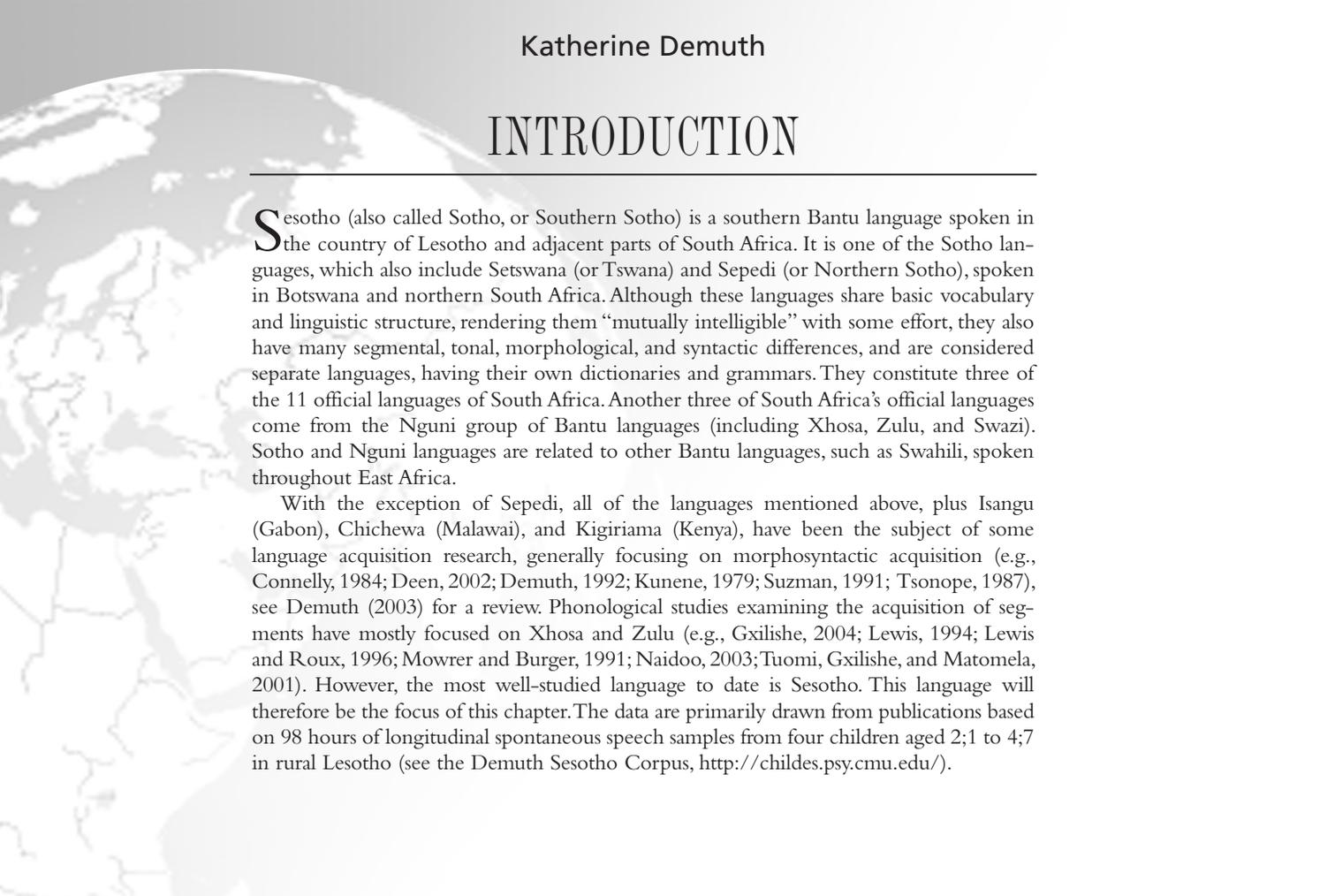




# Chapter 51

## Sesotho Speech Acquisition

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### INTRODUCTION

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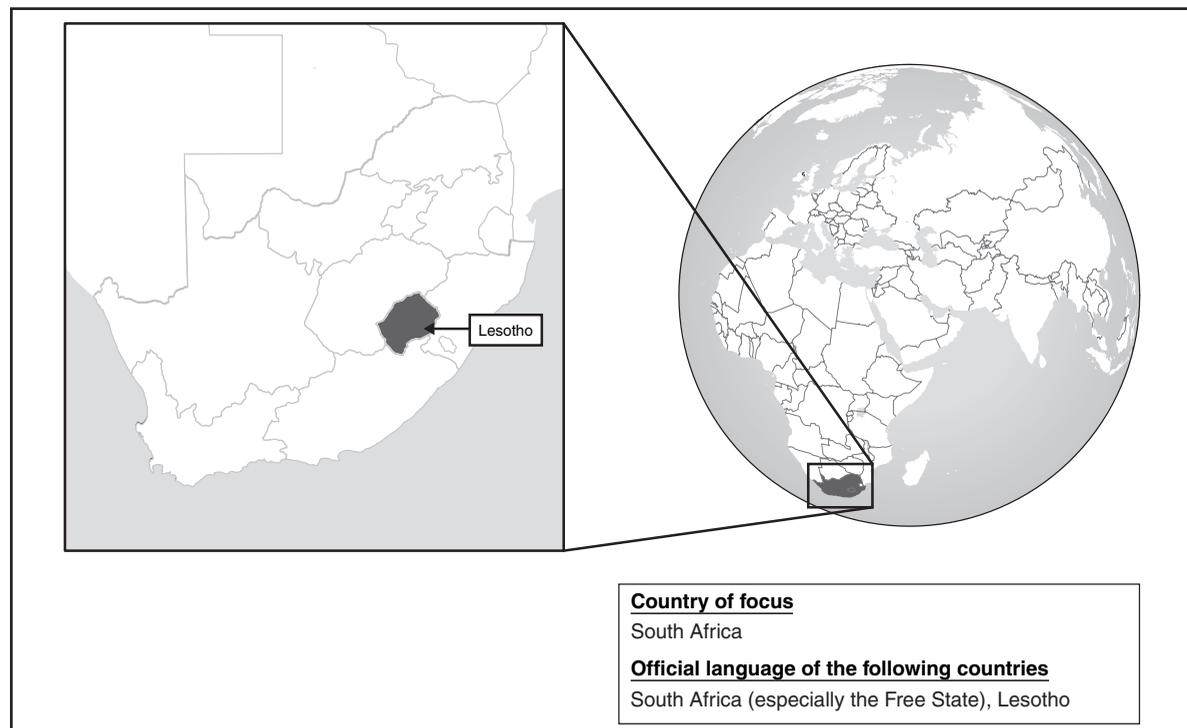
Sesotho (also called Sotho, or Southern Sotho) is a southern Bantu language spoken in the country of Lesotho and adjacent parts of South Africa. It is one of the Sotho languages, which also include Setswana (or Tswana) and Sepedi (or Northern Sotho), spoken in Botswana and northern South Africa. Although these languages share basic vocabulary and linguistic structure, rendering them “mutually intelligible” with some effort, they also have many segmental, tonal, morphological, and syntactic differences, and are considered separate languages, having their own dictionaries and grammars. They constitute three of the 11 official languages of South Africa. Another three of South Africa’s official languages come from the Nguni group of Bantu languages (including Xhosa, Zulu, and Swazi). Sotho and Nguni languages are related to other Bantu languages, such as Swahili, spoken throughout East Africa.

With the exception of Sepedi, all of the languages mentioned above, plus Isangu (Gabon), Chichewa (Malawai), and Kigiriyama (Kenya), have been the subject of some language acquisition research, generally focusing on morphosyntactic acquisition (e.g., Connelly, 1984; Deen, 2002; Demuth, 1992; Kunene, 1979; Suzman, 1991; Tsonope, 1987), see Demuth (2003) for