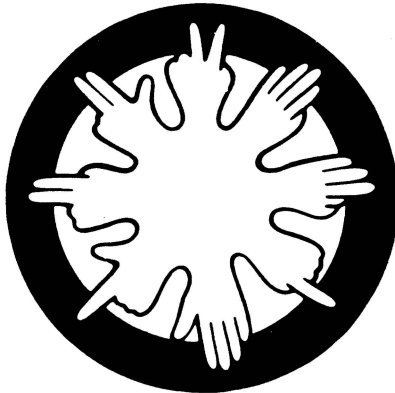


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The National Cued Speech Association, Inc.

This issue of the Cued Speech Annual consists of selected papers delivered at the first annual Conference of the National Cued Speech Association held in New Orleans, Louisiana, November 10-12, 1987. The Appendix contains abstracts of additional presentations at this same gathering.

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The National Cued Speech Association, Inc.

Organized and incorporated in 1983, the National Cued Speech Association is committed to the advocacy and support of Cued Speech use. Specific goals of the Association include publications and research, Cued Speech program guidelines, certification, interpreting, new parent support, parents' rights and advocacy, and the additional concerns of hearing-impaired adults as well as children.

Officers of the Association: Mary Elsie Daisey, President; Philip Payonk, Vice President; Cathy Sheridan, Secretary; Fritz Leitner, Treasurer; Joseph Weiss, Immediate Past President.

Board of Directors: Mike Maslin, Northeast; James Latt, Mid-Atlantic; Beth Dowling, Gulf Coast; Pamela Beck, Great Lakes; Deirdre Clements and Nancy Tepper, Midwest; Joan Rupert, West; Margaret Rejhon, Canada; S. Tompkins Walter, Jr., Director-at-Large.

PROGRESS AND PERSPECTIVES: 1987

R. Orin Cornett, Ph.D.
Gallaudet University

Taking advantage of the freedom my assigned subject gives me, I shall summarize the progress of the 22 years since the beginnings of my thoughts about Cued Speech. This will give me a chance to recognize many of the people who have made key contributions to the use and spread of the system, and those who have devised techniques for its effective use. Then, I will attempt to provide some perspectives, some probabilities and possibilities bearing on the future. Some of these will be in the form of "What if?" speculations; others will take the form of suggestions and even exhortations.

I developed Cued Speech in 1965-66, during the first twelve months I was at Gallaudet College, as Vice President for Long Range Planning, charged with the responsibility of developing a master plan which would convince the Department of Health, Education and Welfare that the College needed the money it was asking for, several times as much per student as typical universities. Some of you may not know that I went to Gallaudet with the specific intention of developing a system for making speech clear through vision--in fact, I left my position with the government to go to Gallaudet because I had become obsessed with concern about the fact that prelingually deaf children are, as a rule, very poor readers. Obsessed? Indeed, I had become so preoccupied with the problems of the hearing-impaired I could hardly do my work as Director of Higher Education.

In my files is a memo to myself dated August 16, 1966. It marked the beginning of my second year at Gallaudet, and was for the purpose of recording my thoughts about progress to that point and identifying the persons who had been of special help to me. It also recorded some impressions about my work in long-range planning, which I will not go into here, of course. The memo mentioned the inestimable value of Barbara Grimes (now Caldwell), my secretary. She influenced many key people at Gallaudet, whose opposition would have made me unable to continue working, to see enough value in Cued Speech that they, at least, did not oppose it, and some even supported it. She was also of great help to me in testing my ideas, arguing with me and forcing me to validate each step in the development of my ideas.

Mervin Garretson, a completely deaf faculty member, was the first deaf adult to learn to read Cued Speech. He was invaluable at the first workshop in July, 1967, appearing on stage with me to say words and phrases in 12 languages, which the audience of 98 teachers had given to me for him to say.

Dr. Powrie Doctor was the first professional at Gallaudet whom I asked for an evaluation. He was strongly supportive, saying it was the first system to provide syllabication for the deaf. He said, however, that I would never be able to convince oralists of its value. I replied that never is a long time.

Dr. Philip Goldberg, was the first hearing professional to learn Cued Speech, and gave me my first opportunity to read it myself. He used it in his Chaucer class to teach pronunciation.

Dr. John Gough, Director of Captioned Films at the U.S. Office of Education, learned about Cued Speech from me over a cup of coffee at a 1966 conference. He recognized its logic and embraced it wholeheartedly. Through him, Gallaudet received funding for a series of filmed lessons on Cued Speech, as well as for the first workshop. The result of these lessons and workshop was the initiation of the use of Cued Speech in 33 places around the country in the Fall of 1967.

Others appear in my records, some of whom helped me through their opposition to the system. Their strong arguments forced me to examine the logic of Cued Speech and to improve my rationale. For obvious reasons, I will not name them here.

My files contain a description of the system dated September 20, 1965--one month and four days after I started my employment at Gallaudet. This early effort included three vowel locations and an unspecified number of "signs" for the consonants, primarily manual alphabet symbols. A draft document entitled "Oralism vs. Manualism" dated November 16, 1965--exactly three months after I went to Gallaudet--described the principles of the system exactly as they are today. In this manuscript, however, there were three vowel locations instead of four, and a still-to-be-determined number of configurations as symbols for groups of consonant phonemes. The basic unit was the spoken syllable, a factor which reduced the symbol rate to a little more than half that of fingerspelling and which forced consistent use of lipreading. Another memorandum of the same date discusses the possibilities of producing the information in the cues by electronic means--a first glimmer of the idea of the Autocuer.

A draft dated March, 1966--"Cued Speech: A New Aid in the Education of Hearing-Impaired Children"--is essentially the same as the first published descriptive article on Cued Speech, which appeared ten months later in the January, 1967, issue of the American Annals of the Deaf. As of March, 1966, I had expanded the system to four hand locations for the vowels and eight configurations for the consonants, grouped precisely as in the 1967 article, and thus identical with the system as it is today. The only exceptions to that early description of the system were the refinements of the movement down for the schwa sound, the "flick" for the consonant not followed by a vowel, and the use of inclina-

tion for approximate pitch which had not yet been conceived. I had already observed that the flick occurred naturally, it being difficult to stop the hand quickly without a little jerk, but I regarded it as a mistake which would disappear with use, rather than an asset to be incorporated into the system and taught to beginners so as to improve synchronization.

During the remainder of my first year at Gallaudet, I experimented with the system, teaching it to Mr. Garretson and Dr. Goldberg, and carrying out as much evaluation as possible. In early August, 1966, my secretary (Mrs. Grimes, now Caldwell) learned that a high school friend had a 22-month-old child who was profoundly deaf, and that she was not happy with what she saw in existing programs for hearing-impaired children. Mrs. Grimes soon convinced the parents that they should try Cued Speech, and I gave them ten one-hour lessons before the end of August. The parents started using it in the home with the young child--Leah Henegar, who at 24 months of age became the first "Cued Speech kid." Her mother we now know as Mary Elsie Daisey, Director of the Cued Speech Center in Raleigh, N.C., and President of the National Cued Speech Association. Leah's language development (450 words during the first 12 months) gave us needed evidence of the value of the system.

A second surge in use was caused by the program of services funded by the Office of Education in 1968-71. In this project Van Porter served for a year as my associate, and Pamela Hardy (now Beck) and Christine Lykos (now Sechrist) spent two years as field instructors. Interest in Cued Speech, and talk about it at conferences, grew rapidly. Growth in its use, however, was relatively slow, primarily as a result of strong opposition both from manualists and most traditional oralists. Since we were getting a grant for exploration of the feasibility of the Autocuer idea, in 1975 I resigned as Vice President of Gallaudet and, with the support of President Edward C. Merrill, set up the Office of Cued Speech Programs, with Mary Elsie Daisey as office manager. The services and materials furnished by this office continue today to play a crucial role in sustaining the growth and use of Cued Speech. Even after the reduction of staff following my retirement and its relocation in the Department of Audiology and Speech-Language Pathology, the staff--Elizabeth Kipila, coordinator of the unit, and Barbara Williams-Scott--have been central to the continued support and extension of Cued Speech.

Now, let me list the names of some others who have made key contributions to the spread of Cued Speech both in the United States and abroad. Brother G. J. McGrath, Principal of St. Gabriel's School in Castle Hill, Australia, heard my first professional presentation on Cued Speech at the CAID convention in Hartford, Connecticut, in June, 1967. Immediately afterward he cornered me, saying that Cued Speech was what he had been looking for for 20 years. After prevailing upon me to give him a two-hour

teaching session, he took Cued Speech back to Australia and put it into use in his school, where it has prospered ever since. A few years later he arranged for the Australian Ministry of Education to invite me to Australia for a lecture tour--50 hours of lectures in nine days. At the conclusion of each lecture, he testified that Cued Speech did everything that I claimed for it and invited people to "come and see." His support spread Cued Speech throughout Australia. My experience in Australia was also important in making me aware that I had been very provincial in designing the system only for American dialects. As a result, I expanded the system to cover all brands of English, and also began making adaptations to other languages and dialects. Cued Speech is now available for 43 languages and dialects. In 1970 Mrs. Winifred Tumim came from England to learn and help make lessons in the dialect of Southern Standard British English. She took it back to June Dixon-Millar, her deaf daughter's teacher, who has carried the banner for Cued Speech in England ever since. Mrs. Dixon-Millar founded, and directs to this day, the National Centre for Cued Speech, initially located in London, and now in Canterbury.

In 1976 Rebecca Jones brought Stasie, aged 24 months, from France, and learned Cued Speech from me in both English and French in one week. Stasie became the first truly bilingual Cued Speech child, fluent in two spoken languages. When she was 10, I persuaded her to interpret for me in simple conversations with French-speaking persons. Stasie's accomplishments aroused the interest of Monsieur and Madame Spinetta, of Paris, on behalf of their daughter, and contributed to the remarkable spread of Cued Speech in France, Switzerland and Belgium. Soon there were national associations in all three countries: l'Association Pour la Promotion et le Développement du Language Parlé Complété, in France, and the similarly named organizations in Switzerland and Belgium. Certain key persons have been crucial to the development of Cued Speech in each country: the Spinettas and Rebecca Jones in France; Madame Marianne Rebeau in Switzerland; and Dr. Olivier Périer in Belgium, who installed it in his school in Brussels about seven years ago. Other pioneers include Sarah Pareky in India; Santiago Torres Monreal in Spain; Dietlind Jacobi and Dr. Hendrick Fehr in Germany; the Bruggemann family in the Netherlands, and Hanspeter Selinger in German-speaking Switzerland. There are many others, in the countries named and elsewhere, whose efforts and support have been significant. Dr. Daniel Ling's early research on Cued Speech, and that of his student Gaye Nicholls (now Musgrove) contributed immensely. He was also instrumental in the recognition of Cued Speech in October, 1983, by the Board of Directors of the A. G. Bell Association for the Deaf, as "...an adjunct to oral communication."

I wish I could recognize all the individuals who have used Cued Speech and then, because they recognized its value, have devoted great amounts of time and effort to its promotion. Because I cannot begin to name everyone who deserves mention, I will

confine myself to those who have actually set up service centers, beginning with Mary Elsie Daisey of the Cued Speech Center in Raleigh, North Carolina. Joan Rupert, of West Coast Cued Speech Programs in California, with her husband participated in the 1967 workshop. Other key persons are Pamela Beck of North Coast Cued Speech Services in Cleveland; Lynn Friess of the Delaware Valley Cued Speech Center; and Mr. and Mrs. Ron Lachman in Illinois. With the collaboration of Ann Bleuer, who pioneered with Cued Speech in Milwaukee, they are operating a school and center in the Chicago area called Alternatives in Education for the Hearing Impaired.

I cannot say enough in praise of the work of the National Cued Speech Association, now headed by Mary Elsie Daisey, and its officers and board members. Other key persons are those who lead the state and local Cued Speech associations--too numerous for me to mention by name--and Dr. M. Carolyn Jones, Executive Director of the Gulf Coast Cued Speech Association. Finally, I must mention one person who does not operate a center, but is herself a service center on wheels--"Miss Have Cues-Will Travel", Nancy Tepper--of Ames, Iowa. As you can see, the progress of Cued Speech is truly the result of the dedication and effort of many.

Many of those mentioned, and others, have contributed innovations in techniques of teaching or parenting, or improvements in instructional materials or their use. Such efforts began with Mary Elsie Daisey's early invention of Cuescript, continued with her Cued Speech Handbook for Parents, co-authored with me, and then her more recent book for use in teaching Cued Speech (Cued Speech Instructional Manual). Specific contributions were made also by Pam Beck and Christine Sechrist in the development of an alternative order in the introduction of the phonemes in teaching Cued Speech. Mrs. Sechrist followed with her Cued Speech Handbook for Teachers. and Pam Beck, more recently, with specific strategies for teaching Cued Speech, together with a book of lessons and materials suited to their use. Barbara Williams-Scott and Earl Fleetwood carried out a systematization of the techniques of interpreting with Cued Speech and a curriculum for training interpreters which is now in use in the interpreter training course at Gallaudet. In the early 1970's Virginia Smith, of Lake Charles, Louisiana, was a pioneer in the use of Cued Speech with aphasic deaf children. Anne Riley, of the Montessori Children's Home, in Bowie, Maryland, was the first to demonstrate the value of Cued Speech in teaching phonics to hearing children.

Accelerated language learning in language-delayed children through the use of Cued Speech, was pioneered at St. Gabriel's School in Australia, using the Gates second-language curriculum for hearing children. Barbara Lee of Louisiana initiated the use of Cued Speech in conjunction with the Bloom and Lahey language development curriculum in accelerated language development for certain children. Parenthetically, I hope many of you visited her

program Tuesday. Her documentation of the children's progress is impressive, and the techniques of the program are fascinating.

Dr. Walter Beaupre initiated the use of Cued Speech in teaching phonetics to university students at the University of Rhode Island. He has done Cued Speech an even greater service by developing his procedure and scale for evaluating proficiency at cueing, something which had been needed for many years. Until he developed and validated it, evaluations of cueing proficiency lacked objectivity. Dr. Beaupre has also produced a book based on his proficiency scale for use in improving cueing ability.

Other extensions of Cued Speech include Judy Lasensky's remarkable innovation of the use of Cued Speech with the deaf-blind. Roselyn Clark has developed Nue-Vue-Cue for use with the multiply handicapped. Dr. Carolyn Jones extended it by her own Funeemik Spelling system, together with her Self-Monitoring Cue Cards.

Dr. Olivier Périer, of Brussels, has a unique program at the Centre Comprendre et Parler. This innovation may turn out to be the solution to the struggle between the traditional oralists and the supporters of manual communication. Dr. Périer's grasp of the problems of hearing impairment is unmatched. He is a neurologist, a distinguished member of the faculty of medicine at an outstanding university, the father of two deaf children, and the founder and director of a truly outstanding program for the hearing-impaired. His recent book, although not yet available in English, is remarkable for its penetration into the basic problems of hearing loss.

Other attempts at innovation with Cued Speech have occurred which I view with mixed feelings and varying degrees of interest. In Japan Dr. Isao Imai has introduced a modification which was referred to as "Japanized Cued Speech" at the International Congress in 1985. This system takes advantage of the fact that there are only five vowel phonemes in Japanese, and that a consonant without a following vowel rarely occurs, and then only with N. As a result, the only lipreading confusion of the vowels of Japanese is between /i/ and /e/, which they feel justifies cueing only the consonant phonemes. The system is certainly easy to learn and use. Only time will tell how accurate it is. My own adaptation to Japanese uses only two hand locations for the vowels.

At New York University Dr. Duffy has developed what he terms "Augmented Cued Speech," cueing the semivowels w and y as blended vowels--for example, yes becomes ee - es, and we becomes oo - ee. There are other modifications--designed, he says, to make the system easier to learn and use. In my opinion, however, these changes result in diminished speed and flexibility.

In England a Dr. Woolf expanded Cued Speech to make it usable as a manual system, that is, without dependence on watching the lips. I am unable to understand the benefits of such a manual system.

There have been two other modifications of Cued Speech in Europe that are particularly interesting. In 1976 Dr. Walter Wouts published a system called AKA, "l'Alphabet des Kinèmes Assistés," with which he had been experimenting since 1972, and which he and his colleagues continued to modify until 1981. In 1984 the IBM Compagnie France arranged for a seminar in which Dr. Wouts and his associates presented AKA and I presented Cued Speech. The most interesting thing about AKA is that it attempts to improve Cued Speech in a very logical way, by grouping the phonemes not only for visual contrast but by common phonetic properties, that is, manner of production. For example, it placed p-t-k--all unvoiced stops--in one group, and b-d-g--all voiced stops--in another. The purpose, of course, is to make the system more helpful in developing good speech habits.

