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References

- Altvater-Mackensen, N. & Mani, N. (2013). Word-form familiarity bootstraps infant speech segmentation. *Developmental Science*, 16, 6, 980-990.
- Adriaans, F. W. (2011). *The induction of phonotactics for speech segmentation. Converging evidence from computational and human learners*. PhD thesis. LOT: Utrecht.
- Archer, S. L. & Curtin, S. (2011). Perceiving onset clusters in infancy. *Infant behavior and development*, 34, 534-540.
- Bacchini, S., Boland, T., Hulsbeek, M., Pot, H. & Smits, M. (2005). *Duizend-en-een woorden, de allereerste Nederlandse woorden voor anderstalige peuters en kleuters. Stichting leerplanontwikkeling. Een gefundeerde woordenlijst gefuseerd naar verwerving*. [online document]. <http://www.slo.nl/downloads/archief/Duizend-en-een-woorden.pdf/>
- Ball, M. J., Lowry, O. & McInnis, L. (2006). Distribution and stylistic variation in /r/-misarticulations: a case study. *Clinical Linguistics & Phonetics*, 20, 2/3. 119-124.
- Bailey, T.M. & Plunkett, K. (2002). Phonological specificity in early words. *Cognitive Development*, 17, 1265-1282.
- Berko, J. & Brown, R. (1960). Psycholinguistic research methods. In P. H. Mussen (ed.) *Handbook of research methods in child development*. New York: Wiley. 517-557.
- Blevins, J. (1995). The syllable in phonological theory. In Goldsmith J (ed.) *The handbook of phonological theory*. Oxford: Blackwell. 206-244.
- Boersma, P. (1998). *Functional phonology: formalizing the interactions between articulatory and perceptual drives*. PhD thesis. University of Amsterdam.
- Boersma, P. (2011). A programme for bidirectional phonology and phonetics and their acquisition and evolution. In A. Benz & J. Mattausch (eds.) *Bidirectional Optimality Theory*. Amsterdam: John Benjamins. 33-72.
- Boersma, P. & Weenink, D. (2008). Praat: Doing phonetics by computer (Version 5.0.10) [Computer program]. <http://www.praat.org>.
- Boersma, P. & Hamann, S. (2009). Loanword adaptation as first language phonological perception. In A. Calabrese & W. L. Wetzel (eds.) *Loanword phonology*, 11-58. Amsterdam: John Benjamins.

- Bowey, J. A. (2001). Nonword repetition and young children's receptive vocabulary: A longitudinal study. *Applied Psycholinguistics*, 22(03), 441-469.
- Browman C. P. & Goldstein, L. (1989). *Articulatory gestures as phonological units*. Haskins Laboratories Status Report on Speech Research, SR-99, 100, 69-101.
- Browman C. P. & Goldstein, L. (1992). Articulatory phonology: An overview. *Haskins Laboratories Status Report on Speech Research*, 111-112, 23-42.
- Carter, A. & Gerken, L. (2004). Do children's omissions leave traces? *Journal of Child Language*, 31, 561-586.
- Catts, H. W. & Kamhi, A. G. (1984). Simplification of /s/ + stop consonant clusters: a developmental perspective. *Journal of Speech, Language, and Hearing Research*, 27, 556-561.
- Chaney, C. (1988). Acoustic analysis of correct and misarticulated semivowels. *Journal of Speech, Language, and Hearing Research*, 31, 275-287.
- CHILDES (Child Language Data Exchange System). URL: <http://childe.s.psy.cmu.edu/>
- Cohen, L. B., Atkinson, D. J., Chaput, H. H., (2000). Habit X: A new program for obtaining and organizing data in infant perception and cognition studies (Version 1.0)[Computer software] Austin: University of Texas
- De referentie van Chomsky is: Chomsky, N. (1981). *Lectures on Government and Binding*. Mouton de Gruyter.
- Cooper, F. S., Liberman, A. M. & Borst, J. M. (1951). The interconversion of audible and visible patterns as a basis for research in the perception of speech. *Proceedings of the National Academy of Sciences*, 37, 318-325.
- Davis, B. L. & MacNeilage, P. F. (1990). Acquisition of correct vowel production: a quantitative case study. *Journal of Speech and Hearing Research*, 33, 16-27.
- Davis, B. L. & MacNeilage, P. F. (1995). The articulatory basis of babbling. *Journal of Speech and Hearing Research*, 33, 1199-1211.
- Dell, G. S., Martin, N. & Schwartz, M. F. (2007). A case-series test of interactive two-step model of lexical access: Predicting word repetition from picture naming. *Memory and Language*, 56, 490-520.

