

# What to Expect for a Child's Auditory Development

MaryKay Therres, M.S., CCC-SLP, LSLS Cert. AVT

Virgi Mills, M.E.D.

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## Disclosure

MaryKay and Virgi are both employees of MED-EL

- MaryKay: Manager of Education and Therapy
- Virgi: Outreach Manager, SE Region

# Presentation

- Expectations of Outcomes
- Hierarchy of Auditory Skills, Goals and Timelines
- Assessment Tools
- Case Studies

## Expectations

- Ability to develop auditory and oral-verbal/listening and spoken language/listen and talk
- Not everyone who receives a cochlear implant will have the same expectations
- Expectations should be held high to ensure that each recipient reaches their individual potential
- Use as a counselling tool to identify and discuss factors that may impact outcomes



This presentation will address expectations in children

- Children: Those who have developed minimal to no language or have had progressive loss and have developed further language skills; up to around age 5 to 7; use a **habilitative** approach



## Children and Influencing Factors- Intrinsic

- Age
- Pre/post lingual deafened
- Medical findings
- Neural survival
- Etiology
- Cognition
- Additional disabilities



## Children and Influencing Factors- Extrinsic

- Functional use of hearing aids
- Communicative intent
- Available habilitation services
- Educational program
- Child's behavior (i.e., focus/attention)
- Parental involvement (i.e., compliance with follow up, stressors, support)



## ChIP: Children's Implant Profile-Modified

- Hellman, S.A., Chute, P.M., Kretschmer, R.E., Nevins, M.E., Parisier, S.C., & Thurston, L.C. (1991). *The Development of a Children's Implant Profile*. *Am Ann Deaf*, Apr;136(2): 77 – 81.
- Others have modified to meet their specific implant center's needs
- Profile usually divided into 5 sections
- Rate each item in the section (usually as no concern, some concern, great concern)
- Overall profile of areas of that impact expectations-strengths and concerns

## ChIP Areas

- Medical (physical health, radiological, age)
- Audiology (degree of hearing loss, ability to test, functional use of amplification/residual hearing, audiologic history)
- Speech-Language (non verbal and verbal receptive and expressive language, speech development, child's attention/behavior for language development)
- Family (child's developmental ability, family follow up/compliance with recommendations, family stressors, understanding and expectations of hearing loss and technology)
- Habilitation (availability of services, educational placement, knowledge and skill of service providers, parent participation)



# Modified ChIP-example

TEAM IMPRESSIONS OF THE FACTORS IMPORTANT TO IMPLANT USE AND SUCCESS	NO CONCERN	SOME CONCERN	GREAT CONCERN
<b>1. CHRONOLOGICAL AGE</b>			
<b>2. DURATION OF DEAFNESS</b>			
<b>3. OTOLARYNGOLOGY</b>			
· - Medical			
· - Radiological			
<b>4. OTHER DISABILITIES</b>			
<b>5. AUDIOLOGY</b>			
· - Test Reliability			
· - Hearing Aid Use			
· - Hearing Aid Benefit			
<b>6. SPEECH PATHOLOGY</b>			
· - Auditory Training			
· - Formal Language Use/Comprehension			
· - Use of Voice to Communicate			
· - Desire to Communicate			
<b>7. SOCIAL WORK</b>			
· - Family Structure & Support			
· - Child's Behavior			
· - Expectations (Parents)			
· - Expectations (Child)			
<b>8. EDUCATION</b>			
· - Current Educational Placement			
· - Future Educational Placement (Transition)			
· - Access to Auditory-Oral Services			
· - Educational Staff CI Training			
· - Ability of Parent to Participate in Educational Process			

# Profile 1

	No Concern	Some Concern	Great Concern
<b>Medical</b>			
Physical findings	X		
Radiology	X		
<b>Audiology</b>			
Test reliability	X		
Attention/behavior	X		
Hearing Aid Us	X		
Compliance with Recommendations	X		
Hearing Aid Benefit	X		
Auditory Skills	X		
Other Disabilities	X		
<b>Speech Language</b>			
Receptive Language	X		
Expressive Language	X		
Play/Social Skills	X		
Oral Motor Skills	X		
Speech Reading Skills		X	
Communicative Intent	X		
Speech Production		X	
Attention/Behavior	X		
CA/duration of deafness	X		
Other Disabilities	X		
<b>Family</b>			
Family Support and Structure	X		
Family Stressors	X		
Expectations (parent/child)	X		
Other Disabilities	X		
<b>Habilitation</b>			
Current Educational Placement			
Availability of Support Services	X		
Appropriateness of Skills of Service	X		
Future Placement		X	
Parent's Ability to participate in process	X		
Child's ability to participate in process	X		