What is ironic is that this exact logic occurred to me in the first stages of my work on Cued Speech, and the preliminary form of it which I first developed is almost identical to what Dr. Wouts later adopted for AKA, with p-t-k together, and b-d-g together. The problem is that the sounds in each of these groups are not as visually contrastive on the mouth as they need to be. I had set up the objective of making Cued Speech as accurately readable as speech with normal hearing. When I tested this preliminary arrangement, I got about 70% accuracy on VC syllables, which was not good enough. As a result, I gave up the idea of making Cued Speech a speech tool, and simply maximized accuracy.

A system similar to AKA, called KESS, has been developed in Germany. In addition to grouping the consonants according to phonetic characteristics, it changes the hand shapes to be consistent with those of PMS, the phoneme-manual transmitting system of Dr. Schulte, which is a completely manual system useful in teaching speech. The fact that PMS is widely used may help KESS gain support.

Actually, several persons had suggested the basic idea of the AKA arrangement to me. In 1966 when I showed Cued Speech to Dr. Ira Hirsch at the Central Institute for the Deaf, he asked why I did not group the consonants in a way that "makes sense phonetically." I explained that I had tried, and he understood. In 1970 Risberg, of Sweden, wrote a paper for the Scientific Symposium held in advance of the International Congress in Stockholm. In his paper he made the same criticism Hirsch had made. The 60 invited papers had been circulated in advance and were to be discussed, not presented, in the symposium. At the symposium Risberg reported that he had changed his mind, that I was right and he was wrong. I have admired him ever since for his intellectual honesty.

Now may I speak briefly about research--briefly, because there is not much to tell. The research that has been done, however, is important. Perhaps others, like I, have done research and failed to seek publication in a refereed journal. Fortunately, Gaye Nicholls-Musgrove came along with her excellent study "Cued Speech and the Reception of Spoken Language," which left no room for doubt as to the readability of Cued Speech. I regret not having published my early work in 1970 on the vibrotactile delivery of cues, an early stage of my work on the Autocuer. I was able to demonstrate that CV syllables could be read at least as accurately with vibrotactile cues as with the manual cues. The only notice of this work was in the *Cued Speech News*.

An Addendum to this paper is a short summary of published research on Cued Speech, including articles in referred journals, conference proceedings and funded project reports, in addition to master's theses and three doctoral dissertations.

There is some quite significant research recently completed or in progress. Alegria and Leybaert (1986) reported--I am now quoting in translation from the French--"...results demonstrating that deaf children accustomed to Cued Speech utilize an interior representation derived from that method. To the extent that this permits the visualization of the phonemes, one can consider the phonologic coding which is derived as equivalent (emphasis mine) to the phonologic coding of the hearing." In England Conrad (1979) showed that deaf persons have a much lower index of internal speech than hearing persons, and he attributes their poor reading to this fact. Jean Wandell, Teachers College, Columbia University, is in the process of duplicating Conrad's work with children accustomed to Cued Speech.

In the last two months I have written to twelve profoundly deaf young people--now 8 to 18 years old--who have grown up on Cued Speech. I asked them what happens in their minds when they think or dream. Eleven confirmed that when they think, they talk to themselves, although one of the 11 wrote that she "usually" thinks in written words. Another indicated that he consistently thinks in written words and pictures. All report that in their dreams they speak and are perfectly understood and that they understand those speaking to them without difficulty. Several wrote, "When I dream, I am just like a hearing person." Speech is obviously their thought language.

Several research needs still exist. For example, studies are needed of the effects of distance upon the accuracy with which Cued Speech can be read; of the effect of the rate of presentation; and of the effects of long-term use on language development and on reading. We need also to look at the situation described to me recently by a young Australian man. He wrote that most of the profoundly deaf young people who, like him, have grown up on Cued

Speech there, learn to sign and acquire many deaf friends after they are 15 to 18 years old. I should like to know what effects, if any, are observed from this phenomenon. Also, more knowledge is required about the internal language of deaf youngsters, including those who use some form of signed English as their primary communication mode.

Perspectives

Looking at the progress of Cued Speech during its first two decades, one must conclude that progress has been steady if somewhat slower than might be desired. Perhaps I can contribute some perspective to the picture by posing a few "What if?" questions. What if the Alexander Graham Bell Association had recognized Cued Speech as "an adjunct to oral communication" in 1973 instead of 1983? Would it have made much difference? Obviously, there is no real way to know; but what if a few of the best oral schools in the United States had followed the example of St. Gabriel's School in Australia? It was an excellent oral school which went over--lock, stock, and barrel--to Cued Speech. What if Clarke School, or Central Institute, had even started using Cued Speech intensively with their pupils who were struggling? Had they done so, the use of Cued Speech likely would have spread much more rapidly. In addition, oral programs in general would have provided what was needed in order to enable a majority of their students to succeed, including the very deaf. Furthermore, in my opinion, oral programs probably would not have suffered the loss of the majority position in the education of children with a hearing impairment.

What if the Autocuer had not bogged down for five or six years in the problems of attempting to satisfy half a dozen experts and greater numbers of administrators from three government agencies on the details of plans for the field test and the remaining work necessary on the device? Add to all this the cut-backs in federal funds. Again, we cannot know; but fortunately the prospects are quite different now. We decided to by-pass government involvement and find a company anxious enough to manufacture and market the Autocuer and willing to provide the required funds for research and development. Such a company found us. Power International, based in Australia, learned about the Autocuer at St. Gabriel's School when they went there to think about devices for helping the hearing impaired. Power International has an American branch, with headquarters fifteen miles from my home. Gallaudet University and the Research Triangle Institute (RTI) have signed a license agreement with Power International. The latter has given me a contract to conduct the field tests, and awarded a contract to RTI to make the necessary refinements which we want incorporated in advance of the field test.

Our present plans for the field test include the orientation of parents and school systems, along with the selection of

subjects, during the first three months of 1988. The training of both parents and subjects will take place on weekends during April through June. Wearable prototypes are scheduled to go on the children in early July, so as to give the subjects two months in which to become accustomed to the Autocuer before school starts. Most of the training of the subjects will be done by the parents in the home because we are convinced it is most efficient. My associate in the field test will be Cathy Sheridan, of Pennsylvania State University, who will work on weekends during the first half of 1988, and then full-time until the completion of the field test in June, 1989.

Now some additional "What if?" questions. What if the field test is not very successful? Should such results occur, the question will become, "Does the Autocuer show enough promise to warrant continuing to improve it, at substantial cost in time and money?" The Autocuer is different from most devices developed to help the deaf. Most of them work perfectly, but the deaf subject cannot make good use of their input. We have demonstrated that the subjects can do their job in the laboratory when we correct the mistakes in the output of the device. The only problem is to improve the performance of the device enough for it to do its part of the job. We think it is good enough now. The field test will tell us whether or not it actually is.

What if the Autocuer turns out to be of great help to the subjects of the first field test? All of the subjects in this first trial have had Cued Speech from an early age, and all of them have a good knowledge of the spoken language. In a trial with such subjects, the potential of the Autocuer may be established. This field test, however, will say nothing about its value to children who do not know the spoken language well and who have to start from scratch in learning to read the code. A successful field test with Cued Speech children would insure that postlingually deaf persons, who know the spoken language but not Cued Speech, could profit from the use of the Autocuer; but a second field test would be necessary to see how much time would be necessary to develop skill in its use and what kind of training would be needed.

Another question unanswered by the first field test will be that of how much the device would help deaf persons who do not know the spoken language. I am not optimistic as to positive benefits on this issue, at least for the near future. In my view, the Autocuer would need to be almost error-free in order to enable a deaf child to learn the language efficiently.

I think you can see a very important implication for Cued Speech itself, if the Autocuer succeeds with the subjects in the first field test. Since it will be made clear that the Autocuer is not accurate enough to put on a three or four-year-old child so as to enable him to learn the language, thousands of parents will likely rush to get Cued Speech for their young deaf children, so

they can be ready for the Autocuer at age eight or nine. If the field test is convincing, prepare to be swamped with requests for help in learning, for conferences with school systems and organizations, and for some turmoil and confusion. I would expect, however, relative ease in obtaining grants for programs for parent and teacher training and assistance in school program start-up--if the field test is successful.

Another implication of a successful field test which may not have occurred to you is that the Autocuer will provide a feedback of about 40% to the wearer. As a result, the immediate and most spectacular benefit of the device will probably be its effect on expressive speech. This may very well have a major effect on traditional oralists.

My expectation is that in the next ten or fifteen years the Autocuer will be improved enough to make it useful for the very young. Even in its present state, however, it may be capable of helping a young child learn new language, or an older child who does not know spoken language, if it is incorporated in an effective training program and perhaps supplemented by manual cueing for needed clarification.

Where Do We Go From Here?

While awaiting the outcome of the Autocuer field test and gearing up for the expected new impetus which will result from this trial, what should be the direction of your efforts? Aside from the research that is needed--which some of you may be in a position to do--many problems exist which need solutions through innovations in instruction and parenting.

For example, badly needed are techniques for making Cued Speech easier to learn for the 10% or so of the population who have trouble distinguishing some of the phonemes, particularly the short, front vowels /I/, /E/, /i/, and /e/. Their problem is poor auditory conceptualization, a situation which often contributes to serious problems in learning to read. A lady from West Virginia--I am embarrassed that I do not remember who--found it beneficial to have learners practice pronouncing short words containing these vowels, and identifying the vowels by producing them in isolation, before starting actual instruction in cueing. I have found it helpful to have the learner say the word, such as bit, then say it without the t--that is, bi, then remove the b and say i. I have done this, however, only by spotting the persons who have trouble with these vowels, in the course of instruction in cueing, and taking them out for work on the troublesome sounds. I am now convinced that it would be better to incorporate this practice in the lessons, as one works with the lesson in which the vowels /I/, /E/, /i/, and /e/ are encountered. My hope is that some will try this method or one similar to it and report to the Cued Speech

community. The problem which a few people have in learning Cued Speech tends to give an incorrect impression of its difficulty.

Another needed aid to instruction is a program for developing a young child's knowledge of multiple meanings for the function words: for, by, with, on, off, out, etc. These words form the bases for thousands of idioms which the child must know if he/she is to read well at the fourth-grade level. I have told many parents to get a good dictionary, copy the 20 to 30 most important meanings of each of these and other function words, and make it a point to use those meanings in conversation with the child. The child will quickly learn to understand "Daddy is on edge--be nice to him tonight," if such an expression is used a few times when dad is actually on edge. What is needed, though, is a curriculum of idioms incorporating the all-important "little" words, set up with examples of likely uses by parents. It would make a very nice little book, and it would be useful to all parents and teachers of hearing-impaired children, not just those using Cued Speech.

One of the more serious problems we encounter is that of expressive communication by the young child who is learning receptive language rapidly through Cued Speech, but whose speech is developing very slowly. There are several possible ways to solve this problem. One is to find better techniques for developing expressive cueing (accompanied by lip movements) in the child. I have found working with the parent in front of a large mirror to be helpful, but we need a complete plan and set of procedures. A second option is the alternative of having both child and parents learn about 100 signs, and see that he knows the equivalent of each in Cued Speech. In one variation of this idea the parent only cues to the child, but accepts signs from the child, confirming them with Cued Speech when it is desirable. In another variation the parent uses pidgin signed English and Cued Speech interchangeably, as does the child. In either case, the signs tend to be phased out as the child's expressive communication with speech and/or cueing becomes reliable, and language more sophisticated, unless there is continuing effort by the parents to expand their sign vocabulary. Of course, many parents will want the child to become acquainted with deaf children who sign, and to aim for bilingualism; but unless Cued Speech continues to be the primary language of the home, verbal language development will likely suffer. Assistance needs to be provided to families where this problem exists, as it often does in cases in which the hearing impairment is very profound. A key factor in the decision of the Centre Comprendre et Parler to use both signs and Cued Speech in their preschool was their concern about early expressive communication, which they wanted from the start, for all children. Some children with virtually no hearing may also be helped in speech development by use of a vibrator, or perhaps even a cochlear implant as a last resort.

In my opinion, the practice of "parroting", in which a child is asked to repeat statements that are inappropriate or untrue, stunts language development. The two programs for hearing-impaired children that have demonstrated accelerated language development most clearly, in my view, are those of the Gates curriculum--as used at St. Gabriel's School in Australia--and that of the Bloom and Lahey curriculum--as used in Ascension Parish in Louisiana. Both these curricula carefully avoid parroting, asking the children only to say what is appropriate. When a child is told exactly what to say--"Say, I am a tiger!"--he does not have to find the language to express the concept in his mind. Compare that practice with--"Let's pretend that we are all tigers. Now, Linda, tell me what you are!" If the child cannot find the language, the teacher does not tell him/her what to say, but rather goes to another child who perhaps can model the correct reply. Then the teacher can go again to the first child--"Linda, what are you?". The child now has a model of the sentence, but only the child who needs it. In the Bloom and Lahey curriculum, there are two teachers, and one can serve as the model when necessary. In the home and in the classroom when such a curriculum is not in use at the time, however, it is best to avoid parroting as much as possible. If you want to help, develop a plan for parents and teachers which will enable them to avoid parroting. The result will be faster language development.

Many other areas of teaching and parenting exist for which helpful techniques are needed along with Cued Speech. Think about them, work them out, and share them. The various newsletters are good conduits for the communication of such material.

At the first workshop on Cued Speech, I reminded the participants that I was not a teacher of the deaf, and that I knew only a little about hearing impairment. My development of Cued Speech has been a scientific exercise for me, the design of a tool for making spoken language clear through vision to a deaf child, no matter how deaf. "It is up to you, not me," I said, "to find out what this tool is good for." I still feel the same way. I have had very little experience in teaching hearing-impaired children. What I have learned I have learned from others, from watching and listening. I marvel at the skill of teachers such as Barbara Williams-Scott, Barbara Lee, and Jim Latt, and many other teachers I have been able to observe at length. I marvel no less at the incredible skill of many mothers and some fathers--mothers like Mary Elsie Daisey, Rebecca Jones, Sue Swadley, and Cathy Wells. In many cases I know their skill without having seen them in action, simply through the accomplishments of their children. When I do have an opportunity to observe, however, I am filled with an indescribable sense of wonder and reverence at what must be found in the heart and mind and soul of such a mother. Difficult as it is to parent a deaf child, the process does seem to cause many to become better, stronger, more resourceful persons.

You, the parents and the teachers, are the ones who must determine the best ways to use the tool I was fortunate enough to develop. I ask only one thing--that you try to use it well.

ADDENDUM

Summary of Published Research on Cued Speech

Research reports in refereed journals, conference proceedings and project reports.

- Ling, D. and Clarke, B. R. (1975). Cued Speech: An evaluative study. *American Annals of the Deaf*, 120, 480-488.
- Clarke, B. and Ling, D. (1976). The effects of using Cued Speech: A follow-up study. *Volta Review*, 78, 23-34.
- Beaupre, W. J. (1985). A test for Cued Speech proficiency. *Cued Speech Annual*, 1, 38-45.
- Kipila, E. (1985) Analysis of an oral language sample from a prelingually deaf child; Cued Speech: A case study. *Cued Speech Annual*, 1, 46-59.
- Chilson, R. (1985). Effects of Cued Speech instruction on speechreading skills. *Cued Speech Annual*, 1, 60-68.
- Nicholls, G. and Ling, D. (1981). Cued Speech and the reception of spoken language. *Journal of Speech and Hearing Research*.
- Sneed, N. A. (1972). The effects of training in Cued Speech on syllable lipreading scores of normally hearing subjects. *Cued Speech Parent Training and Follow-up Program*. (Project report to U.S. Office of Education), pp. 38-44. Washington, D.C.: Department of Health, Education and Welfare.
- Cornett, R. O. (1972). A study of the readability of Cued Speech. *Cued Speech Parent Training and Follow-up Program*, 45 - 52. (Project report to U.S. Office of Education, pp. 45-52) Washington, D. C.: Department of Health, Education and Welfare.
- Périer, O. (1986). Evaluation of the effects of prolonged practice of Cued Speech upon the reception and internal processing of spoken language. *Proceedings of the 1985 International Congress on Education of the Deaf*, Manchester, in press.
- Tammaaeng, M. (1986). The effects of Cued Speech upon tonal perception of the Thai language by hearing-impaired children. *Proceedings of the 1985 International Congress on Education of the Deaf*, Manchester, in press.

Power, D. J. (1986). Teacher-pupil interaction in oral and Cued Speech classes in England and Australia. **Proceedings of the 1985 International Congress on Education of the Deaf**, Manchester, in press.

