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Mr. Fleetwood works as an adjunct instructor in the Master of Artsin ASL/English Interpretation Program at Gallaudet University, as president of Language Matters, Inc., and as a staff interpreter for Sign Language Associates, Inc. Dr. Metzger and Mr. Fleetwood are nationally certified as cued language transliterators and as ASL-English interpreters. They have authored a variety of texts, videotapes, and audiotapes on the topics of ASL and cued English, including Cued Language Structure: An Analysis of Cued American English Based on Linguistic Principles and have conducted empirically based research on the nature of cueing, including the study Does Cued Speech Entail Speech?: A Comparison of Cued and Spoken Information in Terms of Distinctive Features. During the course of the past several years, the terms cuem, cued English, and cued language have been used with increasing frequency. In 1998, our book Cued Language Structure: An Analysis of Cued American English Based on Linguistic Principles became the first publication to formally define and use these terms in referring to particular phenomena. Because that publication serves to formalize the use of these terms, we as the authors would like to provide clarification with the hope of minimizing their misuse. Such is a goal of this writing. Productive philosophical, academic, and practical discussions are dependent on a common understanding of the terminology that they employ. However, because research findings drive a continually evolving body of knowledge, it can be difficult to realize such a shared understanding. While new knowledge often requires the reformulating of definitions1, the adoption of new definitions happens neither spontaneously nor simultaneously among the populous. Nevertheless, an evolving understanding of reality creates the need for meanings ascribed terminology to evolve as well. The point here is that reality is not a means of justifying definitions ascribed terminology. Definitions are a means by which reality is discussed. Underscoring the nature and value of evolving definitions is another goal of this writing. — CUED SPEECH — Because we are not the inventors of Cued Speech, we do not presume the right to define it. Nevertheless, in terms of its function, Cued Speech is a visual articulatory system. Designed in 1966 by R. Orin Cornett, Ph.D., the system is characterized by a set of visibly discrete symbols. Each symbol is the result of pairing a mouthshape with either a handshape or a hand placement, the former to distinguish among consonant phonemes and the latter to distinguish among vowel phonemes. All pairs are unique. Thus, the phonemic inventory of a consonant-vowel language is completely visible through this articulatory system without the need to create acoustic symbols via a different articulatory system — speech. — CUEM — Recognizing that traditional definitions of Cued Speech include reference to sound, speech, and/or speechreading, and wanting to refer strictly to a phenomena accessible entirely in the visible medium, the authors coined a term that refers solely to the visible products of cueing: handshape, hand placement, mouthshape. The term cuem is used to refer to these visible products and is not equivalent to, a replacement for, nor interchangeable with, the term Cued Speech. — CUED LANGUAGE — The term cued language refers to a class of languages just as the term spoken language refers to a class of languages. The need to distinguish between cued and spoken languages was incidently created as a result of (1) R. Orin Cornett developing Cued Speech and (2) people using Cued Speech to communicate linguistically. Cued languages employ the visibly discrete attributes of Cued Speech (i.e. handshape, hand placement/movement, and mouthshape). However, cued languages also employ visibly discrete non-manual features, including, but not limited to, brow-movement and head-thrust. These visibly discrete symbols and non-manual features are combined and modulated following a hierarchy of rules and processes which constitute the phonology, morphology, and syntax of a given consonant-vowellanguage. In other words, a cued language is any consonant-vowel language in which cuem, the visibly discrete symbols of Cued Speech, serves as the foundation for conveying wholly in the visible medium all of the features that constitute a language. Those visibly accessible behaviors associated with the linguistic application of Cued Speech are characteristic of cued language. Thus, the terms Cued Speech and cued language are not interchangeable; the former refers to an articulatory system that produces visibly discrete symbols (cuem); the latter refers to the linguistic employment of that system. — CUED ENGLISH — With regard to the term cued language, "cued" identifies the articulatory system employed; "language" refers to the hierarchy of symbols, structures, and rules conveyed by that system. The terms signed language and spoken language are similarly descriptive. Thus, cued English simply refers to one member of the class of cued languages. — DIFFERENT PHONETIC FEATURES — Cueing produces a different set of symbols than does speaking; cueing produces a visible set and speaking produces an acoustic one. The symbols produced by cueing are bipartite (2-part) in nature: a visible symbol is uniquely identifiable as the product of combining (a) handshape and mouthshape or (b) hand placement and mouthshape. The symbols produced by speaking are tripartite (3-part) in nature: an acoustic symbol is uniquely identifiable as the product of combining (a) voice+ (i.e. voiced/voiceless attribute), (b) manner (e.g. plosive, nasalized), and (c) place (e.g. bilabial, interdental). Thus, a cued symbol is described by a set of phonetic features different from the set of phonetic features describing spoken symbols. Because cueing is a bipartite system and speaking is tripartite in nature, and because the relevant symbols (visible vs acoustic) and medium (light vs sound) differ, cued languages exhibit phonological pro- cesses distinct from those characteristic of spoken languages. — CUEING IS NOT THE SAME AS SPEAKING — Spoken English users who learn to cue English thereby learn to produce a set of visible symbols that represent the phonemes of English. Cued