intransitive verbs (both unaccusatives and unergatives) as well as transitives. Transitive applicatives made up approximately half of both children's applicative verbs, and this was constant across time. The remaining half are split approximately evenly between unaccusative and unergative verbs, and either transitive verbs which in the applicative are also only transitive (e.g. tsela 'pour, pour onto' > tsella 'pour in/for, pour earth onto'), or transitives that become ditransitive and then undergo passivization (e.g. phehelwa 'be cooked for'). We examine the children's use of the applicative with different verb classes below.

3.2.1. Unaccusatives. Recall that unaccusative applicatives add a Locative argument, or a Goal argument with mixed verbs like mathela 'run to/toward'. H tends to use a Locative NP or a Locative Adverb with his unaccusatives (21a), though in the following case of mathela H his use of the Locative adverb much like a Goal (21b).

(21)   H 3 yrs.
        a.   ha   ke-w-el-e   mona
              NEG AGR-fall-APL ADV
              'I'm not falling down here'

H 2;6 yrs.

b.   wena a mathela ma::::ne Chabadimachetse kwana

      (wena o-math-el-a   mane Chabadimaketse kwana)

      you   AGR-run-APL ADV Chabadimaketse ADV

      'You running over there to Chabidimaketse yonder'

In contrast, L tends to omit the Locative argument of unaccusatives altogether.

(22)   L 3 yrs.

      ya masenke ke aolelang

      (ya masenke ke e-w-el-ang)

      of tin roof   is REL/AGR-fall-APL-RL

      'The tin-roofed one is that which is falling down'

In all cases children seem to use the applicative morpheme when required for adding a Locative argument, even if L tended to omit the Locative itself. This implies that they understand that the applicative can have the function of adding a Locative/Goal argument, and that they have identified the class of verbs for which this is appropriate.

   Interestingly, all but one of L's unaccusative applicatives involve the verb <u>oela</u> 'fall down'. Previous studies have indicated that L is less grammatically advanced than H at the same age (e.g. Demuth 1989, 1990a, 1995). It is possible that this is also reflected in a more restricted verbal lexicon. Alternately, it is possible that L is a more conservative learner, using productive morphology on a finite set of verbs before she generalizes to a larger class. Further investigation of L's and H's total verb inventory will be needed to evaluate this possibility.

3.2.2. <u>Unergatives</u>. Unergative applicatives generally add a Benefactive argument. For both children, the large majority of Benefactive arguments used with both unergatives and transitive verbs are animate. Most of H's unergative Benefactives appear as pronominal objects. In contrast, many of L's tend to be

reflexives, giving a 'by myself' reading when the subject and Benefactive are animate, generally 1st person singular.

(23)   H 2;6 yrs.

a.   ntlele e thime

(n-tl-el-e   ke-jetem-e)

OBJ-leave-APL AGR-jump

'Leave me alone so I can jump'

b.   ntachele

(n-chak-el-e)

OBJ-visit-APL

'Pay me a visit'

(24)   L 2;6 yrs.

a.   kee thoballa

(ke-a-i-thobal-l-a)

AGR-PRES-RF-sleep-APL

'I'm going to sleep by myself'

b.   ke (i)tholel

(ke-a-i-thol-el-a)

AGR-PRES-RF-quiet-APL

'I'm keeping myself quiet'

Once again, both children seen to recognize that unergative applicatives require a Benefactive argument, and use one as required.

3.2.3. <u>Transitives</u>. Transitive verbs become ditransitive with the addition of an applicative argument, adding a Benefactive or Locative object to the Theme which is already present. As noted with unergatives, the Benefactive argument tends to be encoded as an object pronominal or reflexive, and this is especially

true for child L. In addition, the Theme is frequently dropped as part of the phenomena of 'unspecified object deletion'. Again, this is especially the case for L. This is shown in the following examples.

