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## The AUDacity of Listening: Early Intervention for Children with Hearing Loss

**K. Todd Houston, PhD, CCC-SLP, LSLS Cert. AVT**

Professor of Speech-Language Pathology  
School of Speech-Language Pathology and Audiology  
The University of Akron

## Acknowledgement

- Children with hearing loss are NOT a homogeneous group. Therefore, due to a number of factors, a single communication methodology isn't appropriate for all children with hearing loss & their families.
- *HOWEVER*, because of changes in the field of deafness and enhancements in hearing technology and intervention/educational strategies, an increasing number of children with hearing loss are now learning to listen and talk.
- **This presentation will focus on these trends.**

## Learning Outcomes

■ By the end of this presentation, participants will be able to:

1. Identify incidence and prevalence of hearing loss in children;
2. List current trends affecting the identification of children with hearing loss and enrollment in early intervention; and
3. Define the Auditory-Verbal approach through a set of 10 principles of practice.

## Dylan and the Butterflies

## Trends in Childhood Hearing Loss

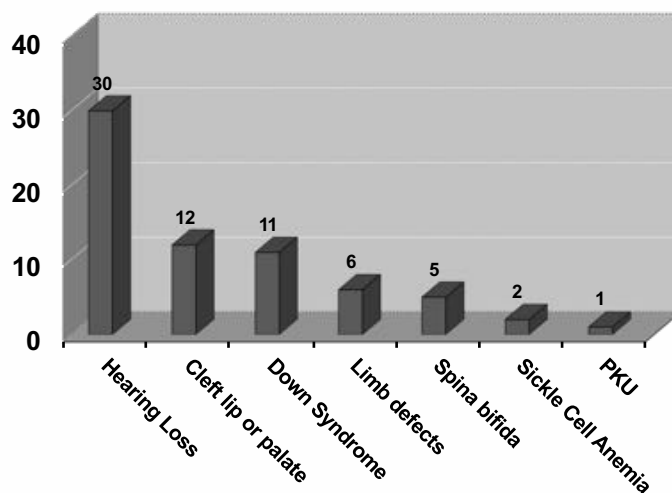
- 1 – 3 per 1000 infants identified with hearing loss at birth
- UNHS has been very successful
- Lost to follow-up an issue; failing screenings but not making it to diagnosis and/or early intervention
- ~95% of parents are hearing themselves; when parents know about spoken language options, nearly 90% will choose listening & spoken language (AVT) for their child with hearing loss
- Current shortages of early interventionists/SLPs who can successfully provide listening & spoken language (LSL) intervention

## 21<sup>st</sup> Century Trends & Changes: Universal Newborn Hearing Screenings (UNHS)

### ■ Statistics

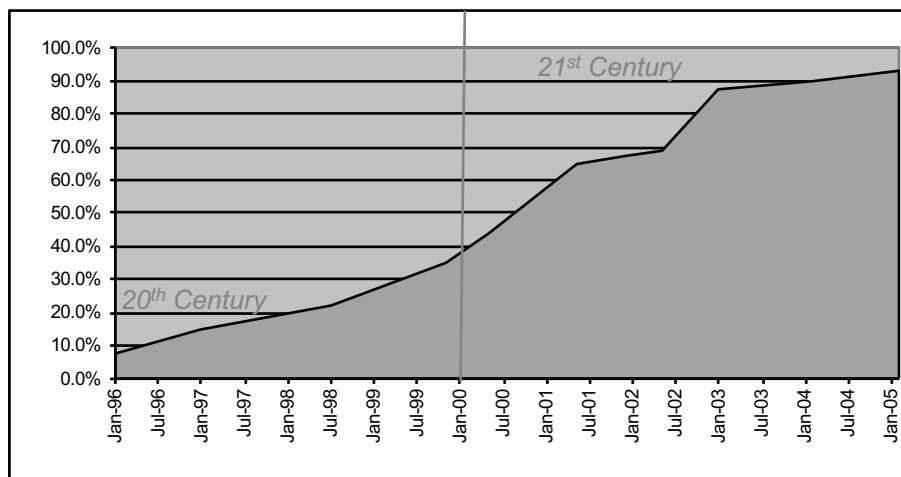
- Prior to UNHS, the average age of identification was \_\_\_\_ (Calderon et. al, 1998).
- On average, a parent suspects their child has a hearing loss for \_\_\_\_ months before the child is diagnosed.

