Audiometric Characteristics of Children and Adults

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Possible Adult-Child Differences

- Audiometric Configurations
- Right-Left Ear Asymmetry of Hearing Loss
- Progression of Hearing Loss
Methods

Groups
- 248 audiograms from 60- and 61-year-old adults
- 227 audiograms from 6-year-old children

Criteria
- Right ear thresholds at octave test frequencies 250-8 kHz
- At least one threshold $\geq 30$ dB
- Confirmed right ear sensorinueral hearing loss by bone conduction audiometry
- Air-bone gaps $\leq 10$ dB.
Audiogram Classification

- Sloping
- Rising
- Flat
- U-Shaped
  - Noise Notched
- Tent-Shaped
- Other
Audiogram Classification

- **Sloping**
- **Rising**
- **Flat**
- **U-Shaped**
  - Noise Notched
- **Tent-Shaped**
- **Other**
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Results: Configurations

<table>
<thead>
<tr>
<th>Configurations</th>
<th>Adults</th>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sloping</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>Rising</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>Flat</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>U-Shaped</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>Tent-Shaped</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
Results: Average Audiograms

- **Adults**
  - Frequency (Hz): 250, 500, 1000, 2000, 4000, 8000
  - Hearing Level (dB HL): -20, 0, 20, 40, 60, 80, 100, 120

- **Children**
  - Frequency (Hz): 250, 500, 1000, 2000, 4000, 8000
  - Hearing Level (dB HL): -20, 0, 20, 40, 60, 80, 100, 120
Results: Sloping

- Adults
- Frequency (Hz): 250, 500, 1000, 2000, 4000, 8000
- Hearing Level (dB HL): -20, 0, 20, 40, 60, 80, 100, 120

- Children
- Frequency (Hz): 250, 500, 1000, 2000, 4000, 8000
- Hearing Level (dB HL): -20, 0, 20, 40, 60, 80, 100, 120
Results: Sloping

[Graph showing hearing level (dB HL) against frequency (Hz) for Adults and Children.]
Results: Sloping

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>Hearing Level (dB HL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>-20</td>
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<tr>
<td>500</td>
<td>-20</td>
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<td>1000</td>
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<td>4000</td>
<td>60</td>
</tr>
<tr>
<td>8000</td>
<td>80</td>
</tr>
</tbody>
</table>

**Adults**

**Children**
Results: Flat

Adults

Children
Results: U-Shaped

[Graph showing hearing level (dB HL) vs. frequency (Hz) for Adults and Children.]
Results: U-Shaped
Results: Tent-Shaped

Hearing Level (dB HL)

Frequency (Hz)

Adults

Children
Results: Tent-Shaped

[Graph showing hearing level for adults and children across different frequencies (250 Hz to 8000 Hz).]
Results: Other

Adults

Children
Results: Other

Graph showing hearing levels (dB HL) against frequency (Hz) for Adults and Children.
Results: Other

- Frequency (Hz)
  - 250
  - 500
  - 1000
  - 2000
  - 4000
  - 8000

- Hearing Level (dB HL)
  - -20
  - 0
  - 20
  - 40
  - 60
  - 80
  - 100
  - 120

- Adults

- Children
Results: Other

Adults

Children

Frequency (Hz)

Hearing Level (dB HL)
Asymmetry

Left Ear Thresholds

- 248 60- and 61-year-old adults
- 227 6-year-old children
Results: Asymmetry

% of Audiograms

FREQUENCY (Hz)

- 250 Hz
- 500 Hz
- 1000 Hz
- 2000 Hz
- 4000 Hz
- 8000 Hz

Adults
Children
Results: Asymmetry @ 250 Hz
Results: Asymmetry @ 500 Hz
Results: Asymmetry @ 1k Hz

- **Left Ear (dB HL)**
  - Adults:
    - 0 dB HL to 120 dB HL
  - Children:
    - 0 dB HL to 120 dB HL

- **Right Ear (dB HL)**
  - Adults:
    - 0 dB HL to 120 dB HL
  - Children:
    - 0 dB HL to 120 dB HL
Results: Asymmetry @ 2k Hz
Results: Asymmetry @ 4k Hz

- **Adults**
- **Children**

![Graph showing asymmetry at 4k Hz for adults and children.](image-url)
Results: Asymmetry @ 8k Hz

Graph showing asymmetry in hearing levels for adults and children. The graph compares the hearing levels in the left and right ears, measured in decibels hearing level (dB HL). The data points are scattered across the graph, indicating variation in hearing sensitivity between adults and children.