Investigation of Language Impairment in Zulu

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ABSTRACT

Research into the nature of language impairment in African languages is just beginning (Demuth and Suzman, 1997). This paper presents findings from two case studies of Zulu children diagnosed as language-impaired. Speech samples from Sipho, 2;7 and 3;7 and Nompumelelo 5;6 were analysed for phonology, morphology, syntax and pragmatics. From these case studies, a profile of language impairment begins to emerge for Zulu. It is characterized by use of simple sentences and nonstandard verbal complexes. It reflects differential access to morphology. Children use NC and agreement morphology productively but they do not have access of subtle syntactic markers encoding semantic complexity. Infrequent use of verb extensions, participials, subjunctives and relative clause markers in Zulu contributes to reliance on simple sentences and stereotyped connectives.

KEY WORDS: Specific Language Impairment (SLI), noun class (NC), concordial agreement, verbal complex.

INTRODUCTION

There is presently little systematic language therapy available in the African (Bantu) languages of South Africa, although the majority of them are official languages spoken by the majority of the population. This means that speakers of Northern and Southern Sesotho, Tswana, Zulu, Xhosa, Ndebele, Swati, Venda and Tsonga get informal therapy in their home language or receive therapy in a second language like English and Afrikaans. The present situation can be summarized as:

- No developmental norms (Suzman, 2000);
- Few assessment materials (Bortz, 1995; Holm, 1992; Leggo, 1992; Schweizer, 1993);
- Few native-speaker speech pathologists;
- Variable health records for children;
- Little sociolinguistic research concerning language input at home;
- Increasingly multilingual populations;
- Growing access to pre-school education and
- Hegemonic relation of English to African languages - bilingualism issues.

The various social factors involved in language acquisition in South Africa make identification and explanation of language impairment a complex task. However, it is a matter of national priority that we provide adequate primary health care services to the estimated 7% of children between two and six years of age who are afflicted by childhood language disorders.

The aim of this paper is to begin to identify characteristics of Specific Language Impairment (SLI) in Zulu, a representative Bantu language spoken in South Africa. SLI is a well-known and poorly understood syndrome of primarily language impairment. It has been investigated extensively in English and there is also a growing literature of crosslinguistic studies of SLI in other languages (Leonard, 1998). In this paper, we discuss two case studies of language impairment in Zulu whose similarities and differences make a contribution towards defining SLI in Bantu languages. The paper has the following structure;

- A brief sketch of Zulu structure relevant to this study
- An overview of normal acquisition
- Method
- Presentation of case studies
- Results
- Discussion of research findings

ASPECTS OF ZULU GRAMMAR

This paper is primarily concerned with the morphology and syntax of young children's speech. These aspects are the focus of the following presentation. Zulu is a SVO language with head-initial phrase structure[1]. Like Italian, it is a null-subject language and tolerates subjectless sentences. Overt subjects can be omitted and subject markers (SMs) function as pronominal subjects on the verb (hereafter, the inflected verb is referred to as the verbal complex). Passive sentences are frequent in Zulu and formed by object fronting (like English) with the addition of the passive (PASS) verb extension on the verb, e.g. *u-bon-w-e ng-u-bani* SM1-see-PASS-PAST COP-NC1-who 'She was seen by whom?'. Compound sentences are formed by linking two sentences with co-ordinate conjunctions like *futhi* 'and also' and *kodwa* 'but'. A frequent compound in one child's speech was several sentences linked with the

[1] Zulu has considerable word order flexibility due to agreement and noun fronting for topicalization.

inflected conjunction *aqeda lapho* 'and then'. Complex sentences are formed with a variety of subordinators as well as serial constructions. Infinitives are formed by a main verb followed by the infinitive prefix *uku-* and the verb, e.g. *ba-funa uku-hamba* 'SM2-want INF-go 'they want to go'. That-clauses are formed with complementisers like *ukuthi* 'that'. Complex sentences expressing consecutive actions employ the subjunctive suffix *-e,* as in *ba-fika ba-dl-e* SM2-arrive SM2-eat-SUBJ 'they arrive and eat'. Concurrent actions are expressed by the participial mood markers, e.g. *Wa-fika e-khala* REM1-arrive PART-cry 'she arrived crying'. Relative markers (REL) embed relative stems and verbs, as shown in *in-gane e-khal-ayo* NC9-child REL-cry-RELSUF 'the child who is crying'.

Zulu is a heavily morphological language. It is partly agglutinative with rich derivational morphology, verb extensions (benefactive (BENE), passive (PASS), causative (CAUS), etc.) and many tense aspect markers (TAM). It also has an extensive noun class and agreement system. Every noun in Zulu belongs to a noun class (NC) that indicates noun class membership and generally number. The majority of the 13 noun class prefixes occur in singular-plural pairs, as indicated in the representative examples in Table 1 below, e.g. *um-ngane* NC1-*ngane* 'friend'; *aba-ngane* NC2-*ngane* 'friends'. The NC system determines regular, extensive concord (agreement) on other sentence constituents. See Appendix A for a full list of abbreviations used in this paper.

Basic syntax and the noun class and agreement system is illustrated in the examples in (1) below.