# Profile 2

	No Concern	Some Concern	Great Concern
<b>Medical</b>			
Physical findings	X		
Radiology	X		
<b>Audiology</b>			
Test reliability	X		
Attention/behavior		X	
Hearing Aid Us	X		
Compliance with Recommendations		X	
Hearing Aid Benefit	X		
Auditory Skills		X	
Other Disabilities	X		
<b>Speech Language</b>			
Receptive Language		X	
Expressive Language		X	
Play/Social Skills	X		
Oral Motor Skills		X	
Speech Reading Skills		X	
Communicative Intent	X		
Speech Production			X
Attention/Behavior	X		
CA/duration of deafness	X		
Other Disabilities	X		
<b>Family</b>			
Family Support and Structure		X	
Family Stressors		X	
Expectations (parent/child)	X		
Other Disabilities		X	
<b>Habilitation</b>			
Current Educational Placement			
Availability of Support Services	X		
Appropriateness of Skills of Service	X		
Future Placement		X	
Parent's Ability to participate in process	X		
Child's ability to participate in process	X		



# Profile 3

	No Concern	Some Concern	Great Concern
<b>Medical</b>			
Physical findings	X		
Radiology	X		
<b>Audiology</b>			
Test reliability			X
Attention/behavior		X	
Hearing Aid Us		X	
Compliance with Recommendations			X
Hearing Aid Benefit	X		
Auditory Skills			X
Other Disabilities	X		
<b>Speech Language</b>			
Receptive Language			X
Expressive Language			X
Play/Social Skills	X		
Oral Motor Skills		X	
Speech Reading Skills		X	
Communicative Intent			X
Speech Production			X
Attention/Behavior		X	
CA/duration of deafness			X
Other Disabilities			X
<b>Family</b>			
Family Support and Structure		X	
Family Stressors		X	
Expectations (parent/child)			X
Other Disabilities		X	
<b>Habilitation</b>			
Current Educational Placement			
Availability of Support Services	X		
Appropriateness of Skills of Service	X		
Future Placement		X	
Parent's Ability to participate in process		X	
Child's ability to participate in process		X	

## Expectations

Through experience and without being judgmental have recognized three general descriptive categories applicable to recipients of all ages:

- Comparable aural-oral skills to individuals with typical hearing
- Functional aural-oral communication
- Aural-oral skills that assist in communication

Range within each category

## Comparable communication

Children would be expected to develop aural-oral skills that are comparable to peers with typical hearing

- Language and academic learning can be accomplished through auditory modality
- Deafness is only challenge
- Expected to maintain and compete with peers in mainstream education
- Appropriate to utilize auditory based approach

## Functional communication

Children would be expected to develop aural-oral skills for functional language and academic learning but not to level of peers with typical hearing (i.e., lower vocabulary, difficulty with lengthy and abstract information through listening alone)

- Not done with ease and require intensive support;
- Language is not at level of peers with typical hearing
- Other mild to moderate issues may be present, particularly language issues
- Child may have been implanted outside the optimal age of implantation
- Appropriate to utilize auditory based approach with additional visual strategies (speech reading, reading, gesture cues)

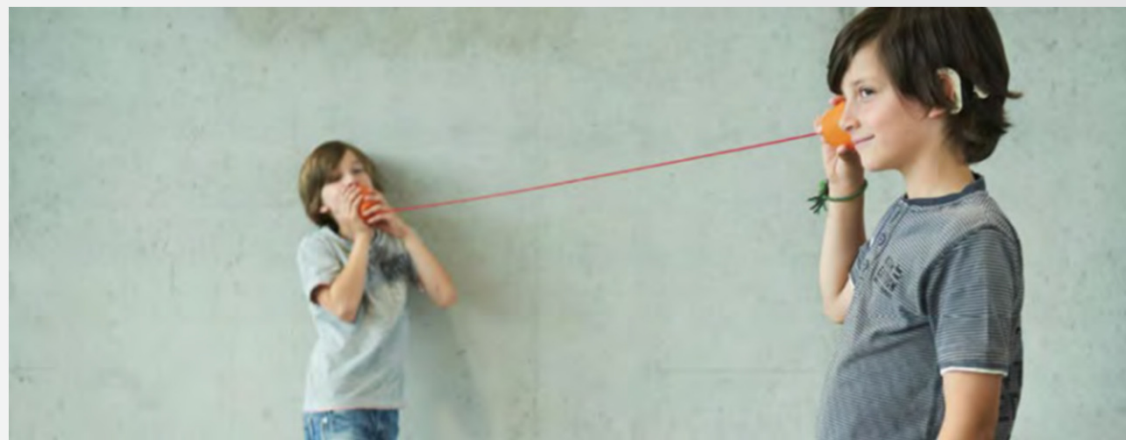
## Assist to communication

Children would be expected to develop some aural-oral skills to assist communication but primary communication will be through visual means

