Per Linguam 2008 24(2):75-87
http://dx.doi.org/10.5785/24-2-45

Journal Home Page:
http://perlinguam.journals.ac.za

Per Linguam

A Journal for Language Learning
Tydskrif vir Taalaanleer

AFRICAN LANGUAGES, LINGUISTICS, CHILD SPEECH AND SPEECH PATHOLOGY – THE CONNECTION

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This article deals with the need for the incorporation of the study of child language in the field of African Linguistics. It gives an overview of some of the studies conducted in the area of acquisition of Xhosa with a view to developing norms for the development of Xhosa amongst monolingual Xhosa-speaking children. This is useful in the diagnosis of speech and language disorders using criterion referenced measures. The developmental data may be used in the development of culturally appropriate standardised assessment measures: which are severely lacking for the indigenous languages of South Africa.

Keywords: child language; Xhosa acquisition; diagnosis of speech and language disorders; culturally appropriate norms; speech language impaired children

INTRODUCTION

Every normal human child, given a certain minimal exposure to language in use, acquires an incredible array of fantastically co-ordinated behaviours of language and related communicative activity. Language is a broad and an all-encompassing category of human behaviour. Speaking, listening, writing, reading, thinking, problem-solving, discriminating, perceiving, recalling, all directly involve language. Knowing a language includes knowing the sounds and sound patterns of the language, the words of the language, the grammar of the language, and the way to use the language to communicate. Thus, the study of language development would have to include the study of phonological development (sound and sound patterns), lexical development (words), the development of syntax and morphology (the grammar), semantics (the study of meaning) and the development of communicative competence (language use). Broadly defined, communicative competence is based on pragmatic and sociolinguistic knowledge (Hoff 2001:5). Consequently, in order to do justice to the complex and multifaceted nature of language development, receptive and expressive components would have to be included within each subcomponent of analysis. This study would also have to be carried out within an integrated holistic framework in order to properly inform professional educators (Ferguson, 1977; Hirsh-Pasek & Golinkoff, 1996; Hoff, 2001).

COMMON TRENDS

Children learning any language progress through similar stages of development (Menyuk, 1971; Brown, 1973; Slobin, 1973). One remarkable feature of this sequence of development is that children all over the world, regardless of the language they are learning or culture they are part of, progress through these major phases in the same order and at approximately the same ages (Slobin, 1973; Ingram, 1989; Demuth, 2003). Speech sound development occurs roughly between 1;0 and 8;0 years, with vowels developing earlier than consonants (Stoel-Gammon & Herrington, 1990; Robb & Bleile, 1994). Stops are most frequently produced during early stages, with stops and nasals being acquired prior to glides. Fricatives and affricates are generally acquired next, with liquids being the last to develop and mature (Lewis, 1994).

IMPORTANCE OF STUDYING CHILD LANGUAGE DEVELOPMENT IN AFRICAN LANGUAGES

Early speech and language development have been the focus of considerable research interest in the past four decades (e.g. Brown, 1973; Ingram, 1989; O'Grady, 1997; Guasti, 2002). This research has shed light on the contribution and complex interaction of many factors, both generic and environmental, in the development of language and communication (Guasti, 2002). Its insights have been used in many diverse fields such as education linguistics, speech-language pathology computer assisted translation and speech recognition The study of language development provides vital information for educators because language is an important medium in which to exchange information with children and secondly, language development data can be used to inform and direct learning and teaching within classroom situation (Naidoo, van der Merwe, Groenewald & Naude, 2005). Developmental data may also be used by educators and speech language pathologists and audiologists in the diagnosis of speech and language disorders using criterion referenced measures (Naidoo, 2003). Furthermore, the developmental data may be used in the development of culturally appropriate standardised assessment measures, which are severely lacking for the indigenous African languages of South Africa.