(1) a.
Aba- ngane ba- khe aba- de ba-
NC2- friend POSS2-3PS ADJ- tall SM2-
phuz -a u-tshwala
drink -FV NC11-beer
'His tall friends drink beer.'

b.
Um- ngane u- thel- -el -a u-
NC1- boy SM1- pour -BENE -FV NC1-
mama i- thiye
mother NC5- tea
'The friend pours tea for Mother.'

c.
U- thel- -el -a u- mama i- thiye
SM1- pour -BENE -FV NC1a- mother NC5- tea
'S/he pours tea for Mother.'

d.
A- ba- m- bhal -is -i
NEG- SM2- OM1- write -CAUS-NEG
'They do not make me write'

Structure of the verbal complex:
(NEG)-SM-(Tense)-(OM)-Verb-(Verb extension)-FV(Neg)

Examples (1a) and (1b) illustrate the basic SVO word order, head-initial phrase structure and pervasive agreement. As noted above, Zulu is a null subject language and tolerates empty subject nouns. In the absence of the overt subject seen in (1b), the SM in (1c) functions like the personal subject pronoun in English. Example (1d) is a verbal complex (equivalent to a full sentence in English) inflected with agglutinative affixes; their fixed order in the verbal complex is given beneath the example.

RESEARCH BACKGROUND

Although research into language disorders in Zulu and related languages is just beginning (Demuth and Suzman, 1997; Suzman, 2000), there are several normal language acquisition studies of Southern African languages: Swazi (Kunene, 1979); Sesotho (Connelly, 1984; Demuth, 1984); Setswana (Tsonope, 1987) and Zulu (Suzman, 1991). These studies have all considered, in varying degrees, the acquisition of the noun class and agreement system. They concur in finding early, effortless acquisition of the rich nominal and verbal morphology in these languages. Syntactically, Demuth (1984) and Suzman (1991) found precocious acquisition of the passive and relative in Sotho and Zulu, a finding that counters later acquisition of these structures in languages like English. Profiles of normal acquisition of morphology and syntax for Zulu and for Sesotho (where indicated) are given below.

NORMAL LANGUAGE DEVELOPMENT

2 years

Like children generally, two-year old Zulu children can carry on conversations, taking turns, asking questions and making simple statements. In conversational interaction, single nouns, pronouns, verbs and simple sentences (SVO and VS) predominate. Children also use a few question types (what, where and whose) and a few learned negatives, *a-ng-waz-i* NEG-1SG-know-NEG 'I don't know' and *a-ngi-fun-i* NEG-2SG-want-NEG 'I don't want to'. The first complex sentences occur in the form of infinitives expressing personal needs, e.g. *fun'hamb-a* want go-FV (*ngi-fun'uku-hamb-a* 1SG-want'INF-go-FV 'I want to go). As this example shows, these early complex sentences are often reduced compared to adult forms.

By two years, Zulu children use selected NC morphology. This morphology emerges as a consequence of what they talk about. They learn a few singular NC prefixes and

TABLE 1. Representative noun classes and agreement in Zulu

Class	NC	POSS	ADJ	REL	SM	OM	DP	Example	Gloss
1	umu-	wa-	o-	o-	u-	m-	lo	*um-ngane*	'friend'
2	aba-	ba-	aba-	aba-	ba-	ba-	laba	*aba-ngane*	'friends'
9	iN-	ya-	e-	e-	i-	yi-	le	*in-kukhu*	'chicken'
10	iziN-	za-	ezi-	ezi-	zi-	zi-	lezi	*izin-khuku*	'chickens'

demonstrative pronouns (DPs) as part of naming objects and associated SMs and POSS markers in talking about actions and in describing nouns. These NC and agreement markers are the basis of the productive morphological system shown in Table 2. Other classes including plurals are infrequent or represented by a few learned forms like *amanzi* 'water'.

Evidence of precocious use of an integrated NC and agreement system is seen in examples where children use erroneous, but integrated morphological markers associated with a single class. Example (2) from the speech of a child of 1;10 years illustrates.

(2) Child utterance

I-	*phi*	*i-*	*nana*	*ya-*	*mi*
SM9-	where	NC9-	baby	POSS9-	1PS
Target					
U-	*phi*	*u-*	*nana*	*wa-*	*mi*
SM1-	where	NC1a-	baby	POSS1-	1PS

'Where is my baby?'

The child chooses SM9 instead of SM1 that is right for *unana* and does agreement on SM9, not SM1 or NC1. Elsewhere, the child's speech provides strong evidence of her learning this noun as a NC1(a) noun. Such examples show that agreement is well in place, although it is not the same as adult agreement.

Although children have a productive system, they omit and overgeneralise forms. Table 2 above shows that the default NC9 concords overgeneralize to NC5. Prefixes are optionally used, depending on distribution. Pre-verbally and in citation form, they tend to be omitted *Mama.* They are generally used post-verbally, as in *bhek'u-Mama* look at'NC1a-Mother 'look at Mother'. Children's prefixes also take time to stabilize. Numerically, they use the appropriate prefix but make mistakes, as seen in Example (2). Children also reduce NC and agreement prefixes and use a 'shadow' vowel (often *a*) in the early stages. In summary, they use prefixes before they use appropriate prefixes and there is no period of uninflected noun and verb stems as reported for children learning English at the same developmental stage.

At age two, children mainly talk about immediate events and use a majority of present tenses. The present tense *ya-* is used in verbs like *ya-hamba* 'goes'(adult form, *u-ya-hamb-a* SM1-PRES-V-FV). Less frequently, past tense forms like *hamb-ile* 'went' (adult form, *u-hamb-ile* SM1-V-PAST) occur.