Cornett, R. O. (1986). Progress report on the autocuer: Vibrotactile, electrocutaneous and visual automatic support of lipreading. **Proceedings of the 1985 International Congress on Education of the Deaf**, Manchester, in press.

Master's Degree Theses

Musmann, R. W. (1974). **Cued Speech im Vergleich zum Mund-Hand-System nach Forchhammer**. Pädagogischen Hochschule Rheinland, Abteilung für Heilpädagogik in Köln.

Tate, M. B. (1976). **Effects of Cued Speech Instruction on the Mastery of Certain Phonetic Transcription Skills**. Unpublished master's thesis. University of Rhode Island, 109 pp.

Juillerat, C. and Mantelet, E. (1978). Jointly published theses with the title: **Le Cued Speech, Un Complément Visible du Language Parlé**. Submitted to the faculty of the Académie de Paris - Université de Paris. Première Partie (patie commune): La Méthode. Deuxième Partie (Juillerat): Le Cas de Stasie. Troisième Partie (Mantelet): Le Cas d'Isabelle.

Chilson, R. (1979). **Effects of Cued Speech upon speechreading skills**. Unpublished master's thesis. University of Rhode Island. 120 pp.

Nicholls, G. (1970). **Cued Speech and the Reception of Spoken Language**. Unpublished master's thesis. McGill University. 163 pp.

Pierce, P. (1984). **Comparison of language used with a hearing-impaired child (with and without cues) with that used with his normally hearing twin**. Unpublished master's thesis. Pennsylvania State University. Pennsylvania State University.

Chapman, I. R. (1984). **Effects of cued speech training on the auditory discrimination of english vowels by hearing Chinese speakers**. Unpublished master's thesis. University of Mississippi.

Doctoral Dissertations

Kaplan, H. (1974). **The effects of Cued Speech on the speech-reading ability of the deaf**. Submitted to the faculty of the University of Maryland. 105 pp.

Tammasaeng, M. C. (1985). **The effects of Cued Speech upon tonal perception of the Thai language by hearing-impaired children.** Submitted to the faculty of Gallaudet College, Washington, D.C. 83 pp.

Musgrove, G. N. (1985). **Discourse comprehension by hearing-impaired children who use Cued Speech.** Submitted to the faculty of Graduate Studies and Research, School of Human Disorders, McGill University, Montreal, Canada. 218 pp.

**LANGUAGE DEVELOPMENT THROUGH
COMMUNICATION WITH CUED SPEECH**

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Introduction

This is not a technical, scholarly treatise. It is a down-to-earth discussion about an intriguing subject--the impact of communication with Cued Speech on the language development of children who are hearing-impaired. I am not a linguist, but I am awed by the way language develops so effortlessly in hearing children; and I am especially awed at the manner in which the same thing can happen in a profoundly, congenitally deaf child. I have lived with and witnessed such natural language development in my own deaf daughter. It is a developmental process that I am appreciating anew in the next generation. When I hear my four-year-old hearing granddaughter say things like: "Daddy brang me here" or "No, I ant" (her creative contraction for "am not"), I realize again the natural steps in the miraculous process of language development.

Misconceptions About Cued Speech and Language

There are many misconceptions about Cued Speech, and probably the most widespread is misunderstanding about how Cued Speech can affect language development. Many educators of the deaf understand the use of Cued Speech for speech development but fail to comprehend how it can affect language development.

With Cued Speech, simple hand movements called "cues" are added to the natural mouth movements of speech to clarify the speech message for hearing-impaired people. That speech is the spoken language that we know and use constantly. Clear communication in that spoken language is the key to learning the language. Hearing children learn the spoken language of their environment merely through communication with those in their environment. And it is an irrefutable fact that a hearing-impaired child with whom Cued Speech is used can learn language at approximately the same rate of progress for the same amount of exposure as a hearing child.

Deafness -- A Handicap of Language Deprivation

Deafness has been called the invisible handicap, but it has numerous effects on a human being. It is a handicap of language

deprivation, and the implications of the condition can be grim. According to Daniel Ling,

Its primary effect is the restriction it can impose on the acquisition and use of language in communication. Its secondary effects are more widespread and can include impoverished communication that restricts experience, hinders personal and social development, and prevents optimal educational attainment. The third level of adverse effects is found when the child is due to leave school. Poor educational attainments will restrict employment options, limit income, and circumscribe leisure activities. These restraints can, in turn, substantially reduce the quality of a person's life in myriad of ways. (Ling, 1985)

Many studies in the 1960's indicated the inferior condition of the education of the deaf. Notice in Figure 1 that the first study cited indicated that 30% of the deaf students assessed were functionally illiterate. This chart is taken from **They Grow in Silence**, by Mindel and Vernon. They continue in their book to say that for these deaf children,

Their average gain in reading from age ten to age sixteen is less than one year, and their command of expressive and receptive language is even less. Thus, communication by reading and writing is also severely limited for the majority of deaf persons. In summary, it can be unequivocally stated on the basis of the material presented that most parents cannot communicate with their deaf children except at a superficial level unless they themselves learn manual communication. Very few parents do this. (Mindel and Vernon, 1971, p. 96)

The noted Babbidge Report stressed the shortcomings in education of the hearing impaired more than 20 years ago.

The American people have no reason to be satisfied with their limited success in educating deaf children and preparing them for full participation in our society. (Babbidge, 1965)

It is tragic that more recent research indicates that we are still doing no better now than when the Babbidge Report was published in 1965. The average reading level of a child who is hearing-impaired has not increased despite increased knowledge about language development, early childhood education, individualized instruction, and the introduction and increased popularity of Total Communication throughout the country. Hans Furth, a psychologist who has made important contributions to our understanding of deafness, said:

The fact is that under our present educational system, the vast majority of persons, born deaf, do not acquire functional language competency, even after many years of intensive training. (Furth, 1966, p. 13)

A 1985 article in the Volta Review cites more recent test results.

The data correspond to statistics compiled...and cited by Furth (in 1966). The 1978 annual survey yielded almost identical statistics on levels and rates of reading achievement (Jensema and Trybus, 1978), indicating no appreciable change over the last 20 years. This condition suggests that new areas of language development in this population must be investigated. (Yoshinago-Itano and Snyder, 1985, p. 75)

A recent study by the Educational Testing Service, using the Test of English as a Foreign Language with a group of preparatory students at Gallaudet College, indicated that their English scores were lower than those of any group of foreign hearing students (Advocate, 1985). Dr. William Castle, President of the National Technical Institute for the Deaf, was quoted in the same article as saying:

We still need a breakthrough in English development for deaf students. (Advocate, 1985, p. 1)

This unfortunate situation is the source of widespread concern and has caused organizations, such as the Conference of American Instructors of the Deaf, to call for an update of the Babbidge Report. Congress reacted to the growing national concern by creating the Commission on Education of the Deaf in 1986.

Our primary concern here is verbal language, not sign language or written language, but the spoken language, which for most people in this country is spoken English. According to the dictionary, "verbal" means:

Of or consisting of words; expressed in spoken words; concerned with words rather than the ideas expressed. (Random House Dictionary, 1980, p. 1982)

McKay Vernon says that "by the age of five or six the average deaf child has little or no verbal capacity at his disposal."

He will have almost no knowledge of sentence structure. Many deaf children of five do not know the names of the foods they eat or the clothes they wear. Compare this with the hearing child who at the age of five is estimated to have a vocabulary from 5,000 to 26,000 words

and the syntactical skills to combine them into meaningful sentences. (Mindel and Vernon, 1971, pp. 59-60)

Communication--The Key to Language

It is a generally accepted fact that communication is the key to language development. In fact, it is the key to life--interpersonal relationships, education, most occupations, social life, and most other features of human life depend on communication. Obviously communication is vital to language development. Communication is possible in many ways--through gestures, writing, sign language, or the spoken language of any society.

Which Language?

The important question is: Which language is best to use in establishing communication and eventually language development for hearing-impaired children? This difficult decision is at the center of the controversy that has raged among educators of the deaf for so many years. Parents are made to realize when their child is still very young, that they need to choose between the spoken English that hearing people use and the sign language used by deaf people.

Contrary to the prevailing opinion in some educational quarters, sign language is not the native language of all deaf children. The preferred and first language for a deaf child should be the language of his parents. Accordingly, sign language (ASL in most cases) is the natural first language for deaf children who have deaf parents. Deaf children who have hearing parents, however, should be able to develop and use, as their first language, spoken English, as used by their parents. The fact that 90-96% of the parents of deaf children in this country are hearing people means that English should be the language used by most deaf children. English, not sign language, is the native language of these children.

The United States is an English-speaking society. Immigrants who come to this country are encouraged to learn English right away in order to facilitate their acculturation into American life. English is necessary for education and for full participation in this country. In fact, a number of states, including North Carolina, have recently approved legislation making English the official language for their citizens.

Having established the preference of making English the first language for most hearing-impaired children in this country, let me point out that no communication method surpasses Cued Speech for the accurate presentation of English to a hearing-impaired person, face-to-face, in real time.

Sign language is an inadequate means of conveying the English language which is rich with more than 300,000 words. (The new second edition of the unabridged **Random House Dictionary** contains 315,000 entries, including "Cued Speech.")

The chart in Figure 2 is from the definitive study **Language and Deafness** (Quigley and Paul, 1984, p. 84). Notice the two languages at the top, ASL and English, and beneath that the categories of code representations of those languages. MCE stands for manually coded English, and OE for oral English. Remember that ASL (American Sign Language) is a signed language with its own grammar and syntax, whereas the various kinds of manually coded English (MCE) are contrived signed codes, designed to represent the grammar of English.

Note that the oral English approaches use standard English and anchor the right side of the continuum on the chart. Cued Speech is the only one of these approaches which can be effectively used by a profoundly deaf person because it provides a complete visual picture of the oral English being represented.

Quigley and Paul discuss some research on Cued Speech but point out that much of the educational and research activity during the past 20 years has been conducted on the MCE approaches.

Despite this, it has been argued that the usefulness of these approaches in helping deaf children acquire competence in English has not been demonstrated. (Quigley and Paul, 1984, p. 89)

The educational philosophy of Total Communication was conceived in the middle 1960's about the same time Cued Speech was developed. Both grew out of the abysmal state of education of the deaf, and both still need a solid body of research to demonstrate their effectiveness. Total Communication is a much misused term. To many people it means a sign language program. Those who are conscientiously using it as a term to describe the use of signs along with speech and residual hearing are probably in the minority. Many educators feel that their use of a signed English approach within a Total Communication framework assures acquisition of English for their deaf students. Very few, however, are truly following the official definition of Total Communication as adopted by the Conference of Executives of American Schools for the Deaf at its meeting on May 5, 1976:

Total communication is a philosophy requiring the incorporation of appropriate aural, manual, and oral modes of communication in order to ensure effective communication with and among hearing-impaired persons. (Brill, 1976, p. 358)

Few Total Communication advocates realize that it is possible to have true total communication without the use of sign language, by using Cued Speech for communication and language development along with speech therapy and auditory training for maximum development of residual hearing.

A spoken language is not biologically or historically meant to be a visual system of symbols or pictures. In its spoken form it is a series of sounds in combinations that one learns to recognize as meaningful representations of ideas. Hearing people learn spoken language incidently and unconsciously, but hearing-impaired people usually need a visual supplement to help them comprehend spoken language (Williams, 1985). Cued Speech is a logical code to use in conveying the oral English language to hearing-impaired people. It is a code that presents the language sound-by-sound, making it visually clear for a hearing-impaired person to comprehend. The basic reason for the development of Cued Speech, however, and the factor which is the key to the child's development of other skills and abilities is the fact that it provides a means for COMMUNICATING IN SPOKEN ENGLISH--it provides a bridge to the spoken language of the family and society for a child who cannot hear that language.

Basics of Language Development

Lack of understanding among professionals

The subject of language development is a very complex one, and unfortunately many people working with hearing-impaired children do not understand enough about the process of language development for either hearing or hearing-impaired children. A deaf child goes through the same developmental process in learning language as a hearing child--if the deaf child is given the same opportunity and degree of exposure through the modality of Cued Speech. One problem, however, is that many deaf children spend one or two years without consistent exposure to the language before their hearing loss is diagnosed and their parents start habilitation measures. Consequently, many deaf children start out one or two years behind their hearing peers. The result is that, although they go through the same developmental stages, they tend to be somewhat behind hearing children.

Professionals often demonstrate their lack of understanding of the natural stages of language development by their lack of patience in the development of expressive language. Expressive language naturally is considerably behind that of receptive language. Teacher frustration at not being able to understand the expressive attempts of cueing deaf children is usually symptomatic of his/her lack of ability to read the cues. Occasionally a deaf child using Cued Speech will have extremely good language, but his poor speech will limit the understanding of his language to those

who know how to read the cues. Teachers of hearing-impaired children need contact with hearing children the same age in order to keep their perspective on what is natural and normal language development. Mothers of hearing two- and three-year-olds often experience great frustration because they frequently cannot understand what their children are trying to tell them. Likewise teachers of deaf children that age should not be so concerned about not understanding everything the children are trying to say. While the teacher of the deaf child is struggling to decipher his/her message, parents and teachers of hearing children go through this very same stage.

The foundation--communication and speech

Normally hearing babies hear the same language over and over again and absorb it before they begin to use it expressively. They gradually derive the rules for meaningful and grammatical spoken language through experiencing abundant speech communication.

The central nervous system of a hearing-impaired child ...is tuned by nature to process spoken language patterns. The problem faced in aural habilitation is, essentially, how best to supply the child's central nervous system with verbal patterns that are sufficiently clear and sufficiently frequent to activate this processing capability and to develop it. (Ling and Ling, 1978, p. 2)

A hearing baby usually absorbs language during the first year of life, finally producing his first clear words about one year of age. By the age of two, he is using two-word phrases, and by the age of three, short sentences. By the age of three or four, most children are able to express themselves fluently in their native language. They are able to understand most of what is said to them, and can communicate needs, wants, and ideas to anyone. By the age of five, hearing children know and use their native language fluently.

A hearing-impaired child proceeds through the same developmental pattern if three factors are present: clear language input, appropriate language input, and sufficient quantity of that language input. When the language input is limited, or in many cases not accessible to the hearing-impaired child, the child's language development will be impeded, often forcing the hearing-impaired child to be at least several years behind a hearing child in language development.

Language experts agree that the first three or four years of life are the "critical period" for language acquisition. This fact accentuates the importance of early intervention and early decisions regarding the procedures to be followed for the development of the first language in a hearing-impaired child.

Remember that most hearing-impaired children demonstrate a delay in language, but their sequence of language acquisition "may be similar to that of normal-hearing children's in both comprehension and production" (Hutchinson and Smith, 1980, p. 146). Like a hearing child, a deaf child with whom Cued Speech is used can acquire language through the uninterrupted process of living and communicating with those in his environment.

Bilingualism

Eventual bilingualism is to be desired by deaf people, in order to expand their comfortable world to include both hearing and deaf people. This can best be achieved for most deaf children--those with hearing parents--by using Cued Speech first. Cued Speech should be used fully and consistently until English is established as the primary thought language and the child learns to read. After that, any deaf child can and should learn sign language and develop proficiency in that mode of communication, so as to facilitate communication and interaction with other deaf people who do not know Cued Speech. Some deaf children are already enjoying the benefits of such bilingualism.

Written language and reading

Adequate treatment of the important subjects of written language and reading is not possible here, but they are mentioned because of their great importance and because they usually follow a child's mastery of the spoken language.

The distressing results of recent studies indicate that the dismal situation regarding the inability of deaf students to read well has not changed.

Many deaf adolescents graduate from high school today with little control over the English language. Although significant changes in deaf education have occurred over the course of this century, deaf children and adolescents have as much difficulty reading and writing today as they did in 1900. (Rittenhouse, 1986, p. 260)

The basic problem with reading for deaf children is that they typically do not have the necessary knowledge of the spoken language to enable them to learn to read. They cannot recognize written words they have not seen before by sounding them out enough to recognize them as spoken words with which they are familiar. Deaf children are usually exposed to written language at a very early age--nearly always before they have an adequate knowledge of the spoken language.

Dr. Robert Rittenhouse, now at the University of Arkansas, shares the concern of most deaf educators about the reading situation.

