

L I T E R A T U U R L Y S

- ABERCROMBIE, D. *Elements of General Phonetics*. Edinburgh University Press, Edinburgh, 1967.
- APPLEGATE, J.R. "Phonological Rules of Subdialect of English". Word, 17, 1961, pp.186-193.
- A.S.H.A. Reports no. 5. *Speech and the Dentofacial Complex: the State of the Art*. A.S.H.A. Publications, 1970.
- BARKER, J. "A numerical measure of articulation". J.S.H.D. 25(1), 1960, pp.79-88.
- BARKER, J. & ENGLAND, G. "A numerical measure of articulation: Further Developments". J.S.H.D. 27(1), 1962, pp.23-27.
- BEIBOER, J.L., DAMSTÉ, P.H., ELFFERS, P.G. & VAN GRUTING, H.M. *Afwijkende Mondgewoonten*. Stafleu's Wetenschappelijke Uitgeversmaatschappij, NV Leiden, 1970.
- BERESFORD, R. & GRADY, P.A.E. "Some aspects of assessment". Brit. J. Dis. Commun. 3(1), 1968, pp.28-35.
- BERRY, M.F. *Language Disorders of Children - The Bases and Diagnoses*. Appleton-Century-Crofts, Educ. Div., Meredith Corp., New York, 1969.
- BLOOMFIELD, L. *Language*. Henry Holt & Co., New York, 1933.
- DAVIS, E.A. *The Development of Linguistic Skill in Twins, Singletons with siblings, and only children from age 5 to 10 years*. University of Minnesota, Institute of Child Welfare, Monograph Series no. 14. University of Minnesota Press, Minneapolis, 1937.
- EPSTEIN, A.G. "'Articulation' testing". Logopedie en Foniatrie 34(10), 1962.
- FAIRCLOTH, M.A. & FAIRCLOTH, S.R. "An analysis of the articulatory behavior of a speech-defective child in connected speech and isolated word responses". J.S.H.D. 35(1), 1970, pp.51-61.

- FOLEY, H.M. & LOCKE, J.L. "Young children's knowledge of morphological and phonological rules". J.C.D. 4(4), 1971, pp.257-261.
- FRISTOE, M. & GOLDMAN, R. "Comparison of traditional and condensed articulation tests examining the same number of sounds". J.S.H.R. 11(3), 1968, pp.583-589.
- GIMSON, A.C. *An introduction to the pronunciation of English.* Edward Arnold (Publishers) Ltd., London, 1970.
- GOLDMAN, R. & FRISTOE, M. *Goldman-Fristoe Test of Articulation.* American Guidance Service, Inc., Minnesota, 1969.
- GREENBERG, J.H. & JENKINS, J.J. "Studies in the psychological correlates of the sound system of American English". Word 20(2), 1964, pp.157-177.
- HAAS, W. "Phonological analysis of a case of dyslalia". J.S.H.D. 28, 1963, pp.239-246.
- HAGGARD, M.P., CORRIGALL, J.M. & LEGG, A.G. "Perceptual Factors in Articulatory Defects". Folia Phoniatic. 23(1), 1971, pp.33-40.
- HASENKAMP, E. "Eine Lautprüfung bei Schulanfängern der Sprachheilschule". Vox 4-5, 1929, pp.28-33.
- HEJNA, R. *Developmental Articulation Test.* Storrs, Connecticut, U.S.A., 1955.
- HERRIOT, P. *An Introduction to the Psychology of Language.* Methuen & Co. Ltd., London, 1970.
- HIGGS, J.A.W. "The articulation test as a linguistic technique". Lang. & Speech 13(4), 1970, pp.262-270.
- HIGGS, J.A.W. "The phonetic development of word initial /s/ plus stop clusters in a group of young children". Brit. J. Dis. Commun. 3(2), 1968, pp.130-138.
- HOLLIEN, H. "The Templin-Darley Tests of articulation". J.S.H.D. 28(1), 1963, p.97.

