

Cued Speech and the Ling Speech Model: Building Blocks for Intelligible Speech

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Intelligible speech for profoundly hearing-impaired children has been shown to be a desirable and attainable goal (Zing, 1976). Levels of speech skills among profoundly and totally hearing-impaired children have been historically poor, even though totally deaf children can be taught to talk (Zing, Perigoe & Gruenwald, 1981). Cued Speech, a visible speech code system (Cornett, 1967), takes the guessing out of speech reading. Cued Speech can be used in conjunction with the Ling approach (Ling, 1976) as an aid to developing speech skills in profoundly and totally hearing-impaired children.

Cued Speech and the Ling Speech Model

Cued Speech and Ling's model for speech development are both organized and systematic. They are both ideal for use with profoundly hearing-impaired children. The goal of Cued Speech is to give the hearing impaired child clear and precise spoken language **input**. The goal of the Ling speech method is to give the hearing-impaired child clear and intelligible spoken language **output**. Therefore, they are two sides of the same coin. One must concentrate on making the spoken language **output** of the hearing-impaired child as clear as his/her spoken language **input**. This concept is the true meaning of communication.

It is critical to remember that Cued Speech is not a speech teaching system. It merely provides visual cues that make it easier for the child with little or no hearing to speechread. It operates receptively to enable the child to "fill-in" the sounds and parts of words that are difficult to speechread. Examples of sounds difficult to speechread are: sounds made with the tongue tip right behind the teeth, such as /t, d, l, n/; sounds made at the back of the mouth, such as /k, g, ng/; blends and abutting consonant clusters within words and between words, such as /st, nd, dz/, etc.; and voiced/voiceless distinctions, such as /b/p, s/z/, etc. Cued Speech also helps the child to distinguish between many vowels that can look alike on the lips or get lost in connected speech. Examples of vowels which can look alike on the lips are: long /ee/ vs. short /i/ or short /a/ vs. /ah/.

Children who use Cued Speech need a systematic approach, such as the Ling method, for learning speech because: (1) They usually have little usable residual hearing; (2) The use of Cued Speech can slow down both receptive and expressive speech, so there is a need to focus on natural speech production; (3) Teachers and parents tend to read the child's cues for expressive communication and tend not to listen to the speech production of the child.

Speech Development

The clarity of input provided by Cued Speech to the hearing-impaired child will have more value if the child's expressive spoken language is intelligible. It is difficult to tell a child he is incorrect when expressively both his language and cues may be perfect, yet the speech is unintelligible. It is for this reason that a speech program be instituted as soon as the child is diagnosed as hearing-impaired.

If the child is still an infant, there are many informal speech strategies (Ling, 1989; Ling & North, 1990) which can be used successfully along with Cued Speech. As the child gets older, more formal speech strategies can be used (Ling, 1976; Ling & North, 1990). Usually, by school age it is necessary to use a structured approach with formal teaching strategies. Many children at this late stage have already developed poor speech habits (i.e., poor voice patterns, poor voice quality, incorrectly produced consonants and/or inaccurate vowel production, etc.).

It is important for the child who has been identified late or who starts the Ling program after he/she enters school, to be trained to use Cued Speech accurately as soon as speech therapy is started. Cued Speech will aid the student in receiving accurate input and, if the system is known, can also be used initially by the student expressively.

The Ling model represents seven stages of development at both the phonetic (syllable) level and the phonologic (spoken language) level. Ling's order of teaching vowels and consonants is not designed to be developmental stages, though many are, but are designed specifically with the hearing impaired child in mind.

Ling has written a structured set of subskills for the development of each voice pattern and speech sound (Ling, 1976). While Ling stresses the use of auditory input, he also provides many visual and tactile strategies which are

appropriate for children with little or no hearing (Ling & North, 1990). These visual and tactile prompts are removed as the child learns to rely more on auditory and kinesthetic feedback.

Ling's seven stages of development can be divided into four major areas: (1) Voice patterns; (2) Vowels and Diphthongs; (3) Consonants; (4) Blends.

Voice Patterns

Variations in vocal duration, intensity (loudness) and pitch are the "personality" of spoken language. Prosodic and voice features are stressed initially and must continue to be practiced at every stage of development; Cued Speech can be used to communicate the importance of voice patterns.

Vowels and Diphthongs

Vowel development precedes consonant development and is ongoing as more difficult consonants emerge. The voice patterns "ride on" vowels and diphthongs. It is impossible to produce adequate differences in duration, loudness and pitch without vocal manipulation of vowels (except with some unique consonants such as /m/ and /n).

Three main vowels are taught first: /ee/ - front; /ah/ - mid; and /oo/ back. They are then combined to produce the first two diphthongs: /ah-oo/ for /ow/ (as in cow); and, /ah-ee/ for /ai/ (as in pie). The same three vowels serve as the cornerstones from which all other vowels and diphthongs may be taught. In addition, vowels serve as the basis for development of semivowels /w/ and /y/. Alternation of /oo-ah/ - /oo-ah/ produce /wah/ and /oo-ee/ - /oo-ee/ will produce /wee/. Alternation of /ee-ah/-/ee-ah/ will produce /yah/ and /ee-oo/-/ee-oo/ will produce /yoo/. Cued Speech provides accurate input of the individual vowels, plus visually illustrates the blending of the two vowels to form the diphthong or the semivowel.

