

### Supplemental Material S3. Included articles in the analysis.

Notes: \* indicates the paper met or nearly met the quality criteria and was included in the further analysis of discriminative measures / markers

- Aziz, A. A., Shohdi, S., Osman, D. M., & Habib, E. I. (2010). Childhood apraxia of speech and multiple phonological disorders in Cairo-Egyptian Arabic speaking children: language, speech, and oro-motor differences. *International Journal of Pediatric Otorhinolaryngology*, 74(6), 578-585. doi:<http://dx.doi.org/10.1016/j.ijporl.2010.02.003>
- Bahr, R. H. (2005). Differential diagnosis of severe speech disorders using speech gestures. *Topics in Language Disorders*, 25(3), 254-286.
- Barry, R. M. (1995). The Relationship between Dysarthria and Verbal Dyspraxia in Children: A Comparative Study Using Profiling and Instrumental Analyses. *Clinical Linguistics & Phonetics*, 9(4), 277-305.
- Baylis, A. L., & Shriberg, L. D. (2018). Estimates of the Prevalence of Speech and Motor Speech Disorders in Youth With 22q11.2 Deletion Syndrome. *American Journal of Speech-Language Pathology*, 1-30. doi:[https://dx.doi.org/10.1044/2018\\_AJSLP-18-0037](https://dx.doi.org/10.1044/2018_AJSLP-18-0037)
- Betz, S. K., & Stoel-Gammon, C. (2005). Measuring articulatory error consistency in children with developmental apraxia of speech. *Clinical Linguistics & Phonetics*, 19(1), 53-66.
- Bradford-Heit, A., & Dodd, B. (1998). Learning new words using imitation and additional cues: Differences between children and disordered speech. *Child Language Teaching and Therapy*, 14(2), 159-179. doi:<http://dx.doi.org/10.1191/026565998674298897>
- \* Bradford, A., & Dodd, B. (1996). Do All Speech-Disordered Children Have Motor Deficits? *Clinical Linguistics & Phonetics*, 10(2), 77-101.
- \* Bradford, A., Murdoch, B., Thompson, E., & Stokes, P. (1997). Lip and Tongue Function in Children with Developmental Speech Disorders: A Preliminary Investigation. *Clinical Linguistics & Phonetics*, 11(5), 363-387.
- Byrd, K., & Cooper, E. B. (1989). Apraxic Speech Characteristics in Stuttering, Developmentally Apraxic, and Normal Speaking Children. *Journal of Fluency Disorders*, 14(3), 215-229.
- Camos, V., Fayol, M., Lacert, P., Bardi, A., & Laquiere, C. (1998). Counting in Dysphasic and Dyspraxic Children. [Le Denombrement chez des enfants dysphasiques et des enfants dyspraxiques]. *A.N.A.E.*, 10(3), 86-91.
- Djordjevic, V., & Golubovic, S. (2012). Characteristics of fundamental laryngeal voice (f0) in developmental verbal apraxia. *HealthMED*, 6(6), 2140-2146.
- Hayden, D. A. (1994). Differential diagnosis of motor speech dysfunction in children. *Clinics in Communication Disorders*, 4(2), 119-141.
- \* Iuzzini-Seigel, J., Hogan Tiffany, P., & Green Jordan, R. (2017). Speech Inconsistency in Children With Childhood Apraxia of Speech, Language Impairment, and Speech Delay: Depends on the Stimuli. *Journal of Speech, Language, and Hearing Research*, 60(5), 1194-1210. doi:10.1044/2016\_JSLHR-S-15-0184
- \* Iuzzini-Seigel, J., Hogan, T. P., Guarino, A. J., & Green, J. R. (2015). Reliance on auditory feedback in children with childhood apraxia of speech. *Journal of Communication Disorders*, 54, 32-42. doi:<http://dx.doi.org/10.1016/j.jcomdis.2015.01.002>

