

The New BSA Auditory Steady-State Response Guidance in Clinical Practice

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Introduction

- New BSA ASSR Guidance document was published in 2022
- Auditory Steady-State Responses (ASSRs) are evoked potentials that are used for the subjective estimation of hearing threshold in patients of all ages
- Clinical applications include: timely hearing threshold estimation for hearing aid fitting, corroborating ABR results, hearing level monitoring for CMV patients, assessment of older children and adults with learning difficulties or suspected non organic hearing loss, theatre recordings.
- Document enhances understanding of the technique and includes suggested applications, testing protocol and limitations
- The current ongoing project looks into how well ABR and ASSR results correlate when the BSA protocols are applied exclusively.

Methods

- Neonates referred by the Newborn Hearing Screening Programme were assessed with ABR and ASSR under natural sleep
- Only results suggesting a hearing loss (>20dBeHL) were included to avoid floor effects
- Results reflecting a conductive hearing loss were included only when results were obtained in the same session making them comparable.
- Results were obtained with the Interacoustics Eclipse system. Both techniques used the same Narrow Band CE-Chirp stimuli
- The differences between the results obtained with the two techniques were expressed in dBeHL and dBnHL (before and after corrections were applied), before they were analysed

ABR-ASSR Level Differences

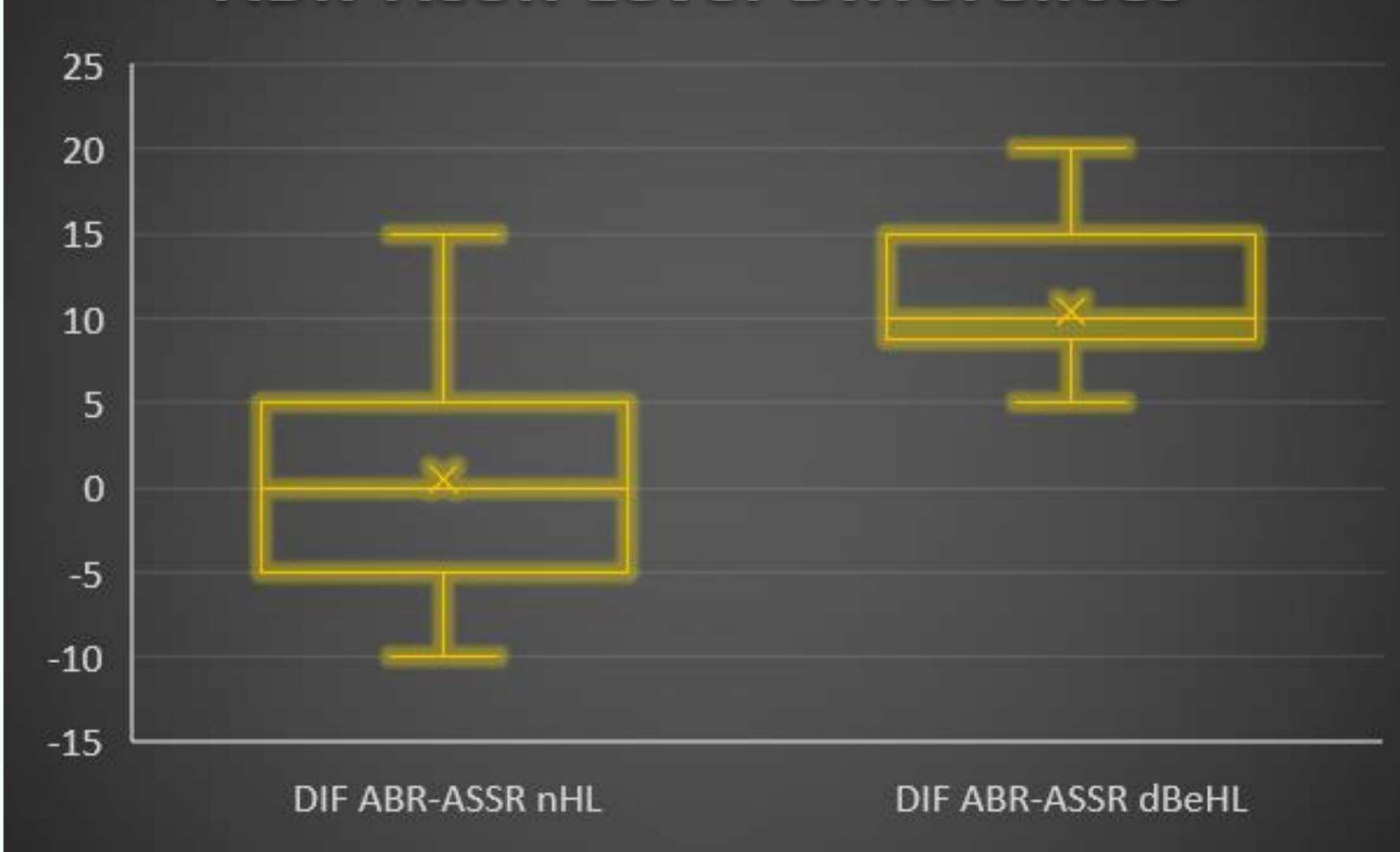
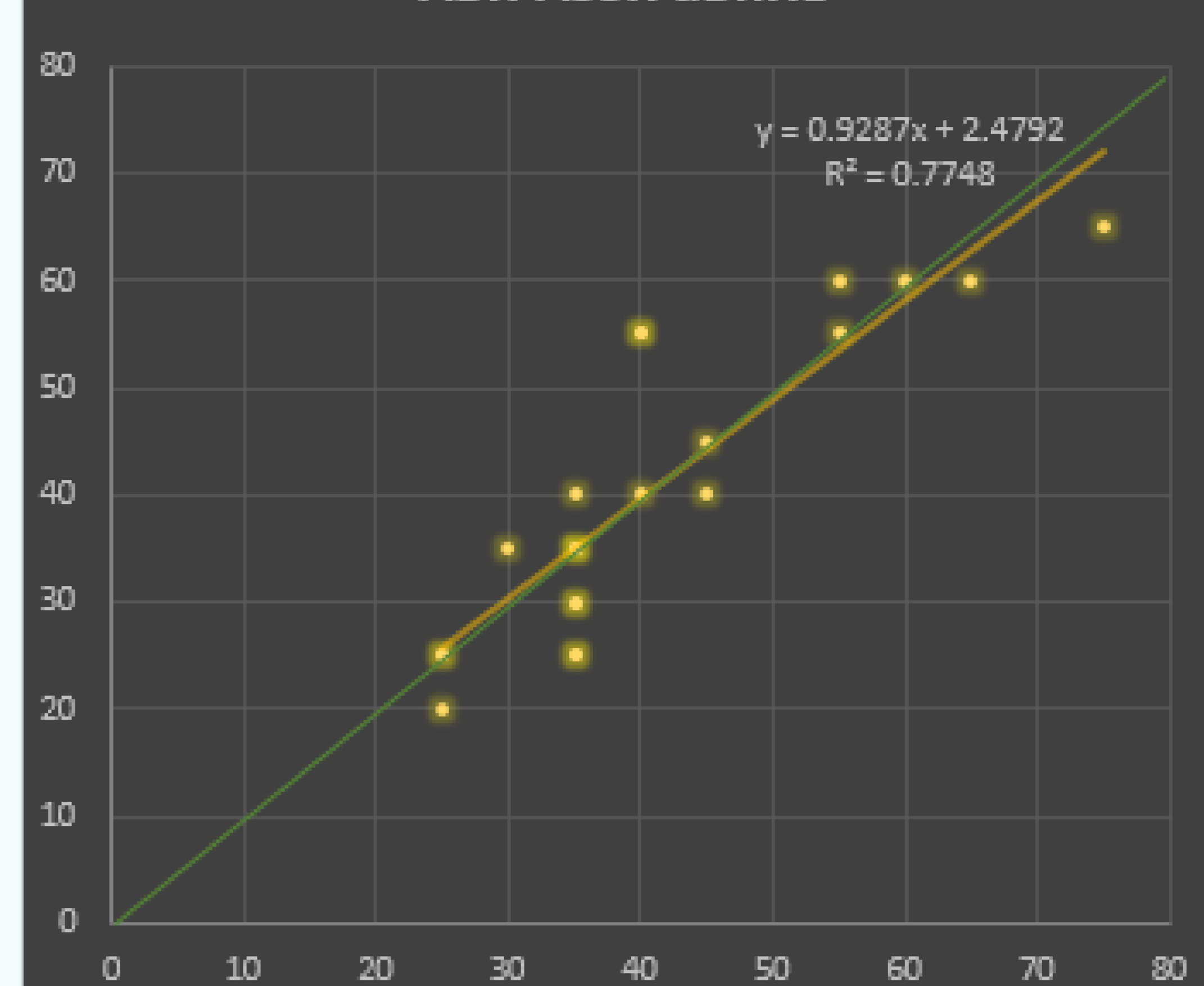


Fig 1 Threshold Differences between ABR and ASSR results, without corrections (left) and after corrections (right) were applied.