- Demuth, K. & Fee, J. (1995). Minimal prosodic words in early phonological development. Brown University, Providence, Rhode Island and Dalhousie University, Halifax, Nova Scotia.
- Demuth, K. (1996) The Prosodic Structure of Early Words. In J. Morgan & K. Demuth (eds.). *From Signal to Syntax: Bootstrapping from Speech to Grammar in Early Acquisition*. Hillsdale, N.J.: Lawrence Erlbaum Associates. 171-184.
- Den Ouden, D.B. (2002). *Phonology in Aphasia; Syllables and Segments in Level-specific Deficits*. Doctoral Dissertation, GRODIL 39, University of Groningen.
- Dresher, B. E., & Kaye, J. D. (1990). A computational learning model for metrical phonology. *Cognition*, 34, 2, 137-195.
- Eilers, R. E. & Minifie, F. D. (1975). Fricative discrimination in early infancy. *Journal of Speech, Language and Hearing Research*, 18, 158-167.
- Ellis, A. W. & Young, A. W. (1988). *Human cognitive neuropsychology*. London: Taylor & Francis.
- Fennell, C. T. & Werker, J. F. (2003). Early word learners' ability to access phonetic detail in well-known words. *Language and Speech*, 46, 245-264.
- Ferguson, C. A. & Macken, M. A. (1983). The role of play in phonological development. In K. E. Nelson (ed.) *Children's language*. Hillsdale NJ: Erlbaum.
- Fikkert, P. (1994). *On the acquisition of prosodic structure*. PhD thesis. The Hague: Holland Academic Graphics.
- Gafos, A. (2002). A grammar of gestural coordination. *Natural Language & Linguistic Theory* 20, 269-337.
- Gay, T., Lindblom, J. & Lubker, J. (1981). Production of bite-block vowels : Acoustic equivalence by selective compensation. *Journal of the Acoustic Society of America*, 69, 802-810.
- Gerrits, E. (2010). Acquisition of /s/-clusters in Dutch speaking children with phonological disorders. *Clinical Linguistics and Phonetics*, 24, 3. 199-209.
- Gilbers, D. G. & Den Ouden, D. B. (1994). Compensatory lengthening and cluster reduction in first language acquisition: A comparison of different analyses. In A. de Boer, H. de Hoop, and H. de Swart (eds.) *Language and Cognition 4, Yearbook 1994 of the research group for Linguistic Theory and Knowledge Representation of the University of Groningen*. 69-82.