English users who learn to speak English learn to produce a set of acoustic symbols that represent the same phonemes. Each set of symbols — visible and acoustic — targets the same linguistic values (i.e. phonemes). However, because one set of symbols does not entail the other set, exposure to cueing does not teach one to speak just as exposure to speaking does not teach one to cue. Cueing is not a representation of speech sounds and speaking is not a representation of cued symbols. Thus, an individual can know cued English without knowing spoken English, and vice versa. — KNOWING A CUED LANGUAGE IS NOT THE SAME AS KNOWING CUED SPEECH — Cued Speech has been adapted to approximately 60 languages and dialects. This adaptation is motivated by the fact that the phonemic inventory of one language does not correspond exactly with that of another language. In light of this difference, the visibly discrete Cued Speech symbols (i.e. cuem) can differ across consonant-vowel languages. For example, cued French employs five (5) hand placements while cued English employs four (4). The additional hand placement (at the cheek) found in cued French is a visibly discrete way of representing vowel phonemes, such as that found in the French word "peu," while visibly distinguishing it from vowel phonemes of other languages, such as that represented at the mouth placement (e.g. /ur/) in cued English Additionally, the values (phonemic) ascribed the symbols (phonetic), the combination and sequence of those symbols (phonotactic and phonologic processes), the meanings ascribed the symbol combinations and sequences (morphologic), and the grammatical (syntactic) rules are language-specific. Thus, by only establishing that two individuals know Cued Speech, it is impossible to determine whether or not they will be able to communicate linguistically. If one is an English monolingual and the other a French monolingual, the fact that both cue does not resolve the fact that they know different languages. Although the individuals share an articulatory system contained wholly in the visible medium, they do not share knowledge of the values ascribed the symbols nor the rules for applying them. Thus, the authors propose that, when describing an individual's avenue for communicating, it is more productive to specify mode (e.g. cued, spoken) and language (i.e. English, French) than to describe the individual as knowing Cued Speech. — CONCLUSION — The terms Cued Speech, cuem, cued English, and cued language have specific meanings. A better understanding of these terms can serve to facilitate a better understanding of language and the nature of communication. As lifelong students of linguistics, we hope that the preceding points of clarification help contribute to that outcome. 1For example, the term phoneme is commonly defined in terms of the sound-units of a language. Such a definition is at odds with the reality that signed languages and cued languages make use of phonemes as structural components. In order to accurately address the reality that signed languages and cued languages are NOT based in sound, definitions of the term phoneme have had to evolve so that they include reference to visible-units. © 1999 Fleetwood and Metzger Cued Speech, a visual communication system, has been revolutionizing the way the Deaf and hard of hearing interact with the world of language and communication. Developed in the 1960s by Dr. R. Orin Cornett at Gallaudet University, Cued Speech was initially designed to aid in the development of phonemic awareness, thereby improving the reading and language skills of Deaf individuals. This article delves into the mechanics, benefits, and global impact of Cued Speech, highlighting its role as a transformative tool in the Deaf community.Understanding Cued SpeechThe Basics of Cued SpeechCued Speech is a system that uses hand shapes and placements in combination with the natural lip patterns of speech to make the phonemes of a spoken language visually clear. It is not a language itself but a visual representation of the phonetic segments of spoken languages. The system comprises eight handshapes and four locations around the face, each representing different phonemes. This visual modality enables Deaf individuals to distinguish between similar lip patterns like "p" and "b" which are visually indistinguishable in spoken languages.Adaptability Across LanguagesOne of the most remarkable aspects of Cued Speech is its adaptability to various languages. Since its inception, it has been adapted to more than 60 languages and dialects worldwide. This versatility makes it an inclusive tool that can be tailored to the specific linguistic needs of Deaf individuals in different cultural contexts.Benefits of Cued SpeechEnhancing Language DevelopmentCued Speech significantly contributes to language development in Deaf and hard of hearing individuals. By providing a visual counterpart to spoken languages, it facilitates the acquisition of phonemic awareness, essential for reading and language comprehension. Studies have shown that Deaf children exposed to Cued Speech demonstrate better literacy skills compared to those who aren't. This is primarily because Cued Speech bridges the gap between visual and phonetic elements of language, enabling a more comprehensive understanding of the structure and form of spoken languages.Improving CommunicationFor families with Deaf children, Cued Speech offers a means of clear and effective communication. It enables parents, regardless of their hearing status, to communicate more effectively with their Deaf children. This shared mode of communication fosters stronger familial bonds and provides a supportive environment for language and emotional development.Educational ApplicationsIn educational settings, Cued Speech facilitates better access to mainstream education for Deaf students. It allows them to access the phonetic structure of the spoken language directly, which is crucial in learning to read and write. Educators using Cued Speech can convey exact pronunciation, aiding in language comprehension and literacy.Challenges and MisconceptionsAccessibility and TrainingOne of the challenges in implementing Cued Speech is the need for extensive training. Educators, interpreters, and family members require proper training to become proficient. This can be