(25) L 2;6 yrs.
    a.   ke o kokel?
        (ke-o-qoq-el-e)
        AGR-OBJ-talk-APL
        'Shall I talk [about something] with you?'

    b.   nka engolla mo
        (n-ka-i-ngol-l-a   moo)
        AGR-POT-RF-write-APL ADV
        'I can write [something] by myself here'

L does seem to realize, however, that the applicative argument can be realized as a full NP, as shown in the consecutive utterances in (26).

(26) L 2;6 yrs.
    a.   amorekela
        (a-mo-rek-el-a)
        AGR-OBJ-buy-APL
        'She should buy [them] for him'

    b.   arekela namane
        (a-rek-el-e   Namane)
        AGR-buy-APL Namane
        'She should buy [them] for Namane'

It is occasionally the case that the Theme is present and the Benefactive missing. This is illustrate in (27), where there seem to be morphophonological problems as well.

(27)   L 2;6 yrs.

            a e tabolelele

            (ke-tla-e-tabol-el-a)

            AGR-FUT-OBJ-tear-APL

            'I'll tear it up [for him]'

H also shows one case of the Benefactive missing but the Theme being present along with applicative morphology (28a).

(28)   H 3 yrs.

            o ngolla lengol?

            (o-ngol-l-a   lengolo)

            AGR-write-APL letter

            'Are you writing a letter [for someone]?'

It is possible that the children meant to use the non-applicative verb forms tabola 'tear' and ngola 'write' in these examples, which would not require a Benefactive. However, the pragmatics of the discourse in both cases indicates that this is not the case. Furthermore, H goes on to use the same verb with a Locative argument, indicating that he knows it is an applicative (28b).

(28)   b.   Ntselleng ha re tlo ngolela ka mona:

                (Ntselleng ha-re-tlo-ngol-l-a ka mona)

                Ntselleng let-AGR-FUR-write-APL in here

                'Ntselleng, let's write [a letter] in here'

This would seem to indicate that H has quite a sophisticated repertoire of arguments which he can use with transitive applicatives.

   In addition to Benefactive and Locative arguments, the applicative can also add an oblique argument in the form of a wh-question. Both H (and occasionally L)

use the transitive applicative with WH-constructions, adding the argument 'why/because'.

(29)   H 3 yrs.

    otlisetsang pere mo?
    (o-tlis-ets-ang   pere mo)
    AGR-bring-APL-WH horse here
    'Why are you bring the horse here?'

   In sum, both children use transitive applicatives with a variety of arguments and a variety of verbs. The Benefactive (or Malefactive) is frequently encoded as an object pronominal or reflexive, and the Theme is frequently omitted when it is an unspecified object. The children's use of these constructions appears to be productive, with the same verb frequently being used in different grammatical constructions. Further evidence of 'productivity' comes from the fact that the children's morphophonological realization of the applicative is often somewhat ill-formed, indicating that these constructions are being produced on-line, and not accessed from the lexicon as an 'amalgam' or lexicalized whole. We turn now to a discussion of the syntax of these constructions.

3.3. Syntax

As discussed in section 2, the Benefactive NP of a transitive applicative in Sesotho must appear in the position immediately following the verb when both objects are inanimate or if only the Benefactive is animate. Only when both objects are <u>animate</u> can the order of the objects be reversed. Interestingly, however, even though the Benefactive functions as the 'primary' object with respect to word order, both the Benefactive and Theme show the same object properties with respect to triggering object agreement and becoming the subject of a passive. We examine children's use of each of these constructions below.

3.3.1. <u>Thematic Structure, Animacy, and Word Order</u>. As mentioned in section 3.2, both of the children in this study tend to drop unspecified objects from transitive applicatives. Furthermore, they both tend to encode the Benefactive argument as a pronominal (or reflexive) object. This means that the so-called 'double object' constructions that would provide evidence of children's knowledge of word-order restrictions simply do not exist. This was unexpected, but in retrospect may not be surprising: The data examined here are spontaneous speech productions where children's use of the applicative is highly affected by the discourse situations at hand. Under such situations unspecified object drop is likely to occur and does. It may be that the children are aware of the thematic and animacy restrictions on Sesotho word order but that the context for using both Benefactive and Theme as full NPs rarely occurs in every day speech. If these constructions are extremely rare, we might expect their acquisition to be difficult and subject to error.