What the students may need is an internalized speech-coding system like the system normal-hearing youngsters use . Without it, it is almost impossible for deaf youngsters to read or write at or above levels of literacy. (Rittenhouse, 1986, p. 247)

Cued Speech provides such an internalized speech-coding system and enables a deaf child to have spoken English--that is, syllabic-phonemic English--as his native language. It provides the necessary foundation for learning to read in the same way as a hearing child--by learning to decode the written form of the language he already knows and uses, employing phonic and other word-attack skills. If he has Cued Speech early enough to have a thorough knowledge of verbal language before being taught to read, in all probability he will develop good reading skills and habits.

Importance of early start and parents' role

One of the most important factors in successful and natural development of language for a hearing-impaired child is an early start in the home. The existence of a critical period for language development has been substantiated in the literature. According to Donald Moores,

The specific ability to develop language appears to hit a peak around the ages of three to four, and tends to decline steadily thereafter. Perhaps any language development that is initiated after the age of five, no matter what methods are used, is doomed to failure for the majority of deaf children. (Moores, as quoted in Schow and Watkins, 1980, p. 237)

The parents' role during the preschool period is of utmost importance. Effective interaction between parent and child must be developed, and parents need to learn how to make the most of situations that promote verbal learning in the context of everyday life (Ling and Ling, 1978). The parents act as language models for the hearing-impaired child, and they must provide extensive exposure to spoken language patterns. They need to saturate the child with these speech patterns.

Helping a hearing-impaired child to acquire native mastery of language is almost a full-time occupation for a parent over a three- to four-year period. It is during the first three to four years of life that conditions are optimal for language learning. (Ling and Ling, 1978, p. 9)

Parents must provide constant language input, using natural activities in the home for language stimulation. They should provide a wide range of interesting activities and experiences while exposing the child to the normal speech and language patterns that are related to the situations.

Role of Cued Speech in Facilitating Communication

Basic to language learning is the development of a foundation of a good interactive communication system.

If the child does not develop a communication system, he will not develop normal language. (Schow and Watkins, 1980, p. 247)

Cued Speech can provide this comfortable and adequate communication system because it satisfies the following requirements:

1. It should be relatively easy for the child to understand and express.
2. The hearing family members must become competent enough in it to be consistent sources of new language, which the child can pick up without specific instruction, when it is used in appropriate settings.
3. It should be used not only in communication with the hearing-impaired child, but when communicating in his/her presence. (Cornett, 1983, p. 1)

People who use Cued Speech know that it is an easy communication system to use with a hearing-impaired person. It is a communication system that provides access to the spoken language, whatever that might be, whether English as in this country or in one of the 42 other languages and dialects in which Cued Speech is now available. With Cued Speech it is possible to build a solid foundation of communication early in a child's life so that he/she can communicate about anything and everything. It is fast and easy, eliminating the need for incessant repetition, situational clues, gestures, drawing pictures, or writing notes. You simply speak and cue what you say.

The important benefits to a hearing-impaired child of having this level of communication with his family seem obvious. Most people realize the importance of communication with young children in regard to their development intellectually, psychologically, and spiritually. Their personalities, their sense of values, their whole outlook on life should be developed in a manner similar to that of hearing children, through communication and interaction with their families during the early years of life.

Remember that Cued Speech is a system of communication. It provides access to the language. If a young deaf child is exposed to the language in essentially the same way as a hearing child (albeit visually), he will learn language in essentially the same way.

Research

Cued Speech is frequently criticized because of what detractors call lack of research. Cued Speech users are the first to agree on the need for good research so that others may be as convinced of the efficacy of Cued Speech as we have become through actual use and experience with the system.

Many teachers are convinced that they are providing English for their deaf students through the use of sign language, that is, Signed English. Those who are currently using Total Communication give the impression that their way has been thoroughly documented and proven superior. Such is not the case, however. The big swing towards the use of manually coded English took place in the 1960's and 1970's because of disillusionment with the results obtained by using purely oral methods. But, "this swing took place with no reasoned initiation, no careful evaluation, and no data base" (Quigley and Paul, 1984, p. 196).

The lack of substantial research evaluation of MCE approaches is surprising, since various forms of MCE are the dominantly used approaches in the United States and have been for ten to fifteen years. (Quigley and Paul, 1984, p. 231)

Quigley and Paul acknowledge that a few small-scale studies have been reported, but:

The reported results to date have been disappointing. ...There is very little evidence that this has resulted in higher levels of literacy (reading and written language) than was previously the case. (Quigley and Paul, 1984, p. 231)

They further elaborate on the claims made by MCE users:

Although it is claimed for this approach (MCE) that it provides children with English in manual form as a first language, the claim is in doubt. (Several studies) have been cited as demonstrating that strict adherence to English structure is difficult with various MCE approaches, and perhaps rare, so that many MCE users are probably using a form of pidgin Signed English...there is very little hard evidence of positive effects of MCE on reading. (Quigley and Paul, 1984, p. 233)

There have been some small studies done on the use of Cued Speech, but some of the best work to date has been done by Gaye Nicholls-Musgrove at St. Gabriel's School for the Deaf in Sidney, Australia. Her first study, done in 1979, investigated the effect of Cued Speech on the reception of spoken language of 18 profoundly deaf children.

This study leads to two major conclusions. First, the visual code provided by Cued Speech is compatible with simultaneous auditory processing, probably because it has a phonologic base. Second, the highly efficient reception of spoken language components by subjects in this study suggests that more widespread use of Cued Speech would be merited. (Nicholls and Ling, 1982, p. 268)

Conclusion

Quigley and Paul are firm in their assertion that:

The development of language in a deaf child is a direct product of the form of communication which is used initially and consistently with the child. (1984, p. 235)

In other words, if you want hearing-impaired children to develop oral English, you must use clear and consistent oral English with them. Cued Speech is the best way to do this.

References

- Babbidge, H. D. (1965). **Education of the Deaf**. A Report to the Secretary of Health, Education and Welfare by the Advisory Committee on the Education of the Deaf. Department of Health, Education and Welfare.
- Brill, R. G. (1976). Total communication definition adopted. **American Annals of the Deaf**, 121(4), 358.
- Cornett, R. Orin. (1983). Communication in the home. (unpublished paper). Gallaudet College, Washington, D.C.
- Furth, H. G. (1966). **Thinking Without Language**. New York: Free Press.
- Hutchinson, J. M. and Smith, L. L. (1980). Language and speech of the hearing impaired. In R. Schow and M. Nerbonne (Eds.), **Introduction to Aural Habilitation**. Baltimore: University Park Press.
- Ling, D. (1985). The effects of hearing impairment. **Newsounds**. Alexander Graham Bell Association for the Deaf. September.

- Ling, D. and Ling, A. H. (1978). **Aural Habilitation: The Foundation of Verbal Learning in Hearing-Impaired Children.** Washington, D.C.: The Alexander Graham Bell Association for the Deaf, Inc.
- Mindel E. and Vernon, M. (1971). **They Grow in Silence: The Deaf Child and His Family.** Silver Spring, Maryland: National Association of the Deaf.
- Nicholls, G. H. and Ling, D. (1982). Cued Speech and the reception of spoken language. **Journal of Speech and Hearing Research**, 25. 262-269.
- Quigley, S. P. and Paul, P. V. (1984). **Language and Deafness.** San Diego, California: College-Hill Press.
- Random House Dictionary, Concise edition.** (1984). New York: Random House.
- Random House Dictionary of the English Language, (2nd ed.).** (1987). New York: Random House.
- Rittenhouse, R. K. (1986). Children with hearing impairments. In S. Kirk and J. Gallagher (Eds.), **Educating Exceptional Children.** Boston: Houghton Mifflin.
- Schow, R. L. and Watkins, S. (1980). Aural rehabilitation for children. In R. Schow and M. Nerbonne (Eds.), **Introduction to Aural Rehabilitation.**
- Williams, B. (1985). Why Cued Speech? Unpublished manuscript. Washington, D.C.: Gallaudet College.
- Yoshinaga-Itano and Snyder, L. (1985). Form and meaning in the written language of hearing-impaired children. **The Volta Review**, 87 (5). pp. 75-90.

THE CUED SPEECHREADING TEST:

AN ANALYSIS OF THE RESULTS

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Whereas speechreading (lipreading) is the ability to decode spoken utterances from visual oral information in the partial or total absence of appropriate auditory information, Cued Speechreading is the ability to decode spoken utterances when a standardized system of hand cues (Cued Speech) supplements visual oral information. Although the ability to "read lips" varies considerably among both hearing and hearing-impaired populations--with or without formal training--there are very few individuals who are totally lacking in at least minimal speechreading skills. Although the writer prefers the term "speechreading," he believes the present discussion will be less confusing if the terms "lipreading" and "Cued Speechreading" are used for contrast.

Because underlying lipreading skills must be assumed present, it follows that such skills should be taken into account when measuring Cued Speechreading abilities. Suppose, for example, one happens to be an excellent lipreader who scores 90-100% on a standardized test for lipreading. Obviously this person's ability to decode Cued Speech (unless the score proves to be significantly lower!) is not going to be of much practical value. If a parent/teacher/clinician can decode the speech of a non-cueing child accurately and easily, the ability to read Cued Speech has little relevance. One exception might be the need for the observer to monitor the accuracy of a hearing-impaired child's cueing skills. If it can be demonstrated that a hearing-impaired child scores significantly higher for Cued Speechreading than for lipreading, there would be strong evidence for the need of routine cueing.

To assess first the lipreading skills of individuals, the researcher chose the "Post-Test" form of the Sargent Lipreading Test to establish a baseline. A series of ten five-word sentences contain a vocabulary from the 99 most common spoken English words. As the test progresses these sentences become visually less clear on the lips. Test results produce not only a percent score;

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results can also be analyzed for consistent patterns which may provide clinical information about present lipreading. Instructions for administering and scoring the Sargent Lipreading Test are presented elsewhere (Beaupre, 1986).

Once the individual's lipreading skills have been quantified, a second test is administered which follows precisely the format of the lipreading test, except that this time the test sentences are cued. Whereas one form only of the Sargent Lipreading Test (SLT) is available to establish baseline lipreading ability, there are two different forms of the Cued Speechreading Test (CSRT) for test/re-test purposes.

Form I of the CSRT introduced 91 handshapes in 90 hand positions. The eight different hand shapes of Cued Speech occur with the following frequencies: VI = 19, V = 17, II = 16, III = 12, IV = 8, handshapes I and VIII = 7 each, and VII = 5. The four different hand positions occur with the following frequencies: side = 46, throat = 20, chin = 16, and mouth = 8. The hand movements at the side occur with the following frequencies: side/forward = 5 and side/down = 4. Only one diphthong which is tested twice occurs in Form I. Two different consonant clusters are represented.

Form II of the CSRT introduced 93 handshapes in 94 positions. The eight different handshapes of Cued Speech occur with the following frequencies: V = 26, VI and IV = 15 each, II = 13, III = 10, VIII = 6, I = 5, and VII = 3. The four different hand positions occur with the following frequencies: side = 51, throat = 21, chin = 13, and mouth = 9. The hand movements at the side occur with the following frequencies: side/forward = 5, and side/down = 9. Three different diphthongs are tested a total of six times. Three different consonant clusters are represented.

The CSRT was standardized on a population of 86 cueing volunteers at a Cued Speech Family Workshop in August, 1986, at Gallaudet University, Washington, D.C. Subjects ranged from novice to experienced cuers, small children to senior citizens, profoundly deaf to normal hearing. Instructions for taking the tests were both auditory and captioned. Actual test sentences were administered without benefit of any audible speech whatsoever. Everyone included in the research population took the tests as though profoundly hearing impaired. However, it is clinically possible to administer the baseline Sargent Lipreading Test on the videotape with audible speech. Unfortunately, the two forms of the Cued Speechreading Test cannot be administered with audible speech because of a technical failure during production. To those clinicians who might have reason to check the receptive skills of the hearing impaired when auditory speech signals are combined with Cued Speech, live presentation may serve such clinical needs.

When subjects' responses to the test were other than written (i.e., oral, manual, fingerspelled and/or cued), their responses were recorded by the examiner directly onto appropriate scoring forms. Written responses by subjects were later transferred to the same scoring forms. Results were analyzed as follows.

SLT and CSRT Scores Compared

The baseline lipreading scores for the 19 men (44.9%), the 67 women (44.0%), and the 10 hearing-impaired subjects (44.6%) were surprisingly similar. The overall mean for 86 subjects was 44.3%. The original videotaped edition of the same Sargent Lipreading Test in black and white and with a trained male speaker had elicited a higher mean of 55%, but there are too many perception variables between editions of the test to expect greater compatibility.

Group means for the Cued Speechreading Test scores of the 19 men (62.5%), the 67 women (69.7%), and the 10 hearing-impaired subjects (79.2%) were obviously quite different. If one hearing-impaired subject who took the test the same day he began to learn Cued Speech had been eliminated, the mean for nine hearing-impaired cuers would have been a whopping 84%! The overall mean for the 86 subjects was 68.42%.

Percentage of Improvement With Cued Speech

Earlier research (Cornett, 1972,; Kaplan, 1974; Clarke and Ling, 1976; Nicholls, 1979; and Chilson, 1985) confirmed that cues provide significantly more oral information than lipreading alone, and one would expect the same to be true in the present study. The percentage of improvement for the total population (N = 86) averaged 108% and for the hearing-impaired (N = 10) the average percent of improvement was 240%. Again, had the first-day subject been eliminated, improvement for the hearing-impaired would have been 270%.

"Pass" and "Proficient" Scores

Frequency distributions of the 86 SLT scores and 86 CSRT scores were computed (See Table 1 and Table 2). It was determined that an individual score of 75% or better on the CSRT would be considered passing (Pass), but a derived score of 50% or better in improvement of Cued Speechreading over lipreading would also be considered passing (Pass). To illustrate: subject M.A. scores 28% on the SLT and 44% on the CSRT, but her percentage of improvement is 57%, so she earns a "Pass." Clinically this means that if a person scores at least 75% (or 50% improvement for Cued Speechreading) without any help from auditory and/or situational cues, this individual would certainly be able to communicate

TABLE 1

Frequency Distribution of 86 SLT Scores

SLT Scores Interval	Frequency	%	Cumulative %
2.000 to 13.999	8	9.30	9.30
14.000 to 25.999	8	9.30	18.60
26.000 to 37.999	14	16.28	34.88
38.000 to 49.999	17	19.77	54.65
50.000 to 61.999	24	27.91	82.56
62.000 to 73.999	10	11.63	94.19
74.000 to 86.000	5	5.81	100.00

TABLE 2

Frequency Distribution of 86 CSRT Scores

CSRT Scores Interval	Frequency	%	Cumulative %
12.000 to 24.570	5	5.81	5.81
24.571 to 37.142	7	8.14	13.95
37.143 to 49.713	7	8.14	22.09
49.714 to 62.285	10	11.63	33.72
62.286 to 74.856	18	20.93	54.65
74.857 to 87.428	20	23.26	77.91
87.429 to 100.000	19	22.09	100.00

reasonably well on a one-to-one basis in an informal, "real life" situation.

Once these cut-off scores (75% or 50%) had been selected, every subject who failed to meet the "Pass" criteria was carefully examined for possible reasons for a "Fail" score. Of the 27 subjects (31%) who failed, 17 had been cueing for less than three months, and 11 had been exposed to Cued Speech for less than five days! Six failing subjects reported that no one cued to them at all. Only four of the 27 failed for reasons which could not be readily identified from data. Of the females tested (N=67), 30% failed; of the males tested (N = 19), 37% failed. Of the hearing-impaired subjects (N=10) tested, 30% failed.

The distribution of those who passed the CSRT according to age groups is interesting, but of doubtful significance. Of the 12 children four to eleven years old who volunteered to take the test, 100% scored "Pass" or better. The percentage dropped to 38% for the 13 children who were from 12 to 18 years of age. Performance then improved for the 20-32 age range, where 60% of the 28 subjects passed. Success was even better for the 34-44 age group where 88% of the 25 subjects passed. Passing rate dropped to 28% for the 47-54 age group.

The performances of subjects taking the tests who were known to be skilled at reverse interpreting with Cued Speech were examined for scores reflecting formal, clinical proficiency. A score of 85% minimum on the CSRT seemed to be a reasonable standard for professional reverse interpreting. For example, one who interprets the cueing of a hearing-impaired child in the classroom to the teacher, or the instructor who determines the correctness of Cued Speech skills in others would need a raw score of 85% or better on the CSRT. There were 22 subjects (26%) who scored in the "Proficient" range. Seven of these were under 21 years of age and four of them were hearing impaired. Three men (16%) and nineteen women (28%) scored "Proficient."

Correlations Among Factors

The average length of cueing time for the 86 subjects was 36 months (35.65), but the range extended from one day to eighteen years! A correlation matrix (Table 3) was prepared to examine the possible relationships among the factors of (1) Time Cued, (3) Lipreading Scores, (3) Cued Speechreading Scores, and (4) Percentage of Improvement.