a review. Phonological studies examining the acquisition of segments have mostly focused on Xhosa and Zulu (e.g., Gxilishe, 2004; Lewis, 1994; Lewis and Roux, 1996; Mowrer and Burger, 1991; Naidoo, 2003; Tuomi, Gxilishe, and Matomela, 2001). However, the most well-studied language to date is Sesotho. This language will therefore be the focus of this chapter. The data are primarily drawn from publications based on 98 hours of longitudinal spontaneous speech samples from four children aged 2;1 to 4;7 in rural Lesotho (see the Demuth Sesotho Corpus, <http://childes.psy.cmu.edu/>).

The study of Bantu language acquisition is interesting for several reasons. First, there are approximately 500 Bantu languages, each with slightly different linguistic structures. This provides an ideal laboratory for understanding the nature of language development. Second, many speakers of these languages grow up with bilingual or multilingual experience (Penn, 1998), raising questions regarding the nature of children's linguistic abilities in the case of language delay (e.g., Demuth and Suzman, 1997). It is therefore imperative that information regarding normative monolingual development be available to practitioners working with such children. However, as will be seen, such work is all too often unavailable. It is hoped that this chapter may stimulate others to take this research further (Alcock, Rimba, Abubakar, and Holding, 2005; Suzman, 2002). See the Resources section for materials pertaining to Sesotho.