2;6 years

Children's syntax and morphology gradually becomes more complex. In addition to infinitives, children begin to use passive and relative sentences. Participials and subjunctives occur in complex sentences that indicate ongoing and subsequent actions. Infinitives increase in frequency.

Table 2. Early NC and agreement system

Class	NC	POSS	SM	DP	Example	Gloss
1(a)	u-	wa-	u-	lo	*um-ntwana*	'child'
5	i-	la-	i-	le	*i-kati*	'cat'
9	iN-	ya-	i-	le	*in-kukhu*	'chicken'

Growing syntactic complexity and increased number of conversational topics for children bring in new morphology. With increasing vocabulary, they acquire new NCs, including plurals. They also acquire REL and ADJ markers in expanded NPs and pronominal expressions, like *o-bhem-ayo* REL1-smoke-RELSUF 'the one who is smoking'. In casual conversation, the verbal complex is frequently used and increases in complexity. Children use negatives, verb extensions BENE and CAUS, TAM markers *sa* 'ongoing action' and *se* 'completed action', and present and past tenses productively.

3 years

By age three, children have achieved basic competence in Zulu. They use nominal modifiers, questions of all types - subject, object, oblique, passives, relative clauses and cleft constructions. Complex sentences marked by participials, subjunctive mood and subordinators *ukuthi* 'that' and *bese* 'then' are productive. Verbal complexes with a range of tenses, verb extensions and inflections continue to characterise utterances in ordinary conversation.

The NC system has been mastered, although productive use of a large range of NCs continues to develop. Although children's speech reflects knowledge of a number of classes, early-learned classes 1, 1a, 5 and 9, continue to dominate due to their being the most productive classes in adult Zulu (Griesel, 1981).

METHOD

This study is based on naturalistic speech samples of two language-delayed children, Sipho, a little boy of 2;7 and 3;7 at time of recording and Nompumelelo, a girl of 5;6 years. Speech samples were elicited during informal taping sessions. In Sipho's case, he interacted with his grandmother, an eleven-year-old child (Rose) and the first author in several recording sessions that were approximately one year apart. Nompumelelo's speech was recorded as she informally interacted with the speech therapist who is the second author in the study. In addition, the speech therapist told Nompumelelo a story that she retold at a subsequent recording session. Her speech was further probed with picture recognition tasks that assessed her ability to comprehend relative clauses. Speech samples were compared to those of a normal child (Nqoba) of 3;5 years. In all cases, the taped speech samples were transcribed into Zulu by a first language speaker of Zulu and analysed.

CASE STUDIES

The two children investigated in this study were identified by their families as language delayed; they were brought to the Department of Speech Pathology and Audiology at the University of the Witwatersrand for assessement. Speech therapists who were first language speakers of related Bantu languages identified these children as language delayed after an informal conversational interview with them. Medical histories were taken for the children.

Sipho

Sipho was interviewed at ages 2;7 years and 3;7 years at home, his grandmother's lodging at the townhouse where her employers lived. As stated above, he had been profes-

sionally diagnosed as language impaired with no attendant hearing or medical problems. However, he did not receive therapy because of the distance from his home to the university.

Sipho was a gentle, shy, wellbehaved child who led a rather isolated life with his grandmother who lived at her employers. He saw his mother and other adult visitors on the weekend. With his family, he occasionally visited the maternal family in Natal. Following these visits, his grandmother's employer said that he appeared to be more confident and talkative. When he was three years old, he attended a multicultural pre-school. At the school, teachers spoke English and assistants spoke Zulu and Sesotho to the African language speakers. The second speech sample was taken seven months after he started school.

Nompumelelo

The second child was a 5;6 year old girl who was part of a family of older brothers and mother and father. She was a lively, interactive, outgoing child who enthusiastically entered into all activities. She had been an abandoned child who was adopted at eight months. She had had a history of minor medical problems, drooling, ear infection and delayed perceptual and motor development. She was brought to the Department of Speech Pathology because of her parents' concern about her language development and school attendance at six years. She was diagnosed as having immature speech with phonological errors, some morphological errors, word-finding difficulties and poor topic maintenance. No neurologically-triggered language problems were found and her hearing was normal when tested.

Representative samples of each child's speech are given below.

(3) Speech samples

a. Sipho, 2;7 years
(S = Sipho and R = Rose, 11 years)
Sipho picks up a small broom and sweeps the floor.
Target forms are given in parenthesis.

S. *I-* *ya-* *m-* *sul* *-a*
SM1SG- PRES- OM1- wipe -FV
(ngi *ya* *yi* *sul* *-a)*
SM1SG- PRES- OM9- wipe -FV
'I am wiping it (floor).'

I- *fun'* *amanzi*
(ngi *fun'* *amanzi)*
SM1SG want NC6water
'I want water.'

