



Diagnostic Criteria for Childhood Apraxia of Speech: A Survey Study

Kelli Vossbeck, Graduate Student, Eastern Washington University
Amy Meredith, Ph.D., Washington State University



Background

- The diagnostic criteria for childhood apraxia of speech (CAS) used among SLPs are highly variable and often contradictory.
- "At present, there is no validated list of diagnostic features of CAS that differentiates this symptom complex from other types of childhood speech sound disorders." (ASHA, 2007, p.4)
- "Clearly the major source of over diagnosis of CAS is the inconsistent and conflicting behavioral features purported to be diagnostic signs of CAS." (ASHA, 2007, p.6)
- ASHA (2007) position statement on CAS included three characteristics cited as hallmark features of CAS: 1.) inconsistent errors on consonants and vowels in repeated productions of syllables or words 2.) lengthened and disrupted coarticulatory transitions between sounds and syllables 3.) inappropriate prosody, especially in the realization of lexical or phrasal stress.
- Forrest (2003) examined the diagnostic characteristics used by 75 SLPs in association with CAS.
 - Findings: 49 different characteristics were being used.
 - Conclusion: the diagnostic criteria for CAS lacks clarity and no single characteristic is used consistently among professionals.

Purpose

Define the diagnostic characteristics used in association with CAS and examine the impact of the ASHA position statement on CAS.

Research Questions:

- What are the diagnostic characteristics currently being used by SLPs in association with childhood apraxia of speech?
- Have these characteristics changed since Forrest's study in 2003?
- Did the ASHA position statement (2007) have an impact on the characteristics being used?

Method

Subjects

- A total of 137 SLPs were surveyed at three professional conferences addressing the diagnosis and treatment of childhood apraxia of speech (Alabama, Utah, and New Mexico).
- Participants were divided into two groups:
 - Group 1: those who read the position statement (n=22)
 - Group 2: those who had not (n=109)
- If the participant did not specify, the survey data was not analyzed (n=6).

Materials

- Survey consisted of four questions:
 - List the most essential diagnostic features of childhood apraxia of speech.
 - Rank characteristics cited by Forrest (2003) according to level of importance using a 1-4 rating scale. See table 4 for list of characteristics used for rating.
 - Have you read the ASHA position statement on CAS?
 - If yes, did it impact the process you use to diagnose CAS?

Procedures

- Surveys were administered at the beginning of each conference before any information on CAS had been presented.
- All specific directions needed for completion were contained within the survey. No additional instructions were given.

Data Analysis

- Group 1: For survey question #1, 20 responses were used for analysis. One was not used due to lack of clarity in the response, and 1 was blank. For survey question #2, a total of 18 surveys, which included ratings for all characteristics, were used for analysis.
- Group 2: For survey question #1, 89 responses were used for analysis. Two were not used due to lack of clarity in the responses, and 18 were blank. For survey question #2, a total of 88 surveys, which included ratings for all characteristics, were used for analysis.
- For the purpose of comparing results with Forrest (2003), 4 of her original characteristics were grouped with other similar characteristics, resulting in a total of 45 characteristics, versus her originally listed 49.

Results

Table 1. Summary of results.

All Participants (n=109)	Participants who read the position statement (n=20)	Participants who had not read position statement (n=89)
Research Question #1		
53 different characteristics were identified as essential features of CAS.	33 different characteristics were identified as essential features of CAS.	43 different characteristics were identified as essential features of CAS.
Research Question #2		
29/45 of the characteristics identified by Forrest (2003) were also identified by participants of the present study.	22/45 of the characteristics identified by Forrest were also identified. 85% of Forrest's top 20 characteristics were identified.	28/45 of the characteristics identified by Forrest were also identified. 90% of Forrest's top 20 characteristics were identified.
Research Question #3		
Among participants that had read the position statement (n=22), 50% indicated that it impacted their process for diagnosing CAS.		

Table 2. Top 10 characteristics identified by participants who had read the ASHA position statement (n=20) with frequency and percent for each.

Characteristic	Freq.	%
1. Inconsistent productions	15	75%
2. Groping	10	50%
3. Presence of vowel errors	8	40%
4. Increased errors with increased utterance length	6	30%
5. Unable to imitate	5	25%
6. Poor sequencing of sounds	4	20%
7. Low phonetic inventory	4	20%
8. General oral-motor difficulties	3	15%
9. Slow progress in therapy	3	15%
10. Poor intelligibility	3	15%

Table 3. Top 10 characteristics identified by participants who had not read the ASHA position statement (n=89) with frequency and percent for each.

Characteristic	Freq.	%
1. Inconsistent productions	50	56%
2. Groping	23	26%
3. General oral-motor difficulties	20	22%
4. Unable to imitate	20	22%
5. Presence of vowel errors	18	20%
6. Increased errors with increased utterance length	16	18%
7. Poor intelligibility	16	18%
8. Poor sequencing of sounds	15	17%
9. Slow progress in therapy	14	16%
10. Motor planning/programming problems	13	15%

Figure 1. Comparison of percent of participants that identified the top 20 characteristics by Group 1 (those that had read the ASHA position statement on CAS), Group 2 (those that had not read the position statement) and Forrest's (2003) results.