- HOUSTON, S.H. *A Survey of Psycholinguistics*. Mouton, The Hague, 1972.
- HUTCHESON, S. "Some quantitative and qualitative criteria in articulation test scoring". Brit. J. Dis. Commun. 3(1), 1968, pp.36-42.
- JAKOBSON, R. *Child Language Aphasia and Phonological Universals*. Janua Linguarum 72. Mouton & Co., The Hague (1941), transl. 1968.
- JESPERSEN, O. *Lehrbuch der Phonetik*. B.G. Teubner, Leipzig und Berlin, 1926.
- JOHNSON, W., DARLEY, F.L., & SPRIESTERSBACH, D.C. *Diagnostic Manual in Speech Correction*. Harper & Brothers Publishers, New York, 1952.
- KAISER, L. (ed.) *Manual of Phonetics*. North-Holland Publishing Co., Amsterdam, 1957.
- KIRK, S.A., McCARTHY, J.J. & KIRK, W.D. *Examiner's Manual, Illinois Test of Psycholinguistic Abilities*, Revised Edition, University of Illinois, U.S.A., 1968.
- KOZHEVNIKOV, V.A. & CHISTOVICH, L.A. *Speech: Articulation and Perception*. (Revised). U.S. Dept. of Commerce. Clearinghouse for federal scientific and technical information. Joint publications research service. Washington, D.C., 1967.
- KRESCHECK, J. FISCHER, H. & RUTHERFORD, D. "A study of /r/ phones in the speech of three-year-old children". Folia Phoniatic. 24(4), 1972, pp.301-312.
- LANHAM, L.W., *The Pronunciation of South African English*. A.A. Balkema, Cape Town & Amsterdam, 1967.
- LEHISTE, I. (ed.). *Readings in Acoustic Phonetics*. MIT Press, Cambridge, Massachusetts, 1967.
- LENNEBERG, E.H. *Biological Foundations of Language*. John Wiley & Sons Inc., New York, 1967.
- LE ROUX, T.H. & PIENAAR, P. DE V. *Afrikaanse Fonetiek*. Juta en Kie Bpk., Kaapstad & Johannesburg, 1927.

- LISKER, L. "Supraglottal air pressure in the production of English stops". Lang. & Speech 13(4), 1970, pp.215-230.
- LUCHSINGER, R. & ARNOLD, G.E. *Voice-Speech-Language: Clinical Communicology: Its Physiology and Pathology*. Wadsworth Publishing Co. Inc., Belmont, California, 1965.
- MALMBERG, B. *Phonetics*. Dover Publications, Inc., New York, 1963.
- MALMBERG, B. (ed.). *Manual of Phonetics*. North-Holland Publishing Co., Amsterdam, 1968.
- MCDONALD, E.T. *Articulation Testing and Treatment. A Sensory-Motor Approach*. Stanwix House Inc., Pittsburgh, 1964.
- MCDONALD, E.T. *A Screening Deep Test of Articulation*. Stanwix House Inc., Pittsburgh, 1968.
- McREYNOLDS, L.V. & HUSTON, K. "A distinctive feature analysis of children's misarticulations". J.S.H.D. 36(2), 1971, pp.55-66
- MENYUK, P. "Comparison of grammar of children with functionally deviant and normal speech". J.S.H.R. 7(2), 1964, pp.109-121.
- MENYUK, P. "The role of distinctive features in children's acquisition of Phonology". J.S.H.R. 11, 1968, pp.138-146.
- MENYUK, P. *The Acquisition and Development of Language*. Prentice-Hall Current Research in Developmental Psychology Series. Prentice Hall Inc., Englewood Cliffs, N.J., 1971.
- MESSER, S. "Implicit phonology in children". J. Verbal Learning Verbal Behav. 6, 1967, pp.609-613.
- MÖHRING, H. *Lautbildungsschwierigkeit im Deutschen*. Dissertation zur Erlangung des Doktorsgrades der philosophischen Fakultät der Hansischen Universität, Hamburg, 1938.