R. *Faka* *phakathi*
put inside
'Put (water) inside'

S. *Fak'* *phathi*
(faka *phakathi)*
put inside
'Put (it) inside'

R. *W* *enz* *-a* *n'* *u* *gogo?*
SM2SG do -FV what' NC1a grandmother
'What is Granny doing?'

S. *Na* *yi*
here SM9
'Here it is (cow)'

At 2;7 years, Sipho's spontaneous speech was limited compared to that of a chronologically-matched child (Demuth and Suzman, 1997). His discourse strategy was to repeat what he had just heard. He did not initiate conversation, answer questions or maintain conversational topic. His words are oddly truncated, e.g. CVCV > CVC, CV. Information about his language competence was sparse due to the paucity of speech. However, he used restricted NC morphology productively, notably classes 1a and 9 NCs and SMs. He may have had more knowledge of the system than his speech revealed.

b. Sipho, 3;7 years and the first author, here abbreviated as A.

A. *Yi-* *ni* *le?* *Bheka lapha.*
Cop- what DP9? Look here.
'What is this? Look here.'

S. *I-* *mali*
NC9- money
'Money'

A. *U-* *zo-* *theng* *-a* *-ni* *nge-* *mali?*
SM2SG- FUT- buy -FV -what INSTR- money
'What will you buy with money?'

S. *Ba-* *thath* *-e* *i-* *mali* *le*
SM2- take -PAST NC9- money DP9
'They took this money, this one.'

S. *Wa-* *shis'* *i-* *mali* *le*
REM1-burn' NC9- money DP9
'He burned the money, this one.'

S. *Wa-* *yi-* *shis* *-a*
REM1- OM9- burn -FV
'He burned it.'

S. *U-* *shis* *-il'* *in-* *gubo*
SM1- burn -PAST NC9- blanket
'He burned the blanket'

Sipho's speech one year later showed considerable development. He initiated some conversation and talked well on his own, although he did not always maintain topic but tended to go off on his own tangent. He used several TAMs, alternated OMS with full objects and used simple sentences occasionally with more complex semantic intention. His speech showed a number of non-standard sentence constructions in the verbal complex.

Summarizing his two speech samples, there was development towards more normal social interaction and conversational interaction. The child no longer relied on repetition as discourse strategy. Repetition is often associated with receptive disorders and the absence of repetition in the later speech sample suggests that he had overcome them. His later speech showed evidence of reliance on earlier, learned forms in expressing new sentence types, including passives. Production problems were found in some word finding difficulties and use of stereotyped speech.

Social factors complicated the interpretation of his speech. Relative improvement in a year suggested that social isolation may have played a role in his speech production and that he might have been at the low end of normal. Leonard (1998) notes that SLI is not a syndrome that shows rapid improvement. However, as will be shown, his speech at 3;7 still consisted of short, simple sentences and contained non-standard verbal complexes and passives.

c. Nompumelelo, 5;6 years. Excerpt from telling the Vava story.
(Glosses: Pres = present tense, Prep = preposition, REM = Remote past tense)

Ba-	*ya-*	*hamb*	*-a*	*n-*	*aba-*	*ntana:*	*ba*	
SM2-								
(U-	*ya-*	*hamb*	*-a*	*n-*	*aba-*	*ntwana*	*ba:-*	
SM1-	PRES-	go	-FV	PREP-	NC2-	child	POSS2:-	
khe)								
3PS								

'They go with their children.'

Lo?		*Vava*	*lo.*
(Lo?	*u-*	*Vava*	*lo).*
DP1?	NC1-	Vava	DP1

'This one? Vava this one.'

I-	*ya-*	*phum...*	*I-*	*ya-*	*phum*	*-a*	
(I-	*ya-*	*phum*	*-a*	*I-*	*ya-*	*phum*	*-a*
SM9-	PRES-	go out	-FV	SM9-	PRES-	go out	-FV
la	*i-*	*fasitelo*					
la	*i-*	*fasitelo)*					
there	NC5-	window					

'She goes out ... she goes out there, the window.'

Za-	*fik*	*-a*	*la*	*izi-...*	*i:-*	*gundane*
REM10-	arrive	-FV	there	NC10..	NC10 -	mouse
(A-	*fik*	*-a*	*la*	*ama-*		*gundwane)*

'They arrived there, the mice did'

I-	*hlak'*			*aba-*	*ntana*	*ba:-*
SM9-	laugh'			NC2-	child	POSS2:
(I-	*hlek-*	*-el*	*-a*	*aba-*	*ntwana*	*ba-* *khe)*
SM9-	laugh	-BENE	-FV	NC2-	child	POSS 3PS

'She laughs with her children.'

Nompumelelo's speech was voluble, at times incoherent. In her enthusiastic responses, she got quite excited and talked very fast, sometimes stuttering and repeating partial utterances. This was most noticeable in storytelling; her speech was most controlled in conversational interaction. In her narrative, she related a structured story but followed the story line less than normal children did. She used a range of tenses but frequently alternated between present and past tenses in telling the story. She had some phonological simplifications, but productive NC morphology with the occasional error in agreement. Simple sentences predominated. Her complex sentences were formed by serial constructions or use of 'and then' conjunctions.

Comparison between the two children is partial, given personality and age differences. Nompumelelo was older and had greater language competence than Sipho. Nompumelelo was sociable and interactive whereas Sipho was shy and reserved. We could ask Nompumelelo questions to probe her language knowledge; Sipho was unwilling or unable to participate in this way. Impressionistically, his speech was restricted whereas Nompumelelo's was dysfluent.

RESULTS

Speech samples were analysed for phonology, morphology, syntax and pragmatics. Despite differences above, children shared certain language features:

PHONOLOGY

Both children provided evidence of consonant cluster simplification and substitutions. Sipho's speech was restricted compared to Nompumelelo's and hence only her speech provided evidence of systematic simplifications. This type of error is also found in younger normal children.