- Gnanadesikan, R., Kettenring, J. R. and Tsao, S. L. (1995). Weighting and selection of variables for cluster analysis. *Journal of Classification* 12, 1, 113-136.
- Golinkoff, R. M., Hirsh-Pasek, K., Cauley, K. M. & Gordon, L. (1987). The eyes have it. Lexical and syntactic comprehension in a new paradigm. *Journal of Child Language*, 14, 23-45.
- Golinkoff, R. M., Ma, W., Song, L. & Hirsh-Pasek, K. (2013). Twenty-five years using the intermodal preferential looking paradigm to study language acquisition: What have we learned? *Perspectives on psychological science*, 8, 3, 316-339.
- Greenlee, M. (1974). Interacting processes in the child's acquisition of stop-liquid clusters. *Papers and Reports on child language development*, No. 7.
- Gulian, M. (in preparation). Dutch /r/ in word onset clusters: Acoustic analyses of [r] and [ɹ] produced by female speakers.
- Gulian, M. & Levelt, C. C. (2009). An acoustic analysis of child language productions with reduced clusters. In J. Chandlee, M. Franchini, S. Lord, and G.-M. Rheiner (eds.) *Boston University Conference on Language Development 33: on-line proceedings supplement*. [<http://www.bu.edu/bucll/proceedings/supplement/vol33/>]
- Gulian, M. & Levelt, C. C. (2011). Temporal measures of reduced /sC/-clusters in toddler speech: Evidence for a detailed lexical specification. *17th International Congress of Phonetic Sciences, Hong Kong*, 787-790. [http://www.icphs2011.hk/ICPHS_CongressProceedings.htm]
- Gulian, M., Junge, C. & Levelt, C. C. (2014). Two-year-olds distinguish snakes from nakes but not trains from tains. *Proceedings of the 38th Annual Boston University Conference on Language Development*. Somerville, MA: Cascadilla Press.
- Harrington, J. (2010). Acoustic phonetics. In W. D. Hardcastle, J. Laver, and F. E. Gibbon (eds.) *Handbook of phonetic sciences: Second edition*. Chichester: Blackwell Publishing. 81-130.
- Havy, M. & Namy, T. (2009). Better processing of consonantal over vocalic information in word learning at 16 months of age. *Infancy*, 14, 4. 439-456.
- Hayward, K. (2000). *Experimental phonetics*. Pearson Education Limited: Essex.

- Hoff, E., Core, C. & Bridges, K. (2008). Non-word repetition assesses phonological memory and is related to vocabulary development in 20 and 24-month-olds. *Journal of Child Language*, 35, 903-916.
- Jongstra, W. (2003). Variable and stable clusters: Variation in the realization of consonant clusters. *Canadian Journal of Linguistics*, 48, 3/4, 265-288.
- Junge, C. (2011). *The relevance of early word recognition: Insights from the infant brain*. PhD thesis. Enschede: Ipsiakam drukkers
- Kager, R., & Zonneveld, W. (1986). Schwa, syllables, and extrametricality in Dutch. *The Linguistic Review*, 5, 3, 197-221.
- Kent, R. D. & Read, C. (2002). *The acoustic analysis of speech*. Albany: Thomson Learning.
- Knight, R. A., Villafaña-Dalcher, C. V. & Jones, M. J. (2007). A real-time case study of rhotic acquisition in Southern British English. *16th International Congress of Phonetic Sciences*, Saarbrücken, 1581-1584.
- Kohn, S. E., & Goodglass, H. (1985). Picture-naming in aphasia. *Brain and language*, 24, 2, 266-283.
- Ladefoged, P. (2001). *Vowels and Consonants: An introduction into the sounds of languages*. Backwell: Los Angeles
- Ladefoged, P. & Maddieson, I. (1996). *The sounds of the worlds' languages*. Cambridge, MA, and Oxford: Blackwell.
- Lawson, E., Stuart-Smith, J. & Scobbie, J. (2008). Articulatory insights into language variation and change: preliminary findings of derhoticization in Scottish English. *University of Pennsylvania Working Papers in Linguistics*, 14, 2.
- Levelt, C. C. (1994). *On the acquisition of place*. PhD thesis. The Hague: Holland Academic Graphics.
- Levelt, C. C., Schiller, N. O. & Levelt, W. J. (2000). The acquisition of syllable types. *Language acquisition* 8, 3, 237-264.
- Levelt, C. C. (2012). Perception mirrors production in 14- and 18-month-olds: The case of coda consonants. *Cognition*, 123, 174-179.
- Levelt, W. J. M. (1998). The genetic perspective in psycholinguistics or where do spoken words come from? *Journal of Psycholinguistics Research*, 27, 2, 167-180.

