

Rationale for and Demonstration of an Approach to Pediatric Hearing Instrument Fitting in 2012

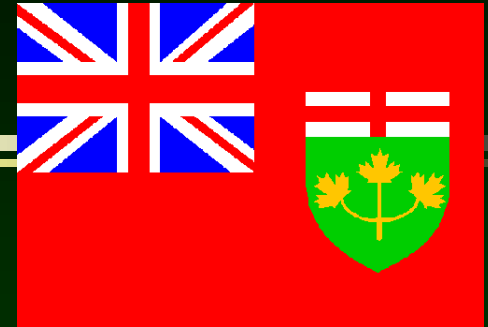
**Richard Seewald, Diana Laurnagaray,
Talita Donini and Marilisa Zavagli**



Infant Hearing Programs

Some thoughts on the need for
clinical protocols

Ideally . . .



- Same equipment
- Same audiologic assessment procedures
- Same prescriptive procedures
- Same electroacoustic verification procedures, and so on . . .

Example

Hearing Instrument Fittings of Pre-School Children: Do we Meet the Prescription Goals?

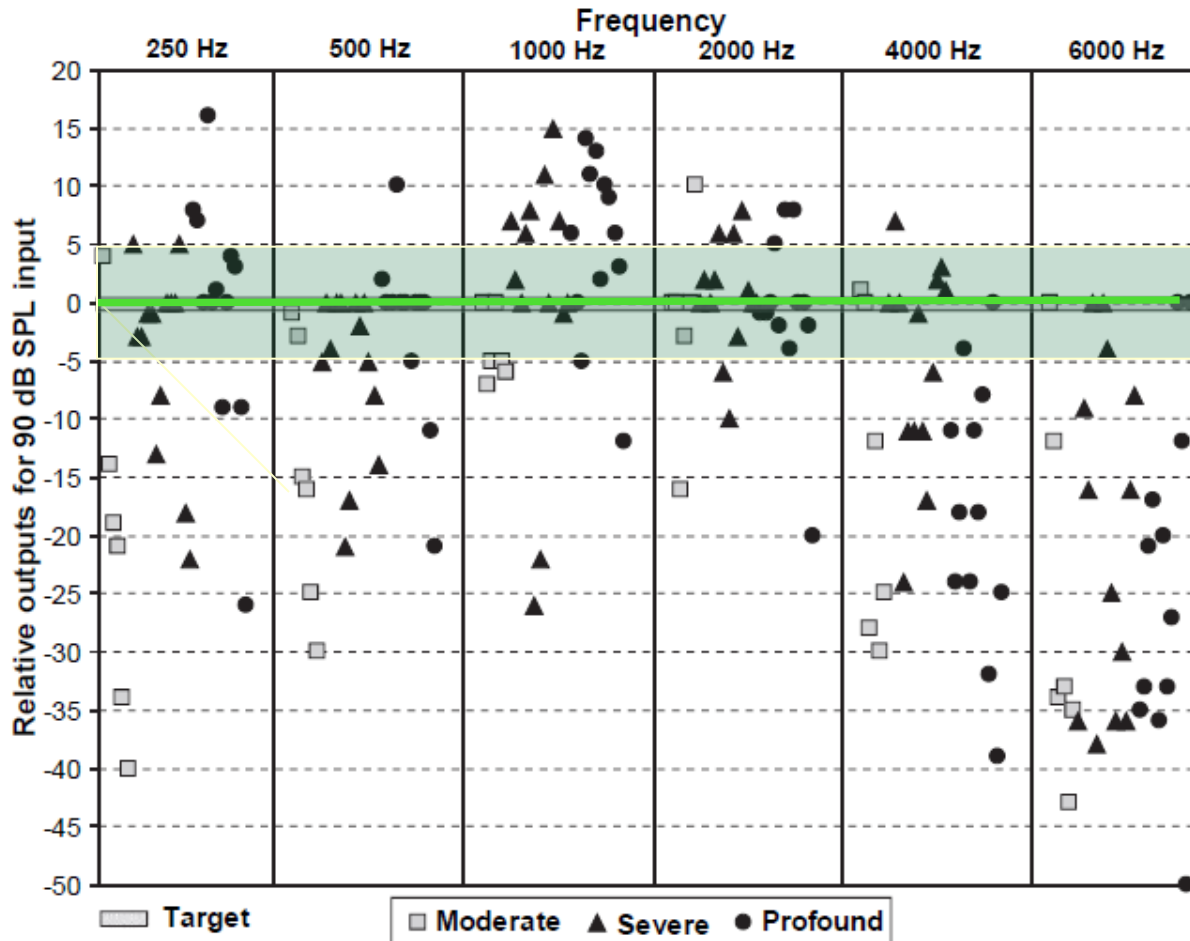
Susan Strauss & Catherine van Dijk
International Journal of Audiology
2008



Method

- Measured the output from 20 children's hearing instruments – total of 31 ears – moderate to profound hearing loss.
- Instruments fitted by a variety of clinicians.
- Compared the measured outputs to the DSLv5 prescribed levels for each child.

Results: 65 dB SPL speech input



Essential Elements of the Pediatric Hearing Aid Fitting Process



Element #1

We need ear-specific and frequency-specific threshold estimates for air and bone conduction before proceeding with the prescription and fitting of amplification for infants and young children.