- MONSEES, E.K. & BERMAN, C. "Speech and language screening in a Summer Headstart Program". J.S.H.D. 33(2), 1968, pp.121-126.
- MORLEY, M.E. *The Development and Disorders of Speech in Childhood*. Baltimore, The Williams & Wilkins Co., 1965.
- MORRISON, S. "Measuring the severity of articulation defectiveness". J.S.H.D. 20(4), 1955, pp.347-351.
- MUSSEN, P.H., CONGER, J.J. & KAGAN, J. *Child Development and Personality*. Harper & Row, Publishers, New York, 1963.
- NEL, B.F. & SONNEKUS, M.C. *Die Nel-Sonnekus Ontwikkelingskaal vir Voorskoolse kinders*. Opvoedkundige Studies nr. 42. Werkgemeenskap ter Bevordering van die Pedagogiese Wetenskap, Fakulteit Opvoedkunde, Universiteit van Pretoria, 1957.
- ODENDAL, F.F. *Die Struktuur van die Afrikaanse Wortel morfeem*. Nasionale Raad vir Sosiale Navorsing Dept. Onderwys Kuns en Wetenskap. Publikasiereeks nr. 3, HAUM, Kaapstad & Pretoria, 1962.
- OYER, H.J. *Auditory Communication for the Hard of Hearing*. Prentice Hall Inc., Englewood Cliffs, N.J., 1966.
- PENDERGAST, K., DICKEY, S., SELMAR, J. & SODER, A. *Photo-Articulation Test*. Danville, Ill.: Interstate Publishers, 1968.
- POOLE, I. "Genetic development of articulation of consonant sounds in speech". *Elementary English Review*, 11, 1934, pp.159-161.
- RENFREW, C.E. & GEARY, L. "Prediction of persisting speech defect". Brit. J. Dis. Commun. 8(1), 1973, pp.37-41.
- ROE, V. & MILISEN, R. "The effect of maturation upon defective articulation in elementary grades". J.S.D. 7(1), 1942, pp.37-50.