a barrier, especially in areas where resources and trained professionals are scarce.Misconceptions About Cued SpeechThere are misconceptions that Cued Speech is intended to replace sign languages or that it is less effective than other communication methods. However, Cued Speech is not a substitute for sign language; rather, it complements it by providing additional linguistic access. It's a tool that enhances language awareness and literacy, working alongside other methods of communication.Global Impact of Cued SpeechCued Speech Around the WorldThe global adoption of Cued Speech highlights its effectiveness in diverse linguistic and cultural contexts. From the United States to Europe, Asia, and beyond, Cued Speech has been instrumental in breaking down communication barriers for the Deaf. It has been adapted to fit various language structures, showcasing its flexibility and universal applicability.Success Stories and Case StudiesNumerous case studies and personal accounts testify to the positive impact of Cued Speech. For instance, Deaf individuals who have used Cued Speech often report improved reading and comprehension skills. Educational institutions that have incorporated Cued Speech report higher literacy rates among their Deaf students.ReflectionCued Speech stands as a powerful tool in the arsenal of communication strategies for the Deaf. Its ability to provide clear visual representations of spoken language offers profound benefits in language development, literacy, and interpersonal communication. While challenges exist, the potential of Cued Speech in enhancing the lives of Deaf individuals is undeniable. As awareness and training continue to grow, so too will the reach and impact of this innovative system.Embracing Diversity in CommunicationThe Role of Cued Speech in Multimodal CommunicationCued Speech is an integral part of a multimodal approach to Deaf communication. This approach recognizes the importance of providing Deaf individuals with various communication tools, including sign language, oral speech, and Cued Speech. Embracing this diversity allows individuals to choose or combine methods that best suit their personal, educational, and social needs. It acknowledges that there is no one-size-fits-all solution in Deaf communication and respects the individual's right to choose their preferred mode of communication.Enhancing Cultural InclusionCued Speech also plays a role in enhancing cultural inclusion. By providing a visual means to access the phonetic structure of spoken languages, it opens up opportunities for Deaf individuals to engage more deeply with the hearing world without losing their Deaf identity. This inclusivity is crucial in building a society where Deaf individuals can participate fully and equally, bridging the gap between the Deaf and hearing communities.The Future of Cued SpeechTechnological IntegrationThe future of Cued Speech looks promising, especially with the advent of new technologies. The integration of Cued Speech with digital tools and resources can make learning and using it more accessible and engaging. For example, augmented reality (AR) and virtual reality (VR) can be used to create immersive learning environments for Cued Speech, making it easier to understand and practice. Mobile apps can provide on-the-go learning resources, making Cued Speech more accessible to a wider audience.Global Outreach and EducationAnother key aspect of the future of Cued Speech is expanding its reach globally. While it has been adapted to many languages, there are still regions where Cued Speech is relatively unknown. Increasing global outreach and education about Cued Speech can help more Deaf individuals worldwide access this valuable tool. This involves not only translating Cued Speech into more languages but also providing training and resources in those languages.Continuous Research and ImprovementOngoing research is essential in improving Cued Speech and understanding its impact better. This includes studying its effects on different age groups, its long-term benefits, and how it interacts with other forms of communication. Continuous improvement based on research findings will ensure that Cued Speech remains an effective and relevant tool for the Deaf community.ConclusionCued Speech is a powerful communication strategy that has positively impacted the Deaf community. Its ability to visually represent the phonetic components of spoken language has opened up new avenues for language acquisition, literacy, and communication. While there are challenges in its implementation and misconceptions to overcome, the benefits it offers are undeniable.The future of Cued Speech is bright, with opportunities for technological innovation, global expansion, and continuous research and development. By embracing diversity in communication and striving for cultural inclusion, Cued Speech will continue to be an essential tool in bridging the communication gap for the Deaf community.As we move forward, it is crucial to continue advocating for and supporting the use of Cued Speech, along with other communication strategies, to ensure that every Deaf individual has the opportunity to communicate and learn in a way that best suits their needs. In doing so, we contribute to a more inclusive and accessible world for all. Nature of Cued Speech and Cued Language Statement: While Cued Speech is an effective tool for visually clarifying an auditory message and can improve a child's ability to interpret auditory information received through hearing aids or a cochlear implant, cueing can provide a complete representation of a spoken language regardless of how much a person can or cannot hear (Fleetwood and Metzger, 1997), and it would appear that in at least one case, cueing can even disambiguate phonemic properties of a tonal language such as Thai (Tammasaeng, 1986). It has been shown that deaf cuers of English process much of the linguistic message in a fashion similar to hearing speakers of English, but the visual nature of cueing allows deaf native cuers to process the phonology of English in a way that is unique to them (Koo, 2003). Research: Fleetwood and Metzger (1997) studied the distinctive features of spoken and cued messages, and concluded that the acoustic properties of the spoken message (for those who can hear it) may at times provide