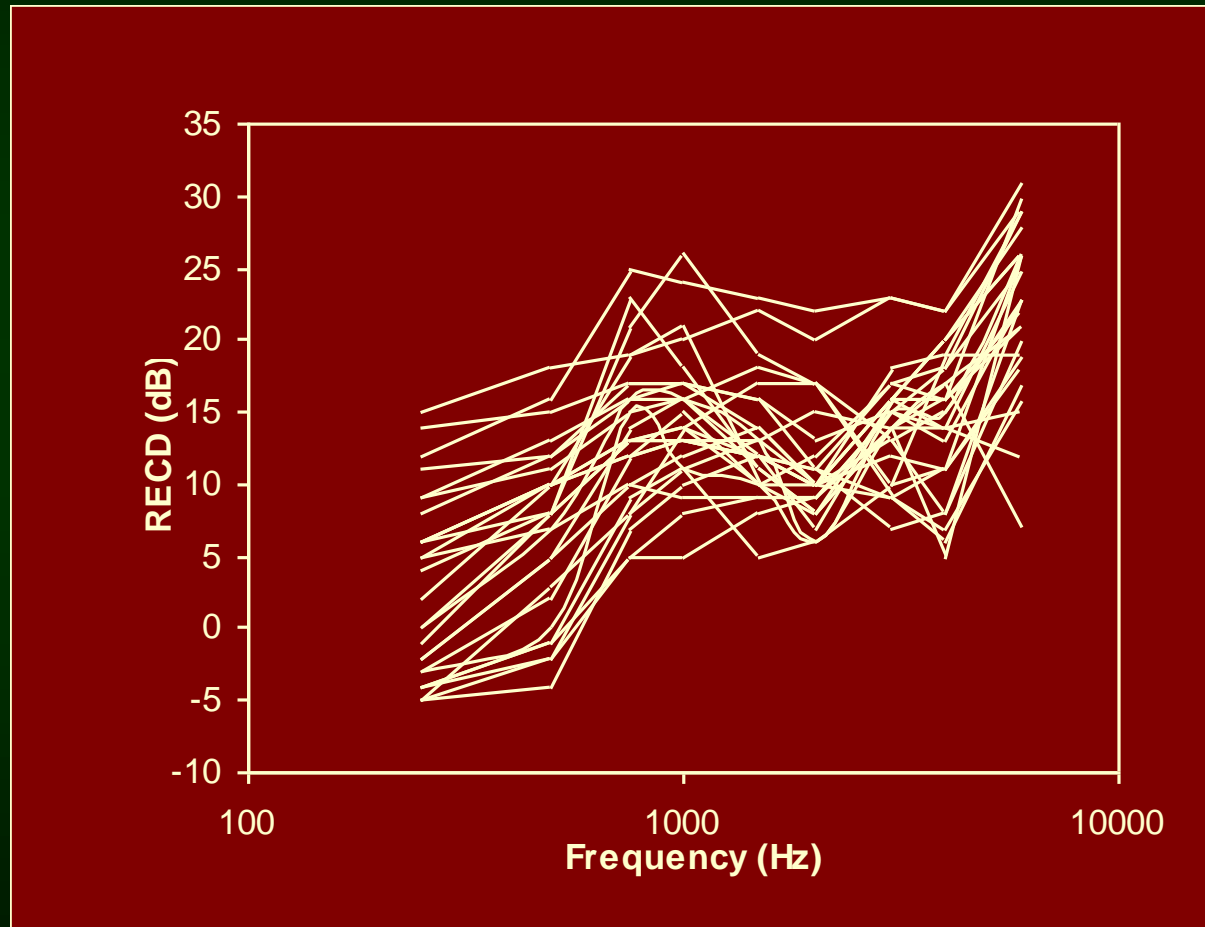


Element #2

We need to measure the external ear acoustics of the individual infant/child using the real-ear to coupler difference (RECD) procedure for the purposes of audiometry and hearing instrument fitting.

Why ????