Until recently, research on early language development has been done only on speakers of English and other Indo-European languages: English (Brown, 1973; Watson & Scukanec, 1979; Stoel-Gammon, 1985, Robb & Bleile, 1994), Finnish (Kunnari, 2000), Japanese and Swedish (Boysson-Bardies & Vihman, 1991). In Africa, there is a still a dearth of developmental studies in indigenous languages to assist educators and health professionals in the assessment diagnosis, and management of child language disorders. This lack of normative studies in indigenous languages has seriously hampered the role of educators and professionals in the field of child language in this country. Speech-language therapists and remedial educators are faced with the growing challenge of providing an equitable and appropriate service to a linguistically and culturally diverse population. Speech-language pathologists and audiologists are faced with the task of advising mothers and educators on how to direct the development of speech and language in children. They also need to accurately diagnose when language aberrations constitute language disorders so they can set about planning the most appropriate method of rehabilitation.

In South Africa, therefore, there is a pressing need to establish linguistically appropriate norms of speech and language development for the speakers of languages other than English

and Afrikaans. A number of factors hamper progress in doing so. For instance, speech-language therapy is a relatively new profession amongst Black South Africans. The vast majority of speech-language therapists in South Africa are either English or Afrikaans speaking and they have little or no proficiency in an African language. Their ability to and their confidence in embarking on research in an African language is thus severely limited.

There are a number of other reasons that make the study of child language development imperative. One reason is that it is important to understand child language development in order to facilitate changes in child behaviour. (Hoff, 2001:331) points out that studying the development of language in populations other than typically developing children offers an understanding of how language development may be affected by other conditions and that such studies should be used as the basis for designing programmes to help all children optimise their language development.

The study of language development allows us to ask how different human abilities contribute to the language acquisition process. For example, studying language development in deaf children can help us discover whether language depends on the auditory-vocal channel or whether language is a function of the human brain that can make use of other channels if the typical channel is unavailable. Studying language development in blind children can address questions about the role of the extra linguistic context in language development (Hoff, 2001). It is important for child language researchers to determine the kinds of knowledge that children learn to communicate and what aspects of language learning are universal across cultures. Apart from examining *what* learning development children have in common, it is important to examine *how* children learn language and to acknowledge the role of individual variations in the acquisition process. The question of how children learn language relates to the neurobiological mechanisms underlying language acquisition.

ACQUISITION STUDIES IN AFRICAN LANGUAGES

Acquisition studies in African languages began with the work on Siswati by Kunene (1979). Studies on other languages followed (e.g. Chimombo, 1981 (Chichewa); Connelly, 1984 and Demuth, 1984 (Sesotho); Tsonope, 1987 (Setswana); Mowrer & Burger, 1991; Lewis, 1994; Lewis & Roux, 1996; Gxilishe & Tuomi, 2001; Gxilishe, 2004; Gxilishe, de Villiers & de Villiers, 2007a and b (Xhosa); Suzman, 1991 (Zulu); Idiata, 1998 (Sangu). The majority of these studies involved children older than 1;5 years. Much research in African language acquisition has focused on the morphological system, especially on nominal morphology. Of particular interest is the question of what happens in a language where both plural and singular are morphologically marked (Demuth, 1998). Is the singular taken as ‘unmarked’, and/or treated as an unanalysed whole with the plural added to it (Peters 1983)? What about the acquisition of morphological paradigms with ‘holes’ (e.g. zero marking for class 9 in many Bantu languages)? Are such gaps in the paradigm filled (Slobin, 1985)? Do children use meaning to learn the noun class system (Demuth, 2003)?

Some of these studies, while making a valuable contribution to the limited pool of data, have limitations. One of the most significant is the lack of documented linguistically-appropriate norms of speech development for all the languages spoken in South Africa, apart from English (Kunene, 1999). The result is that there are no benchmarks for the development of language that can be referred to in normative testing. Use has been made of rough translations from English (Suzman, 1991). But languages differ in terms of the size and content of speech

sound inventory, the phonotatic constraints of the language, the syllable structures of words and the phonetic complexity of the sounds (Naidoo *et al*., 2005). The norms of one language can thus not necessarily be applied to other languages. Language-specific normative data are critical in speech-language therapy, as they facilitate the differentiation between true speech-language pathology and speech-language difference (Naidoo *et al*., 2005). In addition to normative data assisting in identifying the presence or absence of a problem and making early and appropriate referrals possible, it facilitates the identification of goals and procedures for treatment, as these are usually based on developmental processes (Creaghead *et al*., 1989).

