Auditory Training for Speech and Language Development

Introduction

Learning Process

Demonstration ➔ Perception ➔ Imitation

Auditory Training

• Methods designed for improving auditory speech-perception
• Perception and production = interrelated
  – Auditory training
  – Speechreading practice
  – Articulation drill

Auditory Perceptual Abilities

• Hierarchy
  – Detection/Awareness
  – Discrimination
  – Recognition
  – Comprehension

Training Paradigm

<table>
<thead>
<tr>
<th></th>
<th>Detection</th>
<th>Discrimination</th>
<th>Recognition</th>
<th>Comprehension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Speech Sounds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phonemes</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Syllables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suprasegmentals</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Words</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Phrases</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sentences</td>
<td></td>
<td></td>
<td></td>
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<td>Connected Speech</td>
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<td></td>
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Detection/Awareness

• Definition - ability to distinguish between the presence and absence of sound
• Depends on aided sensitivity
Detection/Awareness

- Training
  - Auditory sensitivity cannot be improved by training
  - Awareness may be improved with training
    • learn to pay attention to sound
    • learn to respond to sound
    • learn not to respond when there is no sound

- Awareness may be improved with training
  • learn to pay attention to sound
  • learn to respond to sound
  • learn not to respond when there is no sound

Exercises

- Present noises, speech sounds, words, phrases or sentences (without visual cues) with high potential for arousing attention:
  • Overlearned and important
  • Unusual (novel)
  • Loud and long sounds
- Response = I hear it/I don't hear it

Purpose

- Orient attention to listening tasks
- Demonstrate which sounds can be detected
  • quick check of instrument function
  • maximum speaking distance
- Establish a basis for more advanced exercises
- Brief check during ongoing identification or comprehension activities

D, a, u, m, s, sh
- Detection = main use
- May also be useful for phoneme discrimination identification

Definition - capacity to respond differently to different sounds
- Detection = required
- Limited by the nature of hearing loss

- Training
  - Discrimination cannot be improved by training
  - However, an individual can be trained to demonstrate their capacity for discrimination
    • Attend to the differences between sounds
    • Learn to respond differently to different sounds
Discrimination

- Exercises
  - Based on differences in:
    - Frequency (pitch)
    - Intensity (loudness)
    - Time (duration)

Purpose

- Demonstrate how well different sounds can be discriminated
- Foundation for recognition exercises
- Valuable information on potential for acquiring speech through hearing

Recognition

- Definition - ability to label or identify sounds
- Requires adequate detection and discrimination
- Training
  - Recognition must be learned through repeated opportunity to hear and identify the sound

Exercises

- The core of formal auditory training
- Adapted to the capacity and needs of the individual by:
  - Controlling the number of alternatives
    - Closed-set tasks
  - Choosing sets based on discrimination capacity
    - Easy = "Dick, Peter, Mary Anne, Elizabeth"
    - Harder = "Richard, Peter, Mary, Betty"

Recognition

- Exercises
  - With sentences, provide multiple decision points
    - E.g., "Give me the cup/spoon/ball/flower." = 1 decision
    - Better = "Give/show me the red/blue, cup/spoon/ball/flower."
- Recognition does not automatically involve comprehension!

Comprehension

- Definition - ability to understand a message
  - Linguistic - ability to synthesize recognition skills with contextual and situational clues
  - Cognitive - ability to make complex associations between sounds and events or objects, and between words
Comprehension

- Exercises
  - Ask questions or instruct to perform a task
  - Comprehension is demonstrated by answering questions or performing the task correctly.
  - Cognitive tasks
    - "tell me the opposite of," north; hot; big; etc.
    - Categorization

Purpose
- To develop association between sounds and their meaning
- Comprehension training = language therapy
- Large variations in ability to use hearing for comprehension due to differences in:
  - Residual hearing
  - Intellect
  - Language development

Current Curricula
- Speech Perception Instructional Curriculum and Evaluation (SPICE)
  - CID product for auditory training
- The Developmental Approach to Successful Listening II (DASL II)
  - Comprehensive and objective based for children and adults
  - Assessment component
- Miami CHATS
  - Goals and objectives for children
    - Cochlear implants
    - Hearing aids
    - Tactile aids

SKI-HI
- Comprehensive, E-I program
  - Hearing aid use
  - Auditory training
  - Communication
  - Language development
- 11 competencies range from
  - #1 = Attending
  - #11 = speech use

Flexible
- Verbal communication through hearing and speaking is a major focus
- Provides for shifting to TC if verbal speech and language skills are not developing with hearing alone

Auditory Training Methods
- Evaluation
  - Goal = incorporate hearing into the personality of the child, so that special education is not necessary and audition serves as the primary avenue for learning
  - Realistic for some, but not all
Individualized Training

• Awareness level
  – Detection/awareness training
  – Will be visual learner
• Signal-Warning level
  – Detection/awareness training
  – Maybe localization and environmental sound discrim training
  – Will still be visual learner

25

Individualized Training

• Symbolic - Gross
  – Prime candidates for AT
  – Most children with CIs
  – Vision = important for learning
    • Hearing = Vision , or
    • Vision = #1, hearing = important #2

26

Individualized Training

• Symbolic - Fine
  – AT to facilitate hearing aid use

27