### Incidence per 10,000 of Congenital Defects/Diseases



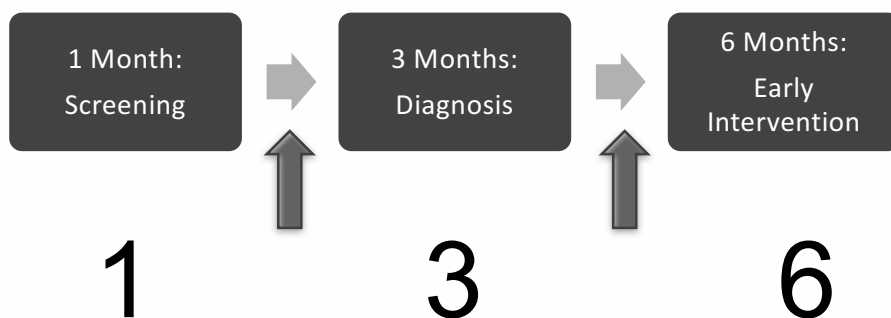
### Percentage of Newborns Screened for Hearing in the United States

2017 = ~97% of All Newborns



## Current EDHI Standards:

The Joint Committee on Infant Hearing (JCIH)



## 21<sup>st</sup> Century Trends & Changes: Infant Diagnostics

- Routinely available technology allows us to:
  - Diagnose the degree & locus of the hearing loss
  - Assess the internal structure of the ear
    - Structure of middle ear and cochlea
    - Identify enlarged vestibular aqueduct (EVA)
    - Assess auditory nerve

## Due to the Infant/Pediatric Audiology Diagnostics, we can:

- Detect the capacity to hear at birth as newborns
- Determine the type of hearing loss
- Monitor stability over time
- Fit devices to provide early access to spoken language

## 21<sup>st</sup> Century Trends & Changes: Auditory Access to Spoken Language

- Children need to hear spoken language well enough to produce it clearly.
- A variety of devices can make speech sounds accessible to deaf and hard-of-hearing children.
  - Hearing technology – digital hearing aids, cochlear implants, bone anchored, & assistive listening devices – have GREATLY improved!
- The particular device depends on the degree and type of hearing loss and the structure of the hearing mechanism.

...In the last century...

Significant delays in  
auditory, speech and  
language development—  
impacting social-  
emotional, literacy,  
academic and career  
opportunities...*was the  
norm...and often was  
the expectation from too  
many professionals!*

*...the key to happiness is low  
expectations...NOT FOR  
CHILDREN WITH HEARING  
LOSS!!!*

## 21<sup>st</sup> Century Trends & Changes: Early Proficient Spoken Language

- Fluent, clear spoken language is possible for most children born with any degree of hearing loss with EARLY IDENTIFICATION and:
  - Appropriate hearing technology & ongoing audiological management
  - Specialized early intervention services
    - with appropriately trained professionals
  - Parent education, support, and engagement!

