Perceptual Weighting Strategies in Normal Hearing and Hearing Impaired Children and Adults

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How do hearing-impaired children learn to perceive speech?

- Children: less experience perceiving speech
- Hearing impaired: receive reduced speech signal
How do hearing-impaired children learn to perceive speech?
Subjects

Normal Hearing
- 10 Adults (mean = 28 yrs, 20-44)
- 20 Children (mean = 6:8 yrs, 5-7)

Hearing Impaired
- 10 Adults (mean = 59 yrs, 49-66)
- 10 Children (mean = 7:8 yrs, 5-10)
Subjects

Normal Hearing
- 10 Adults (mean = 28 yrs, 20-44)
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Hearing Impaired
- 10 Adults (mean = 59 yrs, 49-66)
- 10 Children (mean = 7:8 yrs, 5-10)
4 words
- CVC
- 2 vowels
- 2 fricatives
Stimuli

- 2 conditions
  - w/ transition
  - w/o transition
Stimuli

- 2 conditions
  - w/ transition
  - w/o transition
Stimuli

**2 conditions**
- w/ transition
- w/o transition
Stimuli

- 2 segments
  - fricative
  - vowel
Stimuli

2 segments
- fricative
- vowel
Stimuli

- 5 levels
  - 5 to 12 dB steps
  - 20 to 48 dB range

![Graph of stimulus levels vs frequency](image)
Stimuli

- 5 levels
  - 5 to 12 dB steps
  - 20 to 48 dB range
Stimuli

- 5 levels
  - 5 to 12 dB steps
  - 20 to 48 dB range
Stimuli

◆ 5 levels
  – 5 to 12 dB steps
  – 20 to 48 dB range
Stimuli

- 5 levels
  - 5 to 12 dB steps
  - 20 to 48 dB range
Stimuli

- 5 levels
  - 5 to 12 dB steps
  - 20 to 48 dB range
Stimuli

- 5 levels
  - 5 to 12 dB steps
  - 20 to 48 dB range
Stimuli

- 5 levels
- 5 to 12 dB steps
- 20 to 48 dB range
Stimuli

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Stimuli

- **5 levels**
  - 5 to 12 dB steps
  - 20 to 48 dB range
Short-Term Audibility

![Graph showing short-term audibility over frequency. The graph plots level (dB SPL) against frequency (Hz) on the x-axis and performance on the y-axis. The data shows a decrease in audibility with increasing frequency.](image-url)
Short-Term Audibility

- Level (dB SPL) vs. Frequency (Hz)
- Performance vs. Short-Term Audibility
Short-Term Audibility

Level (dB SPL)

Frequency (Hz)

Performance

Short-Term Audibility
Short-Term Audibility
Performance vs. Short-Term Audibility
Short-Term Audibility
Results
Normal-Hearing Adults

Performance

Short-Term Audibility

- w/ transition
- w/o transition
Conclusions

• Experience
  - Overall performance and use of the transition increased with age

• Hearing
  - HI adults showed significantly poorer performance when the transition was removed. Suggests that the transition was more important to perception in this group than in NH listeners.
  - HI children showed no difference in performance for words with and without a transition.