There is a high correlation between Lipreading scores and Cued Speechreading scores, as one might expect. There is also a reasonably high negative correlation between Lipreading and Percentage of Improvement. Obviously, if one is a skilled lip-reader to begin with, the opportunities for improvement with Cued Speech are going to be compressed. The length of time subjects

had been cueing correlated positively (.402) with Cued Speech-reading scores. A steady increase in improvement of Cued Speech-reading scores over lipreading scores (See Figure 1) occurs until the 14-24 month learning period (from 26% to 95%). There is virtually no correlation between lipreading and length of time subjects had been cueing. This is surprising if the claims are correct that learning Cued Speech improves one's ability to lipread even in the absence of cues. However, if one examines the distribution of scores in Figure 1, one notes that SLT scores varied considerably and clustered within the 3-1/2-year period. Improvement of lipreading may occur in the very early period of training and level off. As a matter of fact, subjects who had only been cueing 22-31 days achieved the high mean score of 56% in lipreading, a mean score never again equalled even by those who had been cueing for more than six years.

TABLE 3

Correlation Matrix

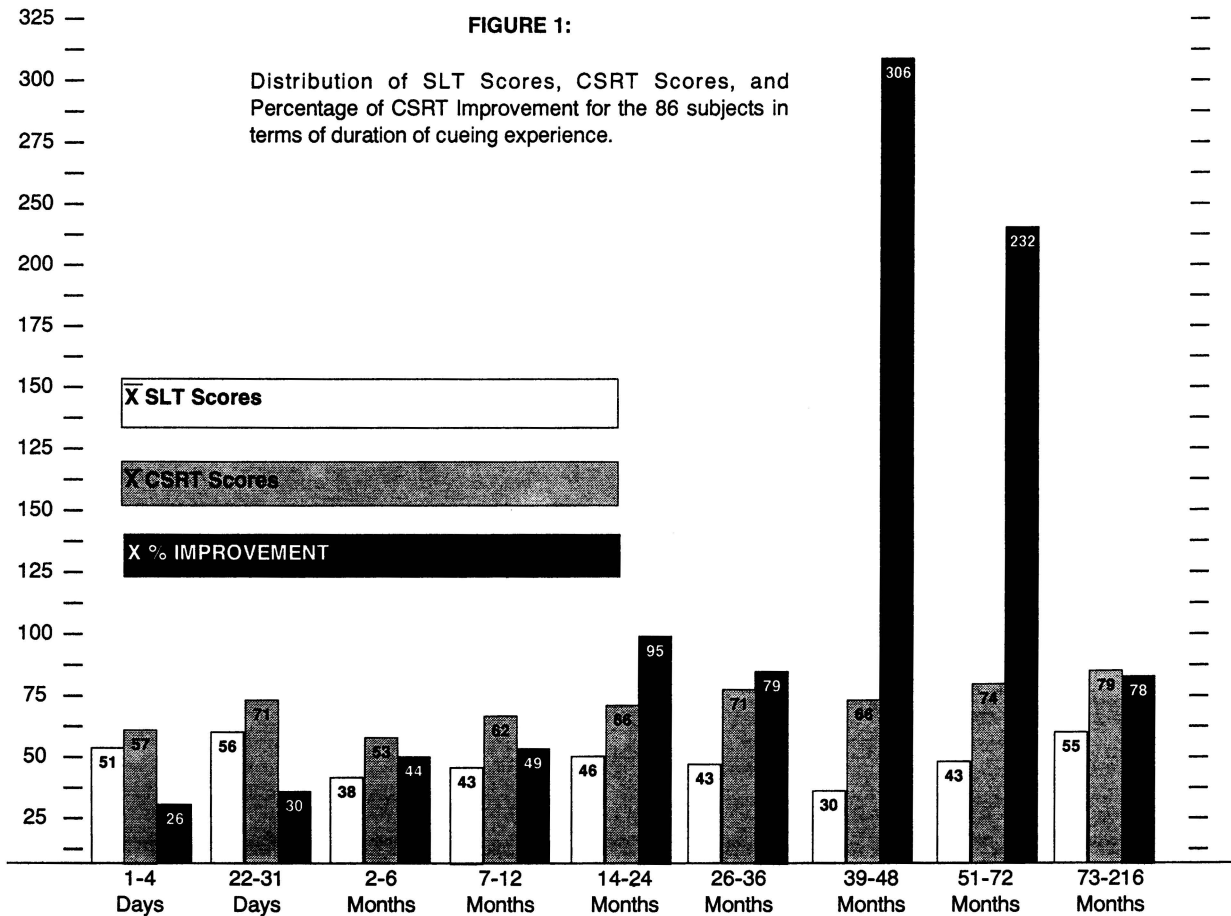
Variable #	1	2	3	4
1	86	.048	.402	.158
2	86	86	.633	-.519
3	86	86	86	-.036
4	86	86	86	86

Analysis of Substitution Errors

When subjects simply did not respond at all to cued words and/or sentences in the CSRT it was impossible to speculate as to their perceptions. However, an analysis of the incorrect substitute responses of subjects could conceivably be productive if one were able to determine which were lipreading errors and which were Cued Speechreading errors. In some instances this could be done. To illustrate: Suppose a subject responded with the word "should" when the correct cued stimulus was "shall." From the standpoint of lipreading, the /sh/ phonemes in both words appear identical; the vowels represented in the spellings "oul" and the "a" are supposed to look different on the lips; and the /d/ and /l/ look identical. When cued, the same two words "should" and "shall" have the same cues in the same positions except that the

FIGURE 1:

Distribution of SLT Scores, CSRT Scores, and Percentage of CSRT Improvement for the 86 subjects in terms of duration of cueing experience.



/d/ is hand shape I and the /l/ is hand shape VI. The substitution error, therefore, shows a confusion between hand shapes I and VI; but it also indicates lipreading confusion between vowel phonemes.

Actually the most frequent confusion attributable to receptive cueing skills among all subjects was between hand shapes I and VI. Other common confusions occurred for the following hand shapes in rank order:

2. IV for V (or V for IV)
3. VI for V
4. VIII for II
5. I for VIII
6. IV for VII

Position confusions were primarily between throat-chin and throat-mouth. Two-syllable chin-throat words frequently become one-syllable diphthongs with IV-V hand shape confusion. Another general tendency among subjects was to perceive a much simpler set of cues in a complex syllable. For instance, the word "thinks" (VII-throat, VIII-side, II-side, III-side) was seen as "this" (II-throat, III-side). Note that the II hand shape is a simplification of the VII hand shape while VIII-side and II-side have disappeared. Further specific examples of substitute responses would require listing many words which actually appear in the tests.

Both the SLT and the CSRT had been constructed so that the sentences became progressively less visible (Sanders, 1982) on the lips. It was evident when the Sargent Lipreading Tests were first standardized that visibility on the lips was only one variable among many (Jeffers and Barley, 1971). Nevertheless, when raw scores of the present population for the most visible first five sentences of the SLT were compared with raw scores for the less visible second five sentences, the mean scores were 11.67 and 10.50 respectively. Subjects' scores for the second half were 89% of their scores for the first half.

Ambiguity Reduction with CS for the Hearing-Impaired

The test developer hypothesized that with cues added to an identically weighted lipreading test, there would be no difference between scores for the two halves of the CSRT. Actually the group means turned out to be 18.04 and 15.72 respectively. Subjects' scores for the second half of the CSRT were 87% of the first half. It would seem that the test designed had underestimated the power of lipreading stimuli, especially for hearing subjects.

However, analysis of the scores of the hearing-impaired group who took the tests told a different story. SLT split-half scores were 11.5 and 10.8--very similar to total group means reported above. But split-half scores of the CSRT for the hearing-impaired

group were 19.8 and 19.8 respectively. Obviously the second half of the test with cues was not more difficult than the first half for this population. Where this group (with one exception) consistently relied upon Cued Speech in daily communication, it is reasonable to assume that the visibility of words on the lips would be less critical than for hearing subjects when the auditory component is taken away.

References

- Beaupre, W. J. (1976). **Sargent lipreading pre-test, post-test and follow-up test.** [Videotape plus scoring forms]. Providence, R.I.: Sargent Rehabilitation Center for Communication Disorders.
- Beaupre, W. J. (1986). **Cued speechreading tests.** Kingston, R.I.: University of Rhode Island. [Videotape plus instruction manual for cued speechreading tests and Sargent lipreading tests].
- Chilson, R. F. (1985). Effects of Cued Speech instruction on speechreading skills. **Cued Speech Annual**, 1, 60-68.
- Clarke, B. and Ling, D. (1976). The effect of using Cued Speech: A follow-up study. **The Volta Review**, 78, 23-24.
- Cornett, R. O. (1972). Effects of Cued Speech on speechreading. In G. Fant (Ed.), **International symposium on speech communication ability and profound deafness.** (pp. 1-7). Washington, D. C.: Alexander Graham Bell Association for the Deaf.
- Jeffers, J. and Barley, M. (1971). **Speechreading (Lipreading).** Springfield, Ill.: Charles C. Thomas.
- Kaplan, H. (1974). **The effects of Cued Speech on the speechreading ability of the deaf.** Doctoral dissertation. University of Maryland, College Park, Maryland.
- Nicholls, G. (1979). **Cued Speech and the reception of spoken language.** Master's thesis. McGill University, Toronto, Canada.
- Sanders, D. (1982). **Aural Rehabilitation: A Management Approach** (2nd ed.). Englewood Cliffs, N. J.: Prentice-Hall.

**RESPONSE PATTERNS IN A
SPEECHREADING TASK INVOLVING CUED SPEECH**

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Some time ago, during a week-long Cued Speech workshop at Gallaudet, I collected data on the speechreading skills of deaf cue users. There were 11 subjects, ranging from 11 to 68 years of age. Five had prelingual losses, the remainder postlingual losses. Two of the subjects were hard-of-hearing, while the remaining nine were "deaf" (most profoundly so). On average, the subjects had been using Cued Speech for over four years.

The task consisted of speechreading sets of monosyllabic "phonetically balanced" words presented via videotape. Each subject sat in on two test sessions. In each session 50 words were presented with cues and 50 words without cues. The order of presentation--with or without cues--was random. Each subject attempted to identify, by writing his/her best guess on paper, 100 cued words and 100 non-cued words. The audio portion of the videotape was left on so that the viewers could avail themselves of whatever residual hearing they might possess.

The resulting data can, of course, be analyzed in a variety of ways. Many would be curious as to whether the use of cues seems to facilitate speechreading (among those individuals who were accustomed to using the system). Briefly, the answer is affirmative; that is, without cues the viewers could correctly identify only about 43% of the items. With cues subjects were able to read the words correctly approximately 76% of the time. This difference in speechreading was statistically highly significant.

While that information is gratifying, this paper focuses on a somewhat more esoteric issue. Ignoring the results under the "uncued" condition, this study asks: Are there patterns with the cued words that might offer some insights as to the functioning of Cued Speech; and, if so, could these patterns offer suggestions for further research and for instruction?

The small number of subjects precluded any valid statistical comparisons here. It was, however, still possible to conduct an informal item analysis. To do this, the frequency of correct responses across the eleven subjects was tallied for each of the 100 cued words. Those words correctly identified by all eleven subjects were labelled "easy" words, with those missed by at least half of the viewers being classified as "hard" words.

The results are in Table 1. The number in parentheses next to each word in the "hard" list represents the number of subjects out of the total of eleven who missed that word. Thus "ease," with a score of 9, was the hardest of all the words, being missed by nine out of the 11 viewers.

The two lists were compared according to both articulatory features and types of cues involved. In terms of consonants, no major discrepancies were found between the two lists in terms of the manner or place of articulation, nor in incidence of the voicing contrast. Likewise, no major disparity was detected between the "easy" and the "hard" words in terms of the consonant cue formations. Apparently the two lists were, as far as consonants concerned, rather similar.

TABLE 1

Easy versus Hard Cued Words

Easy Words (Correctly identified by all 11 viewers)	Hard Words (Most often missed)
deaf	ease (9)
now	carve (8)
one (won)	wise (8)
then	knees (7)
to (too, two)	as (7)
tree	ace (7)
with	jaw (7)
your (you're, yore)	mew (6)
you (ewe)	and (6)

N.B. In the "Hard Words" column, the figure in parentheses after each word indicates the numbers of viewers (out of a total of eleven) who missed that item.

Some differences, however, did seem to exist with regard to vowels and diphthongs between the "easy" and "hard" words. For example, Table 1 indicates that for the "hard" list there is a disproportionate number of back and lax vowels, as well as a tendency toward the "open" jaw position. With regard to cue positions, there also seems to be a high incidence of the "throat" position. (Six "throats" can be counted if the glide portion of the diphthongs is included.) Finally, whereas all of the "easy"

words start with consonants, four of the "hard" words are "vowel initial."

In summary, consonants did not seem to differentiate between the "easy" and the "hard" words. However, vowels with certain articulatory characteristics and with the throat cue position, as well as words that start with vowels, appeared somewhat problematic to the subjects.

Discussion

Some of these results should not be surprising. The fact that vowel-initial words are difficult, for instance, is not really news. I can recall being advised during my training as a teacher of the deaf to syllabicate words so that the syllables were consonant-initial whenever possible. Such a breakdown is often easier for the deaf student to both speechread and articulate. Likewise, the Cued Speech system may not offer as much help with vowel-initial words, since the finger configuration for vowels matches that of /m/, /f/, and /t/ (i.e., the number five configuration). Thus, even a proficient cue reader may not be able to easily distinguish, for example, "tease" from "ease", or "tanned" and "and." This might be especially true with the present task, in which the items were presented with no supporting context whatsoever.

Likewise, in specific instances, some of the results may be artifactual. Thus, the fact that the word "mew" was difficult may stem more than anything else from its low-level frequency and, therefore, its low probability for inclusion in such a list. (Remember that even good lipreaders must play a "psycholinguistic guessing game.") Frankly, there is some doubt as to whether the younger viewers were even familiar with this word.

In any case, given the small number of subjects here, any speculation should remain highly guarded until further research can be done. What might characterize this future research? First, it would be advantageous to have similar investigations done with a substantially larger number of subjects. If such studies continue to point out general aberrations in speechreading with cues, perhaps more focused investigations could be undertaken. Such research might use minimal pairs, contrasting easy versus hard articulations and cues. Likewise, questions might be asked as to whether such "easy"/"hard" contrasts hold up in running speech, in which the cue reader can avail him/herself of linguistic, paralinguistic, and social context and feedback? Finally, if certain articulations and cues continue to be found problematic, it would be beneficial to have some instructional research dealing with these troublesome features. Another question has to do with the timing of instruction in these problem areas. Should such features be worked on early in cue instruction, or should we hold off until the easier patterns are mastered? Should these features

be worked on in isolation--i.e., in a "decontextualized" fashion--or should they be immediately incorporated into larger units such as words, phrases, and sentences? Again, are there some individuals for whom these features are not particularly nettlesome? If so, what is it that such individuals do or do not do? Clearly, a number of important questions remain to be addressed.

We may never be able to empirically answer everyone's favorite query, "Is Cued Speech definitely more effective than other approaches?" (This is so because we cannot legally or ethically set up the classic experimental design, with totally random assignment of children and adults to cueing and non-cueing environments). Nevertheless, we can address questions of effective instructional strategies with Cued Speech. The logistics of carrying out such studies with large numbers of experienced cue users are formidable, given, for example, the wide geographic dispersion of hearing-impaired individuals. Still, the knowledge we might garner would make the effort worthwhile.

CUE READING SKILLS DEVELOPMENT

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Surprisingly, nothing has yet been published on the subject of cuereading from the perspective of a hearing-impaired person. We have merely been used as guinea pigs for the research of others. As we are the principal reason for the existence of cueing, I feel that our personal input could be important for those who cue to us. I am speaking from the perspective of one who is severely to profoundly hearing impaired (a progressive loss) and who finds cueing an invaluable adjunct to speechreading.

This paper has relevance for cuers of all ages as well as for cuereaders. Some of the problems I shall outline can be corrected by the cuer. Some are the business of the cuereader. A few involve the system.

All of us are at some time or another cuereaders. Hearing parents and grandparents, teachers and friends have to cueread deaf children. Hearing-impaired adults have to cueread each other. Why, then, has so little research been done into this issue? The reason lies surely in the fact that until a few years ago the only cuereaders were "Cue Kids" who had learned to cueread unconsciously, as it were, without analysis of the system. Now that more hearing-impaired or late-deafened adults are learning about the benefits of the system, there are some fully "conscious," fairly fluent cuereaders about. It is their views, in addition to my own, on which the following observations are based.