(4) Phonological substitutions

a. Sipho

	Child	Target	
hl > t	*itata* (repeat)	*isihlahla*	'bush'
tsh> sh	*ishani* (repeat)	*utshani*	'grass'
dl > s	*uyasaya*	*uyadladla*	'he plays'
v > g	*uyagula*	*iyavula*	'he opens'

b. Nompumelelo

	Child	Target	Gloss
tw > t	*abantana*	*abantwana*	'children'
dw > d	*igundane*	*igundwane*	'mouse'
q > c	*aceda lapho*	*aqeda lapho*	'and then'
Occasional			
j > z	*inza*	*inja*	'dog'
z > s	*phus*	*phuza*	'drink (tea)
	but later *phuz'itiye*		

MORPHOLOGY

The children varied considerably in the amount of morphology used, as might be expected due to age and personality differences. Sipho's spontaneous speech revealed a restricted but productive NC and agreement system, NC markers 1 and 9 and their respective SMs at 2;7, and evidence of development at 3;7. He overgeneralised rather than omitted morphological markers, a finding consistent with younger normal Zulu children (Suzman, 1991). Table 3 summarizes the use of noun class and agreement in the two language-delayed children compared to a normal child Nqoba of 3;5 years.

TABLE 3. Grammatical morphology - Noun class and agreement systems

Marker	Nompumelelo 5;6	Sipho, 3;7	Nqoba, 3;5
Totals	144	75	150
NCPrefix	38% (54)	33% (25)	37% (56)
Poss	6% (9)	.04% (3)	5% (8)
Adj	2% (3)	-	3% (4)
Rel	- (1)	-	3% (4)
SM	38% (54)	57% (43)	39% (26)
OM	2% (3)	- (1)	14% (21)
DP	14% (20)	.04% (3)	13% (19)

Profiles of the older language-delayed child and the younger normal child, Nqoba, were similar, with the exception of the use of OMs and Rels. Neither language-delayed child used either of these markers with any frequency, but otherwise provided evidence of productive NC and agreement morphology. Their speech showed that language impairment did not affect access to the noun class and agreement system.

The profiles of tenses and optional agglutinative morphology are quite different. All three children used a range of tenses and rather fewer agglutinative morphemes, as would be expected. Although numbers are low, the normal child produced several verb extensions while the language-delayed children did not. (A larger speech sample confirmed her ability to inflect verbs with verb extensions).

SYNTAX

Sipho

With two exceptions (infinitives), Sipho's utterances at 3;7 were simple sentences. The majority were VS sentences like *li-ya-hamb-a i-hhashi* SM5-PRES-go-FV NC5-horse 'it goes, the horse does' and SVO sentences, e.g. *u-theng'i-moto* SM1-buy'NC9-car 'he buys a car'.

A qualitative analysis of verbs showed that Sipho formed new sentence types, building upon early-learned forms (Demuth and Suzman, 1997). Sipho at 2;7 years frequently used *iya-* and a verb or predicate. *I-ya-* SM9-PRES was first used as an unanalysed form *iya-* and was associated with a range of sentences, as shown in Example (5).

(5) Child form Adult target

a. *iya* *phuza* *ngi* *ya* *phuz* *-a*
??? drink SM1SG PRES drink -FV
'I drink'

b. *iyamsula* *ngi* *ya* *yi* *sul* *-a*
???OM1wipe SM1SG- PRES- OM9- wipe -FV
'I wipe it (floor)'.

Table 4. Frequency counts of verbal morphology

Tenses	*Nompumelelo*	*Sipho*	*Nqoba*
PRES	12	11	11
PAST	1	24	6
FUT	-	1	6
REM	23	5	11
CONTREM	13	1	-
Agglutinative			
TAM *Se-*	1	-	1
Verb extensions			
CAUS	-	1	2
BENE	-	1	2
PASS	-	-	2
Agglutinative type subtotals	1	2	7

c. *iyaphansi* *ngi* *phansi*
???-down SM1SG- down
'I am down (sitting down)'

d. *iya* *baba* *ngu* *baba*
???- father COP- father
'It is Father'

Iya- persists in part in the sentence types taken from his transcript one year later.

(6) Nonstandard verb forms in the 3;7 sample.

a. *A-* *yi-* *ya-* *hamb* *-a*
Neg- SM9- PRES- go -FV
(A- *yi-* *hamb* *-i)*
NEG- SM9- go -NEG
'He doesn't go'

b. *U-* *ya-* *fun'* *u-* *ngen* *-a*
SM1- PRES- want INF- enter -FV
(U- *fun'* *uku-* *ngen* *-a)*
SM1- want' INF- enter -FV
'She wants to enter.'

c. *I-* *ya-* *phuz'* *amanzi*
SM9- PRES- drink' water
(I- *phuz'* *amanzi)*
SM9- drink' water
'It drinks water.'

d. *I-* *ya-* *dl* *-e*
SM9- Pres eat -PAST
(I- *dl* *-ile)*
SM9- eat -PAST
'She ate.'

These non-standard verbs have in common the elements SM-ya-V. Sipho retained the present tense *ya-* in the negative (6a), the infinitive (6b), transitive (6c) and the past (6d). None of these sentences have the present tense marker.