## Where Sesotho is spoken

Sesotho is spoken in the country of Lesotho and adjacent parts of South Africa (see accompanying map and Appendix D).



## Components of Sesotho

### Consonants

Sesotho has a rich inventory of 40 consonants, including an extensive array of affricates, laterals, and syllabic nasals. Sesotho also exhibits phonemic use of aspiration, and has one click (see Table 51-1).

### Vowels

Many Bantu languages have five or seven vowels. Sesotho has nine vowels, with three different heights of mid vowels (see Table 51-2).

### Phonotactic restrictions

#### *Syllables*

As in many other Bantu languages, most Sesotho syllables exhibit basic CV structure. However, the possible Sesotho syllable structures include (C)(G)V, or a syllabic consonant (nasal or /l/). Vowel-initial syllables and words are permitted, though not common, most consisting of English or Afrikaans loanwords. Sesotho also permits syllabic liquids

TABLE 51-1 Consonants produced in Sesotho

	Bilabial	Labiodental	Dental	Alveolar
<b>Plosive</b>	p' p <sup>h</sup> b			t' t <sup>h</sup> d
<b>Nasal</b>	m ɱ			n ɲ
<b>Trill</b>				r
<b>Tap or flap</b>				
<b>Fricative</b>		f [v]		s
<b>Lateral fricative</b>				ɬ
<b>Affricate</b>				ts' ts <sup>h</sup> tɬ' tɬ <sup>h</sup>
<b>Approximant</b>	(w) (labiovelar)			
<b>Lateral approximant</b>				l
<b>Consonants (non-pulmonic)</b>				
<b>Coarticulated consonants</b>	pʃ' pʃ <sup>h</sup> bʒ	fʃ		

Key. Consonants in parentheses indicate alternative place of articulation, and consonants in square brackets appear in loanwords.

Black = articulations judged impossible

Based on the International Phonetic Alphabet. Courtesy of the International Phonetic Association (c/o Department of Linguistics, University of Victoria, Victoria, British Columbia, Canada).

(e.g., *mamello* /mameɭɔ/ 'patience') and nonmorphemic syllabic nasals, which can be found word-initially (e.g., *ntja* /ntja/ 'dog'), word-medially (e.g., *banna* /baɲna/ 'men'), and word-finally (e.g., *ratang* /rataŋ/ 'love! pl.') (Doke and Mofokeng, 1985).

### Consonants and consonant clusters

Glides can occur as part of a complex onset (e.g., *ngwana* /ŋwana/ 'child'). All other consonant clusters (and word-final consonants) found in English and Afrikaans words introduced into Sesotho are adapted to obey the basic CV syllable structure of the language by using vowel epenthesis (e.g., *school* ⇔ *sekolo*) (Rose and Demuth, in press).

### Tones

Sesotho uses High and Low (default) tones to mark both lexical and grammatical meaning. Verbs have either High or Low basic tone, and this tone may change in the context of certain grammatical morphemes (e.g., subject markers) and the tense/mood of the sentence to produce a specific tonal pattern or tonal melody (Demuth, 1993, 1995a). These processes of tone change are called tone sandhi.

### Stress and intonation

Sesotho does not have stress like English, but lengthens the penultimate syllable of a phonological phrase. Thus,

the greeting for one person is *Lumela!* /dume:la/, and the greeting for more than one person is *Lumelang!* /dume:la:ŋ/, where the final syllable is a syllabic nasal. Lengthening therefore shifts to the penultimate syllable. This is independent of the tone on the penultimate syllable, which may be either High or Low.

The tonal system of Sesotho exhibits gradual down drift, with sentence-initial Low tones being higher than sentence-final High tones in a declarative sentence. However, in an interrogative sentence, down drift and penultimate lengthening are both attenuated, giving the impression of a quicker, flat contour. Although shifts in word order or a choice of different lexical items are typically used for contrastive focus, this can also be achieved by employing excessive lengthening and extreme raising of the overall pitch register of the focal lexical item(s).