Consonants

The Ling method is ideal for Cued Speech users who are first learning to distinguish consonant sounds on the lips. For the school-age child who may be learning Cued Speech late and has unintelligible speech, the use of Cued Speech in speech training will be helpful. If the teaching of cues can be coordinated with the order of teaching speech sounds, it will be very beneficial. As Ling introduces consonants that are progressively more difficult to produce and less visible on the lips, Cued Speech will help hearing-impaired children to distinguish and identify these sounds accurately. It is important that the Cued Speech instructor teach the Cued Speech system accurately and quickly to these late comers to speech therapy, for optimal benefit of the two approaches.

Ling has demonstrated that simple consonants can be learned more easily if they are taught in a particular order. Consonants are divided into several steps. Step 1 consonant sounds are the most visible on the lips (except /h/). Step 1 consonant sounds /b/p, f/v, th, h, w, m, and final p/b/ teach **manner** of articulation. These visible consonants lay the foundation for correct consonant articulation and act as building blocks for later developing sounds. For example,

Step 1	→ → →	Step 2	→ → →	Step 3
b/p		d/t		g/k
f/v & th		s/z		sh/zh
m		n		ng

Steps 2 and 3 consonants teach **place** of articulation. Most Step 2 sounds are dental, (d/t, s/z, sh/zh, y, l, n, and final t/d). They are important in spoken language because many of these consonants, which appear frequently in English, are used in many morphological markers, such as verb endings and plurals. Step 3 consonants include back sounds that are difficult to see, (g/k, ng, final k/g) and sounds that are more difficult to pronounce (/t/ and /ch/). Step 4 consonants concentrate on teaching **voiced/voiceless** distinctions.

Blends

Once basic consonants are established in words, initial and final blends can be introduced as the student progresses to two or more syllable words and phrases. A coarticulation approach can be used at this point in the speech program to encourage naturally produced speech (Hudson, 1980). Cued Speech provides clear input for blends and for abutting consonants (when consonants are next to each other within a word or between words). Cued Speech helps to avoid confusion and omissions of consonants in clusters and blends.

Carry-Over

To achieve carry-over the hearing-impaired child must transfer what has been learned in the classroom and speech sessions into real-life situations. Carry-over of learned speech skills into spoken language can be facilitated by Cued Speech because it is a total representation of the phonological system. The advantage of Cued Speech above other visual systems, such as fingerspelling or sign language, is that it presents intact to the hearing-impaired child both the grammar of English and its phonology (how speech sounds are distinct from one another and combine to make words). Unlike the printed word, used in many oral programs, Cued Speech represents the sounds of English, not the written symbols. This helps to eliminate some typical "deaf speech" mispronunciations such as, "thumbuh" for "thumb." It also helps with the pronunciation of many irregular spellings in words, such as "ough" in:

through - long /oo/
though - long /o/
bought, thought - /ah/ or /aw/ (depending on the dialect)
enough - /uf/
plough - /ow/

To increase carry-over to spontaneous speech, structured carry-over activities should include a coarticulation approach for teaching phrases and sentences. Speech should be presented in natural phrases of at least two more syllables rather than in isolated words. Speech and language go should be combined so that practice can be more effective. This can be done by using morphological markers, such as "-s", "-ing" and "-ed;" function words, such as articles and prepositions (Perigoe & Ling, 1986) and common phrases used in the classroom and at home.

Daily practice of speech and oral language goals are important. The teacher or speech therapist should provide parents with follow-up activities for daily home practice which will reinforce **learned** skills. Carry-over activities can be designed to be fun as well as effective. Activities should be designed to practice learned skills and to provide more opportunities to use the new speech skills. Good speech production on the part of hearing-impaired child must be reinforced by the listener, not merely with phrases such as "Good speech!" or "You said that correctly!" Instead, natural, real-life consequences of the child's verbal production should be the main reinforcer.

Because hearing-impaired children who use Cued Speech expressively can communicate effectively with parents, teachers and others who can read cues, their perception of their own speech may be over-rated. The student needs to take greater responsibility for his/her own speech and work on improving poor speech habits. Teachers and speech pathologists can help by using remediation strategies for speech errors common to profoundly hearing-impaired children (Calvert & Silverman, 1975; Ling, 1976, 1989; Ling & North, 1990; Perigoe, in press).

In addition, parents and teachers need to have high expectations of the child's speech. They should demand this high standard of speech and focus on the actual speech production and less on expressive cues as the student progresses through the Ling speech program. Instructors and parents should provide opportunities for the child to express himself without using Cued Speech expressively. Over time, the dependence on Cued Speech as expressive output can be diminished as the student's speech production improves. This can be part of the planned therapy session, the class lesson (i.e., answering questions, reading aloud, etc.), or the everyday interactions at home (i.e., at mealtimes, playtime, etc.).

Conclusions

Cued Speech can be a valuable speech teaching tool when working with profoundly and totally deaf children. It can be a facilitator in communicating speech objectives to profoundly hearing-impaired students. When properly implemented, Cued Speech can facilitate speech training, but it does not replace speech therapy. It is not a substitute for good speech teaching. An organized and systematic approach to speech teaching, such as the one provided by Ling, can be implemented with success with hearing-impaired children. The pairing of the Ling approach and Cued Speech can be a natural complement to the overall speech training program. In this way the Ling method and Cued Speech can work well together as the building blocks of intelligible spoken language.

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