   Recall, however, that post-verbal word order is not the only test for determining if the language being learned has symmetric or asymmetric object properties. Both pronominalization and passivization patterns in Sesotho indicate that it is basically a symmetrical language - that is, either object can passivize or become a pronominal object. We examine children's use of these constructions below.

3.3.2. <u>Pronominal Objects</u>. As noted above, the vast majority of children's Benefactive arguments are encoded as pronominal objects, and this is true with both intransitive and transitive applicatives. Almost all of these Benefactives are animate (often first person), though L has a few cases of non-animate Benefactives as pronominal objects.

(30)   L 2;6 yrs.

              a ye thibele?
              (o-le-thib-el-e)
              AGR-OBJ-prevent-APL
              'Might you stop it (from rolling)?'

Perhaps more importantly, both children have at least one case where the <u>Theme</u> of a transitive applicative is encoded as a pronominal object, indicating that it is not just Benefactives that can assume this syntactic position. (Note that in both (31) and (32) the Benefactive has been dropped, making these appear to be simple transitive verbs but for the applicative morphology and the pragmatics).

(31=27)L 2;6 yrs.

        a e tabolelele
        (ke-tla-e-tabol-el-a)
        AGR-FUT-OBJ-tear-APL
        'I'll tear it up [for him]'

(32)   H 3 yrs.

        a e patele Ntselleng?
        (o-e-pat-el-e   Ntselleng)
        AGR-OBJ-hide-APL Ntselleng
        'Are you hiding it [for someone], Ntselleng?'

Recall also (from section 2.1) that one of the distinctions between Locative and Goal arguments is that only the Locative can be be a true object. Although the children use few Goal objects, these tend to be encoded as NPs rather than triggering object agreement, as illustrated in (33=21a).

(33=21a) H 2;6 yrs.

        wena a mathela ma::::ne Chabadimachetse kwana
        (wena o-math-el-a   mane Chabadimaketse kwana)
        you   AGR-run-APL ADV Chabadimaketse ADV
        'You running over there to Chabidimaketse yonder'

   In sum, it would appear that these Sesotho-speaking children permit both Benefactive and Theme (but not Goal?) arguments to have object properties. They may therefore have determined that Sesotho is a symmetric language, where

both objects can control object properties. We might then predict that they would go through a stage where they would overgeneralize word order phenomena. We would also expect them to allow for both Benefactives and Themes to surface as the subject of a passive transitive applicative.

3.3.3. <u>Passive Subjects</u>. As it turns out, there are no clear cases of passivized transitive applicatives in the corpus examined here. One exists, but it is morphologically so impoverished that it is difficult to determine if this is what the child actually said, though the word order is clearly passive. Furthermore, it is an answer to a question a where the passive applicative has been modeled in the previous utterance, and therefore is likely not to be a productive construction at this early age.

(34)   L 2;1 yrs.

        e phe a mame
        (e-pheh-ets-w-e   ke Mami)
        AGR-cook-APL-PASS-PERF by Mami
        'It was cooked by Mami'

If this is a productive construction, then it is a case where the Theme has been promoted to subject and the applicative argument dropped. Note that the target verb in (34) includes not only the applicative and passive, but also perfect aspect, making it a morphologically complex construction to use at this young age. We have seen above, however, that H makes an attempt with a similar construction a few months later (35=18), where the Benefactive has been promoted to subject and the Theme is realized as a pronominal object (though again the child's morphology is underdetermined).

(35=18) H 2;4 yrs.

     a rekela e mang?

     (u-e-rek-ets-w-e   ke mang)

     AGR-OBJ-buy-APL-PASS-PERF by who

     'You were bought it by who?'

