BIAP Recommendation 06/16 - 07/7 Annex 3:

Validation of Hearing Assistive Technology: Behavioural measurements

Introduction

The overall objective of the validation is to establish as closely as possible the actual situation of the user and to evaluate the benefits of the technology correctly. This can be done through an easy way or a well-structured test protocol. This evaluation has to be done with and without HATS in order to evaluate the benefit of the HAT.

Before starting…listen to the system!

Recommendation

1. Functional Listening Evaluation (FLE)

The FLE can be easily used to validate the benefits of the HAT-system by comparing the performance with and without the HATS in four listening conditions (close/quiet, close/noise, distance/quiet and distance/noise). This protocol is based on the FLE by C.D. Johnson & P. Von Almen (1993).

This test protocol can be established in a soundproof booth or in the real situation of the child/ hearing-impaired person, taking into account the actual listening conditions (distance, noise, reverberation).

	CLOSE / QUIET	CLOSE / NOISE	DISTANT/QUIET	DISTANT/NOISE
HA/CI/NONE				
HA/CI + HAT				
Typical hearing children at age 3-17 y: 90% or better in quite and noise (@ SNR 0dB) (study: Bodkin, Madell and Rosenfeld in 1999)				

Material:
- o SPEECH: depending developmental age and language of the child/teen/adult
- o NOISE: Speech noise – babble noise – TV/Radio – Natural noise - …

Method:
- o Live voice (the use of a sound level meter is recommended)
- o Recording

Distance:
- o Close: 1.5 m
- o Distant: 4-7 m (depending on room size)

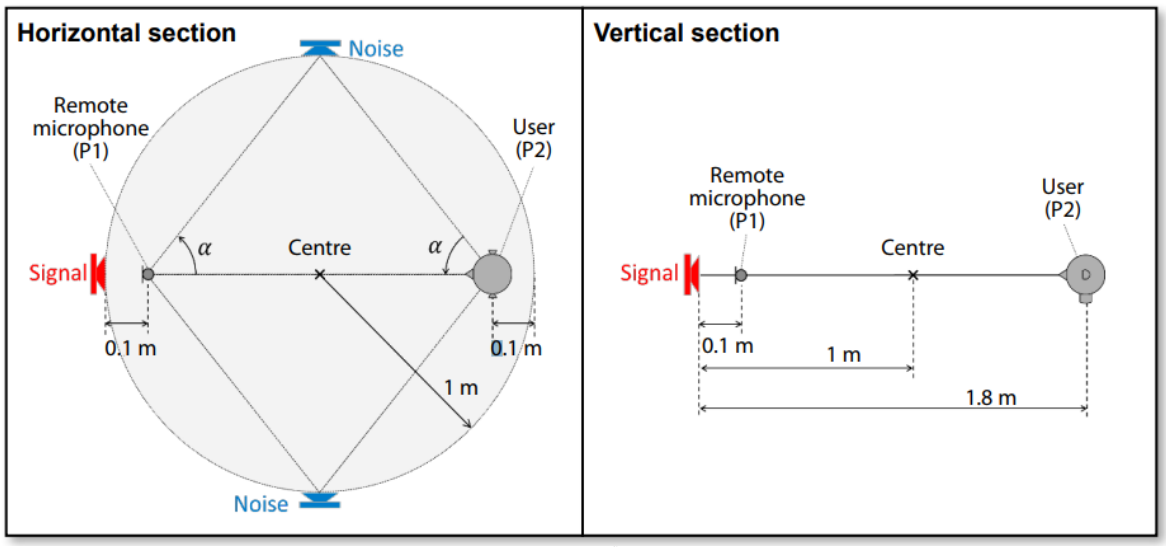
Conditions:
- o Quite: voice level at a moderate level (65 dBSPL)
- o Noise: 0° - 90° - 180° at 60 - 65 dBSPL (SNR +5 / 0 dB)

Note: Every measurement has to be done in the same conditions and with the same type of speech-noise material.

2. Well-structured test protocol

Several well-structured test protocols have been published. These well-structured test protocols make it possible to compare the results of many candidates but have the disadvantage that not everyone has the appropriate material and the possibility to use it systematically.

An interesting guideline from EUHA (Guideline 04-06 - v1.0 - issued 9 May 2017) envisions a dual-channel speech audiometer and three speakers:



More information can be found on the website from EUHA:

http://www.euha.org/assets/Uploads/Leitlinien/Expertenkreis-04-Hoerakustik/EUHA-Guideline-04-06-en.pdf

References

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Smaldino, J.J. & Flexer C. (2012). *Handbook of Acoustic Accessibility*. Best Practices for Listening, Learning and Literacy in the Classroom. USA: Thieme.

EUHA (2017). Wireless remote microphone systems – configuration, verification and measurement of individual benefit, Guideline 04-06 - v1.0 - issued 9 May 2017.

This recommendation was created and approved in multidisciplinary cooperation between professionals of all audiophonological disciplines, which are medicine, pedagogy, speech therapy, psychology and hearing instrument audiology.

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