### Writing system

Several different orthographic conventions were used by different missionaries in the 1800s and early 1900s, resulting in no marking of tone, all mid vowels being written with the graphemes 'e' and 'o', and the palatal-alveolar click written as 'q'. Today, Lesotho uses one set of orthographic conventions, and South Africa another. The major segmental difference between the two systems is that in Lesotho orthography, phonemic /l/ is used for the [d] allophonic variant before high vowels

Post alveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
			k' k <sup>h</sup>			
		ŋ ŋ	ŋ ŋ			
				(R)		
		ʃ (ʒ)	[x]			h
		tʃ' tʃ <sup>h</sup> dʒ	kx <sup>h</sup>			
		j				
!	! <sup>h</sup>					

**TABLE 51-2** Vowels produced in Sesotho compared with General American English

American English location	American English Vowels Smit (2004)	American English examples	Sesotho location	Sesotho vowels (Doke and Mofokeng, 1985)	Sesotho examples
High-front	i	<i>beat</i>	High-front	i	'bjna' <i>sing</i>
	ɪ	<i>bit</i>	Mid-high close	ɪ	'bela' <i>boil</i>
	e	<i>raid</i>	Mid-front	e	'besa' <i>roast</i>
Mid-low front	ɛ	<i>bed</i>	Mid-low open	ɛ	'bea' <i>put</i>
	æ	<i>bad</i>			
High-back, rounded	u	<i>blue</i>	High-back, rounded	u	'bu <u>a</u> ' <i>talk</i>
	ʊ	<i>book</i>	Mid-high back close, rounded	ʊ	'botsa' <i>ask</i>
Mid-back, rounded	o	<i>boat</i>	Mid-back, rounded	o	'bonya' <i>flirt</i>
	ɔ	<i>form</i>	Mid-low back, open, rounded	ɔ	'bofa' <i>tie, bind</i>
Low back	ɑ	<i>drop</i>	Low, mid-back	ɑ	'batla' <i>look for</i>

(e.g., /li/ is pronounced [di]), and the mid vowel graphemes 'e' and 'o' are used for front and back glides /j/ and /w/, respectively. In addition, Lesotho 'ch', 'kh', 'ts', 'n', and 'm' = South African 'tjh', 'kg', 'tsh', 'nn', and 'mm', respectively. Both orthographies use a disjunctive rather than a conjunctive writing system, where grammatical morphemes (subject agreement, tense, pronominal object, verbs) are all written as separate words rather than together, that is, *ke tla li reka* vs. *ketlalireka* 'I will buy them' (lit. 'I will them buy'), as is the case in Zulu and Swahili.

## Varieties of Sesotho

Sesotho is considered to be relatively homogeneous dialectally, especially within Lesotho. Even in Lesotho, however, there are some ideolectal differences with respect to tone sandhi (tonal changes). Sesotho as spoken in South Africa contains another tonal rule, shows the influence of Setswana in the tense/aspect system, and contains more loanwords from Afrikaans. 'Deep Sesotho', or *Sesotho se tebileng*, is a more formal speech register used for special purposes such as storytelling. This more ritualized use of Sesotho, as well as a more extensive vocabulary containing words for traditional foods and so forth, is generally maintained in rural areas by older generations, but it is being lost by the young and the urban. There are also an increasing number of lexical items from English, Afrikaans, Zulu, and other languages as there is more contact with these languages.

## Typical acquisition of Sesotho

Due to the simple syllable structure of Sesotho, most consonants and vowels are acquired by the age of 2,

though problems with the labial glides and simplification of affricates and clicks persist until 3 (Demuth, 1992). The consonant /h/ is sometimes reduced, though this is true of adult speech as well, and aspiration is sometimes missing. However, place of articulation and voicing do not appear to present problems. Similar general findings are reported for Xhosa (Mowrer and Burger, 1991; Tuomi et al., 2001), along with late acquisition of prenasalized stops, which Sesotho does not have. Lexical tone is acquired early on Sesotho words with stable tone. However, tone sandhi processes are still being acquired at the age of 3. Like other Bantu languages, Sesotho has a rich noun class agreement system with extensive agglutinative morphology. Many of these monosyllabic morphemes are missing or reduced at 2, but are generally well formed by 3 (Demuth, 1988, 1994). The Summary of Studies table at the end of this chapter contains studies of the acquisition of Sesotho.

## Acquired sounds

### Consonants

Most simple consonants have been acquired by the age of 2 (Demuth, 1992); see Table 51-3. This includes syllabic nasals and voicing distinctions on labial and alveolar stops. The placement of /r/ is generally toward the back of the mouth (uvular) rather than trilled. Coarticulated sounds are typically simplified, though these are rare, and seldom appear in children's speech. The consonant [d] is an allophone of /l/ that appears only in the environment before the high vowels /i/ and /u/. Due either to its restricted (and less frequent) distribution, or to the lack of having learned the phonological rule for its use, [d] is occasionally realized as [l] until 3. Word-internally, especially after a velar nasal, /w/ may be omitted until the age of 3. The lateral