A sample of RECD values for infants

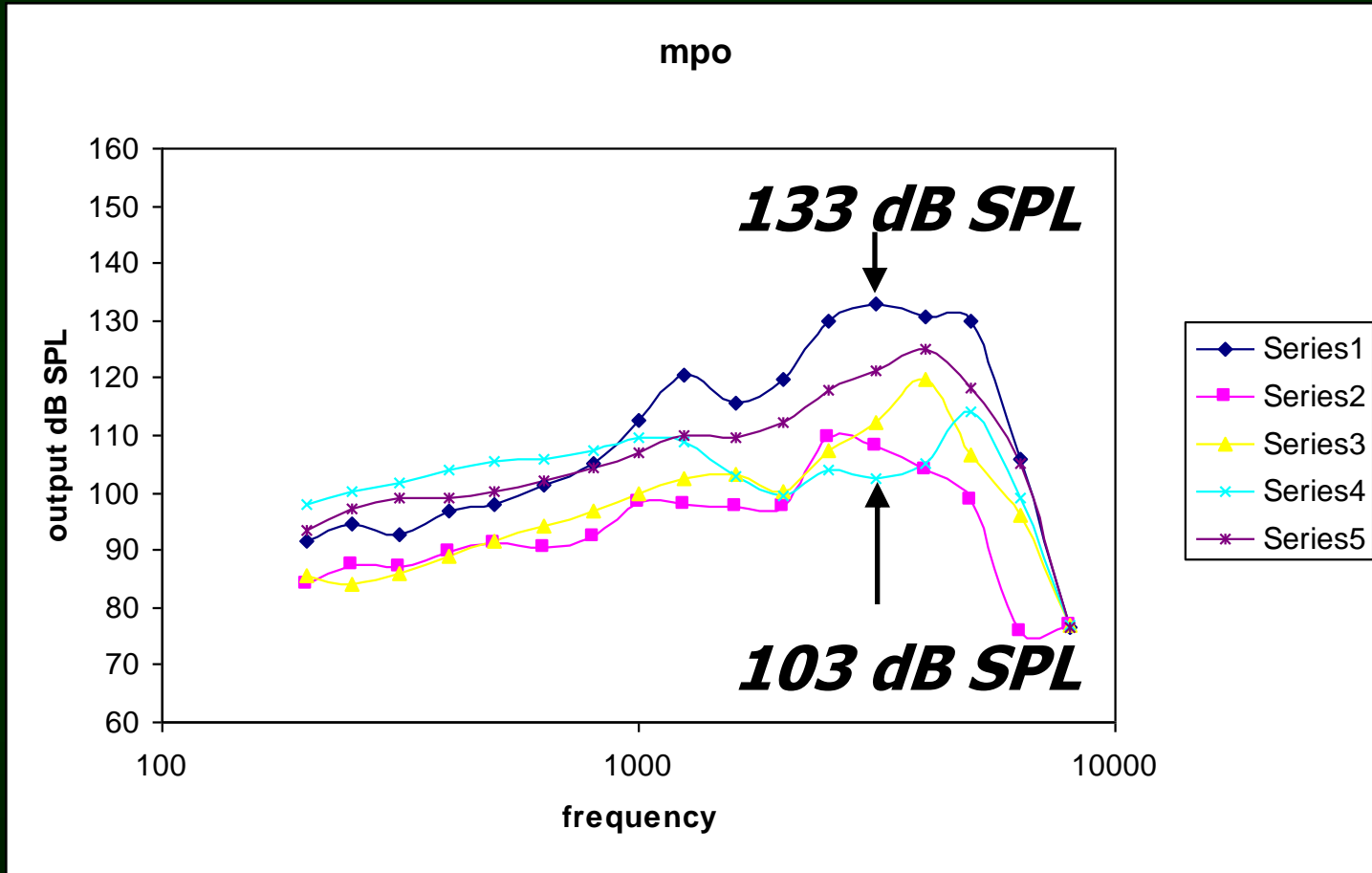


Element #3

To fit hearing instruments accurately in the pediatric population (and to follow all current ‘best practice’ guidelines) we need to use *a real-ear / hearing aid analyzer* to measure external ear acoustics and to implement evidence-based generic pediatric prescription procedures (i.e. the DSL v5.0 method or the NAL-NL2 prescription procedure).

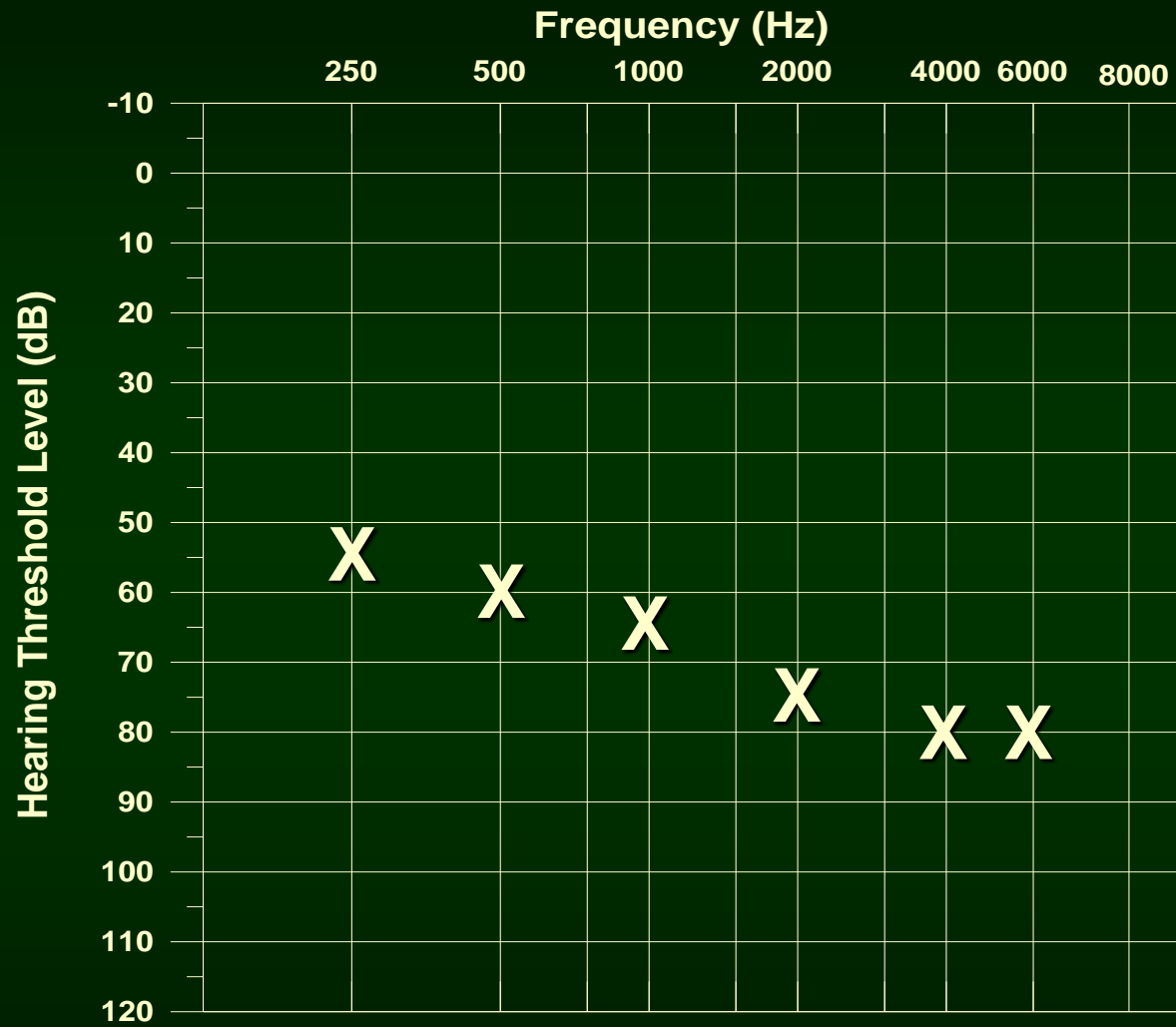
Why??