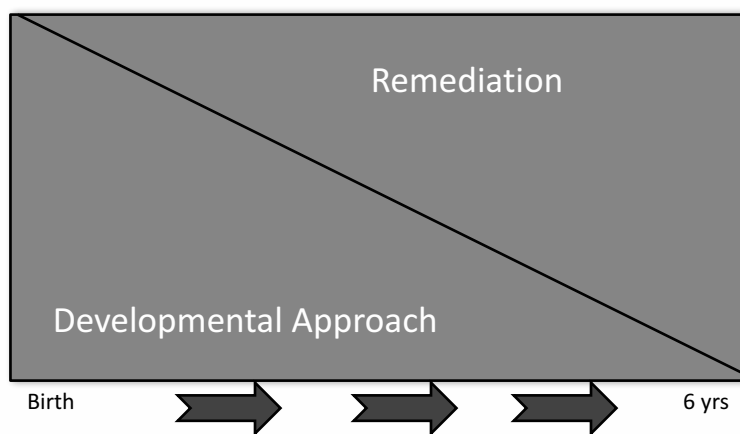


# Hearing Loss

# ≠

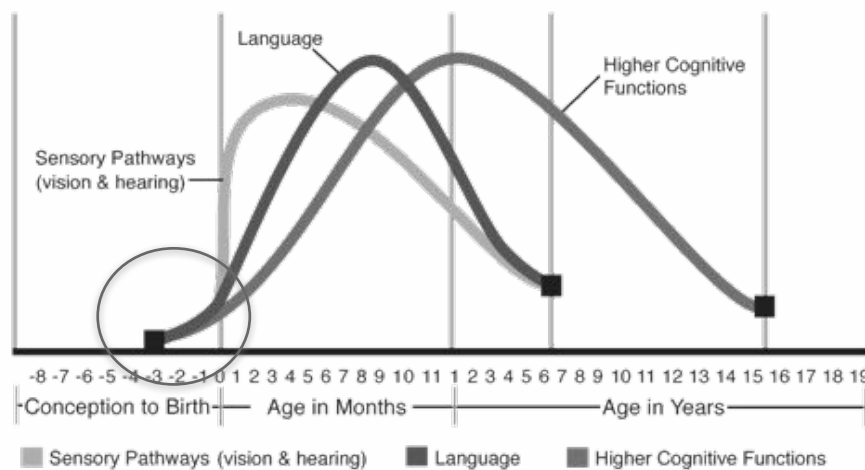
# Auditory Function

## The Promise of Early Intervention



Developmental synchrony is the goal!

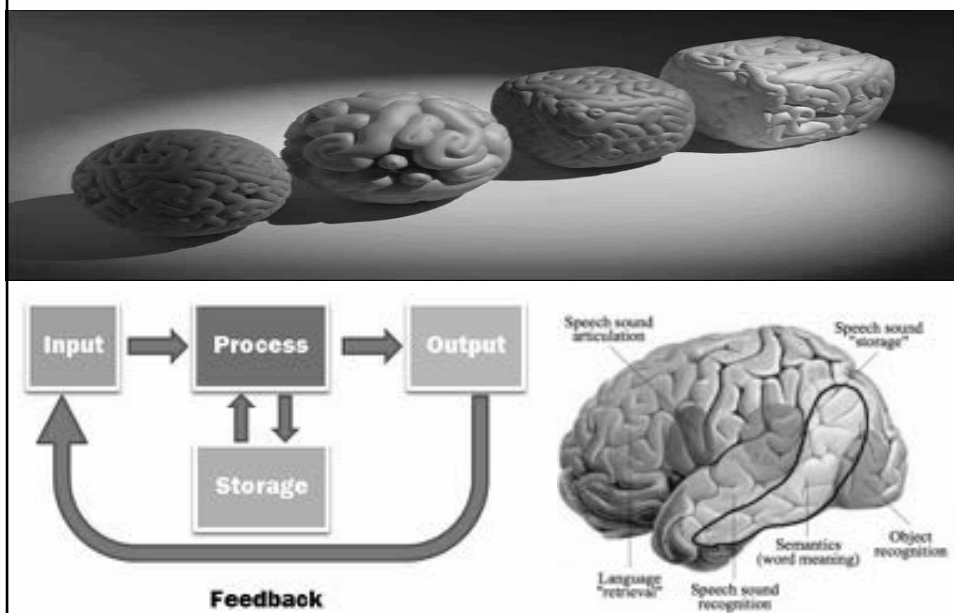
## Early experiences form brain architecture



Graph Source: C.A. Nelson (2000)

First2000days.org

## How do we grow a brain?



continued™

The brain is one  
of the only organs not fully  
developed at birth.