NOUN CLASS MORPHOLOGY

In her summary of the research on acquisition of noun class prefixes, Demuth (1998) concludes that acquisition of African languages nominal morphology report very similar findings. First, it appears that both singular and plural noun class prefixes are segmented as separate morphemes early on: there were no cases of plural morphemes being added to singular stems, nor of noun class prefixes being incorrectly added to nouns that have no prefix (see Kunene, 1979; Connelly, 1984; Tsonope, 1987; Suzman, 1991; Idiata, 1998). Although singulars are more frequent than plurals in everyday discourse, there is no evidence that the acquisition of plural noun class prefixes is delayed.

All of the studies on the acquisition of African languages noun class prefixes report the following three partially overlapping stages of development from the age of 2 to 3:

a. No prefixes (full or partial noun stems)
b. 'Shadow' vowel and nasal prefixes
c. Full and phonologically appropriate noun class prefixes.

(Demuth, 2003:211)

The acquisition of nominal agreement shows remarkable cross-linguistic uniformity, sharing partially overlapping 'stages' of development namely:

a. Shadow vowel
b. Well-formed morphemes.

(Demuth, 2003:213)

Demuth (1998) explains that the relatively early and error-free acquisition of the African languages noun class and agreement system is because learning complex morphological paradigms is easy when they are phonologically transparent.

The acquisition of subject-verb agreement and tense/aspect marking has featured prominently in the recent acquisition literature. A study of African languages with their rich systems of verbal inflectional and derivational morphology and complex tense/aspect system could provide valuable insights into how these systems are acquired and how cross-linguistic differences in this area arose (Demuth, 1998).

Developmental studies in the acquisition of Xhosa.

Xhosa is one of the indigenous Nguni languages spoken in South Africa and is the home language of about 18% of South Africans. Apart from anecdotal data, we have had little or no

accurate information on how Xhosa-speaking children learn to speak or what kind of speech and language disorders they might develop until recently. Several preliminary studies on early child development have now been conducted: the acquisition of Xhosa phonemes (Gxilishe & Tuomi, 2001), the acquisition of clicks (Gxilishe, 2004) the acquisition of noun–class (Gxilishe, Denton-Spalding & de Villiers 2008), the acquisition of tense (Gxilishe & de Villiers, 2007), the acquisition of subject agreement (Gxilishe & de Villiers, 2007) and number agreement in Xhosa and English (De Villiers & Gxilishe, 2008). Clearly, more extensive studies are necessary because language development is the single most important predictor of a child's success at school.

Phonemes

The results of the study by Gxilishe and Tuomi (2001) on the acquisition of phonemes show that Xhosa vowels had all emerged by 1;6 years. This is in line with studies on other languages which suggest that vowels emerge very early (Stoel-Gammon & Harrington, 1990). Furthermore, the study shows that nasals, stops and the glide [j] were the earliest consonants to emerge and fricatives and liquids came last (Gxilishe & Tuomi, 2001). In general the consonants that emerged between 1 and 3 years corresponded to the ones by Mowrer and Burger (1991) reported at 2.6 -3.0. In many instances anterior sounds appeared to occur earlier but some alveolar and velar sounds seemed to occur quite early. Overall, by age 3 years, all Xhosa consonants were occurring in the speech of at least some children even if at a relatively low level of frequency.

Clicks

The finding on the acquisition of click consonants (Gxilishe, 2004) are in line with Jacobson's (1967) view that children move from unmarked to more marked phonological structures in the course of acquisition. It confirms that the order of basic acquisition in c, q and x; that all basic clicks appear between 1;0 and 6;0; that there is slow development up to 1.6 years; that a spurt occurs between 1;7 and 2;0 years; and that there is a noticeable trend in development from voiceless to voiced and nasalised clicks (Gxilishe, 2004:7).