Sample Findings: Output Limiting Levels



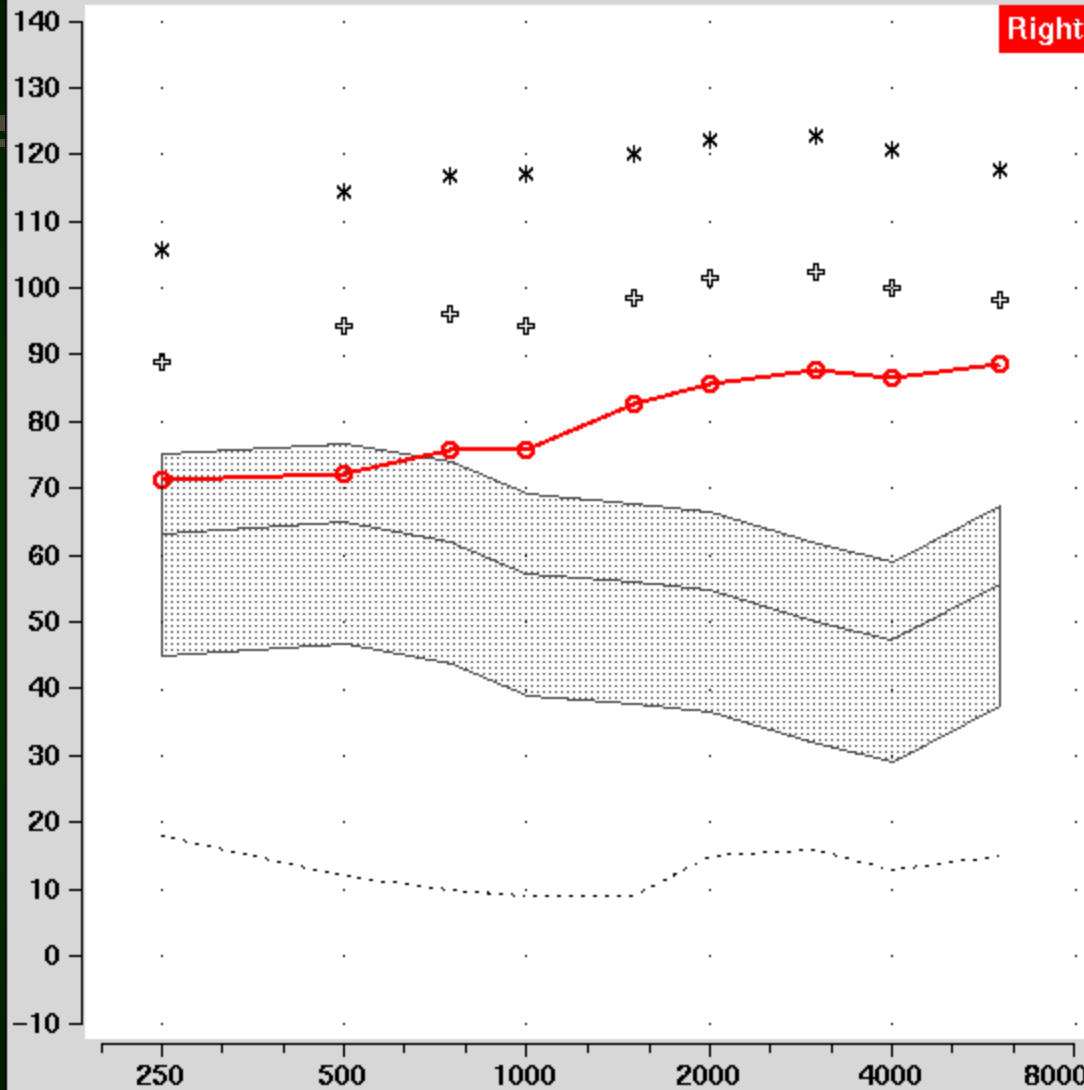
Element #4

We need to verify that the desired real-ear performance of the hearing instrument has been provided to the infant or child before they leave the clinic.