**TABLE 51-3** Age of acquisition for Sesotho consonants

Consonant	Connelly (1984)	Demuth (1989)	Demuth (1992)
most consonants			2;0
/tʰ/, /tʰ/			2;6
/tsʰ/, /tsʰ/			2;6
/w/		2;6	2;6
/r/			3;0
[d] (allophone of /l/)			3;0
/l/, /lʰ/	3;0		3;0

affricates /tʃ/ and /ts/ are often simplified to /t/, preserving aspiration. The most problematic consonant for Sesotho-speaking children is the palatal-alveolar click /!/. Although it is spontaneously produced in isolation as early as 2;6, it is realized as /k/ within a word until around the age of 3, appropriately preserving aspiration. The later acquisition of clicks in context is probably due to the difficulty of coarticulating this consonant with a following vowel. Similar findings are reported for the three Xhosa clicks (dental 'c' /!/, palatal-alveolar 'q' /!/, and lateral /||/); the palatal-alveolar and dental clicks are produced with 50–69 percent accuracy by the age of 3 (Mowrer and Burger, 1991; Tuomi et al., 2001), and all (including prenasalized clicks) are mastered by 4 (Lewis, 1994). However, the first clicks appear earlier in Xhosa (1 to 1;6) than in Sesotho, probably due to the higher frequency of clicks in that language, 15 percent of lexical items (Gxilisho, 2004).

### Consonant clusters

As noted, Sesotho has no true consonant clusters. However, when /w/ is part of a complex syllable onset, it is often deleted (e.g., *ngoana* /ŋwana/ [nana] 'child') (Demuth, 1992). English loanwords with word-initial sC clusters are sometimes produced as a cluster by both adults and children, indicating possible syllable structure change due to extensive contact with English and Afrikaans (e.g., *sekolo* /stkolo/ [skolo] 'school') (Rose and Demuth, 2006).

### Vowels

Little is known about the acquisition of Sesotho vowels. There is some evidence that children may have some difficulty in producing some of the finer distinctions in vowel height (e.g., *rona* /rōna/ [runa] 'we'), but there has been no systematic study of this issue. Word-final vowels in Sesotho can also tend to be devoiced, and children sometimes omit these altogether.

## Percent correct

### Consonants

There are no studies with percentages of accuracy on consonant production for Sesotho. However, since Sesotho syllable structure is simple, most consonants appear to be acquired early (Connelly, 1984). The nearest estimate is presented in Table 51-4. Mowrer and Burger (1991) report similar early segmental acquisition for Xhosa: 80 percent at 3 years, compared with 40 percent for English.

**TABLE 51-4** Percent correct for Sesotho consonants and vowels

Age	Consonants	Vowels
2;0	75 percent	75 percent
2;6	80 percent	80 percent
3;0	90 percent	90 percent
4;0	100 percent	100 percent

### Vowels

There are no studies with percentages of accuracy on vowel production for Sesotho. However, since Sesotho does not have any diphthongs, vowel acquisition seems to be achieved relatively early. The nearest estimate, based on Demuth (1992), is presented in Table 51-4.

## Phonological processes

Sesotho has several phonological processes that still cause children problems at 3 years and beyond. Labial palatalization is used in the derivation of some passives (*shapa* /ʃapa/ > *shatjoa* /ʃatʃwa/ 'lash' ⇒ 'be lashed'), and is rarely used correctly by 3. Strengthening processes take place in the environment of a nasal, such as with the first person singular object marker, where voiced plosives become voiceless ejectives (/b/ ⇒ [pʰ], /l/ ⇒ [lʰ]) and fricatives become aspirated obstruents (/f/ ⇒ [pʰ], /r/ ⇒ [tʰ], /s/ ⇒ [tsʰ], etc.) (Doke and Mofokeng, 1985). Some of these forms, especially frequent imperatives like *mphe* [mpʰhɛ] (from /ŋ + fa/) 'give me' (lit. 'me-give') are learned early as a lexical unit. However, the productivity of this phonological process is probably not complete for many children by the age of 4. Sesotho does not have the phoneme /d/; it occurs only as an allophone of /l/ after high vowels. Children between the ages of 2 and 3 years do not consistently produce the allophone [d] before high vowels, in either initial or medial position.

Sesotho also has a system of vowel harmony, where mid vowels are raised in certain phonological environments. Thus, the mid open vowel (*reka* /rɛka/ 'buy') is raised to a mid vowel when followed by a high vowel /i/ (*rekile* /rekile/ 'have bought'). Little is known about when Sesotho-speaking children acquire the rules governing vowel harmony. Like children learning many other languages, Sesotho-speaking children exhibit productive processes of consonant harmony (e.g., *Tlokoeng* /tʰokweŋ/ ⇒ [kokeŋ] 'name of a town'; *ke tla etsa*

/kʰ tʰ a ets'a/ ⇒ [ts'a ets'a] 'I will do (it)'. These examples also show evidence of glide simplification, and a missing/coalesced subject marker. Both are typical of Sesotho speech around 2;6 years.