Brain architecture is  
forming during a child's  
early years.

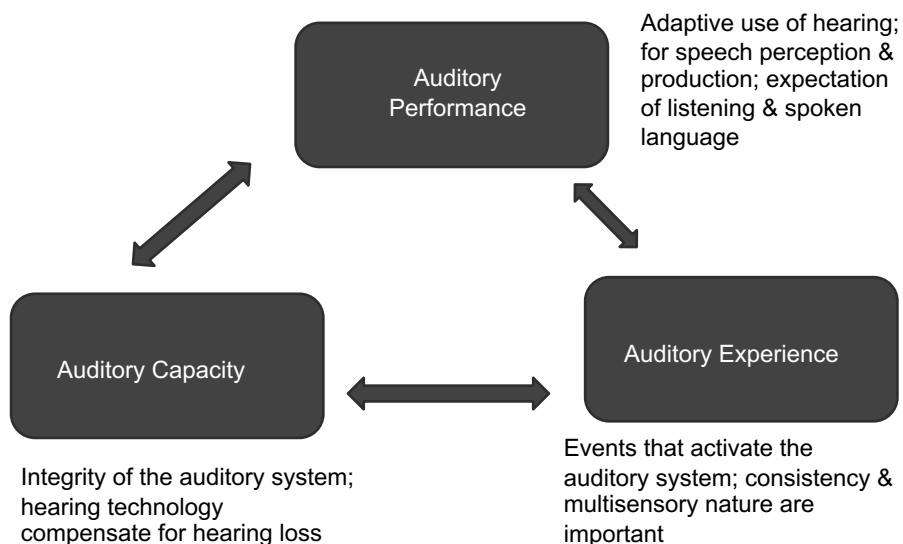
First2000days.org

*Early experiences  
build brain  
architecture*

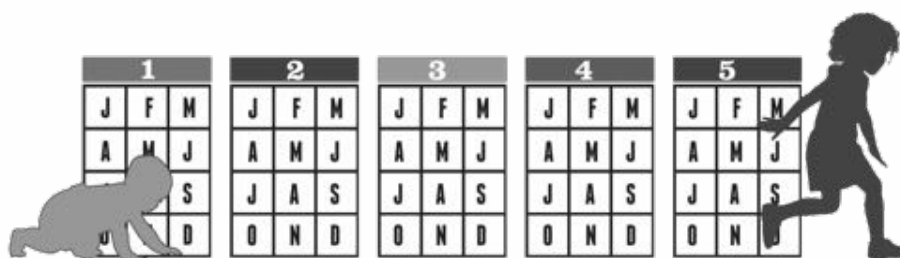
- Brains are built, not<sup>26</sup> born.
- There is rapid growth, then the brain prunes.
- Connections that are used are **STRENGTHENED** those that are not, *pruned*.
- This process shapes how brains are wired.

First2000days.org

## Interdependence of audition, the brain, & spoken language



There are only 2000 days to  
get it right!



First2000days.org

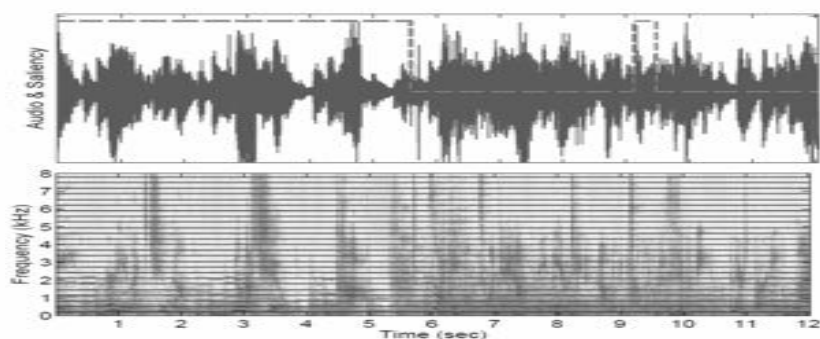
## Congenital Hearing Loss

- Reduces access to auditory experiences
  - Quantity
  - Quality
- Distorts, reduces, or eliminates speech cues sent to the brain
- Rewires the brain's auditory system

So...