information that supports the visual properties of a cued message, or may at times provide confounding information. The authors conclude that, while Cued Speech was intended by its inventor to be accompanied by an audible spoken message, there is reason to believe that this acoustic information may not be necessary for an individual to receive the full linguistic information conveyed via cueing. Tammasaeng (1986) investigated the effect of Cued Speech on the tonal perception of the Thai language for deaf children in Thailand. Students came from a program using speech with signs, and from a program using signs with fingerspelling, but no speech. All students were taught lipreading skills and Cued Speech for one semester, and were given a test to discriminate pairs of Thai words that differ by tone only. Performance on the test did not vary by program, but did vary by mode of communication, that is the students scored an average of 49.5% with speech alone and an average of 86.2% with the addition of cues. When separating the two groups, the children exposed to speech and then taught to cue scored an average of 96.9%, while the students not exposed to speech and then taught to cue scored an average of 82.6%. The results show that Cued Speech can clarify the tonal characteristics of such a language. Koo (2003) studied the relative contributions of manual and mouth-shape information to the comprehension of a cued message. Koo found that, for a native cuer, a cued message is not 50% handshape (or placement) and 50% mouthshape (or mouth movement), but that cuers use a combination of these incoming signals, with relative weighting of importance. In another study, Koo investigated cuers' ability to use affixes (e.g., word endings), and found that some deaf cuers more consistently apply typical English word endings to psuedowords, suggesting that these cuers have an intrinsic linguistic ability to generate rules regarding nonsense words in the same way that they would apply to real English words. Cued Speech and Speechreading / Lipreading Statement: Deaf cuers are able to perceive and comprehend far more information presented to them via cueing than via speechreading alone (Ling & Clarke, 1975; Clarke & Ling, 1976; Nicholls & Ling, 1982; Gregory, 1987), and there appears to be no support for the opinion that cueing provides a 'crutch' for speechreading, preventing a person from being able to speechread without cues (Ling & Clarke, 1975). Research: Ling and Clarke (1975) conducted one of the earliest studies of speechreading ability with Cued Speech. They presented phrases and isolated words, slowly and at a regular speed, via speech alone and via cueing. The children in their study received inconsistent access to cueing and were cued to during in-class instructional times only, and several of the children had already been placed in oral programs, but were considered unable to learn in that setting. Nonetheless, Ling and Clarke found an increase in the amount of information the children could perceive, recode, and recall when presented via cueing, as opposed to speech alone. Clarke and Ling (1976) conducted a follow-up to their 1975 study, and reported that, after one additional year of classroom exposure to Cued Speech, the children's responses gave "a clear indication that cueing facilitated speechreading for sentences, phrases, and words." (p. 30). The authors further stated that "audition [hearing the speech] played no role in speech perception with our subjects" (p. 32), suggesting again that access to 'spoken' language via cueing is not dependent upon a person hearing speech. Nicholls and Ling (1982) studied deaf cueing children's ability to understand speech under seven conditions: 1) audition alone, 2) lipreading alone, 3) audition + lipreading, 4) manual cues alone, 5) audition + manual cues, 6) lipreading + manual cues (i.e., cueing) and 7) audition + cueing. The children were able to recognize over 95% of key words in sentences and over 80% of syllables when the materials were cued to them, higher than in any other condition, with or without audition. This study also supports the idea that, while audition can be very helpful in the reception of a cued message, it is not strictly necessary. Gregory (1987) investigated the speechreading ability of cuers by testing them with and without the addition of cues. Cuers correctly identified almost twice as many single words presented via cues than via speechreading alone. Gregory also found that single words beginning with vowels were more difficult to identify for these cuers than were single words beginning with consonants. Cued Speech and Cochlear Implants Statement: While observational reports from parents and teachers are quite encouraging, research regarding the benefits of Cued Speech specifically in regard to cochlear implants is still minimal. Osberger (1997) reported results of an FDA (United States Food and Drug Administration) clinical trial on the efficacy of cochlear implants for language development in young children, in which children raised with Cued Speech were included as a discrete group. Results from the clinical trial suggested that exposure to Cued Speech provided a benefit pre- and post-implant, as compared to the other groups of children. Vieu, Mondain, Blanchard, Sillon, Reuillard-Artieres, Tobey, Uziel and Piron (1998) studied Cued Speech, Oral, and Signing groups of children at annual intervals post-implantation and found that, while all three groups made progress in speech intelligibility and spoken language ability, the Cued Speech group generally outperformed the other two groups of children. Descourtieux, Groh, Rusterholz, Simoulin and Busquet (1999) discussed a series of case studies of cueing children fitted with cochlear implants that, when considered in sum, suggest that early and consistent access to Cued Speech pre-implantation provides a superior foundation for the acquisition of spoken language after implantation. Cochard, Calmels, Pavia, Landron, Jusson, Honegger and Fraysse (2003) did investigated several auditory, communication, and family-related factors implicated in the development of deaf children who receive cochlear implants, and found many benefits associated with early and clear exposure to Cued Speech. Research: Osberger (1997) reported results of an FDA clinical