### Intelligibility

Despite a few problems with some complex segments, missing morphemes, and tone, Sesotho-speaking 2-year-olds are generally intelligible.

### Phonetic inventory

With the exception of the trilled /r/, affricates /tʰ/ and /ts/, the click, /!/, and coarticulated consonants, Sesotho-speaking children appear to have a full phonemic inventory by 2;6 (Demuth, 1992).

### Common mismatches

The trilled /r/ is often replaced by its uvular counterpart. The affricates /tʰ/ and /ts/ are typically realized as /t/, and the click /!/ is realized as /k/, often preserving ejective or aspirated status.

### Syllable structure

Glides occurring as part of the syllable onset may be deleted until 3. Word-medial and word-final syllabic nasals may be syllabified as coda consonants, though this requires further investigation.

### Prosody

Sesotho-speaking 2-year-olds seem to have learned that the penultimate syllable of a phonological phrase is lengthened. However, the degree of lengthening may be shorter than that of adults, leading to a lack of falling tone on the penultimate syllable in certain contexts (Demuth, 1993, 1995a). Declarative/interrogative intonation is generally produced by 2;0 to 2;6.

### Tonal development

The acquisition of fixed lexical tones (High and Low) appears to be completed by the age of 2. However, the rules governing tone sandhi (i.e., tonal change in context, such as the lowering of an underlying High tone when preceded by another underlying High tone in the same prosodic domain) are learned only by the age of 3. This especially affects the first tone of verbs, which at 2 years tends to be produced with High tone, even if the verb is lexically Low. Less is known about the acquisition of grammatical tonal melodies, which distinguish,

for example, the affirmative, negative, and subjunctive (Demuth, 1993, 1995a).

### Phonological awareness

There is little research on Sesotho-speaking children's phonological awareness. However, 3-year-olds often shift to different speech registers when playing house, talking to their newborn siblings, or interacting with nonnative speakers (Demuth, 1992).

## Speech assessment for Sesotho-speaking children

There is little in the way of speech assessment tools for Sesotho or any other southern Bantu language. Preliminary tests of the *MacArthur Communicative Development Inventory* (CDI) (Fenson et al., 1993) are being developed for Swahili and Kigiriana (Alcock et al., 2005). This may be adaptable to other Bantu languages, though vocabulary items will vary depending on the country and climate and on urban/rural context.

There are no standardized tests for assessing Sesotho-speaking children's speech sounds.

Speech sampling tools that have been developed for use with Sesotho-speaking children include the following:

- Spontaneous speech interactions with family members and peers (e.g., Demuth, 1989, 1990).
- Elicited production tasks focusing on specific grammatical constructions (Demuth, Machobane, and Moloi, 2003; Demuth, Machobane, Moloi, and Odat, 2005).

The following analyses have been designed for analyzing Sesotho speech:

- Quantitative analysis of morphological development in spontaneous speech (Ziesler and Demuth, 1995).
- Quantitative analysis of syntactic development using both spontaneous speech and elicited production tasks (Demuth, 1995b; Demuth et al., 2003; Demuth et al., 2005).

## Speech intervention for Sesotho-speaking children

To date, no speech intervention techniques have been developed for Sesotho or any other southern Bantu language.

## Working in Lesotho and South Africa

Working in Lesotho and South Africa has many challenges, but also many opportunities. Under-five clinics and preschools exist in much of Lesotho, even in rural areas, and the same is true in many parts of South Africa. Most parents are generally interested in

their children’s language development. Many who can afford to do so enroll their children in English-medium preschools to ensure that good English language skills are acquired early, because they are the key to later economic success. This makes documentation of normative monolingual development of Sesotho, as well as that of the other South African Bantu languages, all the more pressing.

### PHONETICALLY SPEAKING

#### Pronunciation of Sesotho: /sɪsɔtʰɔ/

##### Relevant words for speech assessment and intervention

Word	Formal usage	Pronunciation
Tongue	<i>leleme</i>	/lɪlɪmɪ/
Teeth	<i>meno</i>	/mɪnɔ/
Lips	<i>melomo</i>	/mɪlɔmɔ/
Hard palate	<i>lehalapa</i>	/lɪhalapɔ/
Soft palate	<i>leshano</i>	/lɪshanɔ/
Larynx	<i>kolu</i>	/kɔlɪ/
Lungs	<i>matsoafo</i>	/matsʰwafɔ/
Nose	<i>nko</i>	/ŋkɔ/
Sound	<i>molumo</i>	/mɔdumɔ/
Word	<i>lentsoe</i>	/lɪntswe/
Sentence	<i>polelo</i>	/pɔlɛlɔ/
Paragraph	<i>seratsoana</i>	/sɪratswana/

## RESOURCES

### Books

Doke, C. M., and Mofokeng, S. M. (1985). *Textbook of Southern Sotho grammar*. Cape Town, South Africa: Longman.

