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VALIDATION OF CSS - SENTENCE TEST IN ROMANIAN LANGUAGE

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ABSTRACT. The **CSS Sentence Test** was developed in the desire to have a sufficient number of test sentences for the repeated evolution of speech understanding of CI users. A noise with speech-shaped spectrum on CD allows the evaluation of speech understanding in noise. Sentences were assigned to lists.

Key words: *Cochlear Implant, Speech test, Sentence test, Speech understanding*

ABSTRAKT. Das **CSS- Satztestmaterial** entstand primär aus dem Wunsch heraus, für die wiederholte Erfassung des Satztverständnisses von Cochlea-Implantat Benutzern eine ausreichende Anzahl an Testsätzen zur Verfügung zu habe. In einer Studie mit 60 normalhörenden wurde die Discriminations-funktion des Tests gemessen. Der CSS –Test wurde über Kopfhörer dargeboten. Die Listen wurden in randomisierter Reihenfolge dargeboten.

Stichworte: *Cochlear-Implantat, Sprachtest, Satztest, Sprachverständniss*

BACKGROUND

There has been progressive improvement in the outcomes achieved with cochlear implantation due to advances in technology together with change in candidate characteristics. There in now international acceptance of the benefit of bilateral cochlear implantation for both children and adults who do not have sufficient contra-lateral acoustic hearing to use a hearing aid (Briggs, 2010, p. 43-44).

As with hearing aids, persons (children or adults) who receive cochlear implants do not perform in a uniform fashion, given the heterogeneous nature of the hearing-impaired population. The overall habilitation goal for implant users is the development of language. Once the auditory information gets to the brain, there are four levels which can occure. The most simplistic level of processing, *detection*, is the awareness that a sound has been made. The most complex level, *comprehension,*requires both the perception of sound and knowledge of language to interpret the sound. Between this two extremes are the auditory skills of *discrimination* and *identification* (Erber, 1982).

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The ultimate goal of listening practice is always auditory comprehension or understanding through listening. The development of auditory skills is always framed in a language context.

The change in language understanding performance is obtained through the use of test materials.

The CSS (Stanciu, Cotulbea, Ştefănescu) is a Romanian sentence test which was developed to evaluate speech understanding in cochlear implant (CI) users. It is an adaptation of the German-language Hochmair-Schulz-Moser (HSM) test. In order to evaluate speech perception, noise with a speech-shaped spectrum was recorded together with the spoken sentence lists.

METHODS

The CSS test consists of 30 lists of twenty 3-8 word sentences (106 words total), plus 3 exercise lists of 10 sentences each, resulting in 10 CDs with different signal to noise ratios (SNRs) ranging from +1 to -9 (variants: male and female voices). To assess the difficulty of the individual lists, 30 normal-hearing adult subjects were presented with the lists at the 6 different SNRs (+1, -1, -3, -5, -7, -9) in random order and asked to repeat what they heard. The lists of CSS test were presented via headphons.

RESULTS

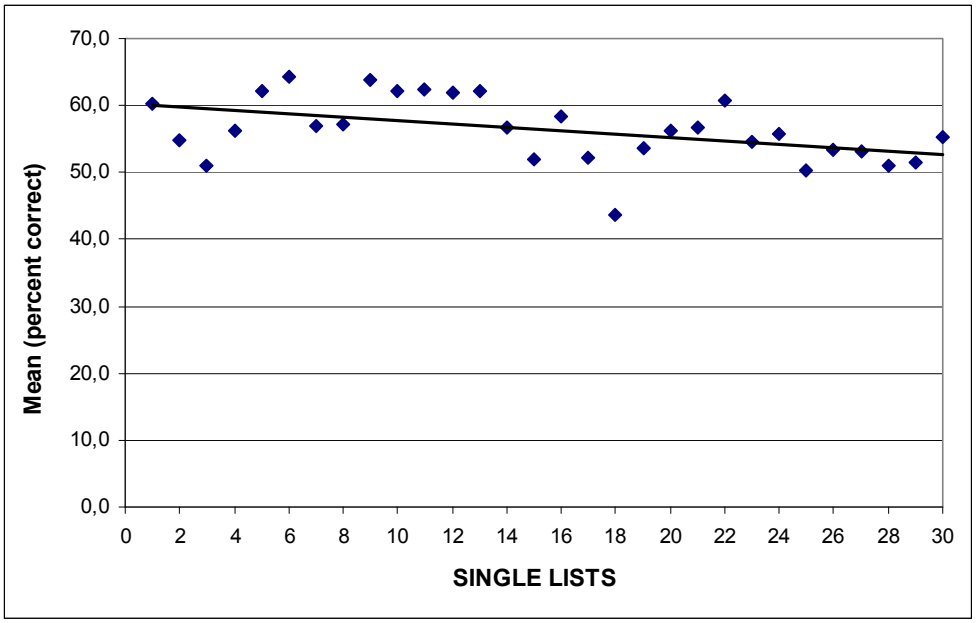
1. Female voice: the percentage of correctly repeated words decreased as a function of increased noise levels. The 50% understanding level was found to be at an SNR of - 4.