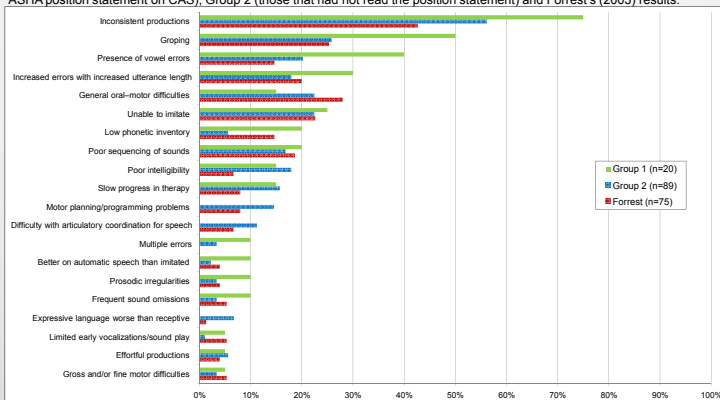
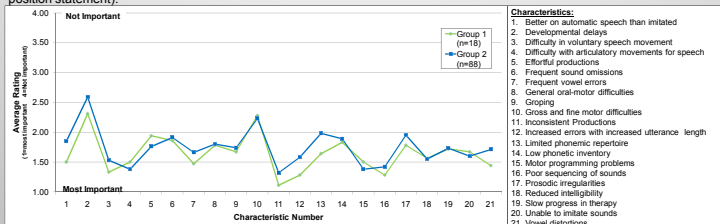


Table 4. Comparison of average characteristic ratings between Group 1 (read position statement) and Group 2 (had not read position statement).



Conclusions/Discussion

- What are the diagnostic characteristics currently being used by SLPs in association with childhood apraxia of speech?**
 - Results from this study support previous research findings (Forrest, 2003) that the diagnostic features used in association with CAS are highly variable, with no general consensus among professionals. See table 1. Top characteristics identified can be found in Tables 1 & 2.
- Have these characteristics changed since Forrest's study in 2003?**
 - Comparison of data found by Forrest (2003) and results of the present study shows that there is no more agreement among professionals regarding key features of CAS than there was five years ago. See table 1 and figure 1.
- Did the ASHA position statement (2007) have an impact on the characteristics being used?**
 - No dramatic differences in the diagnostic characteristics used for CAS were seen among those that had read the ASHA position statement and those that had not. In fact, there was 90% agreement between the two groups on the ten most important characteristics. See table 1 & 2.
 - Regarding the top four characteristics identified in this study, participants in Group 1 showed more consensus regarding their importance as diagnostic features of CAS than participants of Group 2. See figure 1.
 - Participants from both groups in this study rated diagnostic characteristics similarly with regards to their level of importance for CAS. See figure 2.
 - Characteristics which were rated higher by Group 1 include: better on automatic speech than imitated, inconsistent productions, increased errors with increased utterance length, limited phonemic repertoire, and vowel distortions; all of which were mentioned in the position statement as being features of CAS that are less likely to occur in other non-apraxic speech sound disorders. See figure 2.
 - Of the three characteristics listed as hallmark features of CAS in the position statement, the first, inconsistent errors, was identified by 75% of participants in Group 1 and 56% of participants in Group 2. The second, lengthened and disrupted coarticulatory transitions, was not identified by any participants. The third, inappropriate prosody, was identified by 10% of participants in Group 1 and 3% of participants in Group 2.
 - Some comments from participants regarding the impact of the ASHA position statement on their process of diagnosing CAS included:
 - "Brought up more questions than answers."
 - "That we are allowed to diagnose. At first I did not even know if we were allowed to diagnose."
 - "I feel more comfortable labeling it."
 - "Clearly defined diagnostic criteria."
 - "Avoid direct diagnosis as primary."

Clinical & Research Implications

- The survey population of this study is assumed to have an increased interest in CAS just by having attended the workshops at which it was administered. Considering that only ~17% of the participants had read the ASHA position statement on CAS raises the question of how many SLPs are aware of its existence.
- Additionally, only 50% of participants that had read the position statement reported it impacted their process of identifying CAS, suggesting a need to generate a position statement that is more functional for practicing SLPs.
- With the continued ambiguity of the diagnostic characteristics for CAS, this disorder will likely go over diagnosed until this information becomes available.

Limitations

- Having an opened ended question on the same page as a closed-set question that included a list of characteristics, may have skewed the results of question number one.
- The exact wording of Forrest's original survey question was not used, possibly impacting the validity of comparison results.
- The characteristics used for rating in survey question number two have all been previously cited as important diagnostic features of CAS.

References:

- American Speech-Language-Hearing Association. (2007). Childhood Apraxia of Speech [Technical Report]. Available from www.asha.org/policy.
- Forrest, K. (2003). Diagnostic criteria of developmental apraxia of speech used by clinical speech-language pathologists. *American Journal of Speech-Language Pathology*, 12(3), 376-380.