trial, in which 151 profoundly deaf children were followed pre- and post-implantation. The children represented a somewhat homogenous group, in that they all were profoundly, bilaterally (most prelingually) deaf, did not benefit from hearing aids, did not show evidence of mental retardation, and came from homes with spoken English as the primary language. It is important to note that the majority (64%) of the children were implanted by the age of 5 years. The children were categorized as Oral, Cued Speech, or Total Communication. The children raised with Cued Speech represented 13% of the sample, which is a relatively large group. The efficacy of the cochlear implant was determined by children's awareness of sound (speech and environment) and language development. Therefore, it was necessary to test language abilities and to group children according to communication mode (language access). The Glendonald Auditory Screening Procedure (GASP) and the Early Speech Perception Test (ESP) were used to determine language comprehension. The Cued Speech group's performance (both pre- and post-implantation) was similar to (though slightly higher than) the Oral group, and significantly higher than the Total Communication group. It is important to note that the range of scores for the Cued Speech group was smaller than that of the Oral group, possibly suggesting that Cued Speech was a more significant factor for this group; the Oral group having higher and lower scores, suggesting other variables were significant (depending on the child). Vieu, et al. (1998) investigated speech production of 12 implanted children between the ages of 5 and 9 years old, with an average age of implantation of 7 years, 2 months. This study examined not only pronunciation of single words, but also syntax (grammatical accuracy) of sentences and stages of sentence patterns (language level). Speech intelligibility (words) was tested before implantation, and again at 1, 2, and 3 years post-implantation, by showing children pictures of common objects and having them verbally name the objects (1, 2, and 3 syllable words). Sentence syntax was tested at 1, 2, and 3 years post-implant, by presenting spoken sentences to the children and having them repeat them back completely. Language level was tested at 3 years post-implant, by showing pictures to the children, having them tell stories based on the pictures, and analyzing the accuracy and complexity of the responses. Results indicated that all children improved their speech production and spoken syntax after implantation, and continued to improve over time (3 years). Specifically, results indicated that the Cued Speech group demonstrated more advanced syntax than the oral and signing groups, and that the Cued Speech and Oral groups both outperformed the signing group in word intelligibility and language complexity by the end of 3 years. Descourtieux, et al. (1999), in an attempt to address the issue of whether, "...Cued Speech, which stimulates the visual channel, [would] cease to be useful, perhaps even be contraindicated in the long habilitative process both pre- and post-implant" (p.206), offered a glimpse into the early communication development of four children who received cochlear implants and who were raised with Cued Speech. The authors do not provide specific measures to illustrate receptive or expressive gains experienced by the children in the case studies, but they point out that the common feature of these cases is that the children received a clear visual representation of spoken language prior to implantation, and that their subsequent success with acoustic speech reception must be due, in part, to the visual-acoustic bridge provided by Cued Speech. Cochard, et al. (2003) investigated factors influencing the communication and language development of implanted children, including the role of exposure to Cued Speech. The authors report data on 53 children, who were followed for a number of years in order to document their development. The children were tested regarding auditory discrimination, speech comprehension, spoken intelligibility, and language development. An important aspect of this study is that the children were separated into three "profiles", depending on their language development progress in the first three years after implantation (i.e. Profile 1: children whose progress is fast and continuous; Profile 2: children whose progress is slower, likely due to being implanted at a later age; and Profile 3: children whose progress is halted, likely due to other family or health factors.) Analyses including all 3 profiles indicate that all children improved in their ability to perceive spoken words and in their own speech intelligibility over time. However, for comparisons of the children's development, only those children who fit the first two profiles are included, and these children are further separated into signing, oral, and Cued Speech groups. Major findings are summarized thus: Regarding the children's perception of words in open and closed lists, the Cued Speech group outperformed the signing and oral groups at all three time intervals (i.e. 1, 3, and 5 years after implantation). Regarding the children's speech intelligibility, all children were similar at one year after implantation, but the Cued Speech group outperformed the signing and oral groups at 3 years and 5 years after implantation. Comparisons of language development were carried out using data from 19 children to whom the authors had consistent access for at least 4 years. Major findings are summarized thus: Neither age at implantation nor age at the beginning of auditive education appeared to be significant factors of comparison for these groups. This is likely due the children being similar in these regards. A significant difference, however, can be seen regarding a child's ability to benefit from hearing aids prior to implantation. Children who experienced benefit from hearing aids prior to implantation were all found in Profile 1 (progress was fast and continuous) and children who did not benefit from hearing aids prior to implantation were all found in Profile 2 (progress was evident, but slower). Also, most of the children in Profile 1 came from families that reported being comfortable and capable with their communication mode (whether signing, oral, or