ABR-ASSR dBnHL



ABR-ASSR dBeHL

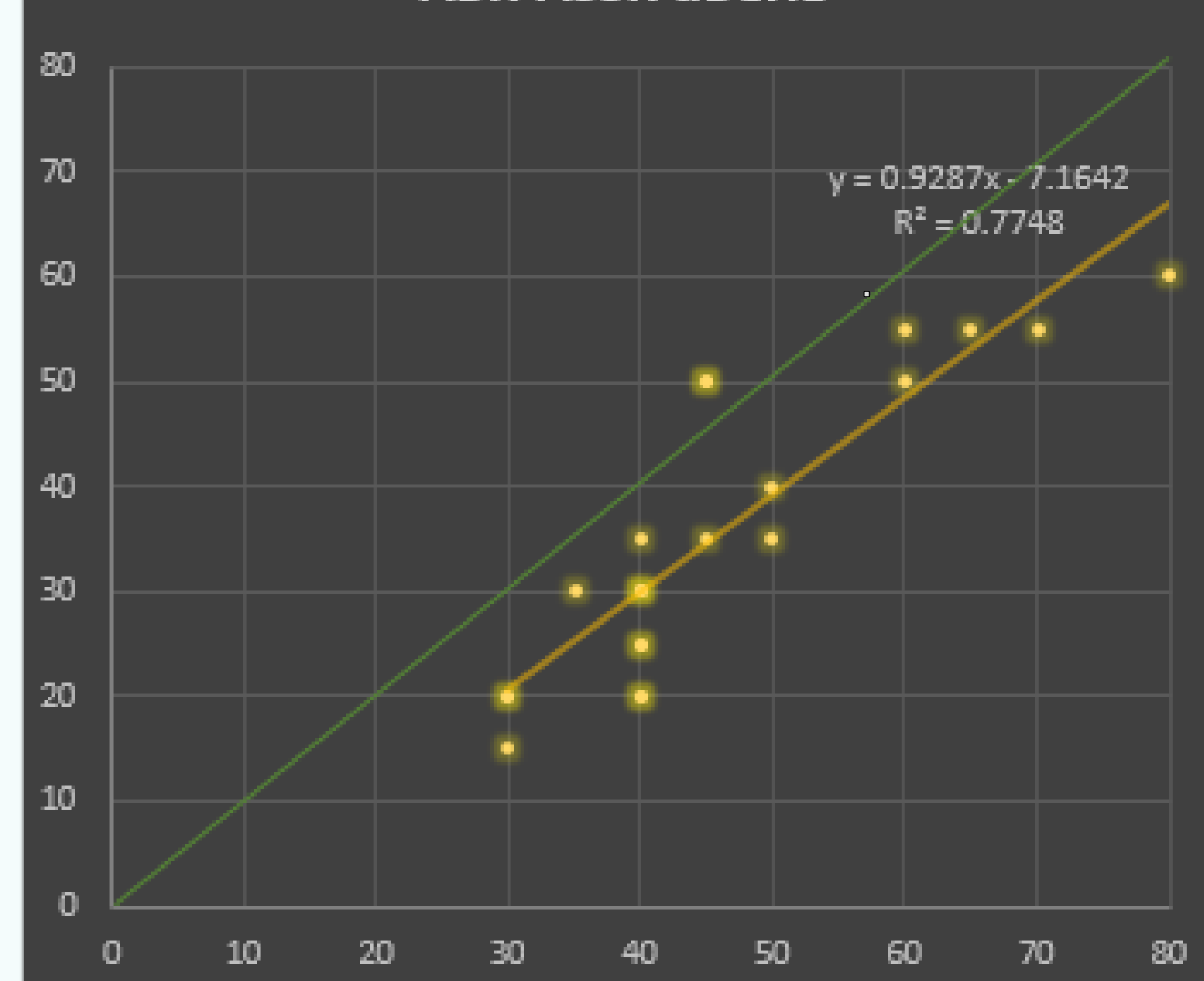


Fig 2 Correlation between ABR (vertical axis) and ASSR (horizontal axis) results before (top) and after (bottom) corrections were applied.

Results

- 21 sets of results were included for analysis
- There is a strong correlation between ABR and ASSR results (Fig. 2)
- The mean difference between ABR and ASSR results was 0dB before corrections and 10dB after corrections (Fig. 1)

Discussion

- Using the BSA Guidance, ASSR technique can be an accurate method for threshold estimation at least in neonates.
- The result differences between the techniques is lower before corrections are applied. This could be due to the fact that the set of corrections differ although both use the same stimuli.
- It is suggested that when one technique is used to inform a starting point for the other, the dBnHL levels are used.

References

1. BRITISH SOCIETY OF AUDIOLOGY (2022), Auditory Steady State Response (ASSR) Testing. Available at: <https://www.thebsa.org.uk/resources/> [2022]
2. Slinger YS, Hunter LL, Hayes D, Roush PA, Uhler KM. Evaluation of Speed and Accuracy of Next-Generation Auditory Steady State Response and Auditory Brainstem Response Audiometry in Children With Normal Hearing and Hearing Loss. *Ear Hear.* 2018 Nov/Dec;39(6):1207-1223. doi: 10.1097/AUD.0000000000000580. PMID: 29624540; PMCID: PMC7664445.