*Why teach a child with hearing loss  
spoken language through listening?*

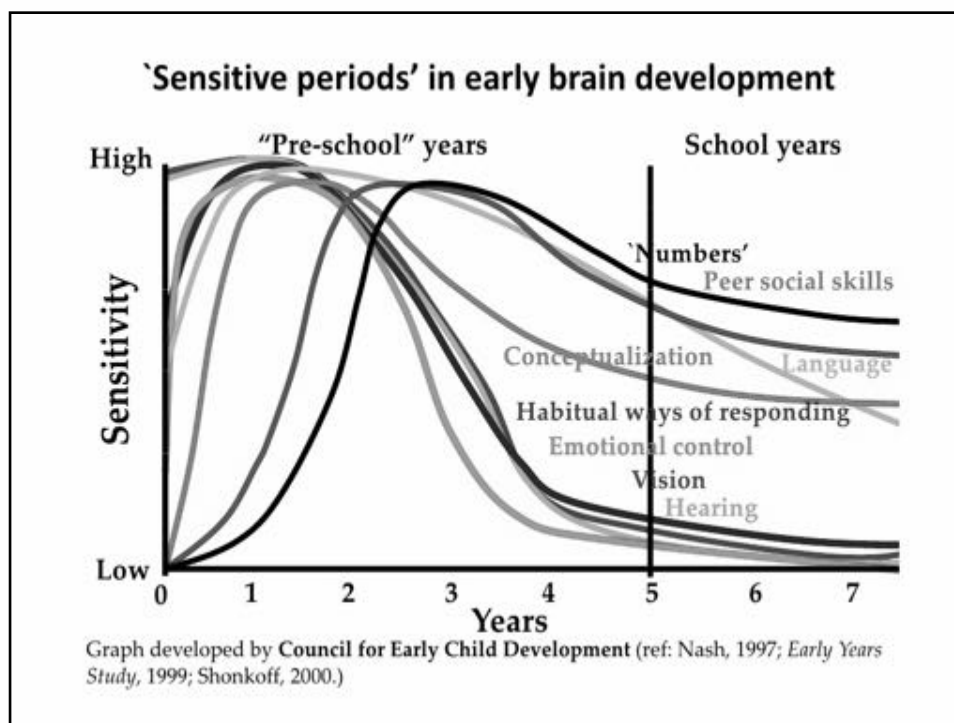
...because speech is an ACOUSTIC event!



And because...

For the vast majority of infants/toddlers who have hearing loss, TODAY'S TECHNOLOGY can provide early auditory access to the sounds of speech optimizing auditory brain development!





## Key Predictors of Communication Success

- Age of identification & enrollment in early intervention
- Parent engagement & participation in intervention

## Language is learned...

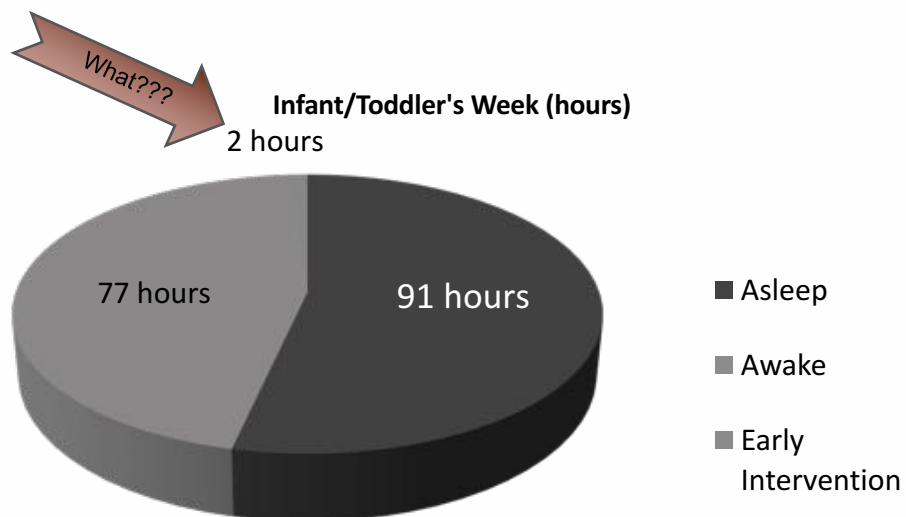
- With someone who adores you
- In the course of play, caregiving routines, and daily life
- During all waking hours if conditions are optimal
- When the language is adapted to your needs and interests