First of all, to be a proficient cuereader takes more time than to be a proficient cuer. You not only have to learn to read the cues but also to read the lip movements simultaneously. "All" the cuer has to do is to cue. As a result, there is a need for patience with the hearing-impaired child or adult. In the end they will get the whole message instead of a frustratingly imperfect one.

This is what a good cuereader has to learn to do:

(a) Learn to read what you can from the lips.

(b) Add this to the information available on the hand. This means making a quick choice between approximately three possibilities suggested by the hand shape and position.

(c) Learn to synchronize the two. Adults need to concentrate on the lips principally and to take in the hand information peripherally. This comes with practice. Most prior lipreaders find cueing a distraction at first but gradually they learn to find the hand an immense help in supplementing the glaring deficiencies of speechreading.

(d) Finally, you have to learn, like a surfer, to "ride with the flow" of language. No one can teach you this. You have to build up speed gradually. Cuereading, like listening, becomes at this stage an automatic skill. If this sounds difficult, it is because we underestimate human intelligence all the time, especially the intelligence of hearing-impaired people. It is really no more difficult than making sense of speech.

There are problems in cuereading which can be alleviated. Let us deal first with the ones caused by the cuer. We are all guilty of one or more of these mistakes at some stage of our cueing.

(a) Poor synchronization of cues and speech, especially in consonant blends. The trick, as Dr. Cornett explains, is not to say the first consonant of a blend until you are ready to cue the second one, or they look like two syllables and are read as such. This can make a considerable difference, as can readily be demonstrated in such pairs of words as: below/blow, polite/plight, or terrain/train.

(b) Other "manual" mistakes are: flat back of hand not facing the cuereader (check this in a mirror), often caused by poor elbow position; fingers not together in "5" position; proper difference not made between hand shape "2" and "8"; hand "bounces" too much or strays too far from mouth; head moves about too much; diphthongs cued from side to throat not distinguishable from vowels cued at throat position.

(c) Cueing of the wrong consonant shape or vowel position. No one is perfect. We all do this. But from the cuereader's point of view, in running speech the vowels do not matter nearly as much as the consonants. Vowels are more lipreadable, on the whole, and more easily heard by those with some residual hearing. It is consonants that carry the sense of speech.

In all this apparent criticism, please do not lose sight of the most important factor:

CUEING IS A TREMENDOUS HELP!

The more severe the loss, the more we (adults and children) need the benefit of cues. You never know--until too late--how much another person misses or misunderstands. Often we do not even know this ourselves.

Now for the errors and omissions of the cuereader, speaking here from the adult perspective. Some of these are avoidable, some are not.

(a) Inattention and lack of assertiveness--pretending to understand when you have not--are, in the main, avoidable. Poor concentration may be the result of fatigue, however. It requires immense concentration to receive a message by a new medium.

(b) Lack of the "three P's"--Patience, Perseverance, and Practice. These are our responsibility.

(c) Insufficient speechreading skill. Speechreading, if not already learned, **must** be taught along with Cued Speech.

(d) Reduced visual acuity. This is very common with age, and does affect the ability to process visual information quickly.

Finally, and cautiously, I would raise a couple of minor criticisms of the system itself which make for some difficulty at times in decoding the cues. Other hearing-impaired adults have expressed the same views.

(a) The first, on which most cuereaders agree, is the difficulty in perceiving whether a word begins with a vowel sound or with a "t" sound, especially if the vowel is a flat one or speech is rapid. Cuers have invented various unorthodox ways to get around this for the sake of adult cuereaders, such as a "wiggle" of the thumb to indicate a "t."

(b) The similarity of the short vowel sounds "i" and "a" in running speech also presents problems as both are cued at the throat. However, I have found that consonants plus context generally take care of this one.

(c) The same hand shape for "k" and "z" also presents some difficulty in running speech where the difference is hard to see. Again, context often resolves this ambiguity. I do, however, remember the difficulty I had in reading the unfamiliar word "zircon."

Again, I would stress that the immense helpfulness of the system and the skill with which it was developed by Dr. Cornett far outweigh any limitations it may have. The addition of even partial help from very imperfect cuereading, or selective cueing of names and changes of subject, can still make all the difference between making sensible guesses and incomprehension. A good cuereader is one who is able to concentrate on the essential and ignore the redundancy of cues and lip movements, in the same way a good listener automatically omits the redundancy of speech. Cued Speech holds great potential for resolving the problems of postlingual hearing loss. Those who have learned and kept practicing think it has the answer to our problems.

CUED SPEECH AND AUDITION:

PARTNERS OR RIVALS?

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Introduction

Part of the difficulty of setting out to prove what Cued Speech can and cannot do lies in the scarcity of information on this subject. Cued Speech has been in use for a little over 20 years, sign language and the oral method have been with us for centuries.

There are now Cued Speech users in many parts of North America, indeed in many parts of the world. Parents find that Cued Speech provides clear English-language communication with their hearing-impaired children. Most Cued Speech students are educated successfully in the mainstream. These facts are all practical pointers to the importance of this new communication tool. Yet we have very little research data to back up these personal success stories. And we cannot ask other professionals, who may be unfamiliar with the attainments of our Cued Speech students, to believe us unless we can support our claims with facts obtained through research.

To many oralists Cued Speech appears wrong--wrong because any kind of visual signal takes the learner's attention away from the auditory input; also wrong because of the belief that auditory signals cannot be processed at the same time. We need to know much more about both these points.

Review of Previous Studies

The studies already done on Cued Speech subjects show without doubt the benefit of Cued Speech for language comprehension. They raise questions about audition which need to be answered by further research.

We are talking about profound hearing losses only. The subjects of the studies mentioned below had unaided pure tone averages between 85dB and 122dB. Students with more hearing might learn language by audition alone; they are not our concern here. We are concerned with profoundly hearing-impaired students, for whom the road of language learning by audition alone can be long, painful, and sometimes impossible. We wish to find out if a

program combining Cued Speech and audition can bring these students success.

Ling and Clark (1975 and 1976) studied a group of 8- to 10-year-olds who had one and two years' exposure respectively to Cued Speech. Their results showed that Cued Speech improved the comprehension of words and sentences. It was not clear, however, whether audition played a significant part in these results.

The auditory status of the subjects was described thusly: they wore FM hearing aids in class, but no information was available about their previous training in and use of amplification.

One may deduce that they were not highly trained in the use of audition, and that this had not been a part of their daily curriculum from an early age. In programs for the hearing impaired, these features are the exception rather than the rule. If the program from which these subjects were drawn had these characteristics, one would not be ignorant of the fact. One can say, then, that it is likely that these boys and girls did not use audition because they had not been taught to do so.

Nicholls and Ling (1982) studied a group of 10- to 16-year-olds who had been educated in Cued Speech for periods ranging from 5 years to 11 years. Their results show that Cued Speech was a major factor in these students' comprehension of language, and that exposure to Cued Speech "could not be seen to inhibit the use of residual audition."

These authors also searched for evidence of the use of low-frequency auditory cues to aid comprehension. They found no evidence of this, although the subjects' aided hearing levels have them the capability of doing so. These students had worn hearing aids from an early age (one had been aided at eight months of age), thus they had had the benefit of early amplification. However, it is known that regular auditory training was not part of their program.

One may say here also that it is likely that these subjects did not make full use of audition because they had not been trained to do so. Grammatico (1975) makes the point very strongly that educational intervention is needed to develop auditory skills. With profoundly hearing-impaired subjects (unlike those with mild to moderate losses), audition does not develop by itself. Daily auditory input of the amount and quality found in normal average homes and classrooms is simply not enough for them. A special program is needed for these students to learn to use their residual hearing.

Oralists are apt to jump to the other conclusion--that the visual input of Cued Speech plus lipreading inhibited the use of audition. But their case is simply not proven. And it will not

be proven one way or another until we have data on a group of subjects who have been trained in both Cued Speech and audition.

As early as 1975, Dr. Cornett advocated the need for this, and described two different methods by which it might be carried out. Educators being notably slow to take up new ideas, only now in 1987 are we beginning to implement his suggestions. Several programs are independently starting to practice the partnership of audition and Cued Speech.

The Processing of Speech Sounds

The dispute about auditory and visual processing continues. In what way are these likely to help or hinder each other? Can the stream of signals which Cued Speech directs to the eye be related to the stream of sounds flowing into the brain via the auditory pathway?

Fry (1985) describes auditory processing as a system which each individual develops through his personal auditory and linguistic experiences. By repeated encounters he builds up a series of acoustic cues which are effective in letting him distinguish all the sounds of his native language from each other. These acoustic cues relate to the three "dimensions" of sound--duration, frequency and intensity. For example, the phoneme /ʃ/ occupies more time than the phoneme /tʃ/, so the distinction shop/chop is made by a durational cue. /θ/ is not as loud as /s/, so the distinction think/sink is made by an intensity cue.

These distinctions develop gradually. The Singhs' (1980) observations show that at 18 months their own normally hearing child did not make the "mice/nice" distinction (a frequency cue), but that by 22 months she had learned to do so.

One can theorize that, because Cued Speech makes these distinctions 100% perceivable for hearing-impaired children, it might help the development of an acoustic cue system to some degree. Of course, these children could also develop a visual cue system through the Cued Speech/lipreading input. These distinctions would be a different classification, however, being based on hand and mouth shapes, and not on time, intensity, and frequency.

It is most probable that Cued Speech users do this. The question is, do they use visual and acoustic cues together, or do they use one to supplement gaps in the other? We do not know.

The "Durational Match"

We can see, however, one way in which there is a "match" between the hand cues of Cued Speech and the acoustic cues

described above. The two streams of information, auditory, and visual, match exactly in gross durational features (or should, in the case of a fluent cuer). Hands, lips and sound are one single stream of information on the time scale, although composed of both auditory and visual signals.

Now gross durational distinctions are some of the earliest ones made by hearing-impaired children. The ability to perceive the difference between a continuous sound and a sound composed of repeated syllables is fairly easy to achieve through training. It is also evident in early babble. A child receiving standard auditory training will start to give back our /aaa/ (for an airplane) as /^^^/, and our /b^:b^:b^/ (for a boat) as /^: ^: ^ /, giving us the clear proof that he has processed this distinction. He can do this in the early stages of training, while he still has only the one sound /^/ in his expressive repertoire.

I believe from my observations and work with young hearing-impaired children that this step is of prime importance. A baby with a profound hearing loss, encouraged to listen and also encouraged to watch Cued Speech, is receiving--even though it may be through his immature auditory pathways, and also through his frequently malfunctioning, chewed and dismantled hearing aids--yet he is receiving a rhythmic stimulus which exactly matches in duration the Cued Speech signals that he can clearly see. Gross duration, as we have seen above, is something he is ready to process; and his attention is directed to it more and more on account of the matching hand movements. Looking at it from this angle, Cued Speech might possibly be enhancing, and not detracting from, early auditory learning.

Once the habit of paying attention to the stream of sound, and finding it meaningful, is established, it could be possible for other and finer distinctions to be learned--the acoustic cues which, this time, do not "match" the hand cues. We have to discover, as Dr. Cornett (1975) pointed out, if the auditory and visual cues are best presented together or one following another. We do not know this, and again must wait for future research to enlighten us. For practical purposes, we follow the method which works in our particular situation. It is most probably that the age of the student and his/her stage of auditory learning affect this choice.

Individual Differences

There is one more relevant point about auditory processing. People develop acoustic cue systems along the same general lines, but there are differences--general differences between users of different languages, and individual differences beyond that. Like all human systems, this is an adaptive one. In Fry's (1984) words, some people "operate in a perfectly normal way with the phonemic system and decode speech like everybody else but they happen to

have evolved a different acoustic cue for the purpose, or to be applying cues in a different way." He gives the example of a hearing-impaired girl who had learned to make the /s/ distinction effectively, but by using a different acoustic cue than the one generally used by people with normal hearing.

In other words, any consistent distinction which a hearing-impaired person is able to hear can become an acoustic cue for him. Might not Cued Speech, which gives him/her a consistent visual stream of information, direct his/her attention to very slight acoustic differences, and help him build them into an acoustic cue system?

Conclusion

This conclusion necessarily takes the form of an collection of "empty boxes."

We do not know very much about the learning processes of hearing-impaired children using Cued Speech from infancy on up.

We do not know if there is a "best way" to combine Cued Speech and audition, and whether, as we hope, this will bring success in both language and speech.

Nor do we know much about how Cued Speech is processed, what type of visual cue system its users may develop, and how these relate to auditory processing and the acoustic cue system.

Imaginative and aggressive qualities in teachers and parents often result in success for the hearing-impaired child. Maybe these are the overriding factors, and maybe the rest does not matter!

And, finally, maybe now some serious research can be undertaken to throw light on these important questions.

References

- Clarke, B. and Ling, D. (1976). The effects of using Cued Speech: A follow-up study. *Volta Review*, 78, 23-24.
- Cornett, R. O. (1975). Cued Speech and oralism: An analysis. *Audiology and Hearing Education*, 1, (1).
- Fry, D. B. (1984). The role and primacy of the auditory channel in speech and language development. In D. Ling, (Ed.), *Early Intervention for Hearing-Impaired Children*. College Hill Press.

- Grammatico, (1975). The development of listening skills. *Volta Review*, 77, (4).
- Ling, D. (1976). *Speech and the Hearing-Impaired Child: Theory and Practice*, Washington, D.C.: A. G. Bell Association.
- Nicholls, G. H. and Ling, D. (1982). Cued Speech and the reception spoken language. *Journal of Speech and Hearing Research*, 25, 262-269.
- Singh, S. and Singh, K. S. (1980). *Phonetics, Principles and Practice*. Baltimore: University Park Press.

CUE TO MY FACE BUT PLEASE TALK BEHIND MY BACK!

COMBINING UNISENSORY AUDITORY TRAINING AND CUED SPEECH

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"Cued Speech is a tool--it is only a tool. It can be used in conjunction with any of the major philosophies in deaf education" (Cornett, 1984). Many supporters of other philosophies may not agree with this statement, but we who use Cued Speech know it to be true. We have seen the proof in our children. The purpose of this paper is to set forth guidelines as to how Cued Speech can be used in conjunction with the auditory-verbal philosophy to achieve the much sought-after results of high-level language and intelligible speech in a deaf child. Dr. Orin Cornett (1984) realized the value of unisensory auditory work in conjunction with the use of Cued Speech when he said, "If it becomes apparent...that rapid learning of the spoken language will occur only if Cued Speech is utilized...it will still be desirable and important to continue the periodic use of unisensory auditory training.

I would suggest to Cued Speech users that not only is it desirable to continue periodic use of unisensory auditory training, it is mandatory that a good deal of each child's day be spent discouraging the use of the visual sense in order to train the sense of hearing. As most parents who choose Cued Speech have hearing-impaired children with profound hearing losses, this may seem an inefficient use of the child's day. However, these profoundly deaf children more than any others must learn to listen to speech if they are to become intelligible speakers at all. Cues give little indication as to how the child should produce a sound initially. The sense of hearing is the most efficient means by which this can be accomplished.

How then, specifically, are those using Cued Speech with their profoundly deaf children to decide where and when to emphasize cueing and when to stop cueing and isolate the sense of hearing? Because proponents of an auditory-verbal philosophy have successfully developed use of the hearing sense in countless numbers of severely to profoundly deafened adults and in some profoundly hearing-impaired children, I would suggest that we investigate the following basic principles of an auditory-verbal approach and determine where and how application of Cued Speech might be appropriate.

Principle I - The Hearing Impairment is Detected at an Early Age

Obviously this desire is not limited to an auditory-verbal approach, but the maximum benefits of Cued Speech will never be realized by hearing-impaired children if their hearing losses

continue to go undetected two and three years (or more) after birth. Our Cued Speech organizations must devote as much energy to the promotion of newborn hearing testing as we do to the promotion of Cued Speech.

