The importance of sensitive test methods for determining benefits of high frequency audibility

**Background**

The effectiveness of SoundRecover (NLFC) has been documented for a wide range of hearing losses and for all ages. However, the less severe the hearing loss, the better, at least partially, is the compensation for the difficulties in conventional intelligibility tests caused by the hearing loss. Reduced audibility and discrimination of high frequency sounds are compensated for by inferring any missed words or sounds from the linguistic and situational contexts. Thus, to measure high frequency speech cues such as consonants, more sensitive test methods are necessary since conventional sentence and word tests have the weakness that single phonemes can be discerned on the basis of word or sentence contexts. Here, the Adaptive Logatom Test and the University of Western Ontario plural (UWO) test are discussed as sensitive test methods to evaluate consonant recognition, detection and distinction with SoundRecover.

**The University of Western Ontario Plural Test – Test setup**

- Open-set plural recognition task
- /s/ and /z/ as bound morphemes
- Singular and plural form of 15 words
- Female talker
- Fixed presentation level 50 dBA
- Oral responses
- correct, incorrect
- Two repetitions in random order

**The Phonak Logatom Test (Prototype)**

- Detection, distinction and recognition task
- Sensitive for high frequency phoneme intelligibility
- Specific for four consonants /s/, /sh/, /t/, /f/
- Female talker
- Adaptive presentation level for each stimulus
- Paired presentation
- Equal? If yes which  Different?
- Responses via touch screen

**Presentation of data**

- The UWO Plural Test measures word recognition of high frequency words.
- Data are presented as percentages of correct singular/plural identification.
- NLFC on/off condition nicely comparable (as shown in graph)

- The Phonak Logatom Test measures word identification, detection and distinction of high frequency speech cues.
- Data are presented as participant’s threshold in dBA for 50% identification of each nonsense syllable.
- NLFC on/off condition nicely comparable (data of previous version of the Logatom Test shown in graph)

**Conclusion**

Both, the UWO Plural Test as well as the previous version of the Phonak Logatom Test are sensitive test methods to evaluate the benefits of NLFC in children and adults. While the UWO Plural Test is specific for plural recognition with /s/ and /z/ as bound morphemes, the Phonak Logatom test serves as detection, distinction and recognition task of different consonants. The Logatom Test can only be administered to school-aged children since reading abilities are necessary. The UWO Plural Test however is applicable for all ages. Data presentation in the UWO Plural Test are percentages of correct singular/plural identification while in the Phonak Logatom Test data are presented as participant’s threshold in dBA for 50% identification of each nonsense syllable presented. A new version of the Phonak Logatom Test is now evaluated in validation tests to determine the benefits of NLFC and its validity.

**References**