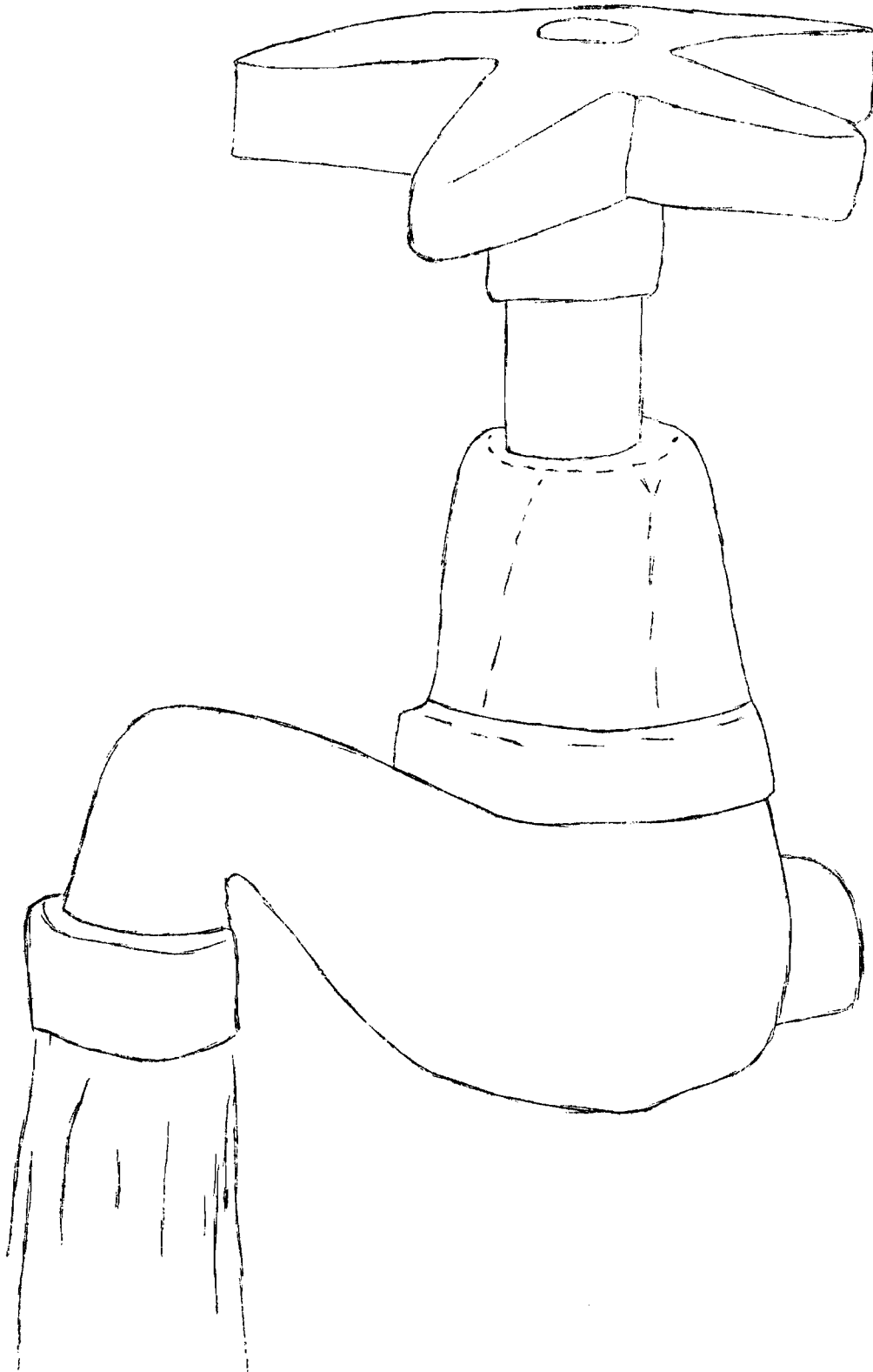
- ROUX, H.C. *'n Ondersoek na die opstel van Foneties-Gebalanseerde Eenlettergrepige Woordelyste vir Spraak-diskriminasietoetsing van Afrikaanssprekende Voorskoolse Kinders.* Verhandeling, B.A. (log), Universiteit van Pretoria, 1970.
- SAPORTA, S. (ed.). *Psycholinguistics: a Book of Readings.* Holt, Rinehart & Winston, New York, 1961.
- SHANKS, S.J., SHARPE, M.R. & JACKSON, B.R. "Spontaneous Responses of first grade children to diagnostic picture articulation tests". J. Commun. Dis. 3(2), 1970, pp.106-117.
- SHOHARA, H.H. "A contribution to the genesis of speech movements and the etiology of stuttering". J.S.D. 6, 1942, pp.29-32.
- SIEGEL, G.M., WINITZ, H. & CONKEY, H. "The influence of testing instrument on articulatory responses of children". J.S.H.D. 28(1), 1963, pp.67-76.
- SMITH, F. & MILLER, G.A. (eds.) *The Genesis of Language: a Psycholinguistic Approach.* Conference on Language Development in Children, Cambridge, MIT, Press, 1967.
- STEWART, A. "Disorders of articulation in children". Brit. J. Dis. Commun. 3(2), 1968, pp.121-129.
- STÖRM, M.G. *'n Voorlopige ondersoek na Diagnostiese Toetse in Afrikaans vir leesprobleme.* B.A. (log) verhandeling, Universiteit van Pretoria, 1972.
- Taber's Cyclopedic Medical Dictionary,* F.A. Davis Co., Philadelphia, U.S.A., 1973.
- TEMPLIN, M.C. "Spontaneous vs. imitated verbalization in testing articulation in preschool children". J.S.D. 12, 1947, p.293.
- TEMPLIN, M.C. "A non-diagnostic articulation test". J.S.D. 12, 1947, p.392.
- TEMPLIN, M.C. "Speech development in the young child: 3. The development of certain language skills in children". J.S.H.D. 28, 1952, pp.280-285.

