

Volubility, Consonant Emergence, and Syllabic Structure in Infants and Toddlers Later Diagnosed with Childhood Apraxia of Speech, Speech Sound Disorder, and Typical Development: A Retrospective Video Analysis

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Authors: Megan S Overby, Susan S. Caspari, James Schreiber

Article Summary

The purpose of this study was to examine the speech sound development between birth and age 2 years of children diagnosed with childhood apraxia of speech (CAS). We compared this development to that of children with typical development and children who had been diagnosed with other types of speech sound disorder (such as articulation errors) to determine whether the early speech sound development of infants and toddlers later diagnosed with CAS was different than that of other infants and toddlers.



There were seven children with CAS, five with a speech sound disorder other than CAS, and five who were typically developing. Children (who were between the ages of 3 and 9 years old) underwent an extensive motor speech exam, speech sound assessment, and language assessment by the first or second author. Using results from these assessments, children were diagnosed following an investigator-made flowchart decision guide. CAS was diagnosed using a pediatric adaptation of the Mayo Clinic System to identify motor speech disorders and a speech sound disorder was diagnosed if there were no signs of motor speech disorder but standard score speech sound performance was <85. Children in this investigation had no significant hearing loss, cognitive delay, or had evidence of any other disorder that could affect communication (such as autism). After the child's speech-language assessment, the child's parent(s) provided the investigators with at least 40 minutes of video-recording of the child between birth and age 2 years.

The investigators analyzed all the utterances (about 14,000 in total) from these video-recordings and compared the frequency of vocalizations and the emergence of consonants among the three groups of participants. Statistical comparisons were made. Compared to the other two groups, the infants and toddlers later diagnosed with CAS used notably fewer utterances that could be transcribed into English speech sounds and many more utterances that consisted of unclear, undifferentiated sounds. In addition, the infants and toddlers with CAS used fewer consonants and had a less diverse repertoire of consonants and syllable shapes than participants in the comparison groups.

The results were then compared to findings from other investigations of the early speech sound development of infants and toddlers later diagnosed with CAS. The consistency of the results across investigations led us to propose some tentative guidelines for identifying CAS in children aged 2 years. These preliminary guidelines are:

1. Limited vocalization in the first 2 years of life, especially for sounds in the language.
2. Lack of a consonant by 12 months of age.
3. Use of fewer than three consonants by 16 months of age, and/or fewer than five consonants by 24 months of age.
4. Limited to no velar (/k/, /g/) production.
5. Favoritism of stops (/b/, /p/, /t/, /d/) and nasals (/m/, /n/, "ng") over other consonants.

6. Productions at 13-18 months are largely vowels with little use of other syllable shapes (such as consonant-vowel-consonant, etc.)

These results must be considered preliminary. Replication and additional study is necessary before these guidelines can be considered generalizable. In addition, children's speech sound development is widely variable so any guidelines must be used cautiously.