Noun Classes

The paper on noun-class marking (Gxilishe, Denton-Spalding & de Villiers, P, (in press) addresses four research questions about young children's acquisition of the noun class system in Xhosa as their first language:

(1) If the pre-prefix and prefix have separate semantic (or pragmatic) and syntactic functions in adult Xhosa, do children acquire them independently of each other? Or are they initially treated by the children as an unanalysed morphological chunk?
(2) Are children sensitive to the role of the pre-prefix as a definiteness marker? If so they should not use a pre-prefix on the noun if the meaning is already marked for definiteness by a demonstrative
(3) Will young Xhosa children reveal the same pattern of early acquisition without errors of commission in their mastery of the noun class prefixes and pre-prefixes as has been found for other Bantu languages? (cf. Demuth, 2003)
(4) Does production of the Xhosa pre-prefix determiner vary with the syllable length of the noun stem in a way to children's production of determiners and noun class prefixes in other languages? (cf. Demuth, 2007)?

The study reveals that the pattern of mastery of noun class marking in young children acquiring Xhosa as a first language is similar to pattern revealed by the analysis of adult Xhosa by Du Plessis (1997) and Visser (2005, 2007). The acquisition of pre-prefix and the prefix run parallel in terms of time, but occur independently of each other. By 2;6 years of age the children are sensitive to the complementary distribution of the pre-prefix with demonstratives. This is in keeping with the pre-prefix serving as a determiner marking definiteness, i.e. where both the speaker and hearer are in a position to identify the referent of the noun phrase (Gxilishe *et al*., 2008:9).

Tense

The research on tense done by Gxilishe *et al*. (2007a) found that children acquiring Xhosa as their first language learn the conditions for the two forms of the present and recent past tenses in Xhosa, namely the long and the short forms, remarkably early. Despite the fact that there are complex grammatical conditions governing which form is appropriate in a sentence, the study demonstrates that very young children can meet these grammatical conditions. The pattern of acquisition of the forms appears to be governed by the adult grammatical rules of the language, not by a simpler initial rule based on verb transitivity, i.e. a grammatical process referring to verbs that take a direct object as transitive and those that do not, referred to as intransitive. Xhosa has four basic tenses:

a. Remote past:
   Nd-a-hamb-a.
   I went (long ago).
b. Recent past:
   Ndi-hamb-ile.
   I went (recently).
c. Present:
   Ndi-ya-hamb-a
   I am going.
d. Future:
   Ndi-za ku-hamb-a
   I will go.

An interesting feature of the research is that it focuses on how Xhosa speaking children acquire the marking of tense in their spontaneous speech – more particularly: how young children come to use the long and the short forms of the present and recent past tenses. Do they establish the right syntactic analysis from the start, or do they just alternate the forms at random? Do they perhaps use a simpler process early in acquisition; say one based on transitivity, which is generally consistent with the distinction between the two forms in adult language (Gxilishe *et al*., 2007a:213)?

The children in the study showed remarkably early mastery of the required tense markers. In total across all of the age groups of the children, there were 172 obligatory contexts requiring an overt (non-zero) tense morpheme to be attached to the verb. In 157 of the cases (91% of the time), the children provided the required morpheme; in only 17 cases (9% of the time) was it omitted. There seemed to be no developmental change between 2;0 and 3;3 years: the children supplied the correct tense markers over 90% of the time in the youngest age band (2;0 to 2;6 years). Thus in this age range there was no period of time in which tense appeared to be optional, i.e. it could be suppressed as opposed to being obligatory. There was no

developmental change either. The children's use of the long form closely conformed to the adult rules for its use. The transitivity use was a fairly good predictor of the children's use of the long form, averaging just on 80% across the age bands (Gxilishe *et al*., 2007a).

Subject agreement

The study on the acquisition of subject agreement in Xhosa in children acquiring Xhosa as a first language (Gxilishe *et al*., 2007b) focuses particularly on the extent to which subject agreement is dependent on the child's appropriate marking of noun class in the subject. The data are used to evaluate different possible models of subject agreement as they predict acquisition of the subject agreement.