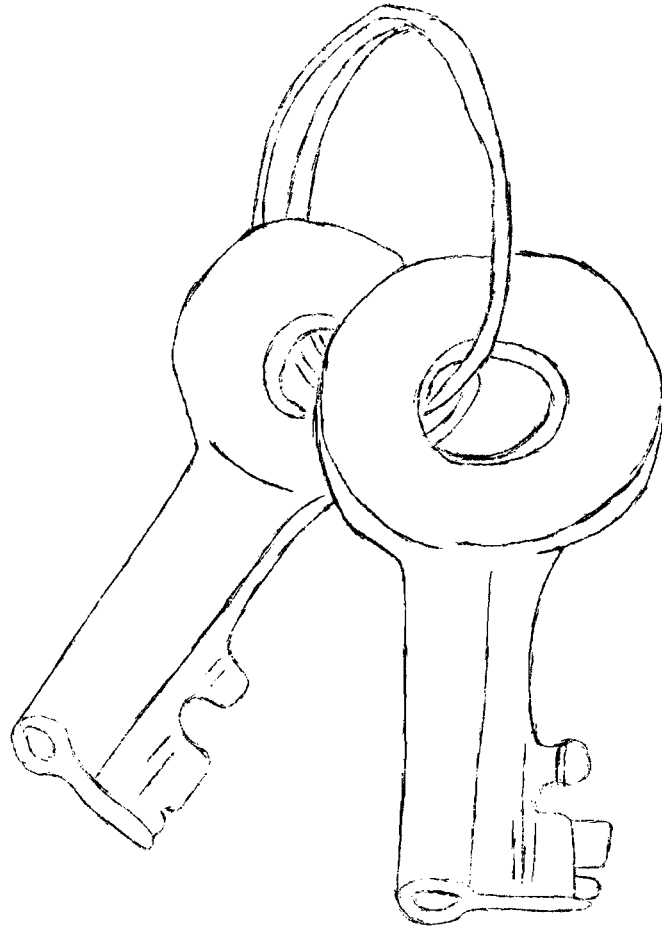
- TEMPLIN, M.C. *Certain Language Skills in Children*.
University of Minnesota Press, Minneapolis, 1957.
- TEMPLIN, M.C. & DARLEY, F.L. *The Templin-Darley Tests of Articulation*. A Manual and Discussion of the Screening and Diagnostic Tests. Bureau of Educ. Research & Service, Ext. Div., State Univ. Iowa, Iowa City, Iowa, 1960.
- TRAVIS, L.E. (ed.) *Handbook of Speech Pathology*. New York, Appleton-Century-Crofts, 1957.
- UYS, I.C. 'n Ondersoek na sekere Biolinguistiese Ver-skynsels by Hakkel. M.A. (log.) Verhandeling, Universiteit van Pretoria, 1969.
- VANDEMARK, A.A. & MANN, M.B. "Oral language skills of children with defective articulation". J.S.H.R. 8(4) 1965, pp.409-414.
- VAN RIPER, C. *Speech Correction-Principles and Methods*. Prentice Hall Inc., Englewood Cliffs, N.J., 1972.
- VAN RIPER, C. & ERICKSON, R. "A predictive screening test of articulation". J.S.H.D. 34, 1969, pp.214-219.
- VELTEN, H.V. "The growth of phonemic and lexical patterns in infant language". Lang. 19, 1943, pp.281-292.
- VYGOTSKY, L.S. *Thought and Language*. (transl. E. Hanfmann & G. Vakar), MIT Press, Cambridge, Massachusetts, 1962.
- WEBER, J.L. "Patterning of deviant articulation behaviour". J.S.H.D. 32(2), 1970, pp.135-141.
- WEIR, R.H. *Language in the Crib*. Mouton, The Hague, 1970.
- WELLMAN, B.L., CASE, I.M., MENGERT, I.G. & BRADBURY, D.E. *Speech Sounds of Young Children*. University of Iowa Studies in Child Welfare, 5(2), 1931.
- WESTON, A.J. (ed.) *Communicative Disorders - An Appraisal*. Charles C. Thomas, Publisher. Springfield, Ill. U.S.A., 1972.