Speechmap/DSL – Single view

audioScan



Instrument:

Mode:

Presentation:

Format:

Scale (dB):

Audiometry:

Age:

Transducer:

UCL:

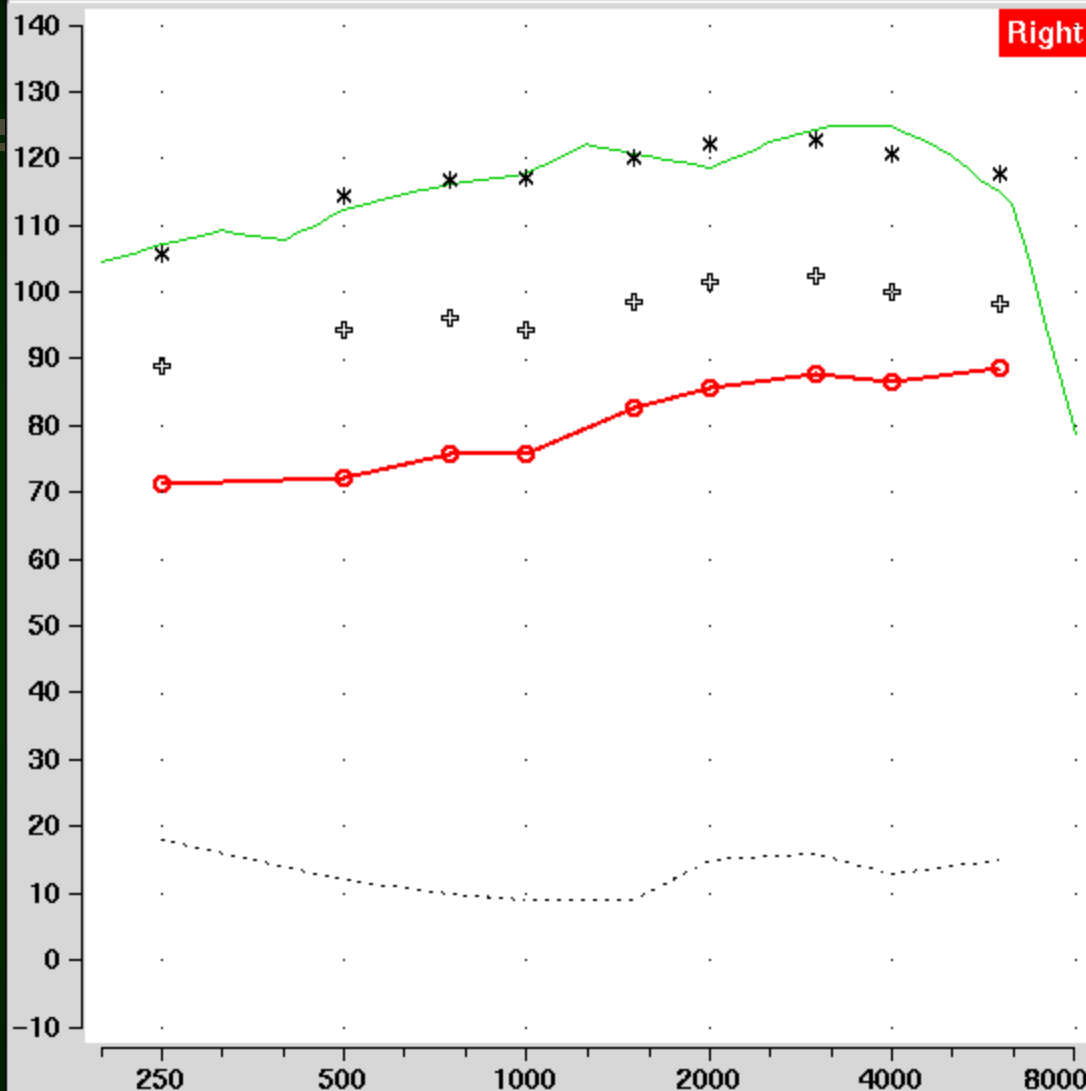
RECD:

REAR	Stimulus	Level	SII
<input type="radio"/> 1	MPO	90	N/A
<input type="radio"/> 2	Speech-shape	Avg (70)	67
<input type="radio"/> 3	Speech-shape	Soft (55)	45
<input type="radio"/> 4	Speech-shape	Loud (75)	62
Unaided			<input type="text" value="5"/>
Curve	<input type="text" value="Hide / Show"/>		<input type="radio"/>

Connect coupler and instrument to coupler microphone. Select one of REAR 1 through REAR 4.

Speechmap/DSL – Single view

audioScan



Right

Instrument: BTE
 Mode: S-REM
 Presentation: Single view
 Format: Graph
 Scale (dB): SPL