The results show parallel development over this age period 1;0–3;3 in both noun class marking on the nouns and subject agreement marking on the verbs. As was the case in other studies of Bantu language acquisition (Deen, 2005), agreement marking did not appear to be learned piecemeal, verb by verb or noun class by noun class. Instead, marking of subject agreement in obligatory contexts increased by chance variation across many roots and several noun classes, especially between the ages 2;0 and 3;0 months. For example, between age 2;0 and 2;6 years the children correctly used subject agreement markers on between 5 and 16 different verb roots, and 41.7% to 84.2% of the total number of verb roots that appeared in obligatory contexts for subject agreement marking for the different children. The individual children produced subject agreement markers for between 4 and 7 different noun classes in this same time period. The errors were almost all errors of omission: 139 out of 143 errors of subject agreement across all the transcripts were errors of omission (97.2%) (Gxilishe *et al*., 2007b:118**)**. That is, substitution errors were rare, as has been reported previously for Sotho and Swati (Demuth, 2003).

Number agreement

Agreement such as number agreement has been considered in several different ways under different theories (Murphy, 1997; Eberhard *et al*., 2005; Buell, 2006). The example to be considered here is from the agreement between the subject and the verb in number, though there are many languages that have number agreement also with adjectives, determiners and so forth. The study by De Villiers and Gxilishe (2008) raises questions about the nature of number agreement in the grammars of young children, whether they are learning languages poor in number agreement (African American English (AAE), relatively simple (Mainstream American English (MAE) or inherently complex (Xhosa). At first glance, number agreement appears to be a straightforward mechanism, but that mechanism is called into question by peculiar asymmetries of production and comprehension that demand more explanation and exploration. The AAE and MAE Agreement in general is weak: there is no marking of case or gender on nouns or verbs, and the verb number agreement on regular verbs is only for third person subjects, and only in the case of the so-called (and misnamed (Sauerland, 2002) 'present tense'. Furthermore, the circumstances are rare in which the notional plurality of the subject number is disguised, as with abstract collectives ('committee') or when the following verb starts with a /s/ and there are no other contextual or linguistic (e.g., pronouns) clues. Writing about this problem, Brown (1973) argues that the cue from number agreement was not salient to children because it is rare in English to have to rely on it.

It is very important to consider data from languages in which the verb provides a more consistent and important cue to number, namely pro-drop languages. If the subject is not

there, then the only clue to its number (and/or gender, etc.) comes from the morphology of the verb. In order to enlarge the discourse, De Villiers and Gxilishe (in press) consider a very rich agreement language, Xhosa, and the ramifications of how children learn number agreement in it.

Xhosa has SVO word order but other variations of this order occur frequently. The subject noun can be dropped (pro-drop), leaving only the subject agreement of the verb appropriate to the class of the absent subject noun. Number is not associated with a single morpheme but instead the form changes by noun class. When it comes to subject and object agreement with the noun class, it is not a straightforward copy of an agreeing prefix, rather the plural form of agreement varies with class. How then does a child acquire such a system, and does a child learn it in piecemeal fashion, verb by verb and morpheme by morpheme?

A recent paper using these data and also data from an even younger group of Xhosa speakers collected in the same manner, revealed that subject agreement was well established by age two (Gxilishe, de Villiers & de Villiers, in press). The group of children aged two to three years used subject agreement appropriately, with practically no substitution errors. Furthermore, the learning was not piecemeal. This confirmed earlier studies on Bantu language acquisition (Suzman, 1982; Demuth, 2003; Deen, 2005). That is, children do omit the subject agreement at age two but never use the wrong form, despite the complexity of the agreement paradigms.

An important question is how well children mark number agreement between the subject and the verb? The study showed that plural agreement is better supplied than singular subject agreement. Most of the plural agreements are from noun classes 2 and 10, and most of the singulars are from corresponding noun classes 1a and 9. In the data presented in Gxilishe *et al*. (in press), plurals represent only 13% of the potential cases of subject agreement from the children aged 24 to 39 months. There is nothing particularly transparent about plural/singular marking for these classes.