## Implications for Children with hearing loss

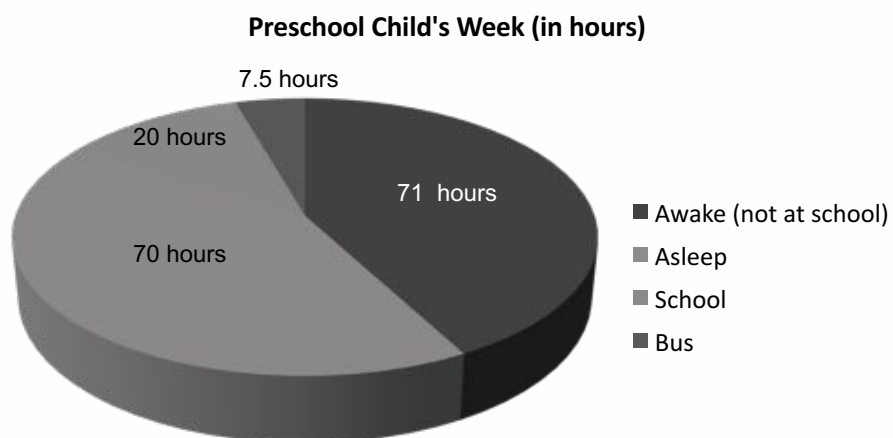
- “Language Intervention” should be happening during all waking hours
- Caregivers are key!
- EI must focus on maximizing parent knowledge, skills, engagement.



## Infant/Toddler's Week



## Preschool Child's Week



## Factors That May Impact Progress

- Age of onset of hearing loss/diagnosis
- Degree of hearing loss
- Type of hearing loss
- Bilateral/unilateral involvement
- Consistent use of technology
- Other handicapping conditions
- Family support
- Services available/Skills of the early intervention provider
- Frequency, duration, intensity of services

## 21<sup>st</sup> Century Trends & Changes: New Professional Expertise - LSLS

For children with hearing loss whose parents want them to learn spoken language...

- New body of knowledge
- New certification from A.G. Bell Academy
  - Listening and Spoken Language Specialist (LSLS)
    - Auditory Verbal Therapist: LSLS Cert. AVT
    - Auditory Verbal Educator: LSLS Cert. AVEd
- New Online Resource: [HearingFirst.org](http://HearingFirst.org)

## Auditory-Verbal Therapy

The following *Description of Auditory-Verbal Therapy* and *Principles of Auditory-Verbal Therapy* were adopted by the AG Bell Academy for Listening and Spoken Language on July 26, 2007.



[www.agbellacademy.org](http://www.agbellacademy.org)

## Description of Auditory-Verbal Therapy

Auditory-Verbal Therapy facilitates optimal acquisition of spoken language through listening by newborns, infants, toddlers, and young children who are deaf or hard of hearing. Auditory-Verbal therapy promotes early diagnosis, one-on-one therapy, and state-of-the-art audiologic management and technology. Parents and caregivers actively participate in therapy. Through guidance, coaching, and demonstration, parents become the primary facilitators of their child's spoken language development. Ultimately, parents and caregivers gain confidence that their child can have access to a full range of academic, social, and occupational choices throughout life. Auditory-Verbal therapy must be conducted in adherence to all 10 Principles of Auditory-Verbal Therapy.