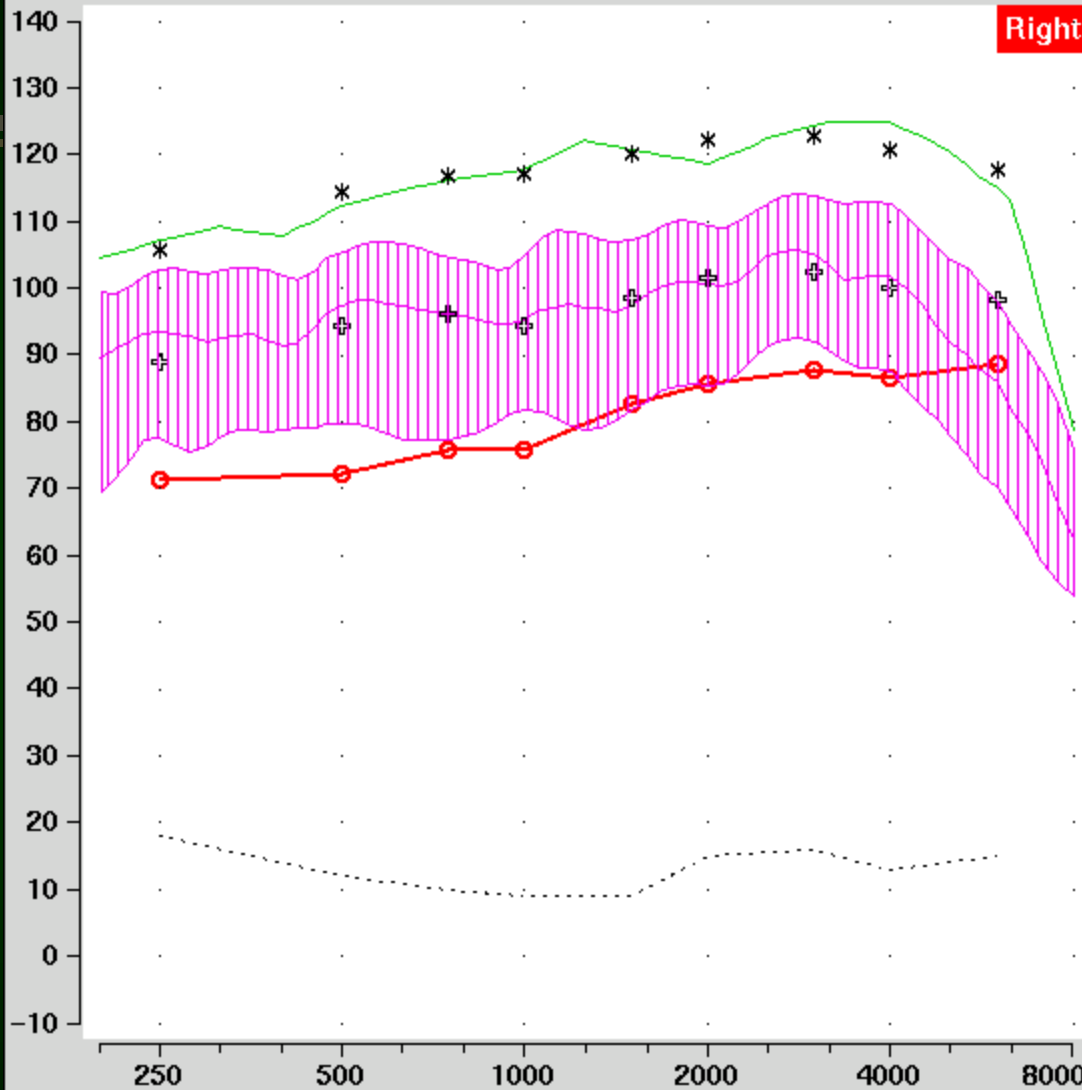
Audiometry
 Age: <7 months
 Transducer: Insert+Foam
 UCL: Average
 RECD: Average

REAR	Stimulus	Level	SII
<input type="radio"/> 1	MPO	90	N/A
<input checked="" type="radio"/> 2	Speech-shape	Avg (70)	67
<input type="radio"/> 3	Speech-shape	Soft (55)	45
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Connect coupler and instrument to coupler microphone. Select one of REAR 1 through REAR 4.