- Deafness is not primary challenge, present with other issues (ie: deaf plus)
- Realistic expectations-keep whole child perspective
- Educational Program/Support Services should include consideration of primary disability
- Appropriate to develop auditory and verbal skills to basic level (i.e., familiar words/phrases); communication development will be through multi-modality approach

## Conclusion on Expectations

- Factors that influence expectations
- Profile to guide expectations
- Range of expectations (comparable, functional, assist)
- Intervention approach based on expectations
- Resources to assist in setting expectations (later)



## Auditory Hierarchy, Goals and Timelines

- Organized hierarchical plan to facilitate development of auditory skills
- Children receive best benefit from combination of direct instruction and exposure to language in natural environments (home and school)
- Direct instruction helps develop skills that can be carried over into natural environments which is the most meaningful context
- Provides accountability-monitor and track progress
- Developing speech perception skills facilitate development of spoken language skills



## Auditory Hierarchy, Goals and Timelines

- The following are guidelines of expectations of development of a specific skill
- Has come about from clinical experience
- Range: when first start to see (emerging) to when child should have developed skill (red flag)
- If not developed by end time, then is a red flag indicator



## Auditory Hierarchy, Goals and Timelines

- Timeline guidelines are provided for under 2 years of age and over 2 years of age
- Timeline goals are from AuSpLan
- Once child reaches 3<sup>rd</sup> Level/Stage, guidelines become similar to those implanted over 2 years of age
- Acquisition of skill guidelines are for Comparable and Functional development for implanted under 2-child is on listening and spoken language track

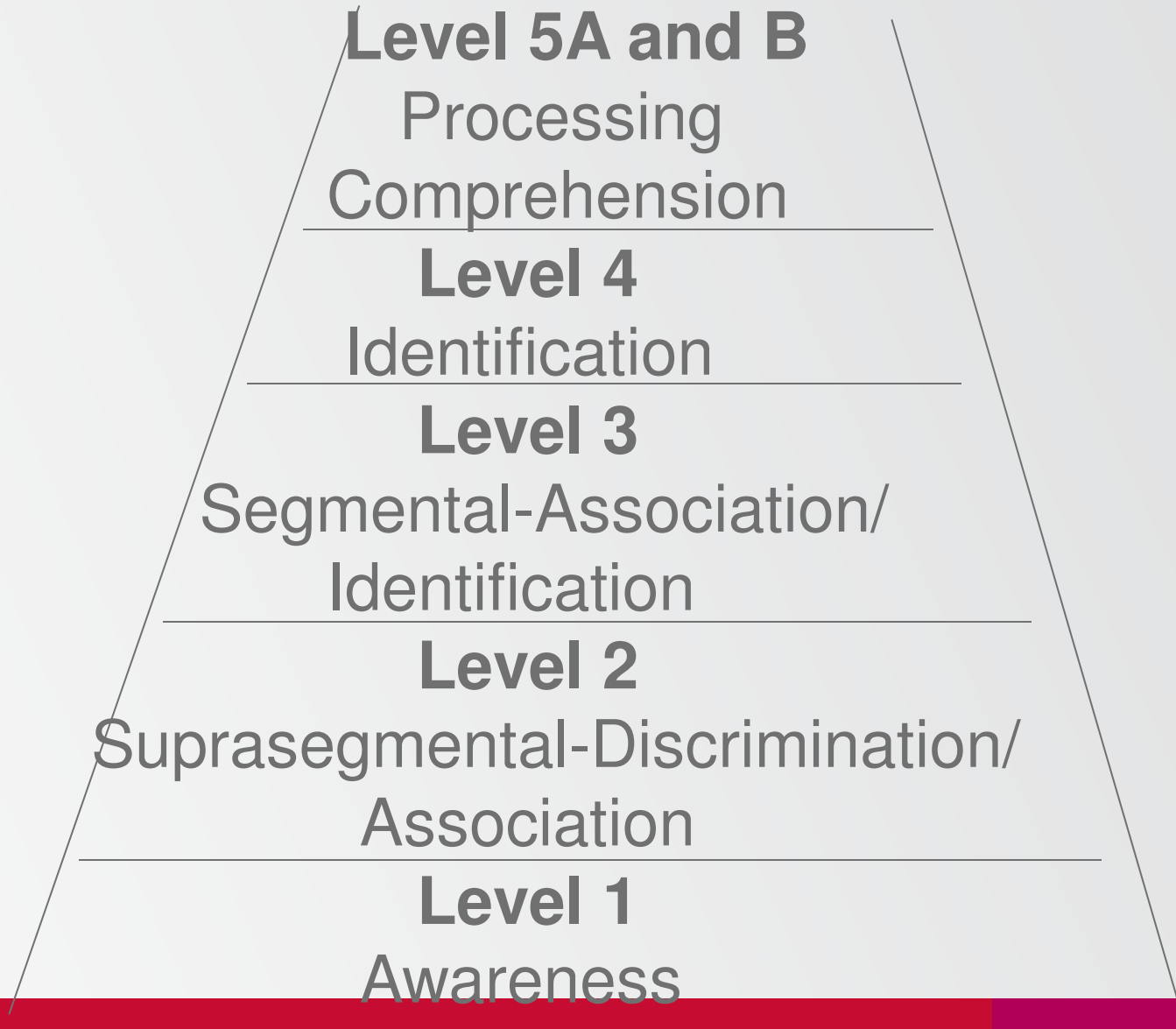
## Auditory Hierarchy, Goals and Timelines