Cued Speech), and most of the children in Profile 2 came from families that reported being frustrated with their comfort and capabilities. Interestingly, most families in Profile 1 used either oral communication or Cued Speech, whereas most families in Profile 2 used signs with speech. The authors examined factors related to parents' and families' use of Cued Speech with their children, and results suggest very strongly the importance of early and consistent use of Cued Speech at home and at school. The authors found that parents who attend formal training enjoy more success with Cued Speech, but that the amount of time spent cueing is a more important factor than the actual type of instruction received. Truly, all families in Profile 1 reported using Cued Speech intensively or regularly, whereas all of the families in Profile 2 reported using Cued Speech regularly, moderately, weakly, or not at all. It is important to note that families in Profile 2 do indeed report success with Cued Speech and/or with the child's cochlear implant, but at a level somewhat lower than the families in Profile 1. In addition to the aforementioned research currently available, Leybaert (2003) has reported on a series of studies in progress or recently submitted for publication, that look into the contributions of cueing for interpretation of new or degraded auditory input provided by cochlear implants. Preliminary data from de Gestas and Leybaert (in Leybaert, 2003) indicate that, among children receiving cochlear implants, the children with early and consistent exposure to cueing at home and at school, attain rhyme judgment abilities at the expected age, whereas the implanted children who do not cue are slightly delayed in this developmental milestone. Cued Speech and Language Development / Language Processing Statement: Deaf children of hearing parents who cue their native spoken language have been found to develop that language according to the same milestones as hearing peers (Kipila, 1985; Anthony, Moseley, & Williams-Scott, 1991; Metzger, 1994). Hearing parents can learn to cue at a rate and accuracy level sufficient to deliver linguistically complex information to their deaf children within 2-3 months of learning the system (Torres, Moreno-Torres, & Santana, 2006). Deaf children exposed to multiple languages by fluent models of those languages can develop both languages and become bilingual in a fashion similar to hearing children (Earl, 2006). Cueing provides children with access to complete language, including such function words as prepositions, often missed by deaf children from other communication backgrounds (Santana, R., Torres, S., & Garcia, J. (2003). Indeed, deaf children whose parents and teachers cue (and/or who work with skilled transliterators) have been found to develop the written forms of spoken languages in ways similar to hearing children of hearing parents (Cornett, 1990; Leybaert & Alegria, 1993; Leybaert, Alegria, & Foncke, 1983; Perier, Charlier, Hage, & Alegria, 1988). Research: Kipila (1985) conducted a case study of the expressive and receptive cueing of a 5 year, 4 month old deaf child, and found many morphological structures used with 100% accuracy, including: regular and irregular past, plurals, possessives, and irregular third-person. Structures that Kipila found to be present but at less than 100% accuracy included: articles, contractible copula, present progressive, and regular third person. Many of these have not yet been reached in the 5th year of normal language development. Quenin (1993) examined the effect of Cued Speech on deaf college students' ability to repeat word-for-word what a speaker has said to them. She timed the participant's responses, to keep track of speed as well as accuracy. The participants' reception of connected speech was more accurate and more efficient with cues than without (less errors, and twice as fast). These findings suggest not only the benefit of cueing for receptive language, but specifically the ability of cuers to process ongoing connected discourse. Metzger (1994) conducted a follow-up study with Kipila's (1985) participant at the age of 11 years. Six years after the original case study, Metzger chose to focus on three structures noted by Kipila at 100% accuracy (regular and irregular past tense, and plurals) and three structures noted by Kipila at less than 100% accuracy (the contractible copula, present progressive, and articles). Metzger found all six structures demonstrated at 100% accuracy, suggesting the developmental nature of cued language development similar to the developmental nature of spoken language development. Anthony, Moseley, and Williams-Scott (1991) conducted a case study of the expressive language ability of one child with a severe-to profound hearing loss who was exposed to Cued Speech from the age of 18 months. At the age of 3 years, 10 months, the child was videotaped in interactions with mother, father, and teacher. Language samples revealed evidence of language milestones, including: expressively-cued mean length of utterance (MLU), use of appropriate morphemes, question and negation forms, lexical categories, and turn-taking. The researchers found the participant's morphological, lexical, and pragmatic development to be within normal limits for age level. Torres, Moreno-Torres, and Santana (2006) conducted a case study in Spain involving a prelingually profoundly deaf child, her hearing mother, and a speech-language therapist with 10 years' Cued Speech experience. The girl was identified as deaf at 12 months, and wore bilateral hearing aids until the age of 17 months, at which point she received a cochlear implant. She was exposed to Cued Speech beginning at the age of 14 months. Within 3 months of learning to cue (by the beginning of the case study), the mother was able to match the therapist's level of cueing (e.g. mean length of utterance, variety and complexity of language forms). Both adults cued 62-65% of language-bearing utterances, and 83% of all words spoken. The child's cued language models provided her access to linguistically rich messages, including nouns, verbs, grammatical structures, and pragmatics. The researchers concluded that the child was provided rich linguistic input via Cued Speech, that a parent can learn to cue and become a sufficiently competent cuer and language model in a short period of time, and that a deaf child can attend to cued as well as oral/aural messages for the purpose of language development.