## Ensuring Successful Auditory-Verbal Therapy

### Principles of AVT

- To detect hearing loss as early as possible through screening in the newborn nursery & throughout childhood.
- To pursue prompt & vigorous medical & audiologic management, including selection, modification, and maintenance of appropriate hearing aids, cochlear implants, FM, etc.

### What It Takes...

- Ensuring newborn has hearing screening & follow-up visits; 1-3-6 Model
- Extra time for audiological management. This may mean more frequent trips to the audiologist than parents who choose a different approach.
  - Could mean seeking a strong pediatric audiologist who has the necessary experience, perhaps not in their community.
- Wearing technology 24/7

## Ensuring Successful Auditory-Verbal Therapy

### Principles of AVT

- Guide & coach parents to help their child use hearing as the primary sensory modality in developing spoken language w/o use of sign language.

### What It Takes...

- Weekly AVT sessions
- Regular attendance, come prepared to learn
- Entire family must be supportive of the approach
- Daily individual play time with child in a quiet environment (1 hour min)
- High expectations for listening

## Ensuring Successful Auditory-Verbal Therapy

### Principles of AVT

- Guide & coach parents to become the primary facilitators of their child's listening & spoken language development through active consistent participation in AVT.

### What It Takes...

- Active participation in AVT sessions
- Parents must understand they are the primary consumers of the approach, not the child.

## Ensuring Successful Auditory-Verbal Therapy

### Principles of AVT

- Guide & coach parents to create environments that support listening for the acquisition of spoken language throughout the child's daily activities.

### What It Takes...

- Control background noise within the home.
- Designated time each day spent talking, reading, & facilitating listening & spoken language.
- Goals integrated during daily routines: bath time, dinner time, going on walk, etc.
- Auditory Learning vs. Auditory Training

## Ensuring Successful Auditory-Verbal Therapy

### Principles of AVT

- Guide & coach parents to help their child integrate listening & spoken language into all aspects of the child's life.

### What It Takes...

- Focus on auditory learning during regular care giving & play activities (3-4 hours per day minimum)
- Control background noise; children must be able to hear spoken language w/o the t.v., radio, etc.
- Listening become a part of child's personality; s/he wants to wear technology

## Ensuring Successful Auditory-Verbal Therapy

### Principles of AVT

- Guide & coach parents to use natural developmental patterns of speech, language, cognition, & communication.

### What It Takes...

- Typical language development is followed
- Child's progress is measured against hearing peers
- An average or better than average rate of progress should be expected
- Speech therapy – may be needed; should follow AV principles

## Ensuring Successful Auditory-Verbal Therapy

### Principles of AVT

- Guide & coach parents to help their child self-monitor spoken language through listening.

### What It Takes...

- Child progresses through normal stages of learning speech: vocalizes, plays with voice, produces vowels BEFORE s/he says words.
- Develop the auditory-feedback loop
- Child begins to monitor the speech of others & self-monitors their own speech

## Ensuring Successful Auditory-Verbal Therapy

### Principles of AVT

- Administer ongoing formal & informal diagnostic assessments to develop individualized Auditory-Verbal treatment plans, to monitor progress, & to evaluate the effectiveness of the plans for the child & family.

### What It Takes...

- Parents must support ongoing monitoring of progress
- Could mean extra visits for formal diagnostics; depending on insurance, could mean higher expense
- Understand sessions are diagnostic in nature – but not “testing” the child every session

## Ensuring Successful Auditory-Verbal Therapy

### Principles of AVT

- Promote education in regular schools with peers who have typical hearing & with appropriate services from early childhood onward.