Paroz, R. A. (1974). *Southern Sotho-English dictionary*. Morija: Morija Printing Works.

### Journals

- *South African Journal of African Languages* publishes articles on all aspects of African language research, including occasional papers on language acquisition.
- *The South African Journal of Communication Disorders* publishes articles on all aspects of communication disorders.
- *Southern African Linguistics and Applied Language Studies*, <http://www.ingenta.com/>, publishes articles on a wide range of linguistic and applied linguistic topics

(e.g., syntax, phonology, semantics, sociolinguistics, language teaching, language policy). Acts as a forum for research into all the languages of southern Africa, including English and Afrikaans.

### Professional associations

The South African Speech-Language-Hearing Association (SASLHA), [www.saslha.co.za/](http://www.saslha.co.za/)

### Useful Sesotho Web sites

- *Sesotho Web Page*, <http://www.sesotho.web.za/>
- *Ethnologue*, [http://www.ethnologue.com/show\\_language.asp?code=sot](http://www.ethnologue.com/show_language.asp?code=sot)
- *National African Language Research Center*, <http://lang.nalrc.wisc.edu/nalrc/prog-serv/mat-dev/mat-dev.html>
- *Nation Master – Sesotho*, <http://www.nationmaster.com/encyclopedia/Sesotho-language/>

## REFERENCES

- Alcock, K. J., Rimba, K., Abubakar, A., and Holding, P. (2005). *First words, nouns, and verbs – data from two East African languages*. Paper presented at the 10th International Association for the Study of Child Language, Berlin.
- Connelly, M. (1984). *Basotho children's acquisition of noun morphology*. Unpublished Ph.D. dissertation, University of Essex, UK.
- Deen, K. U. (2002). *The acquisition of Nairobi Swahili: The morphosyntax of inflectional prefixes and subjects*. Unpublished doctoral dissertation, University of California at Los Angeles.
- Demuth, K. (1988). Noun classes and agreement in Sesotho acquisition. In M. Barlow and C. A. Ferguson (Eds.), *Agreement in natural language: Approaches, theories, descriptions* (pp. 305–321). Stanford, CA: Stanford University Center for the Study of Language and Information.
- Demuth, K. (2003). The acquisition of Bantu languages. In D. Nurse and G. Phillipson (Eds.), *The Bantu languages*. (pp. 209–222). Surrey, UK: Curzon Press.
- Demuth, K., and Suzman, S. (1997). Language impairment in Zulu. In E. M. Hughes and A. Green (Eds.), *Proceedings of the 21st Annual Boston University Conference on Language Development* (Vol. 1, pp. 124–135). Somerville, MA: Cascadilla Press.
- Demuth, K. (1989). Maturation and the acquisition of Sesotho passive. *Language*, 65, 56–80.
- Demuth, K. (1990). Subject, topic and the Sesotho passive. *Journal of Child Language*, 17, 67–84.
- Demuth, K. (1992). Acquisition of Sesotho. In D. Slobin (Ed.), *The cross-linguistic study of language acquisition* (Vol. 3, pp. 557–638). Hillsdale, NJ: Lawrence Erlbaum.
- Demuth, K. (1993). Issues in the acquisition of the Sesotho tonal system. *Journal of Child Language* 20, 275–301.
- Demuth, K. (1994). On the 'underspecification' of functional categories in early grammars. In B. Lust, M. Suñer, and J. Whitman (Eds.), *Syntactic theory and first language acquisition: Cross-linguistic perspectives* (pp. 119–134). Hillsdale, NJ: Lawrence Erlbaum.
- Demuth, K. (1995a). Problems in the acquisition of tonal systems. In J. Archibald (Ed.), *The acquisition of non-linear phonology* (pp. 111–134). Hillsdale, NJ: Lawrence Erlbaum.
- Demuth, K. (1995b). Questions, relatives, and minimal projection. *Language Acquisition*, 4, 49–71.

Demuth, K. (1996). The prosodic structure of early words. In J. Morgan and K. Demuth (Eds.), *Signal to syntax: Bootstrapping from speech to grammar in early acquisition* (pp. 171–184). Mahwah, NJ: Lawrence Erlbaum.

Demuth, K., Machobane, M., and Moloi, F. (2003). Rules and construction effects in learning the argument structure of verbs. *Journal of Child Language*, 30, 1–25.