- Iuzzini, J. (2012). Inconsistency of speech in children with Childhood Apraxia of Speech, phonological disorders, and typical speech. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 73(7-B(E)), No Pagination Specified.
- Keske-Soares, M., Uberti, L. B., Gubiani, M. B., Gubiani, M. B., Ceron, M. I., & Pagliarin, K. C. (2018). Performance of children with speech sound disorders in the dynamic evaluation of motor speech skills. *CODAS*, 30(2). doi:10.1590/2317-1782/20182017037
- Lewis, B. A., Avrich, A. A., Freebairn, L. A., Taylor, H., Iyengar, S. K., & Stein, C. M. (2011). Subtyping children with speech sound disorders by endophenotypes. *Topics in Language Disorders*, 31(2), 112-127. doi:<http://dx.doi.org/10.1097/TLD.0b013e318217b5dd>
- Lewis, B. A., Freebairn, L., Tag, J., Benchek, P., Morris, N. J., Iyengar, S. K., . . . Stein, C. M. (2018). Heritability and longitudinal outcomes of spelling skills in individuals with histories of early speech and language disorders. *Learning and Individual Differences*, 65, 1-11. doi:10.1016/j.lindif.2018.05.001
- Lewis, B. A., Freebairn, L. A., Hansen, A., Taylor, H., Iyengar, S. K., & Shriberg, L. D. (2004). Family pedigrees of children with suspected childhood apraxia of speech. *Journal of Communication Disorders*, 37(2), 157-175. doi:<http://dx.doi.org/10.1016/j.jcomdis.2003.08.003>
- Lewis, B. A., Freebairn, L. A., Hansen, A. J., Iyengar, S. K., & Taylor, H. (2004). School-age follow-up of children with childhood apraxia of speech. *Language, Speech, and Hearing Services in Schools*, 35(2), 122-140. doi:<http://dx.doi.org/10.1044/0161-1461%282004/014%29>
- Maas, E., & Mailend, M. L. (2017). Fricative contrast and coarticulation in children with and without speech sound disorders. *American Journal of Speech-Language Pathology*, 26(2), 649-663.
- Maassen, B. (2004). Speech output disorders. In *Classification of developmental language disorders: Theoretical issues and clinical implications* (pp. 175-190). Mahwah, NJ: Lawrence Erlbaum Associates Publishers; US.
- McNeill, B., Gillon, G., & Dodd, B. (2009). Phonological awareness and early reading development in childhood apraxia of speech (CAS). *International Journal of Language & Communication Disorders*, 44(2), 175-192. doi:<http://dx.doi.org/10.1080/13682820801997353>
- Mei, C., Fedorenko, E., Amor, D. J., Boys, A., Hoeflin, C., Carew, P., . . . Morgan, A. T. (2018). Deep phenotyping of speech and language skills in individuals with 16p11.2 deletion. *European Journal of Human Genetics*, 26(5), 676-686. doi:10.1038/s41431-018-0102-x
- Morgan, A. T., Haafte, L. V., Van Hulst, K., Edley, C., Mei, C., Tan, T. Y., . . . Koolen, D. A. (2018). Early speech development in Koolen de Vries syndrome limited by oral praxis and hypotonia. *European Journal of Human Genetics*, 26(1), 75-84. doi:10.1038/s41431-017-0035-9
- Moss, A., & Grigos, M. I. (2012). Interarticulatory coordination of the lips and jaw in childhood apraxia of speech. *Journal of Medical Speech-Language Pathology*, 20(4), 127-132.
- Munson, B., Bjorum, E. M., & Windsor, J. (2003). Acoustic and Perceptual Correlates of Stress in Nonwords Produced by Children With Suspected Developmental Apraxia of Speech and Children With Phonological Disorder. *Journal of Speech, Language, and Hearing Research*, 46(1), 189-202. doi:<http://dx.doi.org/10.1044/1092-4388%282003/015%29>

- \* Murray, E., Mc Cabe, P., Heard, R., & Ballard, K. J. (2015). Differential diagnosis of children with suspected childhood apraxia of speech. *Journal of Speech, Language, and Hearing Research*, 58(1), 43-60. doi:10.1044/2014\_JSLHR-S-12-0358
- Nijland, L. (2009). Speech perception in children with speech output disorders. *Clinical Linguistics & Phonetics*, 23(3), 222-239.
- Parsons, C. L., Cox, A. L., & Reed, A. L. (1988). A Comparison of Verb Usage in Children with Developmental Apraxia of Speech, Functional Articulation Problems, and Normal Articulation. *Australian Journal of Human Communication Disorders*, 16(2), 45-53.
- \* Peter, B. (2006). *Multivariate characteristics and data-based disorder classification in children with speech disorders of unknown origin*. (PhD), University of Washington, Unpublished dissertation. Retrieved from Linguistics and Language Behavior Abstracts (LLBA) database.
- Potter, N. L., Nievergelt, Y., & Shriberg, L. D. (2013). Motor and speech disorders in classic galactosemia. *Jimd Reports*, 11, 31-41. doi:[http://dx.doi.org/10.1007/8904\\_2013\\_219](http://dx.doi.org/10.1007/8904_2013_219)
- Prichard, C. L., Tekieli, M. E., & Kozup, J. M. (1979). Developmental Apraxia: Diagnostic Considerations. *Journal of Communication Disorders*, 12(4), 337-348.
- Shriberg, L. D., Campbell, T. F., Karlsson, H. B., Brown, R. L., McSweeney, J. L., & Nadler, C. J. (2003). A diagnostic marker for childhood apraxia of speech: the lexical stress ratio. *Clinical Linguistics & Phonetics*, 17(7), 549-574.