- Levelt, W. J. M., Roelofs, A. & Meyer, A. S. (1999). A theory of lexical access in speech production. *Behavioral and Brain Sciences*, 22, 1, 1-75.
- Levelt, C. C. Schiller, N. O. & Levelt, W. J. M. (1999), A developmental grammar of syllable structure in the production of child language. *Brain and Language*, 68, 291-299.
- Lindau, M. (1985), The story of /r/. In V. A. Fromkin (ed.) *Phonetic linguistics. Essays in honor of Peter Ladefoged*. Orlando: Academic Press.
- Lleo, C. & Prinz, M. (1996). Consonant clusters in child phonology and the directionality of syllable structure assignment. *Journal of Child Language*, 23, 01, 31-56.
- Lowenstein, J. H. & Nittrouer, S. (2008). Patterns of acquisition of native voice onset time in English-learning children. *Journal of the Acoustic Society of America*, 124, 1180-1191.
- Macken, M. A. & Barton, D. (1980). The acquisition of the voicing in English: A study of voice onset time in word-initial stop consonants. *Journal of Child Language*, 7, 41-74.
- MacNeilage, P. (1981). Feedback in speech production: An ecological perspective. In: T. Myers, J. Laver & J. Anderson (eds.) *The cognitive representation of speech*. Amsterdam: North-Holland.
- Mani, N., Mills, D. L. & Plunkett, K. (2012). Vowels in early words: an event-related potential study. *Developmental Science*, 15, 2-11.
- Mani, N. & Plunkett, K. (2007). Phonological specificity of vowels and consonants in early lexical representations. *Journal of Memory and Language*, 57, 252-272.
- McLeod, S., Van Doorn, J. & Reed, V. A. (1998). Homonyms in children's productions of consonant clusters. In W. Ziegler & K. Deger (eds.) *Clinical phonetics and linguistics*. London: Whurr. 106-114.
- McLeod, S., Van Doorn, J. & Reed, V. A. (2001). Normal acquisition of consonant clusters. *Language pathology*, 10, 2, 99-110.
- Menn, L. (1976). *Pattern, control, and contrast in beginning speech: A case study in the development of word form and word function*. Doctoral Dissertation, University of Illinois, Urbana. Published, Bloomington: Indiana University Linguistic Club (1979).

- Metsala, J. L. (1999). Young children's phonological awareness and nonword repetition as a function of vocabulary development. *Journal of Educational Psychology, 91, 1, 3.*
- Mills, D. L., Prat, C., Zangl, R., Stager, C. L., Neville, H. J., & Werker, J. F. (2004). Language experience and the organization of brain activity to phonetically similar words: ERP evidence from 14-and 20-month-olds. *Journal of Cognitive Neuroscience, 16, 1452-1464.*
- Munson, B., Edwards, J. & Beckman, M. E. (2005). Relationships between nonword repetition accuracy and other measures of linguistic development in children with phonological disorders. *Journal of Speech, Language and Hearing Research, 48, 61-78.*
- Newman, R. S. (2008). The level of detail in infants' word learning. *Current Directions in Psychological Science, 17, 229-232.*
- Nijland, L. & Maasen, B. (2005). Syllable planning motor programming deficits in developmental apraxia of speech. In R. J. Hartsuiker, R. Bastiaanse, A. Postma, F. Wijnen (eds.), *Phonological encoding and monitoring in normal and pathological speech*. Psychology Press: New York.
- Oller, D. K. & MacNeilage, P. (1983). Development of speech production: perspectives from natural and perturbed speech. In: P. F. MacNeilage (ed.), *The production of speech*. New York: Springer. 91-108.
- Ouden, D. B., Den, (2002), Phonology in aphasia: syllables and segments in level specific deficits. PhD thesis. Enschede: IJskamp.
- Paradis, J. (2011). Individual differences in child English second language acquisition: Comparing child-internal and child-external factors. *Linguistic Approaches to Bilingualism. 1, 3, 213-237.*
- Pater, J. & Barlow, J. (2003). Constraint conflict in cluster reduction. *Journal of Child Language, 30, 487-526.*
- Plug, L. & Ogden, R. (2003). A parametric approach to the phonetics of postvocalic /r/ in Dutch. *Phonetica, 60, 159-186.*
- Prince, A., & Smolensky, P. (1991). *Connectionism and Harmony Theory in linguistics*. University of Colorado, Boulder, Department of Computer Science.
- Pruthi, T., Epsy-Wilson, C.Y. & Story, B. H. (2007). Simulations and analysis of nasalized vowels based on magnetic resonance imaging data. *Journal of the Acoustic Society of America, 121, 3858-3873.*