- WHITACRE, J.D., LUPER, H.L. & POLLIO, H.R. "General language deficits in children with articulation problems". Lang. & Speech 13(4), 1970, pp.231-239.
- WHORF, B.L. *Language, Thought and Reality*. Selected writings of B.L. Whorf. (ed. by J.B. Carroll), New York, Wiley, 1956.
- WINITZ, H. "Temporal reliability in articulation testing". J.S.H.D. 28 (3), 1963, pp.247-251.
- WINITZ, H. *Articulatory Acquisition and Behavior*. Appleton-Century-Crofts, Educ. Div., Meredith Corp., New York, 1969.



BYLAE







SAMEVATTING

'N ONDERSOEK NA DIE ONTWIKKELING VAN ARTIKULASIE BY
DIE AFRIKAANSSPREKENDE KIND MET DIE OOG OP DIE OPSTEL
VAN 'N GESKIKTE ARTIKULASIE TOETS

deur

ELSIE CATHARINA LOTTER

LEIER: PROF. I.S. HAY
MEDE-LEIER: PROF. P. DE V. PIENAAR
DEPARTEMENT: SPRAAKWETENSKAP, SPRAAKHEELKUNDE EN
OUDILOGIE
GRAAD: M.A. (Log.)

'n Artikulasietoets is 'n basiese werktuig van die spraaklynikus - dit bied 'n stelselmatige metode van opsporing en aantekening, vir die beskrywing en evaluasie van die produksie van 'n taal se spraakeenhede. In sommige gevalle word ontwikkelingsnorms by die interpretasie van artikulasietoetsresultate gebruik. Daar word nie beweer dat die vasstelling van sulke norms die vernaamste aspek in die ondersoek na artikulasievermoëns is nie; 'n kwalitatiewe ontleding van gegewens bly altyd onontbeerlik. Die basiese gegewens vir navorsingsdoeleindes sluit egter die ontwikkelingsnorms in en daarom word dit as belangrik beskou. Ouderdomsnorms vir artikulasievermoë word op verskeie gebiede benut, vir kliniese en navorsingsdoeleindes. Daar bestaan tans geen gestandaardiseerde Afrikaanse artikulasietoets nie en ontwikkelingsnorms vir die klanke van Afrikaans is nog nie tevore opgestel nie.

In hierdie studie is gepoog om 'n stel ouderdomsnorms vir die artikulasievermoë van die Afrikaanssprekende kind daar te stel en om 'n voorlopige vorm van 'n Afrikaanse Artikulasietoets vir gebruik by jong kinders op te stel. Die gegewens van 999 proefpersone (499 seuns en 500 dogters) tussen die ouderdomme 3-0 en 9-6 jaar is verwerk vir die

vasstelling van die ontwikkelingsnorms. Die toetsmateriaal vir die artikulasietoets is gekies na aanleiding van die response van 2315 proefpersone.

Hoewel daar met toename in ouderdom 'n algemene stygende neiging voorgekom het in die persentasie proefpersone wat die konsonantklanke van Afrikaans korrek produseer, is afnames in hierdie persentasie op bepaalde ouderdomme gevind. 'n Oorsig van die vroegste ouderdom waarop 90% van die proefpersone binne 'n ouderdomsgroep van 12 maande die afsonderlike klanke korrek artikuleer, dui daarop dat die meeste kinders op 8 jr al die konsonantklanke van Afrikaans korrek produseer, met uitsondering van die kombinasie [-rs]. Die klanke [r] en [s] is dan ook die moeilikste enkelklanke, en die tien moeilikste klankkombinasies bevat almal óf [r], óf [s], of albei, as komponente. Die meeste foute het, op enkelklanke, in die eindposisie van woorde voorgekom. Die moeilikheidswaarde van klanke (volgens persentasie foute) wissel na gelang van die manier van artikulasie - wrywingsklanke is die moeilikste, nasale konsonante die maklikste. 'n Aantal voorstelle vir verdere navorsing het uit die gegewens wat in verband met ouderdomsnorms verkry is, gespruit.