Further support for old forms in new functions comes from his passive sentences. As stated earlier, normal Zulu- and Sotho-speaking children produce passives as early as 2;6 years (Suzman, 1991). However, the passive is rarely used by the two children in this study. The following example shows that Sipho has the concept, word order differences but lacked the passive verb extension.

(7) Sipho talks about someone being bitten by animals

Child
a. *U-* *lum* *-ile* *i-* *hhashi*
SM1- bite -PAST NC5- horse
'He bit. The horse.'

(U- *luny* *-w* *-e* *y-i-hhashi)*
SM1- bite -PASS -PAST COP-NC5-horse
'He was bitten by the horse'

b. *I-* *ya-* *hamb* *-a* *i-* *hhashi*
SM9- PRES- go -FV NC5- horse
'He goes, the horse does'.

In (7a), Sipho does not use the passive verb extension *-w*. However, the nonlinguistic context and the morphological contrast between (7a) and (7b) show that these sentences

are passive for him. When he is talking about the person being bitten by the horse, he uses the appropriate SM1 for the object of sentence (person). This contrasts with (7b) where he talks about 'the horse going' where the SM agrees with the agent noun *ihhashi* 'horse'.

Nompumelelo

Nompumelelo also used primarily simple sentences but there were many instances of complex sentences in a larger data sample. The most frequent of these were compound sentences linked by one inflected conjunction *aqeda lapho* 'and then' ,(8a) as well as serial constructions (8b). Like Sipho, she relied on a few learned forms, producing not so much deviant forms but simple SVO sentences strung together with or without a single 'and then' conjunction.

(8) Nompumelelo's complex sentences

Serial constructions

a. *Abantwana baye bahamba noMama*
'The children went walking with Mother'

Compound sentences conjoined with *aqeda lapho* 'and then'

b. *Aceda lapho wayopheka waceda lapho wayofun'khaya*
'And then she went to cook and then she was looking for a home'

Elsewhere, she tends to omit or reduce subtle syntactic cues marking embedding sentences. She also uses the following complex sentences rather rarely.

Infinitives

c. *Wa-ceda lapho aceda wayofun' la* *u-casha*
(wa-qeda lapho aqeda wayofun' la) uku-casha
REM1-and then and then REM1-FUT-want INF-hide there
'And then, and then, she was looking to hide there'

Consecutive actions marked by present subjunctive suffix *-e*

d. *Ba-m-shay-a a-* *ba-m-dubul-e khal -e*
SM2-OM1-hit-FV SM2-OM1-shoot-SUBJ SUBJ-cry-SUBJ
'They hit her and they shot her and she cried.'

Concurrent actions marked by participial prefix (irregular) on NC1a, 2, and 6.

e. *Ba- buy -e be- khala*
SM2- return -past PART2-cry
'They returned crying'

Relative clause

f. *Lo-mama wa- shay-a lo o-gqcok' im-pahla za- khe*
DP1-mother REM1-hit-FV DP1 REL1-dress' NC10-clothes POSS10-3PS
'This mother hit this one who dressed in her clothes'

The absence of the relative marker in Nompumelelo's speech was further probed in two structured tasks. The first was a picture recognition task that the child spontaneously paraphrased as she pointed to the appropriate picture. The task and her paraphrases are illustrated in Example (9).

(9) Picture recognition of relativized complex sentences

Instruction:

Ngi- bon- is- e in- tombazane e-khomb-a phezulu
OM1SG- see- CAUS-SUBJ NC9- girl REL9-point-FV above
'Show me the girl who points upwards'.

Paraphrase:

Na- yi. Um- ntwana lo u- khomb-a eceleni.
Here- SM9. NC1- child DP1 SM1- point-FV on the side.
'Here she is. This child points on the side.'

The child rephrased the relative clause as a simple sentence, suggesting either that comprehension exceeded production or that she simply did not recognize the grammatical role played by the relative marker *o-* in the input. Table 5. shows that while the child did use the relative marker, the majority of the paraphrases are simply a sequence of two sentences.

The weakness in relativizing was supported by a repetition task where the child demonstrated less ability in repeating this type of sentence compared to other types.

On two tasks then, Nompumelelo did not use relative clause markers in the majority of cases. Her performance indicated that she might not have recognized the role that they played in subordinating the clause. She had no difficulty with Adj and Rel stems that have similar or identical form. It seemed that difficulty occurred at the interface of morphology and semantic complexity.

Table 5. Paraphrases of relative clauses

Total input sentences	*Responses*	*Responses*
	2 simple sentences	Relative clauses
25	16 (64%)	8 (36%)

Table 6. Performance on repetition task

Utterance type	*Accurate*	*Errors*	*Total*
Verbal complexes	13 (100%)	0	13
Relatived S	3 (43%)	4 SS (57%)	7
V + CAUS/BENE	5 (100%)	0	5
N + Adjective	5 (100%)	0	5

Table 7 integrates morphosyntactic and NC morphology and reflects differential use of morphology by language-impaired children compared to the norm.

Table 7 shows that tenses and NC morphology are used by language delayed children. Less robust morphology includes OMs, verb extensions and complex sentence markers (relatives, participials and subjunctives). With the exception of the OM whose absence may be explained by its optionality and lack of surface phonological salience (SM-ya-OM-V), the missing morphemes are associated with the expression of more complex propositions, being either verb extensions that add arguments or morphemes that embed a subordinate sentence within a complex sentence.