Principle II - Two Hearing Aids Are Fitted to Provide the Maximum Amount of Potential Hearing

Auditory-verbalists advocate the fitting of two appropriate hearing aids as soon as a hearing loss is diagnosed. Because this is a cornerstone of auditory-verbal philosophy, professionals advocating auditory-verbal education will not accept any less than the best amplification possible in both ears for each child enrolled in an auditory-verbal program. Often children using Cued Speech are those with profound hearing loss. One reason some parents have decided to use Cued Speech may be because they have been told their child is "really deaf." They may have been told that their child has little chance of developing speech and language through hearing so they and we professionals working with them may not always be as aggressive as we could be in the area of amplification. We may think "we have the children who are really deaf," therefore, a different hearing aid, a modification in the ear mold (acoustic horn, venting, etc.) probably would not make a great deal of difference in our child's auditory performance. In addition, we may not search as zealously for alternatives because we do not have to. A parent or professional whose hearing-impaired child relies solely on audition to receive language virtually runs to the audiologist whenever there is the slightest possibility to improve a child's auditory perception, because the child must use his amplification in order to progress. Cued Speech children can progress in language development without amplification, so a problem with amplification may not seem so urgent for our children. In truth, however, it is. Since many of our children are "so" deaf, if we can improve their reception of any amount of auditory information, no matter how slight, we must. We must urge audiologists to improve the aided responses of Cued Speech children's audiograms. We must search the professional literature for those modifications, and new forms of amplification which will improve our children's auditory responses. We must seek out those professionals who are knowledgeable in the area of improvements in amplification and get them interested in our Cued Speech children.

Principle II - The Limited-Hearing Child is Given the Fullest Opportunity to Use His Residual Hearing

In an auditory-verbal approach, a child is stimulated constantly by sound, his attention is directed toward sounds, and he is rewarded for imitating sounds. Listening is a continuous activity. Pollack (1977) writes that in an acoupedic approach, one neither trains awareness of, nor attention to, visual cues through lipreading, Cued Speech, early teaching of reading, or fingerspelling. In her view there can be no compromise, because

once emphasis is placed upon "looking" there will be divided attention, and the unimpaired modality--vision--will be victorious (p. 18). It is important to note that she does not say that the hearing-impaired child will never be allowed to lipread or use other visual cues. She says that, "once a listening function has been developed, the child can use visual cues to supplement the auditory cues to a greater or lesser degree, depending upon several factors such as degree of loss, amount of environmental noise, position of the speaker, type of activity, etc. He becomes multisensory and integrates all the sensory stimuli in a natural way" (p. 19).

How long does one wait until a "listening function" has been developed? Is it necessary to wait at all? These questions spark great debate among parents and educators of the hearing-impaired. Those who choose to combine Cued Speech and unisensory training have two options, according to Cornett (1984). One option is for the hearing-impaired child to begin unisensorily. If it is determined after a reasonable amount of time that he cannot learn language fast enough through unisensory input, Cued Speech can be added as a tool to make the spoken input clearer. This does not mean that the child should discontinue his work with the auditory-verbal professional or discontinue unisensory training at home. It does mean that a part of each day will be spent cueing to the child--still drawing attention to sound at each possible moment--and part of the day will continue as it did before cues were added, with emphasis solely on the use of residual hearing. The other option is to begin as soon as the hearing loss is diagnosed with the use of Cued Speech and unisensory training--each for a portion of the day. How much of each day is spent cueing must be determined by the individual child, parent, and teacher.

With either option there are guidelines to help in deciding when to cue and when to do specific unisensory training.

1. First, note that I did not say, "when to cue and when not to cue." Beyond simply "not cueing," whenever the parent or teacher is not cueing, he must be within three feet of the child's hearing aid, behind the child's back, beside him, or in front of him with his hand covering his mouth so that the child cannot lipread.

2. Moreover, the child must be encouraged to watch the speaker when he is being cued to, and listen only when he is being worked with unisensorily. The parent or teacher must strictly adhere to these rules during the initial months of beginning with both unisensory training and Cued Speech (some children will reach up to pull a parent's hand away from his mouth so that he can lipread during unisensory training time, or conversely will not watch the parent cueing to him during cueing

time). Later some children begin to decide appropriately themselves when they should watch and when there is no need to.

3. There is some debate as to how to present new information to a hearing-impaired child being exposed to both Cued Speech and unisensory auditory training. Information the child is learning for the first time may be presented unisensorily, and then, if the child needs it, the information should be cued and then presented auditorily again. The alternative is to cue the information first and then present it to the child unisensorily, either immediately after the information is cued (in the same lesson), or as soon as the child regularly comprehends the new information when it is cued (in a few hours/days). The option chosen depends, of course, on the individual child's ability to use his hearing, his rate of language learning unisensorily, his frustration level (if any) when introduced to new information auditorily, and where the child is in relation to the speaker when the new information is being presented. What is important to either option is that "whatever you do you must have an auditory step if you want to keep audition going" (Daniel, 1986). A child will not learn to use his hearing if he is not required to listen all day long. Simply wearing amplification will not result in development of useful residual hearing (Grammatico, n.d.). Auditory training cannot be for one period in a child's day, but must be all day, every day. This is especially true for a child who is being cued to.

4. Cued Speech is a valuable tool for speech correction. The most direct system for speech correction is audition. Many of the errors a hearing-impaired child makes when speaking can and should be corrected auditorily, by asking the child to listen and then saying the correct sound/word directly into his hearing aid without visual cues. If we want our Cued Speech children to use their hearing so as to develop natural sounding speech, we must correct speech errors through audition first, and use the cue as a back-up.

5. Cued Speech allows for clear communication in the car, while Dad is watching TV, while Mom is helping siblings with their homework, regardless of the noise level in the hearing-impaired child's immediate environment. As teachers and families reap the benefits of this tool which makes each day more relaxing for everyone, we need to search for time in the day which will allow the hearing-impaired child to listen in a quiet environment. A Cued Speech child can continue to learn

language while big brother's stereo is on, but he cannot hone his listening skills in a noisy environment.

In conclusion, finding a professional who will try Cued Speech is often quite a task for parents. Finding a professional who will try Cued Speech and who believes that profoundly deaf children can learn to listen and speak is a major undertaking. It is worth the search. Cued Speech and unisensory auditory training can be combined to result in profoundly deaf children who learn language at the same rate as their hearing peers and who learn to speak through the most direct route--use of hearing.

References

- Cornett, R. O. (1984). **Unisensory auditory training.** Unpublished paper.
- Daniel, L. (1986). Speech to a 1986 acoupedic seminar. Denver.
- Grammatico, L. F. **The development of listening skills.** Unpublished paper. n.d.
- Pollack, D. (1977). **Educational Audiology for the Limited Hearing Infant.** Springfield, Ill.: Charles A. Thomas, Publisher.

CUED SPEECH IN GREAT BRITAIN

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Cued Speech was introduced into England in 1971 by a parent, Mrs. Winifred Tumim, who heard Dr. Cornett talk about his new system at the International Congress on the Education of the Deaf in Stockholm in 1970. Mrs. Tumim asked me to teach her daughter, Emma, with Cued Speech. She and Dr. Cornett had adapted it from American English to that of Received Pronunciation (R.P.).

Because of the slight variations in the vowel sound of American English and the Received Pronunciation of England, some of our vowels are cued in different positions to your. We cue them thus:

at the mouth position:	ee, aw, u
at the chin position:	e, ue, o
at the throat position:	i, oo, a
at the side position:	ur, ah, uh

The Central American oe, as in toe, is a pure vowel sound. However, o e, is a diphthong in Received Pronunciation.

I taught three children privately four mornings a week. Two came to me for remedial tuition. They had a CA of 6.6 and Grammatical Closures of two years when I started with them. I did not start cueing with them until they were eight years of age, and their language acquisition accelerated rapidly. I like Cued Speech because it gives both articulatory spelling and alphabetical spelling and, therefore, puts the deaf child in the position of receiving the spoken language in every detail.

All three children passed the written English and mathematics exams of the only Grammar School for the deaf in the United Kingdom at 11 years of age and after only three and a half years of Cued Speech. They became avid readers and their language retardation gap diminished remarkably from a performance of two years to about 8.0 years, in three years.

I determined, therefore, that there should be a National Centre, where parents could have access to, information on, and instruction in Cued Speech. As a result, the National Centre for Cued Speech (NCCS) was opened in December, 1975. It is a registered charity and depends entirely on grants from trusts, firms, and individuals, although the plan is to seek government support as soon as possible. We are most fortunate and honoured to have Dr. Cornett as our Patron, and we keep in close contact with him.

He visits us from time to time and always brings inspiration with him.

The Centre has several functions. It provides information, offers counselling, and runs courses and workshops--both at the Centre itself and anywhere in the U.K. where requested.

The Centre has taught many parents of deaf preschool children but we do have a very tough time persuading the Educational Authorities of the value of Cued Speech, and its growth is slow. We have the age-old conflict between the different philosophies of Manualism and Oralism. Total Communication is, however, gaining wider acceptance in the U.K. and Cued Speech is gradually becoming more and more accepted.

The National Union of the Deaf is fighting very hard for the reintroduction of signing in schools and for it to be included in the training programmes for teachers of the deaf. Such programmes do not include instruction in signing or other forms of manual support. You can see that we have our work cut out for us.

Cued Speech is used in the south and southwest of England. It has been officially adopted as one of the communication tools by the Royal West of England School for the Deaf at Exeter. This school uses Signed English also for dual-handicapped deaf children. Hearing-impaired children are sent to this school from Educational Authorities in the south and southwest of England. It is an independent school. That means that it is not maintained by an Educational Authority. However, various Educational Authorities meet the fees of the deaf pupils that they send there.

Cued Speech has been adopted in Norfolk which is a county on the east coast of England. It has been introduced by the Educational Authorities at the preschool level and in primary schools with partially hearing units attached. It has recently been introduced into the secondary school for mainstreaming the cueing children who have moved up from the primary units. The Cued Speech representative in Norwich has recently been made the Senior Advisory Teacher of the Deaf, with responsibility for communications skills in the County of Norfolk. She is doing excellent work expanding the use of Cued Speech in that county and in the neighboring county of Suffolk.

Northern Ireland

I have made several visits to Belfast, Northern Ireland. I have adapted Cued Speech, with the help of Dr. Cornett, into Northern Ireland English. The big breakthrough is that the Northern Ireland Health Board is accepting Cued Speech as a basic speech and language tool for use in its model special school for hearing children with speech and language difficulties. They find it particularly useful for dyspraxic children. There are also

hearing-impaired children at this school with additional learning problems connected with speech and language acquisition, and Cued Speech is being used by them. We are watching these developments with great interest.

There is some use of Cued Speech in Scotland in Scottish English, and it is hoped that it will shortly be adapted in Welsh English.

The NCCS also runs courses in its own county. The Centre is based in Canterbury in Kent. The Educational Authorities do not as yet use Cued Speech in their schools. However, groups of parents are learning it in order to help their children who are of preschool and school age.

Hi-Centre, Maidstone

I teach young deaf adults in their twenties at a town called Maidstone. They are inarticulate, and they want to learn to speak. They are avid absorbers of language through Cued Speech. They do not hold with the rigid view of many members of the Union for the Deaf, which is that the deaf should only be taught by means of British Sign Language (B.S.L.).

We hope to use these adults to talk to other deaf adults in order to promote their interest in Cued Speech and thus act as ambassadors to the Union for the Deaf and to deaf clubs in the U.K.

We run a Cue Club on Mondays at the Centre. This is attended by both hearing and deaf youngsters aged 16 years and over and adults. The Cue Club is a relaxed evening but gives instruction in language structures and develops cueing skills. We have formed a cueing choir, and we perform at some of the exhibitions in which we participate.

A profoundly deaf adult has recently insisted that she be provided with a Cued Speech transliterator instead of a signing interpreter in her imminent domestic court hearing. She has done so because she says she can understand far more language with Cued Speech. She also points out that she benefits from the use of the voice with Cued Speech, since she has a little useful hearing. This court case is a precedent and could have a far-reaching effect on court procedures for the cueing hearing-impaired in the United Kingdom.

Religious Services

We have Cued Speech representatives around the U.K. We meet to take part in an annual Interfaith Service for people with hearing and speech problems. We provided Cued Speech interpretation and transliteration at these services. We have cued the services throughout including Latin and Hebrew anthems.

We recently held the first Cued Speech service in the U.K. in the Chapel of Christ Church College, Canterbury, where we ran our summer course this year. Hearing children and adults took turns leading the service, and we had a special prayer of thanksgiving for Cued Speech. There were Chaplains-to-the-Deaf on the course, and one of these led the service and cued the sermon. It was a wonderful occasion. As a result, the Dean of Canterbury Cathedral has invited us to hold Cued Speech services in the Cathedral and has given his permission for Cued Speech transliteration and interpretation to be used at services in the Cathedral at which there is also signing interpretation.

Hearing Schools Become Involved in Order to Help the Deaf

Many secondary schools in England have an afternoon devoted to social activities where pupils go into the community to help with shopping and decorating for the elderly, and to assist in special schools for the disabled.

We are at present giving training in Cued Speech to pupils aged 16-18 years of age from one independent and one state school in Canterbury. Seventeen of them have taken our Certificate of Proficiency, and we are in the process of training another 17. Two more schools have asked for their pupils to be taught Cued Speech. These young pupils have open minds, enthusiasm, and dedication. They are the Cued Speech transliterators and teachers-of-the-deaf of the future. Most of them go on to universities and colleges, and we hope to persuade those places of education to use these pioneering youngsters as transliterators for deaf students. We also hope to use them to make video instruction material for their deaf peers. Some have told us that they now wish to train as teachers of the deaf or to work for the deaf in some way. One young man is particularly interested in doing this with computers. He has a severe hearing loss but functions as if he had none. Cued Speech has been a useful support to him.

Courses

The National Centre for Cued Speech runs courses anywhere in the U.K. upon demand. Attendance may range from the teaching of a few parents in their home town, to teaching staff of schools or units for the deaf, or to instructing the staff of hearing schools where there are hearing children with speech and language difficulties. Courses are held regularly at the Centre itself. There are one-week courses for people who are at the beginners'

level or those who have progressed on to the intermediate or advanced levels of cueing. There are also weekly evening courses for beginners in Cued Speech.

No matter how a course is organised, tuition is given in practice for an average of 20 hours. We teach people to cue using both hands so that the hand has equal practice. Of course, once a person has learned Cued Speech he/she only cues with one hand. We also give considerable time to teaching course participants to read back cues from the instructors and each other. In fact, 50% of the course is geared to learning how to cue and 50% is geared to learning how to read the cues of other people. This gives parents and teachers experience in cue reading before they encounter a deaf child or adult who uses Cued Speech. This enables parents and teachers to recognise the cue that may be attempted by their children or pupils as they master Cued Speech, this providing a stronger rapport between them.

We have issued a Certificate of Proficiency in Cued Speech since 1976. People are not obliged to take this examination, but those who do gain self confidence. The Centre keeps a register of those who have gained the Certificate and can monitor where Cued Speech is being well used. The examination for this Certificate comprises:

1. a cueing test for accuracy;
2. a test in cue reading, i.e., reading back information from a cuer with unvoiced speech accompaniment;
3. a simple written paper in which the candidate has to outline the aims and objectives of Cued Speech, its place in the philosophies, and Manualism and Oralism, so that we know that they can talk intelligently to others about the background of the cueing skills that they have mastered.

A period of three months has to elapse before a person who attends a course may take the examination. This period is to ensure that a person has actually used Cued Speech and will not, therefore, lose the skills that he/she has just recently acquired on the course. We need to know that he/she can cue and discuss Cued Speech with others with experience, knowledge and application to reinforce his performance and argument, thus making him/her a better ambassador for Cued Speech.

Close Proximity to Europe

I mentioned earlier that the NCCS is now situated in Canterbury, which is just 20 minutes by road from Dover, the gateway over the English Channel--and in the future, under the Channel--to other countries in Europe where Cued Speech is used. We make good use

of this fact. We have easy access to visit programmes there and vice versa. We have many visitors and pay visits in return in order to seek advice, attend conferences, and residential courses. It is so good to see our close neighbours from Belgium here, too, at this Congress. Mrs. Winifred Burton is not only from Brussels, but also from Canterbury, where she grew up.

It is wonderful to share the development of Cued Speech in the United Kingdom with you and to bring it before its mother country. Thank you for inviting me to such an historic and enriching occasion. It is a privilege for me to be here to represent Cued Speech in the United Kingdom. I bring the thanks of all present and future cuers in the U.K. to Dr. Cornett for all that he has done for us and for what is yet to come. The NCCS will do its utmost to further Cued Speech, for we know that we hold in our hands the key to enriching the future of so many deaf children and adults.

APPENDIX

The appendix contains proposals and abstracts of presentations at the first annual Conference of the National Cued Speech Association for which full manuscripts were not available. These items are presented in alphabetical order by the name of the first author.

LANGUAGE-BASED CRITERIA FOR MAINSTREAMING

Pat Fletcher

When is a hearing-impaired child ready to be successfully mainstreamed into kindergarten? Educators of hearing-impaired children have asked this question for many years. Language-based criteria have been established during the past four years at LeBlanc Special Services Center for mainstreaming children who are hearing-impaired into public school kindergarten classrooms. The criteria were developed during a five-year language program based on Bloom and Lahey's model of language acquisition for normal hearing children as described in **Language Development and Language Disorders** (1978).