Speechmap/DSL – Single view

audioScan



Right

Instrument: BTE

Mode: S-REM

Presentation: Single view

Format: Graph

Scale (dB): SPL

Audiometry

Age: <7 months

Transducer: Insert+Foam

UCL: Average

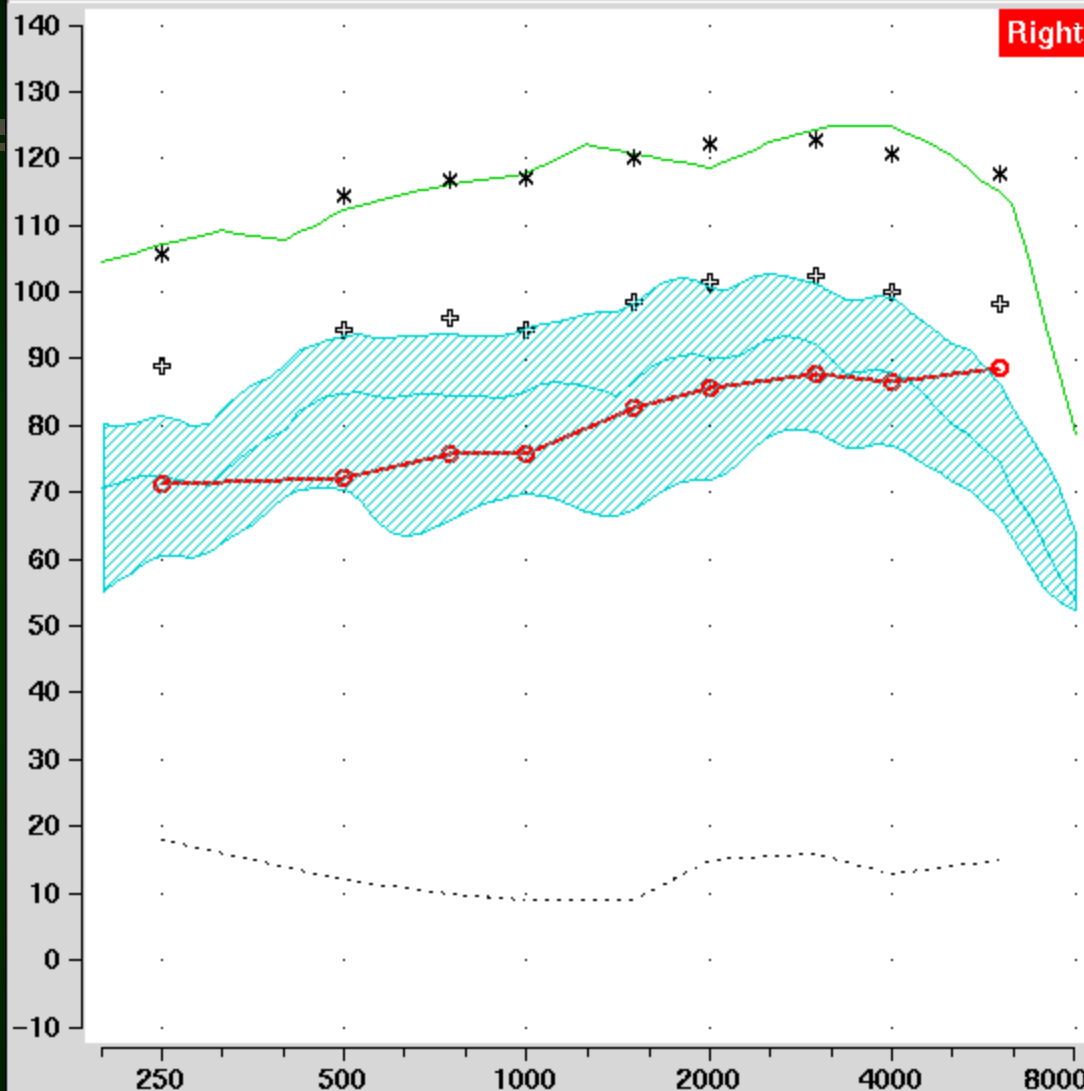
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Speechmap/DSL – Single view

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Right

Instrument

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Presentation

Format

Scale (dB)

Audiometry

Age

Transducer

UCL

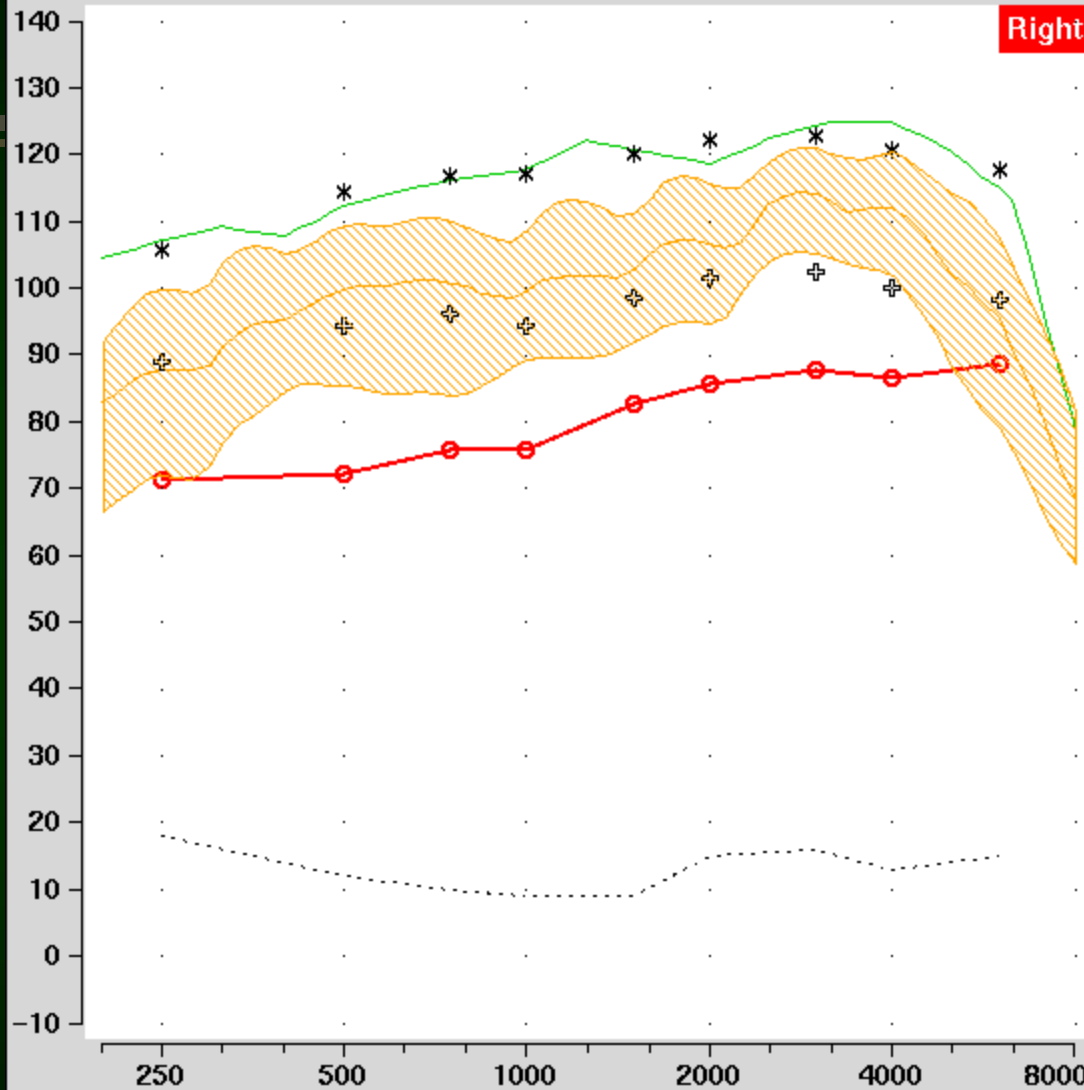
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Speechmap/DSL – Single view