- Shriberg, L. D., & et al. (1997). Developmental Apraxia of Speech: II. Toward a Diagnostic Marker. *Journal of Speech, Language, and Hearing Research*, *40*(2), 286-312.
- Shriberg, L. D., Green, J. R., Campbell, T. F., McSweeney, J. L., & Scheer, A. R. (2003). A diagnostic marker for childhood apraxia of speech: the coefficient of variation ratio. *Clinical Linguistics & Phonetics*, *17*(7), 575-595.
- \* Shriberg, L. D., Lohmeier, H. L., Strand, E. A., & Jakielski, K. J. (2012). Encoding, memory, and transcoding deficits in Childhood Apraxia of Speech. *Clinical Linguistics & Phonetics*, *26*(5), 445-482. doi:10.3109/02699206.2012.655841
- Shriberg, L. D., Paul, R., Black, L. M., & van Santen, J. P. (2011). The hypothesis of apraxia of speech in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *41*(4), 405-426. doi:http://dx.doi.org/10.1007/s10803-010-1117-5
- \* Shriberg, L. D., Potter, N. L., & Strand, E. A. (2011). Prevalence and Phenotype of Childhood Apraxia of Speech in Youth With Galactosemia. *Journal of Speech, Language & Hearing Research*, *54*(2), 487-519. doi:1092-4388(2010/10-0068)
- \* Shriberg, L. D., Strand, E. A., Fourakis, M., Jakielski, K. J., Hall, S. D., Karlsson, H. B., . . . Wilson, D. L. (2017a). A Diagnostic Marker to Discriminate Childhood Apraxia of Speech From Speech Delay: II. Validity Studies of the Pause Marker *Journal of Speech, Language & Hearing Research*, *60*(4), S1118-s1134. doi:10.1044/2016\_jslhr-s-15-0297
- \* Shriberg, L. D., Strand, E. A., Fourakis, M., Jakielski, K. J., Hall, S. D., Karlsson, H. B., . . . Wilson, D. L. (2017b). A Diagnostic Marker to Discriminate Childhood Apraxia of Speech From Speech Delay: III. Theoretical Coherence of the Pause Marker with Speech Processing Deficits in Childhood Apraxia of Speech. *Journal of Speech, Language & Hearing Research*, *60*(4), S1135-s1152. doi:10.1044/2016\_jslhr-s-15-0298
- Smith, B., Marquardt, T. P., Cannito, M. P., & Davis, B. L. (1994). Vowel Variability in Developmental Apraxia of Speech. In J. A. Till, K. M. Yorkston, & D. R. Beukelman (Eds.), *Motor Speech Disorders: Advances in Assessment and Treatment*. Baltimore, MD: Brookes Publishing.
- \* Strand, E. A., McCauley, R. J., Weigand, S. D., Stoeckel, R. E., & Baas, B. S. (2013). A Motor Speech Assessment for Children With Severe Speech Disorders: Reliability and Validity Evidence. *Journal of Speech, Language & Hearing Research*, *56*(2), 505-520. doi:1092-4388(2012/12-0094)
- Terband, H., Maassen, B., van Lieshout, P., & Nijland, L. (2011). Stability and composition of functional synergies for speech movements in children with developmental speech disorders. *Journal of Communication Disorders*, *44*(1), 59-74.
- Terband, H., Zaalen, Y. V., & Maassen, B. (2012). Lateral jaw stability in adults, children, and children with developmental speech disorders. *Journal of Medical Speech-Language Pathology*, *20*(4), 112-118.
- \* Thoonen, G., Maassen, B., Gabreëls, F., & Schreuder, R. (1999). Validity of maximum performance tasks to diagnose motor speech disorders in children. *Clinical Linguistics and Phonetics*, *13*(1), 1-23.
- \* Thoonen, G., Maassen, B., Wit, J., Gabreëls, F., & Schreuder, R. (1996). The integrated use of maximum performance tasks in differential diagnostic evaluations among children with motor speech disorders. *Clinical Linguistics and Phonetics*, *10*(4), 311-336.
- Velleman, S. L., & Shriberg, L. D. (1999). Metrical analysis of the speech of children with suspected developmental apraxia of speech. *Journal of Speech, Language & Hearing Research*, *42*(6), 1444-1460.

- Vick, J. C., Campbell, T. F., Shriberg, L. D., Green, J. R., Truemper, K., Rusiewicz, H. L., & Moore, C. A. (2014). Data-Driven Subclassification of Speech Sound Disorders in Preschool Children. *Journal of Speech, Language & Hearing Research, 57*(6), 2033-2050. doi:10.1044/2014\_JSLHR-S-12-0193
- Williams, R., Ingham, R. J., & Rosenthal, J. (1981). A further analysis for developmental apraxia of speech in children with defective articulation. *Journal of Speech & Hearing Research, 24*(4), 496-505. doi:http://dx.doi.org/10.1044/jshr.2404.496
- Yoss, K. A., & Darley, F. L. (1974). Developmental apraxia of speech in children with defective articulation. *Journal of Speech & Hearing Research, 17*(3), 399-416. doi:http://dx.doi.org/10.1044/jshr.1703.399
- \* Ziethe, A., Springer, L., Willmes, K., & Kröger, B. J. (2013). Study of core features of children with childhood apraxia of speech aged between 4 and 7 years. *Sprache Stimme Gehör, 37*(4), 210-214. doi:10.1055/s-0032-1323786
- \* Zuk, J., Iuzzini-Seigel, J., Cabbage, K., Green, J. R., & Hogan, T. P. (2018). Poor speech perception is not a core deficit of childhood apraxia of speech: Preliminary findings. *Journal of Speech, Language, and Hearing Research, 61*(3), 583-592. doi:10.1044/2017\_JSLHR-S-16-0106