- Richtsmeier, P. T. (2010). Child phoneme errors are not substitutions. *Toronto Working Papers in Linguistics*, 33: [http://twpl.library.utoronto.ca/index.php/twpl/article/view/6889]
- Rong, P. & Kuehn, D. P. (2010). The effect of oral articulation on the acoustic characteristics of nasalized vowels. *Journal of the Acoustic Society of America*, 127, 4, 2543-2553.
- Rose, Y., MacWhinney, B., Byrne, R., Hedlung, G., Maddocks, K., Obrien, P., & Warenham, T. (2006). Introducing Phon: A software solution for the phonological acquisition. In D. Bamman, T. Magnitskaya, & C. Zaller (eds.). *Proceedings of the 30th Annual Boston University Conference on Language Development*. Somerville, MA: Cascadilla Press.
- Roy, P. & Chiat, S. (2004). A prosodically controlled word and nonword repetition task for 2- and 4-year-olds: Evidence from typically developing children. *Journal of Speech, Language and Hearing Research*, 47, 223-234.
- Scobbie, J. M. (1998). Interactions between the acquisition of phonetics and phonology. In C. Gruber et al. (eds.) *CLS 34: The panels*, 343-358.
- Scobbie, J. M. & Sebregts, K. (2011). Acoustic and phonological perspectives of rhoticity and /r/ in Dutch. In R. Folli and C. Ulbrich (eds.) *Interfaces in linguistics: New research perspectives*. Oxford: Oxford University Press. 257-277.
- Sebregts, K. (2015). *The sociophonetics and phonology of Dutch r*. PhD thesis. Utrecht: LOT.
- Selkirk, E. (1984). On the major class features and syllable theory. In M. Aronoff and R. Oehrle (eds.) *Language sound structure*. Cambridge MA, London: MIT Press. 107-136.
- Shriberg, L. D., & Kwiatkowski, J. (1982). Phonological disorders IIIA procedure for assessing severity of involvement. *Journal of Speech and Hearing Disorders*, 47, 3, 256-270.
- Shriberg, L. D. (1993). Four new speech and prosody-voice measures for genetics research and other studies in developmental phonological disorders. *Journal of Speech, Language, and Hearing Research*, 36, 1, 105-140.
- Shriberg, L. D., Austin, D., Lewis, B. A., McSweeny, J. L., & Wilson, D. L. (1997). The Percentage of Consonants Correct (PCC) MetricExtensions and Reliability Data. *Journal of Speech, Language, and Hearing Research*, 40, 4, 708-722.