APPLICATIONS

The studies referred to above give a sense of how children between 1;0 and 3;3 years develop some of the basic morphosyntax of Xhosa. These studies have focused on the acquisition of the noun class prefixes and the nominal/verbal agreement system. There have also been studies on the acquisition of constructions such as passives, relative clauses, wh-questions and tonal system (cf. Demuth 1992, for a review of these studies).

Although there is much we do know about how and when certain grammatical phenomena are acquired in southern Bantu languages, we do know that children learning these languages appear to be relatively precocious when compared with their English-speaking peers (Demuth & Suzman, 1997). In particular, children learning a Southern Bantu language have mastered the noun class and agreement system before the age of 3;0, and competence in using complex grammatical constructions and the grammatical tone system is well underway. The complexity of the Bantu morphological and agreement systems and the fact that normally developing children acquire them early and error-free make them an interesting context in which to explore the nature of language disorders. All the more so since children with specific language impairment experience difficulty acquiring inflectional morphology. What makes the study of language-delayed children learning Bantu languages even more valuable in that

these difficulties appear cross-linguistically, even in morphologically rich languages such as Italian (cf. Leonard, 1992). Such studies could make a critical contribution to understanding the nature of language impairment in children with specific language impairment. The various studies conducted by Gxilishe *et al*. (2008) in respect of Xhosa were small and limited by practical and financial factors. However, they can be seen as a first basic step towards building a comprehensive database of Xhosa speech. Extensive studies need to be undertaken in the following areas as part of that process:

- Substitution errors in noun class agreement marking
- Failure to mark agreement when the subject is not explicit
- Failure to provide or recognise plural agreements
- Avoidance of using verbs indicated by low verb ratios
- Failure to use the resent tense forms in the right syntactic contexts e.g. miss object agreement, use short form for final position
- Continued use of post-verbal subjects and inappropriate application of subject agreement.

CONCLUSION

Based on the above discussion, it is not surprising that problems in speech and language occur, when we consider the requisites for speech, its standards and variations, and the intricacies in its development. A study of normal speech and language behaviour gives insights into the causes and effects which are associated with various speech and language problems, and keeps abnormality and normality in proper relationship to each other.

In the preceding pages I have tried to show how theoretical linguistics can be applied to African Languages with the aim of contributing to knowledge on the development of child speech. I have shown how milestones in Child Language Development can be used to benchmark normal development or to signal speech and language problems in the acquisition of Xhosa.

It is vital, however, that studies on how children learn Bantu languages should not be conducted in isolation from the way in which these languages are actually used in everyday discourse. As Demuth (2003: 222) points out much theoretical linguistic research is concerned with grammaticality judgments – i.e. what types of constructions are permitted. It should not be forgotten that some of the Bantu linguistic structures which have generated the most theoretical linguistic discussion turned out to be very low frequency constructions in actual discourse, being learned very late (e.g. double object applicative) (Demuth, 2003: 222). We need to examine the input language they hear. Data from acquisition studies can provide an invaluable resource regarding how Bantu languages are used in everyday discourse. The frequency effects embedded in this discourse provide key insights into the rate of acquisition for certain Bantu linguistic structures, and may prove critical for understanding aspects of Bantu historical change as well, (Demuth, 2003).

Several researchers in the acquisition of Bantu languages point out the rich and interesting area of research which is only beginning to be systematically investigated (Suzman 1991; Idiata, 1998; Demuth, 2003; Gxilishe & de Villiers, 2007) Most of the studies to date have focused on the acquisition of nominal morphology and agreement, with some attention paid to verbal morphology, syntactic constructions, and the acquisition of tone and clicks (Demuth

2003). Much more research, especially on the acquisition of syntactic constructions, and the acquisition of tone and clicks, has still to be done. Experimental methods may be especially effective in exploring some of these issues. Additional studies are also needed in respect of Speech Language Impaired children to bring our knowledge of Xhosa and other indigenous languages in line with the information we have on English as well as Afrikaans-speaking children, and to further enhance our knowledge base.

Acknowledgements

I want to thank Jill de Villiers for her input and extensive guidance. I am also grateful to Kay McCormick for invaluable suggestions, editing and comments. I also wish to acknowledge the helpful comments that I received from Pharyn Sorour.

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