Modifications and Adaptations for Children with Complex Disabilities

Dawn Burgess, M.S. Early Oral Interventionist
Lori Burgess, M.S., CCC-SLP
Judy Prehn, PT, DSc, PCS
incidence of co-morbid conditions
HEARING LOSS
What You Need to Know about a Child’s Hearing Loss

• Type of hearing loss
• Degree of hearing loss
• Stability
• Cause
Audiogram Basics

Frequency in hertz

Hearing Level in decibels

Hearing Loss
- Minimal
- Mild
- Moderate
- Moderate to Severe
- Severe
- Profound
Amplification Options

Hearing Aids
Amplification Options

Cochlear Implants
Amplification Options

Bone Anchored Hearing Devise
Ling Six Sound Test

ah

oo

eeee

sh

ssss

mmm

shi
Sound Awareness

- Daily checks help monitor
  - Amplification
  - Listening status
- Conditioned Response
  - Exposure/modeling at 16 months
  - Consistent responses around 24 months
- Audiological Evaluations
  - More efficient
  - More reliable
  - More thorough
Lind Six Sound Test

/a/  /u/  /s/  /m/  /i/  “sh”

– Determines if child’s hearing is at least minimally adequate for speech
– Detect and identify sounds
– Present in random order
– Distance/noise
# Sound-Object Associations

<table>
<thead>
<tr>
<th>Toy</th>
<th>Sounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airplane</td>
<td>aaaaaah</td>
</tr>
<tr>
<td>Bus</td>
<td>bububu</td>
</tr>
<tr>
<td>Ambulance</td>
<td>oo-ee-oo-ee</td>
</tr>
<tr>
<td>Boat</td>
<td>p-p-p</td>
</tr>
<tr>
<td>Dog</td>
<td>woof-woof</td>
</tr>
<tr>
<td>Duck</td>
<td>quack, quack, quack</td>
</tr>
<tr>
<td>Rabbit</td>
<td>hop, hop, hop</td>
</tr>
<tr>
<td>Snake</td>
<td>sssssss</td>
</tr>
</tbody>
</table>
Sound-Object Associations

Facilitates listening for children with hearing loss

Goals that can be addressed:

• Attend to sounds
• Develop auditory imprints (schema)
• Engage in turn-taking & joint attention
• Stimulate fluent movement of articulators needed of speech
• Develop communicative intention
• Develop auditory familiarity with spoken language
Controlling the Environmental

- Quieter environment
- Smaller group size
- Decrease background noise
- Closer to the speaker
- Same level as the child
- Get attention first
- Sit beside the child (best hearing side)
Strategies for Developing Listening Skills

- Repetition
- Pausing
- Waiting
- Modeling
- Not too loud
- Do not over articulate
Strategies for Developing Listening Skills

• Re-evaluate set size e.g. open/closed, large/small
• Take “IT” out of vocabulary
• Lowlighting (whispering)
• Sabotage
• Known to unknown
• Follow child’s lead
### Acoustic Highlighting

<table>
<thead>
<tr>
<th>More Salient for Beginning Child</th>
<th>Less Highlighting for Child Listening Well</th>
</tr>
</thead>
<tbody>
<tr>
<td>No background noise</td>
<td>Background noise (music, white noise)</td>
</tr>
<tr>
<td>6 inches from ear</td>
<td>Increase distance</td>
</tr>
<tr>
<td>Slightly slower rate</td>
<td>Normal rate</td>
</tr>
<tr>
<td>Increase pitch and rhythm variation</td>
<td>Normal pitch and rate</td>
</tr>
<tr>
<td>Clear speech/familiar voice</td>
<td>Unfamiliar voice</td>
</tr>
<tr>
<td>Acoustic contrast (vary vowels, # of syllables)</td>
<td>Less variation (minimal pairs, same syllables)</td>
</tr>
<tr>
<td>Shorter phrases</td>
<td>Complex language</td>
</tr>
<tr>
<td>Emphasis on key words or sounds</td>
<td>No emphasis</td>
</tr>
<tr>
<td>Emphasis on function words</td>
<td>No emphasis</td>
</tr>
<tr>
<td>Word position in sentence</td>
<td></td>
</tr>
<tr>
<td>End of sentence</td>
<td>Beginning</td>
</tr>
<tr>
<td>Middle</td>
<td></td>
</tr>
<tr>
<td>Closed set</td>
<td>Open set</td>
</tr>
</tbody>
</table>
CORTICAL VISUAL IMPAIRMENT
Cortical Visual Impairment

