A system of contrasts employed by an adult unilateral CI recipient with CHARGE syndrome

The purpose of this case study research presentation is to examine and document the system of phonetic contrasts used by a highly unintelligible individual with lifelong hearing impairment. Additionally, we aim to discuss the emerging and established phonological processes by this individual, who was implanted with a unilateral cochlear implant as an adult and possesses concomitant mild cognitive impairment, left side facial paralysis and a number of concomitant medical and cognitive conditions which occur as a part of CHARGE syndrome.

In this paper we strive to answer 2 questions:

1. What system of phonetic/phonemic contrasts does this subject produce?
2. What phonological processes is he using, and are they what is expected for his cognitive level? Is there evidence of new processes emerging?

Video recordings of the subject were made and subsequently transcribed using ELAN software. Transcription layers: (i) phonetic information describing Joe's speech attempts, other vocalizations, (ii) body position movements and orientation to the AAC device and partners, (iii) eye-gaze shifts, and his various unaided modalities. Additional data was collected via Goldman-Fristo Test of Articulation-2 (GFTA-2), Khan-Lewis Phonological Assessment-2 (KLPA-2) and Arizona Articulation Profile-3 (AAP-3), which were then used to examine how he utilized a system of contrasts in the presence of physical and cognitive limitations of productions.

Data collection occurred at periodic intervals, for the purposes of this paper phonetic and phonological data collected in both 2010 and 2015 were used. These data sets, which included phonetic inventory of SIWI and SFWF consonants (and clusters where applicable), vowels used, and phonological processes used by the subject at the time of data collection. Additional notes detailing divergent and/or distorted productions were also included to allow for rich and thorough descriptions of the subject's speech productions. These two datasets allowed the authors to not only document and examine the subjects' systems of phonetic contrast, but also to compare the development of both the subject's phonetic and phonological systems. Additionally, it allowed for documentation of established and emerging phonemes and phonological processes.

Results of analysis show the subject has developed a rich system of phonetic/phonemic contrasts in order to produce the differences necessary for listeners to understand his oral speech. These included nasalization differences, rounding and reduplication. His contrasts and phonological development, though differing somewhat from what would be expected from a childhood CI recipient, are emerging and aid him in being an efficient and effective communicator that can be understood by both familiar and non-familiar listeners.