With an SNR of +1 the average percent correct was 92.23%, while an SNR of -9 yielded an average percent correct of 10.56% (SNR -1: 82.17%; SNR -3: 62.96%; SNR -5: 44.41%; SNR -7: 24.19%

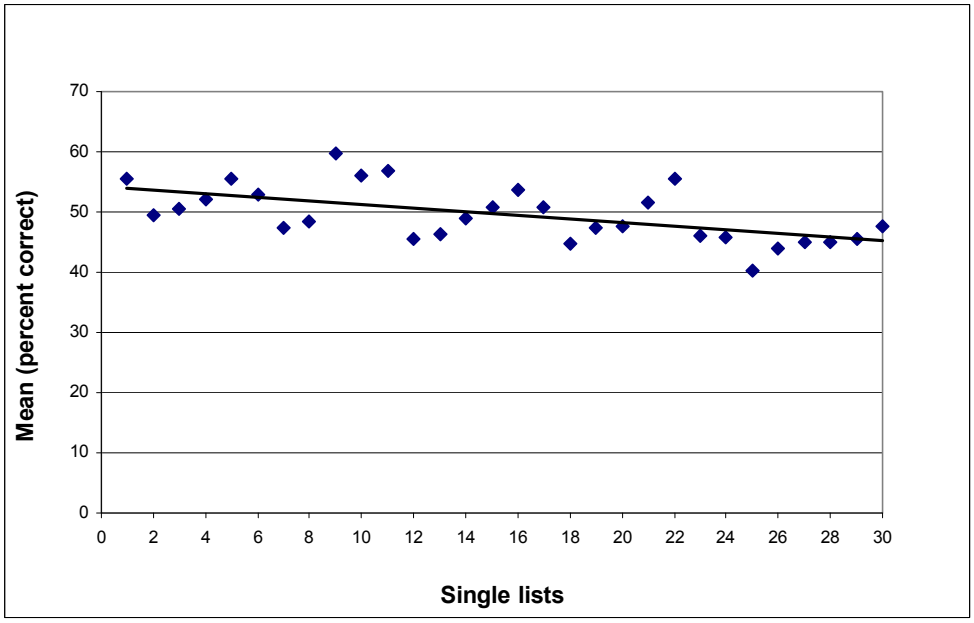
2. Male voice: the percentage of correctly repeated words decreased as a function of increased noise levels. The 50% understanding level was found to be at an SNR of - 4.

With an SNR of +1 the average percent correct was 78.25%, while an SNR of -9 yielded an average percent correct of 12.79% (SNR -1: 67.86%; SNR -3: 55.47%; SNR -5: 41.40%; SNR -7: 24.59%).

The following figures depict the mean (percent correct) distribution of the single lists:



1. Female Voice



1. Male voice

CONCLUSION

When compared to our study of the CSS test using a female voice, we found the male voice to be less understandable with lower percentages of correct words obtained by the subjects.

LEARNING OUTCOME

The CSS test is relevant for the evaluation of adult CI users' speech understanding in everyday life. Due to the different SNRs, it can also be applied with varying degrees of dificulty, as well as compared with sentence tests in other languages such as the HSM (German) test.

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