audioScan



Instrument: BTE

Mode: S-REM

Presentation: Single view

Format: Graph

Scale (dB): SPL

Audiometry

Age: <7 months

Transducer: Insert+Foam

UCL: Average

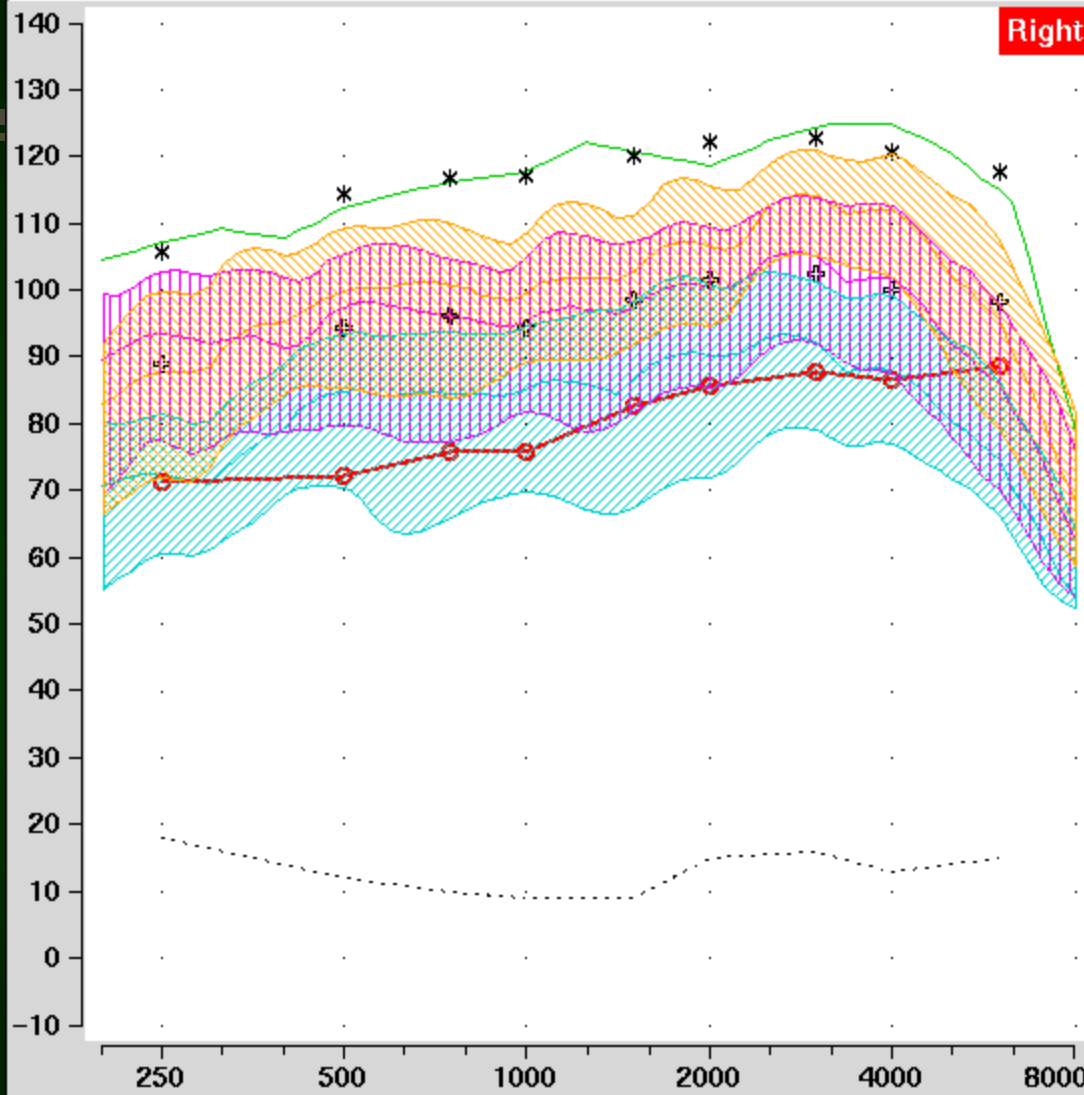
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<input type="radio"/> 4	Speech-shape	Loud (75)	71
Unaided			5
Curve			Hide / Show <input type="radio"/>

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Speechmap/DSL – Single view

audioScan



Right

Instrument: BTE

Mode: S-REM

Presentation: Single view

Format: Graph

Scale (dB): SPL

Audiometry

Age: <7 months

Transducer: Insert+Foam

UCL: Average

RECD: Average

REAR	Stimulus	Level	SII
1 <input type="radio"/>	MPO	90	N/A
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Unaided: 5

Curve: Hide / Show

Connect coupler and instrument to coupler microphone. Select one of REAR 1 through REAR 4.

Element #5

We need to measure and monitor auditory performance and communication development with amplification over time.

- objective measures**
- subjective measures**