# Earl (2006) documented the bilingual development of a ten month old girl with auditory dys-synchrony over a period of 8 months. The girl was exposed to cued Dutch by her hearing mother and cued Spanish by her hearing father. Findings include that, although the girl received fluctuating and inconsistent access to sound and auditory speech information, she demonstrated age appropriate receptive language development in both Dutch and Spanish, and demonstrated comprehension of cued messages in both language whether accompanied by speech or not. The girl's expressive language (primarily spoken) was observed to be approximately 6 months delayed in both Spanish and Dutch, and the researcher speculated that additional disabilities associated with the girl's birth may be contributing factors to this. Santana, Torres, and Garcia (2003), aiming to shed light on deaf children's development of specific linguistic concepts, conducted a study of the acquisition and use of Spanish prepositions by deaf children in Spain form oral, signing, and Cued Speech backgrounds. The researchers chose prepositions due to their important role in the comprehension of spoken language. The results show that the different systems of communication contribute, to different degrees, to the acquisition of Spanish prepositions, with the best results being obtained with Cued Speech. In the study, 35 children with prelingual profound sensorineural bilateral hearing loss who could read at a measured age equivalent of at least 8 years were grouped according to whether they had been consistently exposed (for at least the last 3 consecutive years) to oral, signed, or cued communication. The children were presented with a task booklet made of sheets with simple sentences from which the preposition had been replaced by a blank and four prepositions from which to choose a response. Each sentence was accompanied by a drawing to help clarify the meaning of the sentence. Results indicated no significant difference between the Cued Speech group and a hearing control group. These scores were higher than those seen in both the oral and signing groups. The authors conclude that exposure to cued language supplies information about the prepositions of spoken language to deaf children commensurate with that supplied to hearing children by speech. Cued Speech and Phonics / Spelling Statement: Deaf children with early and consistent exposure to cueing develop a phonological representation of words in their language, and can learn phonics generalizations for spelling in the same way as hearing children who speak the language (Alegria, Dejean, Capouillez & Leybaert, 1990; Leybaert & Charlier, 1996; Leybaert & Lechat, 2001). Research: Alegria, Dejean, Capouillez, & Leybaert (1990) compared hearing students and deaf cuers on the ability to identify new words in print. The students were first given a pre-test to determine words familiar and unfamiliar to them, and then they participated in mini-lessons in which they learned new vocabulary words, presented in cued French and accompanied by pictures instead of written words. After each lesson, the children were shown the drawings again and were given a multiple-choice test, consisting of both familiar and unfamiliar words. For each picture, one written word was the correct choice, two written words visually similar to the correct choice when speechread, and one written word was unrelated. In order for children to choose the correct word, they would have to disregard the both choices that look the same on the mouth and choose the one that is exactly the same when cued. There was a significant increase in correct responses for the new words, even though the children only had exposure to cued representations of the words, and no exposure to the printed word. These findings suggest that exposure to Cued Speech can provide children with the phonological representations of words, and the ability to develop their own vocabularies based on words' phonological structure. Leybaert and Charlier (1996) compared the phonics abilities of hearing students, deaf students who were exposed to Cued Speech at home and at school, those who were exposed to Cued Speech at school, using a generative spelling task. The students were shown simple pictures and were asked to spell the words represented. The deaf students exposed to Cued Speech at home plus at school, like the hearing students, exhibited error patterns in which the majority of errors were phonologically accurate (i.e., could be pronounced like the correctly spelled word). This was in sharp contrast to the students who were exposed to Cued Speech at only at school only, whose errors were almost equally phonologically accurate and phonologically inaccurate. These findings strongly argue for the use of Cued Speech at home plus at school for the development of cued language. Leybaert and Lechat (2001) conducted a study of prelingually, profoundly deaf children's spelling skills, in order to determine whether a deaf child's accuracy in the use of phonics knowledge is affected by: (a) the nature of linguistic experience; (b) the age at which language exposure began; or (c) an interaction of the two factors. Signing children and cueing children were given picture and/or short sentences and asked to write a missing (but familiar) word. Specific phonics rules were investigated, to determine the accuracy of children's spelling based on phonics. Both groups of signing children (those exposed to sign and/or a signed language at school and/or at home) provided more phonologically inaccurate spelling errors than phonologically accurate ones. The children exposed to cueing at home and at school provided more phonologically accurate spellings, and showed differences in spelling based on phonics generalizations, suggesting the importance of early acquisition of a language that has the phonological structure for the development of accurate phonics representations for spelling Cued Speech and Memory for Reading Statement: Deaf children with early and consistent exposure to cueing at home and at school demonstrate word coding, memory, and reading abilities similar to hearing peers, and