### What It Takes...

- Parents actively involved in transition process from EI to public schools (or private school)
- Mainstreamed education is the goal, with proper supports in place
- Child should have language ability to be successful

## A-V IS WORKING for a variety of families because...

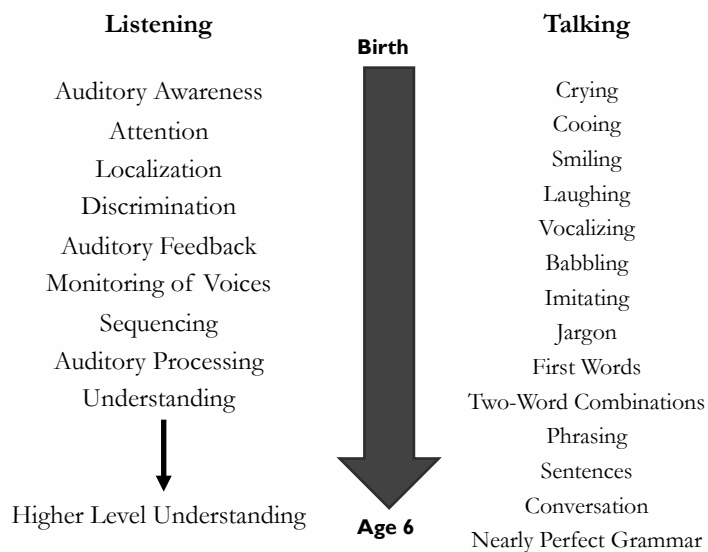
- A-V facilitates a mutually satisfying parent-professional relationship
- From the Professional Perspective:
  - Professionals desire to help but do not want the total responsibility for the child's outcome
  - Given A-V training, professionals can provide parents with cutting-edge information, high-level intervention skills, fact-based information & documented outcomes consistent with parent goals



## A-V IS WORKING for a variety of families because...

- A-V facilitates a mutually satisfying parent-professional relationship
- From the Parent Perspective:
  - A-V employs a problem-solving approach that empowers the parent to take responsibility in decision-making
  - Parent input/questions are welcomed
  - Parents are included in every activity

## Stages of Listening and Talking



## Major Stages of Auditory Development

- Detection
- Discrimination
- Identification/Recognition
- Comprehension

Detection→Discrimination→Identification→Comprehension

Kelly

## Introduce Learning to Listen Sounds



## Learning to Listen Sounds

### Vehicles:

- ▶ Airplane=aaaah
- ▶ Car=brrr – beep-beep
- ▶ Bus=bu-bu-bu
- ▶ Boat=p-p-p
- ▶ Train=ch-ch-choo-choo

### Animals:

- ▶ cow=moo
- ▶ Horse= tongue click/  
neigh-neigh
- ▶ Sheep=baa-baa
- ▶ Pig=oink-oink
- ▶ Duck=quack-quack

### Animals (continued):

- ▶ Dog=woof-woof
- ▶ Cat=meow
- ▶ Bird=tweet-tweet
- ▶ Snake=sssss
- ▶ Rabbit=hop-hop

### Toys:

- ▶ Ball=bounce-bounce
- ▶ Clown=ha-ha-ha
- ▶ Stacking toys=up up up
- ▶ Baby= shhhh/wah-wah
- ▶ Santa=ho-ho-ho

Kelly

## The Ling 6 Sound Test



### ► An Auditory-Only Task

- Detection-I hear it
- Identification- objects or pictures
- Repeating task
- Get baseline distances and monitor
- Consider individual ear information
- Keep a daily record

60

Drew

Kelly

## Summary

- Increased numbers of infants and toddlers will be identified with hearing loss
- Parents have greater access to information; a majority are choosing spoken language options – if they know about them
- Hearing technology will continue to evolve

## Summary

- Children are learning to listen & talk – through typical language development/instruction/techniques
- More children are entering kindergarten or first grade with language abilities on par with their hearing peers; reduced need for self-contained placements; increased mainstreaming
- Ongoing need for highly-qualified, well-trained professionals
  - Need for Pre-service AND In-service training

Thank you for listening!

K. Todd Houston, PhD, CCC-SLP, LSLS Cert. AVT  
Professor of Speech-Language Pathology  
School of Speech-Language Pathology & Audiology  
The University of Akron  
(330) 972-6141  
Houston@uakron.edu  
Facebook: K. Todd Houston  
LinkedIn: K. Todd Houston  
LinkedIn Group: 6 Sound Off