   The one other case of an applicative passive found in this corpus is with the following intransitive verb, where the Benefactive <u>koloi</u> 'car' has been promoted to subject position (where it undergoes null-subject drop), the non-passivized sentence reading something like 'petrol is finished on behalf of the car.'

(36)   H 3 yrs.

     e feletswe ke peterone

     (e-fel-ets-w-e   ke peterole)

     AGR-finish-APL-PASS-PERF by petrol

     'It (the car) is finished by peterol'

Future research will be needed to determine when Sesotho-speaking children learn that both Benefactive and Theme arguments of a transitive applicative verb can function as full-fledged objects, surfacing either as pronominal objects or subjects of a passive.

   In sum, the syntactic evidence indicates that children may be aware that Sesotho is basically a symmetrical language. There is no evidence, however, that they are aware of it's 'mixed' properties with respect to word order. Future research will be needed to determine if children are actively avoiding these constructions, or if they are rarely represented in daily discourse.

4. Discussion

This paper provides a preliminary examination of two 2-3-year-olds' spontaneous use of applicative constructions in the southern Bantu language Sesotho. The findings indicate that both children are using the applicative productively by the

age of 2;6. Evidence of productivity comes from the discourse appropriate use of the applicative morpheme with a wide range of unaccusative, unergative, and transitive verbs found in a variety of grammatical constructions, plus the frequent occurrence of morphophonological problems. Together these findings indicate that these children are using the applicative morpheme as a productive morphological element rather than as an unanalyzed, frozen form, and chose to do so in semantically appropriate discourse contexts.

The picture regarding children's knowledge of the syntactic restrictions of Sesotho applicatives, and specifically the language's 'mixed' properties with respect to animacy and word order, is far from clear. This is in part due to the fact that the Benefactive is generally encoded as a pronominal object, and the Theme frequently undergoes 'unspecified object drop'. That is, there are no examples in these corpora of two postverbal NPs. There is some evidence that children permit both Theme and Benefactive arguments to trigger object agreement and function as the subject of a passive, though the examples are few. Thus, it may be that Sesotho-speaking 3-year-olds treat Sesotho as a symmetrical language, where both objects of a transitive applicative have full object properties. Further research will be needed to determine when and how they learn about the mixed properties that control word order.

What are the implications of this study for issues of semantic vs. syntactic bootstrapping? This is difficult to know without an examination of the input. If the forms the children used in this study are a direct reflection of the patterns observed in the input, then the syntax would appear to be underdetermined. This raises the classic issue of the projection problem (Baker 1979) and the possibility that something along the lined of the subset principle must be the starting point for the conservative learner (e.g. Berwick & Weinberg). We might then expect children to await sufficient positive evidence before making assumptions about the symmetric/non-symmetric properties of the Sesotho applicatives. Alternatively, there might also be sufficient indirect negative evidence along the lines of that found in English dative shift constructions for Sesotho-speaking children to construct the appropriate grammar (cf. Mazurkewich & White 1984, Randall 1987). In such a scenario acquisition of the semantics of Sesotho

applicative constructions might proceed with minimal assistance from the syntax. That is, the double object 'frame' for determining the semantics of applicative verbs would be missing, and in many cases lead the learner to expect thematic argument structures of the form <u>Agent V Benefactive</u>, rather than <u>Agent V Benefactive Theme</u> for transitive applicatives, treating them as transitive rather than ditransitive verbs. Again, further research concerning the nature of unspecified object deletion, and the discourse contexts under which it is 'grammatical', will be needed to shed further light on these issues.

   In conclusion, it appears that Sesotho-speaking 2-3-year-olds are using the applicative in appropriate, if not exhaustive, syntactic and semantic contexts. Further study will be needed to determine the full extent of their knowledge of these constructions. We predict that these younger children may actually be conservative in their use of the applicative, and that older children may exhibit both syntactic and semantic errors such as those found with English-speaking 4-5-year-olds with the causative (Bowerman 1990). Future study will therefore need to focus on older children as well.

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