

## Introduction of Visual Amharic to Educate Deaf Students in Ethiopia - A Pilot Study

Thomas Shull<sup>1</sup>, Molash Hailu<sup>2</sup>, Abera Nega<sup>3</sup>, Telahun Gebrehiwot<sup>4</sup> and Miriam Redleaf<sup>5\*</sup>

<sup>1</sup>Boston Public Schools, 2300 West Washington St., Roxbury, USA

<sup>2</sup>VICKtory School, Addis Ababa, Ethiopia

<sup>3</sup>East Africa Hearing Aid Center, Addis Ababa, Ethiopia

<sup>4</sup>Boston University, Boston, USA

<sup>5</sup>University of Illinois Hospitals and Health Sciences System, Chicago, USA

\*Corresponding author: Miriam Redleaf, MD FACS, University of Illinois Hospitals and Health Sciences System, Rm 2.42, 1855 W. Taylor St., Chicago, IL 60612, USA, Tel: 312-996-6582; Fax: 312-996-4910; E-mail: [mredleaf@uic.edu](mailto:mredleaf@uic.edu)

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### Abstract

**Objective:** To describe the reception of Visual Amharic in 3 schools for the Deaf in Addis Ababa, Ethiopia.

**Design:** Cued Speech enhances lip-reading by providing real-time visual representations of the phonemes of spoken English. This system was adapted to Amharic, the national language of Ethiopia, and taught in 3 weeklong workshops there.

**Results:** Three weeklong workshops were provided with 6 months' intervals between. The first workshop had 39 attendees, the second had 57, and the third had 69 attendees. The first workshop's 39 attendees were 24 Deaf students, 8 faculty, and 7 parents. The second workshop's 57 attendees were 12 Deaf students (2 new/10 returning), 44 faculty (37 new/7 returning), and 1 returning parent. The third workshop's attendees were 38 Deaf students and 31 teachers from 6 schools. Between the first and the second workshops 26 attendees (17 students, 7 faculty and 1 parent) reported on their use of Visual Amharic in a survey: All but 1 had used Visual Amharic since the workshop. Six students and 6 teachers had taught it to others.

**Conclusion:** Cued Speech was adapted to Visual Amharic. Attendees were able to grasp its structure and begin its use after a weeklong introduction.

**Keywords:** Hearing loss; Communication disabilities; Cued speech; Global medicine

### Introduction

Cued Speech is a language modality used among Deaf and hard-of-hearing people. The system was invented in 1966 by Dr. Orin Cornett [1], who was then Vice President of Long Range Planning at Gallaudet University, as an aid to English language acquisition and literacy. In American English, Cued Speech consists of 8 hand shapes to show consonant phonemes and 4 hand placements to show vowel phonemes. In tandem with lip reading, all the sounds of spoken English are made visible. These gestures are simple enough to be executed in real time with the spoken language.

Cued Speech has been adapted to more than 80 languages. Recent articles from French, Spanish, and Farsi-speaking countries [2-5] report its efficacy in helping phoneme recognition and reading. Cued Speech also has been shown to be an effective adjunct to speech understanding and reading development in people who have received cochlear implants [6].

Amharic is the national language of Ethiopia and its orthography differs from English: each consonant is written differently depending on the vowel that follows [7]. Thus the name "Hanna" is written with 2

symbols ("ha" and "na"). For words that start in a vowel, 2 unique silent consonants change shape depending on which vowel begins the word. If a syllable contains a consonant not immediately followed by a vowel, then that consonant is written with the shortest of the vowels even though the vowel is not pronounced. Thus the name Petros would be written with 4 symbols ("Pe", "ti", "ro" and "si"). The relationship between spoken and written Amharic requires speakers to think in syllables as they learn to read. This process is similar for hearing adults learning to cue. For individuals who already have acquired a consonant-vowel language, learning to cue is a relatively simple task of representing internalized phonology differently – with the hand instead of speech. Of course, Deaf native cuers on the other hand, passively acquire the modality and language simultaneously with typical language milestones in a typical sequence.