superior to deaf children from other communication backgrounds (Leybaert & Charlier, 1996; Wandel, 1989; Ketchum, 2001) AND superior to children exposed to cueing only at school (Leybaert & Charlier, 1996). Research: Leybaert and Charlier (1996) compared deaf children raised orally, those raised with cueing at home and at school, and those raised with cueing only at school on their use of phonological representations (the way a word is "said") for remembering a series of words. Picture stimuli were used to avoid the possibility of giving the children pronunciation clues based on spelling. The three groups were asked to recall series of pictures representing words in two sets of conditions: 1) rhyming vs. non-rhyming and 2) one-syllable vs. multiple syllables. The hearing children and the children who were exposed to cueing both at home and at school were able to recall more words than the oral group, and showed a difference in their ability to remember words based on word length and on phonological similarity (it's harder to remember a list of words if they rhyme, and it's harder to remember a list of long words than short words) suggesting that the children exposed to Cued Speech both at home and at school process the phonological structure of spoken words in much the same way as hearing children. Ketchum (2001) studied the working memory capacity of deaf individuals from signing backgrounds and cueing backgrounds, as well as that of a group of hearing controls, to investigate the type of phonological coding that deaf and hearing cuers of English use for short-term retention of serial-order information. The study explored the recall of participants when presented with cued and printed word stimuli in conditions of oral and cued articulatory suppression. Ketchum found that deaf cuers use internal speech recoding similar to hearing individuals in working memory tasks, and do not show reduced working memory capacity relative to hearing individuals. Wandel (1989) matched groups of deaf elementary school students by communication mode (Oral, TC, and Cued Speech) and compared them to a hearing control group matched for age, gender, and cognitive ability. Results indicated that the TC sub-groups had the lowest measured achievement on the tasks and the lowest internal speech recoding ability. There was no significant difference in reading achievement between the hearing and Cued Speech-profound groups. There was a relationship between internal speech recoding and reading comprehension for the deaf subjects in her study, and it seems that cuers use internal speech better than users of MCE systems. Cued Speech and Phonological Representations for Reading Statement: Individuals with early and consistent exposure to cueing in childhood demonstrate an awareness of phonology and reading comprehension commensurate with hearing peers (Coryell, 2001; LaSasso, Crain, & Leybaert, 2003). Children exposed to cued French demonstrate rhyme judgment and rhyme generation abilities similar to hearing peers, (Charlier & Leybaert, 2000), as do children exposed to cued American English (Crain, 2003). Research: Charlier and Leybaert (2000) studied the generative rhyming abilities of deaf children exposed to signing at school or at school plus at home, and deaf children exposed to cueing at school or at school plus at home. The children were asked to think of and write down words to rhyme with either printed words or the words indicated by pictures. Target words were separated into two groups: 1) easier words, in which correct rhyming answers are spelled alike, and 2) more difficult words in which correct rhyming answers may or may not be spelled alike. The group of children exposed to Cued Speech both at home and at school performed similarly to the hearing control group, outperforming all of the other groups. Coryell (2001) investigated the correlation between verbal sequential processing abilities and reading abilities of deaf participants from signing and cueing backgrounds, compared to a hearing control group. Participants were tested with measures of verbal sequential processing, passage reading comprehension, and intellect. The deaf participants who used sign communication showed comparable intellect, yet scored lower than the cueing participants and the hearing controls, both on measures of verbal sequential processing and measured reading comprehension. Coryell hypothesized that the signers' over-reliance on top-down reading processes may contribute to a lesser ability to take advantage of verbal sequencing for reading comprehension. LaSasso, Crain, & Leybaert (2003) compared the rhyme generation abilities of hearing young adults to young adults with severe to profound deafness from 1) cueing backgrounds and 2) non-cueing backgrounds. Rhyming accuracy was better for orthographically-and-phonologically consistent words than for orthographically-and-phonologically inconsistent words. The performance of the deaf participants from cueing backgrounds did not differ significantly from that of the hearing participants. However, the performance of the non-cueing group was well below that of the hearing group. Hearing and cueing participants produced more orthographically different responses (e.g., love and of) while participants from the non-cueing group produced more responses that are orthographically similar (e.g., love and glove), indicating that the hearing and cueing groups rely more on phonology and the non-cueing group more on spelling to generate rhymes. Between-group comparisons reading comprehension scores indicated comparable measured reading achievement for the three groups, but within-group correlations between reading score and proportion of orthographically different responses indicated a correlation between measured reading achievement and rhyming ability. These findings point to the connection between phonological awareness and reading achievement. Crain (2003) compared the effect of exposure to cued American English by comparing the generative rhyming abilities and reading comprehension of 10-14 year old deaf children from oral and cueing English-language backgrounds. He found that although the oral group had higher levels of hearing and better ratings of speech intelligibility than the cueing group, the cueing group had superior phonological awareness (PA) and