By using criteria based on language age, decisions about mainstreaming are no longer guesswork. While social skills, maturity, and personality are important considerations, these areas do not provide definable and measurable information. As a result, using language-based criteria--which are definable and measurable--along with information about the other areas, provides a complete assessment of functioning level before placement is made.

The presenter will define and discuss specific language-based criteria based on time lines; functional levels as determined by Bloom and Lahey's language program; standardized receptive and expressive language test scores; chronological age; hearing age; and individual strengths and weaknesses. A time line of four to five years was determined to be necessary for completion of Bloom and Lahey's Phases I through VIII, which begin with one-word utterances and progress through complex sentences. This time line provides a hearing-impaired child five years to learn language--the same as normal hearing kindergarten children have.

The child's receptive language age must be within one year of the chronological age of children in the kindergarten class. Tests administered to determine this include the Test of Auditory Comprehension of Language, the Peabody Picture Vocabulary Test, the Peabody Picture Vocabulary Test-Revised, the Boehm Basic Concepts Test, the Vocabulary Comprehension Scale, and the general knowledge portion of the Woodcock-Johnson Psychoeducational Battery.

Expressive language is measured by analyzing a spontaneous language sample according to semantic categories listed in Bloom and Lahey's Language Development and Language Disorders and Developmental Sentence Scoring as described in Lee's book (1974) Developmental Sentence Analysis. Expressive language skills do not have to be within one year of kindergarten age, but are considered on an individual basis. Speech skills, which are analyzed according to Ling's Phonetic Analysis described in Speech and the Hearing-Impaired Child: Theory and Practice (1976), are also considered on an individual basis.

Three types of mainstreaming will be described. Full-time academic mainstreaming requires meeting the criteria discussed above. The child attends kindergarten all day, but receives speech and language therapy as needed. The goal is to mainstream a child full-time between the ages of five and eight. After age eight, the child is placed in a self-contained class and partially mainstreamed according to academic functioning levels. Partial mainstreaming into kindergarten for social interaction is also provided. The child is enrolled in a class for hearing-impaired students, but attends kindergarten for social living time, center time, lunch, and recess.

The presenter will also discuss criteria which must be met to remain in the kindergarten class and how these criteria are monitored. The child must maintain average grades as compared to the other children in the class. He/she must answer 80% of the complex who, what, where, why, and how questions asked about the social living lesson. It is also important that the child function on class age levels in the areas of motor, social, cognitive, and self-help skills. The child is monitored by the deaf education teacher and/or aide through observations in the mainstream and by asking the child questions about information given in the classroom. Continuous contact is also maintained with the mainstream teacher.

Data will be presented on eight to ten children who have been mainstreamed during the past four years. Graphs will be used to compare the language scores of children who have been successfully mainstreamed and those who were unsuccessful. The graphs will show the effects of a child's language age on his/her performance in the kindergarten classroom.

**BACKGROUND VARIABLES AS PREDICTORS
OF CUED SPEECHREADING PROFICIENCY**

James F. Gregory, Ed.D.
St. John's University

This presentation centers on two related questions:

1. What background variables are predictive of general cued speechreading proficiency?
2. What background variables are predictive of the greatest benefit to be derived from speechreading with cues?

Data for this presentation are to be drawn from those acquired in a small-scale research project in which the present author tested a set of hearing-impaired subjects (N=11) in their ability to speechread with and without cues. Test items consisted of 200 PBK words. One hundred were presented on videotape with cues and 100 were presented on videotape without cues. Background data were also collected via questionnaire.

The first empirical question deals with general cue reading skills. What background variables are predictive of proficiency in cued speechreading? The general linear model will be used here, with scores on the cued PBK presentations entered as the outcome variable. The predictor set will consist of the following: age at the time of testing, general degree of hearing loss, length of time as a cue user, amount of daily interactions involving Cued Speech. The predictor variables will be entered in stepwise fashion to determine the relative contribution of each predictor to the overall variance in the outcome measure.

It can be argued, of course, that the scores on a speechreading test incorporating a cued presentation measure in part at least general speechreading skills. Thus, the second question listed above--what background variables are predictive of the greatest benefit to be derived from speechreading with cues?--is also pertinent. To address this issue, another run of the general linear model will be made. The predictor set will be the same as in the first run. However, in this instance the outcome variable will be different. Here the outcome variable will consist of "discrepancy scores," that is, the individual's scores on the cued condition minus the scores on the uncued presentation. This discrepancy score then yields an estimate of the actual benefit to comprehension attributable to the cueing per se.

The results of this study are seen as being informative to researchers for outlining future research. These findings may also be of immediate concern to Cued Speech instructors interested in determining which variables may predict the greatest degree of benefit in their students.

AURAL HABILITATION PRIOR TO COCHLEAR IMPLANT

OF A CONGENITALLY DEAF CHILD

Judith A. Lasensky, M.S. and Priscilla M. Danielson, M.A.

The current habilitation program was introduced when the subject was five years old. He was nonverbal and intolerant of speech therapy. He had few spontaneous vocalizations and limited articulatory movements with or without voicing. Modified Signed English served as his primary language. Audiological findings indicated a profound corner audiogram.

We hypothesize that older congenitally deaf people do not typically do as well with cochlear implants because sign language is their first language. Sign language is not time-locked to spoken English even when it is signed in exact English. Therefore, with the introduction of a cochlear implant, they have to sort out all environmental noises. Speech becomes not only an added noise to their environment, but an entirely new language coding system.

Therefore, we propose that an effective plan of treatment is to introduce Cued Speech as the primary mode of communication prior to cochlear implant. Cued Speech as a lipreading aid is always presented in real time with spoken English. During the course of this therapy program, Cued Speech was introduced in as many environments as possible enabling the child to respond to ordinary speech. The initial environment was the therapeutic setting, followed by introduction into the home through game activities and whenever a new vocabulary word needed to be introduced to the child. The eventual goal was fading sign language from the therapeutic environment and introducing cueing into most settings, so the child is essentially becoming bilingual. He will be able to use sign language during interactions with the deaf and spoken cued English in the hearing world.

Once the child became receptively functional to spoken English with Cued Speech, the vibrotactile aid was introduced. Therapy training was divided into individual sessions devoted to training of environmental noises, timing information of speech, and articulatory production and precision. Then the vibrotactile aid was gradually integrated into the environments of his home and school.

The current results of switching to Cued Speech have included closure in age appropriateness of receptive language, improved lipreading skills, an expanded vocabulary in the home environment, greater ability to comprehend complex and abstract language, increased frequency of vocalizations during cueing, consistent visible articulatory movements during spontaneous speech, and

subvocalizations in play, as well as an improved ability to sound out words on a phonetic basis.

The results of employing the vibrotactile aid have been consistent voicing in speech production, better timing of speech, improved coarticulatory patterning, increased ability to focus on speech with competing noise, and increased willingness to self-explore and categorize environmental sounds.

Given his current progress, we anticipate that he will generalize his learned skills, and that within one month following usage of the cochlear implant, he will have full-time adjustment in the school environment and part-time adjustment at home. In short, the majority of habilitation is most effective when conducted prior to implantation.

CASE STUDY: CUED SPEECH TRAINING

FOR A DEAF-BLIND TEN-YEAR-OLD

Judith A. Lasensky, M.S. and Priscilla M. Danielson, M.A.

The following case study concerns a now 12-year-old female diagnosed with Usher's Syndrome. Usher's Syndrome exhibits itself as a progressive hearing disorder associated with Retinitis Pigmentosa (varying degrees of blindness).

This child's hearing problem progressed rapidly to a profound loss before linguistic skills could be acquired. The recognition of the visual deficit and its progression to legal blindness mirrored the hearing disorder. By two years of age she was legally blind. She exhibits mild motor and balance problems.

Today auditorily she has no discrimination of vowels or timing information with binaural amplification. Visually, she is unable to distinguish light from dark. Her primary mode of communication is Signed English word order and a computer-to-Braille typewriter.

She was introduced to Cued Speech two and a half years ago. Prior to that time the child had been enrolled in speech and language therapy on a regular basis. Articulation therapy followed an approach which combined improved awareness of sounds and oral motor movements, as well as correct sound production. At the time Cued Speech was introduced, the child was experiencing significant difficulty with carry-over to new vocabulary items of trained sound productions. This was the result of difficulty with sound blending and lack of phonetic training. Speech therapy eventually evolved into intense sessions devoted to phonetic training for each new word introduced. However, therapy was moving slowly, and progress had reached a plateau.

Currently with the introduction of Cued Speech, the child was enrolled in a private school within the community which did not provide services for handicapped children. The child was reading above the age level within the regular classroom. Consultation with the school revealed that phonetic training at that particular point in the child's academic development would only slow down her ability to perform academic tasks.

Cued Speech was introduced as a means of facilitating comprehension of sound production within words and sound pairs, improved sound blending, and to reduce the need for phonetic interpretation of new vocabulary items. Cued Speech also provided an internal model for sound production which the child could rely on from word to word. It was thought that Cued Speech would serve

as a therapeutic tool and not as a means of communicating with listeners, at least not at the present time.

Following the introduction of Cued Speech, the initial response by the child was significantly improved production of all vowels and most consonants. The Tadoma methods of hand placement on the clinician's face helped her to recognize and correct her own mistakes. Vibrotactile information was also provided through the use of the "Phonator." It served as an accessory means of monitoring sound production characteristics. As therapy progressed, the child rapidly learned all hand positions and became adept at reading the clinician's cues. Speech intelligibility significantly improved at the single word level with parents reporting noticeable improvement at home. Intelligibility of speech, however, was reduced when the cue signal was removed. It appeared that when the child employed the cues, she was using them as a means of self-monitoring her own vocal production. Connected speech remained poorly intelligible, although sound blending, intonation, and rate of speech were observed to slightly improve.

At the present time, the child continues to employ Cued Speech as a therapeutic tool. Intelligibility at the single word level is judged to be good, with intelligibility at the phrase level judged to be fair to poor. Use of cueing continues to improve self-monitoring skills. Articulatory errors are limited overall and are primarily characterized by developmental-type substitution errors, occasional phonological processes, and some voicing errors. Parental awareness remains high, and therapeutic interactions consistently demonstrate progress. It is thought that this child will continue to achieve improved speech intelligibility employing Cued Speech as a therapeutic tool and progressing to the point that speech will be intelligible at the phrase level.

CUED SPEECH AND THE ROLE OF

AUDITORY LEARNING

James M. Latt, M.A.
Fairfax County (Va.) Public Schools

This presentation explores the role of auditory development in children using Cued Speech. A problem expressed by professionals investigating the merits of Cued Speech is that the system has a potential to isolate verbal learning into the visual domain. Educators and clinicians in the field of deaf education have expressed concern that Cued Speech can develop a "visual dependence" and circumvent the development of auditory potentials in children. This, in effect, could limit the development of refined speech communication skills as well as the child's ability to receive and process verbal information which is not cued.

The presenter will discuss Cued Speech learning and auditory learning in general. The major focus of the presentation will be to describe an integrated approach where auditory learning receives a high priority in the early language and communication skill development of hearing-impaired children. The presentation will also explore some potential pitfalls in Cued Speech training and ways to avoid developing "visual dependence." The value of auditory learning is well documented in the literature and will be summarized. A particularly important area of discussion will be the role auditory learning plays in the overall development of speech skills and the reception of spoken language.

A COMPARISON OF THE INTELLIGIBILITY OF

CUED AND UNCUED SPEECH

M. Catherine Sheridan, M.S.
The Pennsylvania State University

For the young hearing-impaired child, lack of development of readily intelligible speech may severely hamper his/her ability to communicate. One possible avenue of augmenting the speech of deaf children consists of the addition of manual cueing to speech. Cued Speech, a phonemically-based hand supplement to speechreading, has been shown to aid in the reception of spoken language, but little has been done to assess the effects of the use of cueing on expressive communication. To date, the focus of researchers examining Cued Speech has been on cueing and speechreading or on cueing and language development.

Sheridan and Blood's recent survey of Cued Speech programs in the United States indicated that, in addition to the use of cueing to convey language to hearing-impaired children, many children were being asked to cue expressively. Now that it appears that Cued Speech is being utilized as an expressive medium, investigation into the efficacy of that approach is appropriate, as well as analysis of its effects. The purpose of this study was to compare the speech intelligibility of hearing-impaired children under two conditions--speech alone or speech in conjunction with cueing. Using the comprehension of cued and uncued utterances by naive, untrained listeners as an indication, the overall effects on intelligibility, when this visual information was present and when a motoric task was overlaid on the act of speech, was assessed.

Six hearing-impaired children who had been cueing for at least three years served as speakers in the study. Sixty university students were judges. Each group of hearing judges audited a videotape of one of the hearing-impaired speakers reading 36 sentences which were balanced for number of syllables, level of predictability/context. For half of the sentences, the hearing-impaired subject spoke and cued; for the other half, the sentences were spoken without cueing. Only one speaker was heard by each judge.

Statistical analyses of the results indicated a significant improvement in intelligibility in the cued condition over the uncued condition for five of the six subjects. The magnitude of improvement for each subject could be correlated with the initial degree of intelligibility according to the NTID Rating Scale. Possible reasons for change in intelligibility with the addition of cueing are also discussed.

Many of the most recent studies of the intelligibility of deaf speakers have endeavored to describe and quantify those factors which make speech less intelligible or different than that of hearing speakers. Integration of this knowledge with assessment of approaches with potential for overcoming those difficulties is an important step in the ongoing development of remediation techniques.

"DON'T JUST TALK, SAY SOMETHING!"

GENERALIZATION OF SPEECH TARGETS INTO EVERYDAY LANGUAGE USE

Nedra A. Sneed, M.S.
Dothan (Alabama) City Schools

Using Cued Speech, a child must "talk" all the time, so it may appear easier for speech targets to be assimilated into his everyday speech. It is easier to work with speech, because a Cued Speech child knows he has to talk to be understood. However, any teacher or parent can assure us that just because a child knows how to produce a sound does not guarantee that he will magically use it in his everyday speech.

There needs to be structured activities used during the carryover phase of speech development before a child will use the targets spontaneously. "Carryover" is a problem even among normally-hearing children. Making the change from the purely phonetic sound level to the phonologic and higher levels of spoken language, is not quickly done (Ling, 1976). As any speech therapist working with normally-hearing children can attest, the rate at which this generalization occurs varies from child to child.

With children who receive speech training from a specialist other than the classroom teacher, there is a risk that they may regard speech as being separate from their everyday school life. It is for the speech room only. Even with Cued Speech where the child must use his speech all the time, the child will not automatically go out into the classroom and use the sounds he has learned. Sometimes the classroom teacher may feel that "speech" is not her responsibility. Also, she may not be sufficiently aware of what speech skills the child has learned and may not insist on his using them in class. The parents may feel that speech teaching is best left to the "experts," and so they feel powerless to know what to do to help the child use his sounds at the phonologic level.

What is the phonologic level? At the phonologic level, the child is concerned with both deriving meaning from the speech of others and using his speech in a meaningful way (Ling, 1976). The speech therapist may say, "Debbie has the /h/ sound now. Be sure she says it all the time." The teacher, no matter how dedicated and well meaning cannot possibly remember everyone's speech targets and get them to use them all day. The parents need to be made aware of what the child should be doing, and given some specific tasks for practice at home.

Anyone can make up, or adapt games or activities for speech practice. However, the specific language level of the child must

be kept in mind. The speech skills need to be closely integrated with language targets being expected from each child. The speech therapist and classroom teacher need to communicate so that each thoroughly understands what the speech and language targets are.

How do you combine them? The simplest way is to make it fun--with games! Speech practice games need to combine the phonetic element to be practiced with a language target at the level of the particular child. Any game may be adapted for use from the lower level suprasegmental target to a much higher level of phonologic use.

A speech book needs to go back and forth daily to the parents so they can have something specific to practice with the child at home. Again, the parents need to be fully aware of their child's language level and what to expect them to use in spoken language. The phonologic level of teaching should not be concerned so much with speech production per se, as with spoken language development (Ling, 1976). So, parents and the classroom teachers are the greatest tools a speech therapist can use to get generalization of speech targets.

This paper will give some practical points on carryover of speech targets into phonological usage, with activities geared for each child's specific language level.

Reference

Ling, D. (1976). **Speech and the Hearing-Impaired Child: Theory and Practice.** Washington, D.C.: Alexander Graham Bell Association.