- Smit, A. B. (1993). Phonological error distributions in the Iowa-Nebraska articulation norms: Word-initial consonant cluster. *Journal of Speech, Language and Hearing Research, 36*, 5, 931-947.
- Smolensky, P. (1996). On the comprehension/production dilemma in child language. *Linguistic Inquiry, 27*, 720-731.
- Song, J. Y. & Demuth, K. (2008). Compensatory vowel lengthening for omitted coda consonants: A phonetic investigation of children's early representations of prosodic words. *Language and Speech, 51*, 385-402.
- Stackhouse, J. & Wells, B. (1997). *Children speech and literacy difficulties: A psycholinguistic framework*. London: Whurr.
- Stager, C. L. & Werker, J. F. (1997). Infants listen for more phonetic detail in speech perception than in word-learning tasks. *Nature, 388*, 381-382.
- Steele, J. (2002). L2 learners' modification of target language syllable structure: prosodic licensing effects in interlanguage phonology. In A. James & L. Leather (eds.) *New Sounds 2000: Proceedings of the 4th International Symposium on the Acquisition of Second Language Speech*. Klagenfurt: University of Klagenfurt. 315-324.
- Studdert-Kennedy, M. (1987). The phoneme as a perceptuomotor structure. In A. Allport, D. MacKay, W. Prizz, W & E. Scheerer (eds.) *Language perception and production*. Academic Press: London.
- Swingley, D. & Aslin, R. N. (2000). Spoken word recognition and lexical representation in very young children, *Cognition, 76*, 147-166.
- Swingley, D. & Aslin, R. N. (2007). Lexical competition in young children's word learning. *Cognitive Psychology, 54*, 99-132.
- Swingley, D. (2003). Phonetic detail in the developing lexicon. *Language and Speech, 46*, 265-294.
- Swingley, D. (2005). 11-month-olds' knowledge of how familiar words sound. *Developmental science, 8*, 5, 432-443.
- Swingley, D. (2009). Onset and codas in 1.5-year-olds' word recognition. *Journal of memory and language, 60*, 252-269.
- Trehub, S. E. & Shenfield, T. (2007). Acquisition of early words from single-word and sentential contexts. *Developmental Science, 10*, 2, 190-198.

- Trommelen, M. (1984). *The Syllable in Dutch*. Dordrecht: Foris
- Van der Feest, S. V. H. (2007). *Building a phonological lexicon: the acquisition of the Dutch voicing contrast in perception and production*. PhD thesis. Radboud University Nijmegen.
- Van der Stelt, J. M., Zajdo, K., Wempe, T. G. & Pols, L. C. W. (2005). Exploring the acoustic vowel space in two-year-old children. Results from Dutch and Hungarian. *Speech Communication*, 47, 143–159.
- Van Leeussen, J. W. (2009). *Investigating consonant inventories with acoustic and articulatory models*. MA thesis. University of Amsterdam.
- Vance, M., Stackhouse, J. & Wells, B. (2005). Speech-production skills in children ages 3-7 years. *International Journal of Language and Communication Disorders*, 40, 1, 29-48.
- Wanrooij, K., Boersma, P. & van Zuijen, T. L. (2014). Fast phonetic learning occurs already in two-to-three month olds: an ERP study. *Frontiers in psychology*, 5, 77, 1-12.
- Weenink, D. J. M., (1985). Formant analysis of Dutch vowels from 10 children. *Proceedings of the Institute of Phonetic Sciences of the University of Amsterdam*, 9, 45–52.
- Werker, J. F. & Tees, R. C. (1984). Cross-language speech perception: Evidence for perceptual reorganization during the first year of life. *Infant behavior and Development*, 7, 49-63.
- White, K. S. & Morgan, J. L. (2008). Sub-segmental detail in early lexical representations. *Journal of Memory and Language*, 59, 114–132.
- Wijnen, F. (1990). *On the development of language production mechanisms*. PhD thesis. Katholieke Universiteit Nijmegen.
- Zamuner, T. (2006). Sensitivity to word final phonotactics in 9- to 16-month-old infants. *Infancy*, 10, 1, 77-95.
- Zamuner, T. (2009). Phonotactic probabilities at the onset of language development: speech production and word position. *Journal of Speech, Language and Hearing Research*, 52, 49-60.
- Szekely, A., D'Amico, S., Devescovi, A., Federmeier, K., Herron, D., Iuer, G., Jacobsen, T. & Bates, E. (2003). Timed picture naming: Extended norms and validation against previous studies. *Behavior Research Methods, Instruments, & Computers*, 35, pp. 621-633.

Zink, I. & Lejaegere, M. (2003). *N-CDI's Lijsten voor Communicatieve ontwikkeling: korte vormen. Aanpassing en hernormering van de Mac Arthur Short Form Vocabulary Communicative Developmental Inventories*. Acco: Leuven/ Leusden.