PRAGMATICS

Processing constraints were seen in both children's data. Sipho repeated input as a conversational strategy and reduced repeated words, producing the truncated forms of Example (10).

(10) Sipho's reduced sentence at 2;7 years

Child			Target	
U-	*fu-*	*pu- nama*	*U-funa*	*uku-phuz' ama-nzi*
SM1-want-drink-water NC6-water			She-want'	to-drink'

'She wants to drink water'

In his later speech sample, he was more communicative. Although he often did not answer questions addressed to him, he usually gave a response.

Nompumelelo's frequent repetitions also suggested processing difficulties. Her interactive conversation was more fluent than her narratives that tended to deteriorate as she related them. Typical examples of frequent false starts, recasts and disfluencies, particularly in utterance-initial position, are illustrated below.

(11) Nompumelelo

	Child		Target
a.	*U-Va...*	*u-Vava*	*u-Vava*
	NC1a-Va	NC1a-Vava	NC1a-Vava
	'Vava'		
b.	*izi... i:gundane*		*ama-gundwane*
	NC10...NC10-mouse		NC6-mouse
	'mice'		
c.	*ama-gu..gu..gwane*		(phonological perseveration)
	NC6-gu.. gu..gwane		*ama-gundwane*
	'mice'		

Table 7. Normal and language impaired morphology

Grammatical Morphology	Zulu	
	Normal	*Impaired*
NCs	X	X
SMs	X	X
ADJ	X	X
Tense	X	X
Oms	X	Rare
Verb extensions	X	Rare
RELs	X	Rare
Complex Sentence morphology	X	Rare

Many of these disfluencies were syntactically-triggered, as the self-corrections in Examples (11d) and (11e) show. In these examples, the child makes a false start, realizes that it is inappropriate and reformulates her sentence.

d. Search for the present transitive verb.

U-	*ya-*	*phu... phu...*	*u-*	*phum' ama-fastera*
SM1-	PRES-	phu... phu...	SM1-	go out NC6-window

'She goes, she goes she goes out the windows.

e. False start in accessing the OM.

Ba-	*yu.. ba-*	*yi..*	*Ba-*	*yi-*	*dubul' in-*	*ja*
SM2-	OM SM2-	OM9..	SM2-	OM9-	shot'	NC9- dog
'They..it	they..it		They shot the dog.'			

Example (11d) shows the child's conflict between present tense forms. *Phuma* 'go out' is both an intransitive and transitive verb. The PRES *ya-* is used with the intransitive, but not the transitive form of the verb. She starts with the intransitive form *U-ya-phu..phu...*, realizes her error and starts again with the transitive form *U-phum'ama-fastera.* In Example (11e), the child gets the OM wrong on her first try; *yu-* is not a Zulu OM. She repeats the right form and then completes her sentence.

Normal children also make false starts, but not to the degree seen in Nompumelelo's speech, nor in the manner illustrated in Sipho's. They provide evidence of inefficient use of language competence (Bishop, 1994).

DISCUSSION

A profile of language impairment in Zulu begins to emerge from the two case studies presented in this paper. It is characterised by:

- productive NC morphology (with the exceptions below);
- absence of OMs and REL markers in clauses;
- lack of verb extensions and subordinators expressing semantic complexity;
- continued use of early-learned simple sentences;
- nonstandard adaptation of early forms;
- pragmatic constraints and
- phonological simplifications.

Their speech is like the speech of younger, normal children in use of simple sentences, uneven productivity of NC morphology and in phonological features. However, the lack of morphology expressing semantic complexity and numbers of non-standard forms distinguished their speech from that of normal children.

Zulu supports differential use of morphology, as observed by Leonard (1998) in SLI studies. As summarized in Table 8, there is more or less robust morphology in Zulu. Children use tenses, NCs and SMs productively. ADJ and REL (with relative stems) are infrequent but accurate. They appear to be learned as part of familiar expressions like *amanzi*

aband
ayo water cold 'cold water'.

Morphological markers of semantic complexity are rare. They are also less frequent in input. They add arguments or compound or embed a subordinate clause within a complex sentence. Oetting and Rice (1993) observed that SLI children in English omit less frequent morphemes and certain syntactic morphemes. The Zulu findings support this observation and suggest that frequency and semantic factors play a role in explaining the relative robustness of Zulu morphology in language delay. The absence of grammatical markers of semantic complexity is interpreted as a matter of competence. Language-delayed children do not appear to have access to morphology marking semantic complexity.

Not recognizing the role that grammatical morphemes play in embedding and encoding additional arguments has, as a consequence, an increased reliance on simple sentence structure. A compensatory focus on simple syntax effectively delays the development of morphological complexity. Less restructuring of early verbal complexes and use of simple sentence types to express new meanings indicates a greater dependence on learned forms (Pinker, 1984), a feature that Rice and Oetting (1993) suggest may be indicative of SLI.

Frequency of recasts and non-standard forms also indicate that these children use their language inefficiently compared to normal children. They know what they want to say but do not produce it on their first try and rephrase their utterances. Thus, language impaired children have both competence and performance problems.