Die voorgestelde vorm van die artikulasietoets bied eweneens navorsingsmoontlikhede. Benewens 'n woordelys vir gebruik as artikulasie-inventaris, word verskeie verwerkings en toepassings van verkreë response voorgestel.

Die voorlopige toetsformaat sluit die volgende in:

1. 'n Tabel vir die optekening van response;
2. gegewens vir die berekening van algemene spraakverstaanbaarheid;
3. materiaal vir die ontlokking van 'n monster van aan-
eenlopende spraak;
4. 'n metode vir die ontleding van foutresponse; en
5. 'n stimuleerbaarheidssubtoets vir diagnostiese doeleindes.

As hierdie studie kan dien om verdere navorsing ten opsigte van die breë taalspektrum van Afrikaans te stimuleer, het dit in sy doel geslaag.

SUMMARY

AN INVESTIGATION INTO THE DEVELOPMENT OF ARTICULATION IN
AFRIKAANS-SPEAKING CHILDREN WITH A VIEW TO THE FORMULATION
OF A SUITABLE ARTICULATION TEST

by

ELSIE CATHARINA LOTTER

SUPERVISOR: PROF. I.S. HAY
CO-SUPERVISOR: PROF. P. DE V. PIENAAR
DEPARTMENT: SPEECH SCIENCE, LOGOPAEDICS AND
AUDIOLOGY
DEGREE: M.A. (Log.)

An articulation test is a basic tool for the speech clinician - it provides a systematic method of detection and recording, for describing and evaluating the production of the speech units of a language. In some instances developmental norms are implemented in the interpretation of articulation test results. It is not contended that the determination of such norms is the most important aspect in the investigation of articulatory abilities; a qualitative analysis of results always remains indispensable. The basic data for research purposes, however, include developmental norms and for this reason such norms are regarded as important. Age norms for the development of articulation are used in several spheres, for both clinical and research purposes.

At present, there exists no standardized Afrikaans Articulation Test and developmental norms for the sounds of Afrikaans have not yet been established. This study attempts to provide a set of age norms for the articulatory abilities of Afrikaans-speaking children and to formulate a preliminary Afrikaans articulation test to be used with young children. Data collected from 999 subjects (499 boys and 500 girls) between the ages of 3-0 and 9-6 years, were processed for

the establishment of the developmental norms. The material used for the articulation test was selected according to responses obtained from 2315 subjects.

Although with an increase in age was coupled a tendency for a general rise in the percentage of the subjects who produced the Afrikaans consonant sounds correctly, a decline in this percentage was found at certain age levels. A survey of the earliest age at which 90% of the subjects within an age group of 12 months articulated the individual sounds correctly, reveals that the majority of children produced all the sounds correctly at 8 years, with the exception of the combination [-rs]. The sounds [r] and [s] were found to be the most difficult single sounds; the ten most difficult sound combinations all contained either [r] or [s], or both, as components. More error responses on single sounds occurred in the final word position than in initial or medial position. The difficulty of sounds (according to percentage of errors) varied with manner of articulation - fricative sounds were found to be the most difficult, nasal consonants were found to be the easiest. A number of suggestions for further research arose from the results obtained regarding age norms.

The suggested form of the articulation test also provided research possibilities. In addition to a list of words to be used as an articulation inventory, several computations and applications of responses obtained from subjects are proposed. The preliminary test format includes the following:

1. An index for the recording of responses;
2. data for the computation of general speech intelligibility;
3. material for eliciting a sample of continuous speech;
4. a method for the analysis of error responses; and
5. a stimulability subtest for diagnostic purposes.

If this study can serve to stimulate research in the wider language spectrum of Afrikaans, it will have served its purpose.