Spoken Amharic has seven vowel phonemes. Far fewer than English. The entire phoneme inventory was analyzed to determine any ambiguities that occur in lipreading, which could interfere with natural language acquisition by Deaf children. The Cued Speech system was adapted to disambiguate spoken Amharic so that it could be reliably accessed (to a phonological level) through a wholly visual modality. That adaptation is called Amarinna Iyita-Visual Amharic. We report here the introduction of Visual Amharic to 3 Deaf schools –

elementary through high school – in Addis Ababa, the capital city of Ethiopia.

We predicted that this system would be easily learned and applied by Amharic-users regardless of hearing status and would provide unambiguous access to Amharic through a visual channel.

## Materials and Methods

One of the co-authors, a sign language user because of a Deaf family member, and a native Amharic speaker, visited each of the Deaf schools in the capital city. Meeting with the administrators and teachers gauged their interest in Visual Amharic.

Two of the co-authors created a 24-page workbook, illustrating 9 hand shapes and 4 hand placements for Visual Amharic. A 9<sup>th</sup> hand shape was added (one more than used in the American adaptation) to represent the ejective consonants not found in English: /p' t' k' tʃ'/. The 7 vowels were grouped and assigned to one of four placements on the face (throat, chin, cheekbone, and near the corner of the lips.) (Figure 1) Grouping and assignment of phonemes serves three major purposes shared among the adaptations of Cued Speech to different languages. First, groups of vowel phonemes that are ambiguous when lipread (e.g., the English vowels /a ɔ æ/) must be assigned to different placements on the face. Vowel phonemes that are not ambiguous, however, may be assigned to the same placement (e.g., the Amharic vowels /i o/) as this allows for efficiency in learning and use. This grouping relies on the mouth to disambiguate the cue. In other words, the hand and mouth are required to represent each phoneme clearly, visually, and unambiguously. This grouping then enhances lipreading ability among native cuers – an advantage when they encounter non-cueing speakers of the language.

2016 at the Alpha School and had participants from the VICKtory, Mekanissa, Yekatit 23, Jerusalem and Hossanna schools.

In June 2015, after the first weeklong workshop and before the second weeklong workshop a survey was conducted to track which participants had continued using Visual Amharic, who had taught the system to others, and to gather opinions and attitudes about Visual Amharic use (Appendix).

## Results

Administrators and teachers from all 3 schools had heard about Cued Speech, and knew that it was being used in Europe and the United States. Each expressed enthusiasm for instruction and for a rotating the workshop sites between the 3 schools.

The first weeklong workshop (February 2015) was taught by one of the co-authors and by an American native Deaf cuer. Attendees were 24 Deaf students, 8 faculty members (2 Deaf, 6 hearing), and 7 parents (all hearing) for a total of 39 participants.

The second weeklong workshop (July 2015) was taught by the same instructor and by a different native Deaf cuer who was fluent in ASL and also from the United States. For the first 4 days, attendees were 44 faculty members (37 new and 7 returning). The last day of the second workshop was a follow-up session which was presented to 10 returning teachers and students, 1 returning parent, and two participants unfamiliar with Visual Amharic. A total of 57 participants participated in workshops during the second workshop

In February 2016 a third weeklong workshop took place at the Alpha school. This workshop was taught by the same cueing instructor (for a third time), another native Deaf cuer who was fluent in ASL and from the United States, and an American hearing specialist in Cueing, ASL and bilingualism. This workshop was attended by teachers from that school and 5 other schools for the Deaf, two of which were out of the capital city. Thirty-four participants were returning and 35 were new. Thirty-one teachers from 6 schools attended, and 38 Deaf students attended. The intermediate level classes were offered by 2 Deaf teachers of the Deaf who had attended the previous 2 workshops.