CONCLUSION

Features of language impairment in Zulu (and potentially in other African languages) have been identified in these case studies. Methodologically, many of the interesting observations in this paper come from a qualitative analysis of the data. More data are needed to test the strengths of these findings. In addition, focussed studies of the verbal complex and complex sentences need to be undertaken to probe the influence of frequency and semantic factors in language delay.

Findings from this study suggest further research topics. They include using the verbal complex as a measure of grammatical complexity in diagnosing language impairment, exploring possible hierarchies of accessibility of morphology and the investigation of factors influencing the ease of acquisition of integrated morphological systems like the NC and agreement.

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APPENDIX A

LIST OF ABBREVIATIONS

1SG	first person singular pronoun 'I'
2SG	second person singular pronoun 'you'
ADJ	adjectival
BENE	benefactive
CAUS	causative
CONTREM	contingent remote
COP	copulative marker
DP	demonstrative pronoun
FV	final vowel
INF	infinitive prefix
INSTR	instrumental preposition
NC	noun class
NEG	negative
OM	object clitic
PART	participial
PASS	passive
PAST	past
POSS	possessive
PREP	preposition
PRES	present
PS	possessive stem
REL	relative prefix
RELSUF	relative suffix
REM	remote tense gender
SM	subject marker
SUBJ	subjunctive
TAM	tense aspect marker

REFERENCES

Bishop, D. (1994). Grammatical errors in specific language impairment: Competence or performance limitations? *Applied Psycholinguistics*, 15, 507 - 550.

Bortz, M. (1995). A language assessment for preschool Zulu speaking children. MA. University of the Witwatersrand.

Cope, A. T. (1984). An outline of Zulu grammar. *Rramalebanya*, African Studies 43(2), pp 83 - 102.

Connelly, M. (1984). *Basotho children's acquisition of noun morphology*, Ph.D. dissertation, University of Essex.

Demuth, K. (1984). *Aspects of Sesotho language acquisition*, Indiana University Linguistics Club, Bloomington: Indiana.

Demuth, K. (1992). Acquisition of Sesotho. In D. Slobin (ed), *The Crosslinguistic Study of Language Acquisition.* Volume 3, pp 557-639. Hillsdale, N. J., Lawrence Erlbaum Associates.

Demuth, K. & Suzman, S. M. (1997). Language Impairment in Zulu. In E. M. Hughes and H. A. Greenhill (eds), *Boston University Conference on Language Development Conference Proceedings* **1**, pp 124-135. Somerville, MA: Cascadilla Press.

Griesel, G. J. (1981). Seleksiekriteria by die onderrig van 'n beperkte kursus in 'n tweede taal. *Tweede Taalonderrig*, 15(**4**).

Holm, A. (1992) Die Hersiening van'n Xhosa Artikulasie Siftingstoets en die Toepassing daarvan op 25 Vyf-Jarige Xhosa Sprekende Kinders. (The Revison of a Xhosa Articulation Screening Test and the Application thereof to 25 Five-Year Old Xhosa Speaking Children.) Unpublished Research Report. University of Pretoria.

Kunene, E. C. (1979). *The acquisition of Siswati as a first language: A morphological study with special reference to noun prefixes,, noun classes and some agreement markers,* Ph.D. dissertation, UCLA.

Leggo, S. (1992) The Revision and Application of the Xhosa Test for the Auditory Comprehension of Language (XTACL). Unpublished Research Report. University of Stellenbosch, Stellenbosch.

Leonard, L. (1993). Specific language impairment in three languages: some crosslinguistic evidence. In P. Fletcher and D. Hall (eds) *Specific Speech and Language Disorders in Children: Correlates, Characteristics and Outcomes.*

Leonard, L. (1998). *Specific language impairment in Childhood.* Cambridge: MIT Press.

Oetting, J. B. & Rice, M. L. (1993). "Plural Acquisition in Children with Specific Language Impairment". *Journal of Speech and Hearing Research*, vol. 36, 1236-1248.

Pinker, S. (1984). *Language learnability and language development.* Cambridge; MA: Harvard University Press.

Rice, M. L. & Oetting, J. B. (1993). "Morphological Deficits of Children with SLI: Evaluation of Number Marking and Agreement". *Journal of Speech and Hearing Research* 36, 1249-1257.

Schweizer, G. (1993). An investigation of Cross Cultural Differences of Children's Performances on the Peabody Picture Vocabulary Task Revised in South Africa. Unpublished Research Report. University of Cape Town, Rondebosch.

Suzman, S. M. (1991). *Language Acquisition in Zulu.* Ph.D. dissertation. University of the Witwatersrand.

Suzman, S. M. (1996). Acquisition of noun class systems in related Bantu languages. In C. Johnson and J. H.Gilbert (eds) *Children's Language* **9**, 87-104. Hillsdale, NJ: Lawrence Erlbaum Associates.

Suzman, S. M. (1998). Morphology as a Diagnostic of Language Impairment in +/- Pro- drop languages. Paper presented at the Annual Meeting of the Linguistic Society of America. NY.

Suzman, S. M. (2000). Norms of Language Development in Zulu. (In progress.)

Suzman, S. M. (2000). (Submitted for publication) Semantic complexity and morphological accessibility in Zulu. To John Benjamin's Series *Current Issues in Linguistic Theory (CILT).* 11/00.

Tsonope, J. (1987). *The acquisition of Setswana noun class and agreement morphology, With special reference to demonstratives and possessives.* Ph.D. dissertation, SUNY Buffalo.