Demuth, K., Machobane, M., Moloi, F., and Odato, C. (2005). Learning animacy hierarchy effects in Sesotho double object applicatives. *Language*, 81 (2), 421–447.

Doke, C. M., and Mofokeng, S. M. (1985). *Textbook of Southern Sotho grammar*. Cape Town, South Africa: Longman.

Fenson, L., Dale, P. A., Reznick, J. S., Thal, D., Bates, E., Hartung, J., Pethick, S., and Reilly, J. S. (1993). *MacArthur Communicative Development Inventories: User's Guide and Technical Manual*. San Diego, CA: Singular.

Gxilishe, S. (2004). The acquisition of clicks by Xhosa-speaking children, *Per Linguam* 20, 1–12.

Kunene, E. (1979). *The acquisition of Swati as a first language: A morphological study with special reference to noun prefixes, noun classes and some agreement markers*. Unpublished Ph.D. dissertation, University of California at Los Angeles.

Lewis, P. W. (1994). *Aspects of the phonological acquisition of clicks in Xhosa*. Unpublished MA thesis, University of Stellenbosch, South Africa.

Lewis, P. W., and Roux, J. C. (1996). A phonological process analysis of the acquisition and loss of clicks in Xhosa, *South African Journal of African Languages*, 16, 1–7.

Mowrer, D. E., and Burger, S. (1991). A comparative analysis of phonological acquisition of consonants in the speech of 21/2–6-year-old Xhosa- and English-speaking children. *Clinical Linguistics and Phonetics*, 3, 139–164.

Naidoo, Y. (2003). *A developmental profile of speech sound and syllable in Zulu speaking children*. Unpublished master's dissertation, University of Pretoria, South Africa.

Penn, C. (1998). The study of child language in South Africa. *Folia Phoniatrica et Logopaedica* 50, 256–270.

Rose, Y., and Demuth, K. (2006). Vowel epenthesis in loanword adaptation: Representational and phonetic considerations. *Lingua*, 116, 1112–1139.

Suzman, S. (1991). *The acquisition of Zulu*. Unpublished Ph.D. dissertation, Witwatersrand University, Johannesburg, South Africa.

Suzman, S. (2002). Morphological accessibility in Zulu. In E. Fava (Ed.), *Clinical linguistics theory and applications in speech pathology and therapy* (pp. 155–174). *Current issues in linguistic theory* 227. Amsterdam: John Benjamins.

Tsonope, J. (1987). *The acquisition of Tswana noun class and agreement morphology, with special reference to demonstratives and possessives*. Unpublished Ph.D. dissertation, State University of New York, Buffalo.

Tuomi, S. K., Gxilishe, S., and Matomela, L. (2001). The acquisition of Xhosa phonemes. *Per Linguam*, 17, 14–23.

Ziesler, Y., and Demuth, K. (1995). Noun class prefixes in Sesotho child-directed speech. In E. Clark (Ed.), *Proceedings of the 26th Child Language Research Forum* (pp. 137–146). Stanford, CA: Center for the Study of Language and Information.

## SUMMARY OF STUDIES OF TYPICAL SESOTHO SPEECH ACQUISITION

Authors	Year	Country	No. of children	Age of children	Information	Sample type	Data collection
Connelly	1984	UK	4	1;6–4;2	Noun class prefixes, clicks	Spontaneous speech corpora	Semi-longitudinal
Demuth	1988	USA	4	2;1–4;7	Noun class prefixes	Spontaneous speech corpora	Longitudinal
Demuth	1992	USA	4	2;1–4;7	Overall grammatical development, review of Bantu acquisition	Spontaneous speech corpora	Longitudinal
Demuth	1993	USA	1	2;1–3;2	Tonal development	Spontaneous speech corpora	Longitudinal

<b>Authors</b>	<b>Year</b>	<b>Country</b>	<b>No. of children</b>	<b>Age of children</b>	<b>Information</b>	<b>Sample type</b>	<b>Data collection</b>
Demuth	1994	USA	4	2;1-4;7	Prosodic constraints on nominal morphology	Spontaneous speech corpora	Longitudinal
Demuth	1995	USA	1	2;1-3;2	Tonal development	Spontaneous speech corpora	Longitudinal
Demuth	1996	USA	4	2;1-4;7	Prosodic constraints on word shape	Spontaneous speech corpora	Longitudinal
Demuth	2003	USA	4	2;1-4;7	Overall grammatical development, review of Bantu acquisition	Spontaneous speech corpora	Longitudinal
Demuth, Machobane, Moloji and Odatu	2005	USA	100	3-12 yrs	Verb-argument structure	Experiments	Cross-sectional