• CVI is visual impairment due to damage to the visual cortex, the posterior visual pathways, or both

• Causes:
  – Hypoxia
  – Atypical brain development
  – CNS infections
  – Head injury (Shaken Baby Syndrome)

• Most individuals with CVI have additional impairments from CNS dysfunction
Cortical Visual Impairment

• Behavioral Characteristics:
  – Non-purposeful gaze; light gazing
  – Distinct color preference (often red and yellow)
  – Difficulty with complex visual patterns
  – Visual latency – delayed response to visual stimulus
  – Attraction to moving objects
  – Absent protective visual responses
  – Look and touch occur separately – lack of eye/hand coordination as child looks and then turns head away to reach
Cortical Visual Impairment

• It will be difficult to achieve consistent engagement, participation, and independence unless vision is addressed during all school activities.

• It is important to incorporate CVI principles into school activities and into all of the child’s environments.

• Modifying environments will lead to a change in participation.

• Expect to see change in use of vision over time.
Cortical Visual Impairment

- Children with CVI need a longer time to process visual information. You could think of this as the visual form of Auditory Processing Disorder. Allow time for them to respond to visual stimulus.

- Visual tasks will be tiring.

- Context will assist with identifying objects/people.

- A child may exhibit more interest in visual stimuli he or she is controlling.
Cortical Visual Impairment: The Teacher’s and Therapist’s Role

• Use high contrast red or yellow against a dull matte background

• Use reflective material such as Mylar or holographic wrapping paper (i.e., wrap toys with Mylar or put it on switches, in books, or around a spoon)

• You may see better vision/head up behavior in a quiet room with few distractions, as the child may default to attending to sounds rather than visual cues
Cortical Visual Impairment: The Teacher’s and Therapist’s Role

• Avoid visual clutter

• The child may see objects that are moving in his peripheral vision better than stationary objects in front of him

• Position the child so that light comes over her shoulder onto the object

• Shield the child from overhead lights

• Incorporate the child’s interest and motivation
Visually Cluttered

See a Difference?
Adapting a Home Environment to Improve Looking, Independent Exploration & Play
WHAT ARE WE USING?

*White Noise

*Minimal Visual Clutter

*Physical assist for optimal head control

*Elimination of overhead lights

*Laptop with special program for simple, lighted visuals

*USB switch for independent control
What Does it Look Like?
What Does it Look Like During Painting?

• Large picture with thick outline
• Hot-glue line over main outline for sensory input
• Picture mounted onto cleanable dark surface
• Use of table-top easel
• Use of black fabric to eliminate visual clutter
What Does it Look Like During Story Time?

• Large pictures with thick outlines
• Black pages (or white, depending on child)
• Large print
• Keep it simple!
What Does it Look Like During Science?

- Black backgrounds eliminate visual clutter
- Use of very simple objects, preferably single-color, and lighted if possible
- Large print with contrasting background
- Use of switches for independent control of objects
What Does it Look Like During Music?

• Larger instruments possibly needed
• Keep colors to minimum when all objects on display
• Consider providing single large voice-recording switch (such as a Big Mac) with “go” for children to take turns controlling the action
What Does it Look Like During Snack or Meal?

• Special-colored plates and utensils for optimum visibility and maximum contrast

• Minimized background clutter

• Consider light box with picture of associated food item for looking-practice while eating
What Does it Look Like During Play?

• Reduce background clutter

• Ensure table-top or floor visual contrast

• Consider simple adaptations to optimize looking during play, such as black boxes as car garages

• Use simple pictures with highly-contrasting backgrounds
What Does it Look Like During Math?