One of the co-authors of this report, a Deaf teacher who had learned to cue, surveyed 26 respondents in June 2015, after the first workshop and before the second. These 26 respondents were the students and faculty members she had access to between workshops. All routinely use Ethiopian Sign Language (EthSL). All 17 Deaf students had used Visual Amharic since the February workshop. Six of the 17 had taught Visual Amharic to another student or a family member. Seven of the 8 teachers had used Visual Amharic since the workshop. Six of the 8 teachers had taught Visual Amharic to more students or friends, and 1 had taught it to his wife. The one parent who responded had used Visual Amharic at home in the interim.

Ten students stated they liked the system and that it helped them communicate. Three stated that it was easy to learn. Two students said it helped with lip reading and it helped them with literacy. Seven of the 8 teachers reported that it helped with vocabulary and when they felt explanation in Amharic was beneficial (e.g., conveying certain math concepts). All respondents, except the 1 teacher who had not used Visual Amharic after the first session, expressed interest in continuing their work in Visual Amharic.

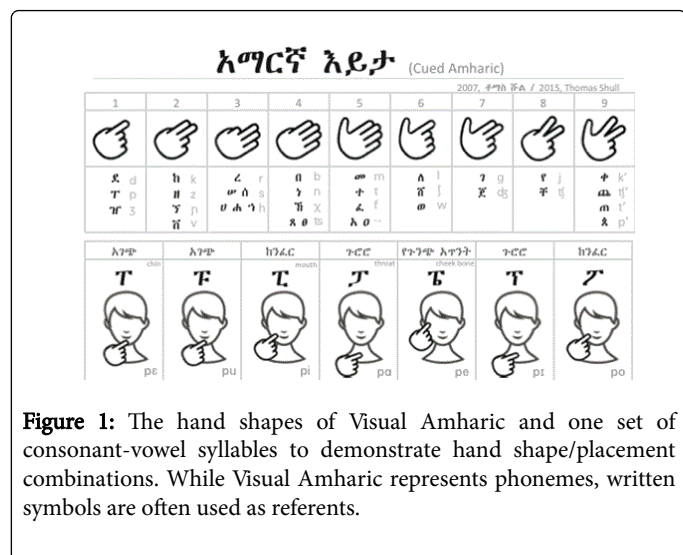


Figure 1: The hand shapes of Visual Amharic and one set of consonant-vowel syllables to demonstrate hand shape/placement combinations. While Visual Amharic represents phonemes, written symbols are often used as referents.

Three weeklong introductory workshops were presented at 6 months' intervals in Addis Ababa in Ethiopia. Deaf and hearing students, teachers and parents from the VICKtory School participated in the first week-long workshop held in February 2015. The second weeklong workshop was held in July 2015. This second workshop began with a 4-day introductory course at the Mekanissa School that also included teachers and students from Alpha School. The second workshop finished with a review day- a fifth day – which was a follow-up course held at the VICKtory School for participants who had previously learned to cue. The third weeklong workshop was February

## Discussion

Cued Speech has been adapted from American English to more than 80 languages. Reports continue to appear in the medical literature linking use of Cued Speech to acquisition and comprehension of spoken languages as well as reading development [2-6]. Visual Amharic provides visual access to spoken Amharic. It visually represents phonology and pronunciation; and visually represents syntax and grammar. The administrators, teachers and students in the 3 Deaf schools in Addis Ababa Ethiopia had heard of Cued Speech and were very motivated to be introduced. By the time of the third weeklong workshop, teachers from neighboring sites were attending. And the numbers of participants grew from workshop to workshop.

In this pilot study Visual Amharic proved to be easy for Deaf students and teachers of the Deaf to understand and use – most likely due to the similarities between the orthography of Amharic and the hand-shape/hand-position structure of Visual Amharic. If the interest on the ground persists, this system could become an aid for Amharic literacy for the Deaf population in Addis Ababa, or even Ethiopia as a whole. Current efforts are underway to identify a motivated family group – parent, Deaf child, other siblings – to cultivate a nidus of Visual Amharic users. In addition, the third weeklong workshop in February 2016 is the first to incorporate a bilingual program to strengthen Ethiopian Sign Language as well as Amharic facility and literacy.

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