• Use large numbers for tracing

• Add a sensory component, such as hot-glue outlines or number pages inside gel-filled zip locks
Inexpensive & Easy-to-Find Essentials:

- Black fabric - not shiny
- Gold and red paper, such as Mylar gift bags from thrift stores
- White and black paper
- Overhead light-blocker (i.e. black foam sun visor)
- Very strong flashlight
- Easy-to-move lamp for accent and low-lighting
Yes, there’s an app for that, TOO!
Significant Cognitive Delay and Motor Disability
Significant Cognitive Delay

• “In the case of a child with severe motoric involvement, it may be more meaningful from the very beginning to emphasize movements for communication and interaction within the environment versus working for normal development of equilibrium reactions and other motor components.” (Atwater)

• Primary goal: Increase interaction with environment (physical and social)
Significant Cognitive Delay

• Increase participation by addressing:
  – Alertness level
  – Activation of switch
  – Cause and effect
  – Play with family
  – Positioning to optimize social interaction

• No need to work on normal sequence of development
  – No need to spend a year working on prone on elbows
Significant Cognitive Delay: Therapy

• Head control
  – Must be considered in association with vision
  – Must be considered in regards to level of alertness
  – Must be considered in regards to motivation

• Active reach
  – Must be considered as linked to cause/effect
  – Must be considered in association with vision
Significant Cognitive Delay: Therapy

• In classroom or at home:
  – Big Mack switch to control activity (read/play “Pete the Cat”)
  – Power link to control activity (Blow up snowman; turn on mixer; turn off Christmas tree lights)
  – Communication device for “Go!”

• Important to do interest survey first to optimize motivation. The child must be positively reinforced for him or her to extend effort.
Significant Cognitive Delay: Switch Activation

• Switch Use
  – Identify the most consistent, predictable movement that requires the least amount of effort
  – Identify a position for the switch so that activation occurs with the identified movement and the child can release the switch
  – Identify the size and type of switch that best works in this position
  – Keep the action close to where the switch is activated
Significant Cognitive Delay: Switch Activation

• Allow time for motor response

• Activation should last approximately 15-30 seconds

• Incorporate the switch use into peer play

• Advance to two switch activities
Significant Cognitive Delay

• Levels of assistance:
  – Physical assist
  – Physical prompt
  – Gesture and words
  – Words only
  – No assistance

• Whenever possible use environmental supports that can be faded
Significant Cognitive Delay

• As the child’s participation, strength, endurance, and coordination increase:
  – Fade prompts
  – Decrease support
  – Require increased effort
General Adaptations

• Adapt toys:
  – Velcro to stabilize
  – Switch
  – Universal cuff
  – Computer games used with switch
  – iPad switch
  – Laminate paper activities
  – Adapt surface – rim on tray out of pipe insulation
Resources

Assessment form:

Comprehensive guide for use of AT in schools:

Forms, inclusion strategies, handouts: http://projectparticipate.org/

Great info on switch use: www.lburkhart.com

AT Basics: http://atto.buffalo.edu/registered/ATBasics.php

Computer program for low vision: SEN switcher
http://www.northerngrid.org/resource/sen-switcher
Resources

- Computer/preliteracy/literacy: www.meddybemps.com/5.1.html
- Computer/preliteracy/literacy: www.hiyah.net
- Computer/preliteracy/literacy: www.bbc.uk/cbeebies/games/theme/switch
- Computer interactive switch accessible books: www.storyplace.org
- Computer/literacy: www.magickeys.com/books
- Computer/literacy: http://digital.library.upenn.edu/books
- Webcasts on AT/AAC use: http://aac-rerc.psu.edu/index.php/pages/show/id/44
Resources

Computer switch activities:
http://www.priorywoods.middlesbrough.sch.uk/page_viewer.asp?page=Switch+%2F+Touch+Screen+Videos&pid=74

Tutorials on use of AT: http://atto.buffalo.edu/

Free download Click N Type:
http://www.freedownloadscenter.com/Utilities/Mouse_and_Keyboard_Utilites/Click_N_Type.html

Many products for AT: http://www.rjcooper.com

Reading and writing tools: http://www.cricksoft.com/us/products/clicker/

Power points on AT
http://natri.uky.edu/findings/presentations/presmenu.html
Online Resources

http://www.pathstoliteracy.org/ipad-apps-kids-cvi

http://ipadkids.com/ipad-helps-special-needs-kids/

http://www.aph.org/

http://www.northerngrid.org/resource/sen-switcher
Online Resources

Cochlear Americas Hope Online
http://hope.cochlearamericas.com/online-courses

Alexander Graham Bell Association for the Deaf and Hard of Hearing
http://listeningandspokenlanguage.org

Test References for Cochlear Implants

The Listening Room: Advanced Bionics
http://www.hearingjourney.com/Listening_Room/preview.cfm?langid=1

Hands & Voices
http://www.handsandvoices.org/
References


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