# Auditory Hierarchy

*AuSpLan (Auditory Speech Language) A Manual for Professionals Working with Children who have Cochlear Implants or Amplification*

McClatchie & Therres 2003

# Auditory Skills Pyramid



## **Auditory Level 1: Awareness**

- Awareness of Voicing
- Awareness of Environmental Sounds
- Awareness of Ling Sounds
- Voice in Distraction



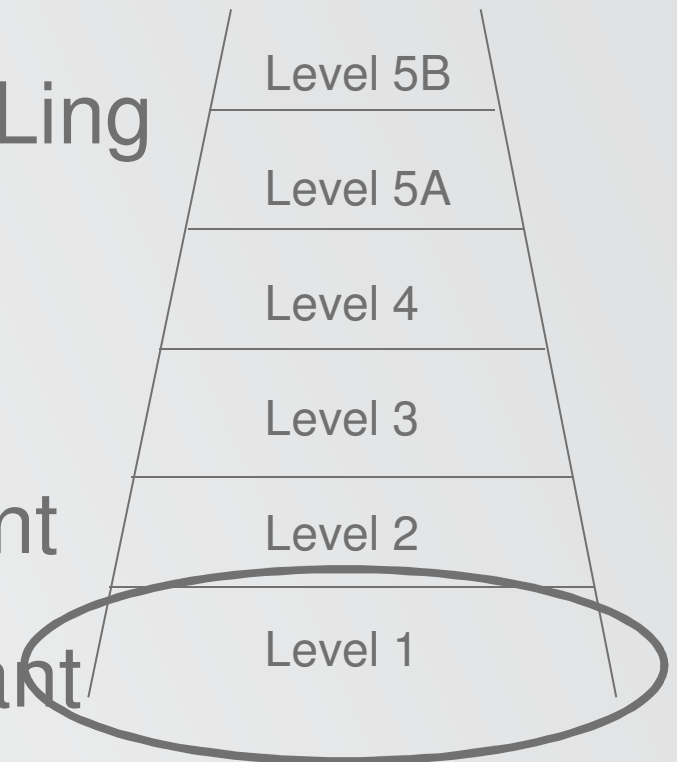
# Timelines-Auditory Level 1 (under age 2)

## Level 1: Awareness

Goal: Show awareness to all Ling sounds

Emerging: 1 week post-implant

Red Flag: 6 weeks post-implant



## Auditory Level 1 (over age 2)

**Low Goal:** Sit in “listening posture” and respond to voicing.

**High Goal:** Sit in “listening posture” and respond to all Ling sounds.

**Mastery:** 8/10 presentations

## Timeline Auditory Level 1

	comparable	functional	assist
<b>Low Goal:</b>	1 wk	1 wk	1-6 wks
<b>High Goal:</b>	1 wk	1 wk	1-12 wks



## Auditory Level 2: Suprasegmental-Discrimination

- Vocal Length
- Onomatopoeic Content
- Word Length
- Sentence Length
- Intensity/Pitch
- Oral/Nasal Resonance
- Prosody







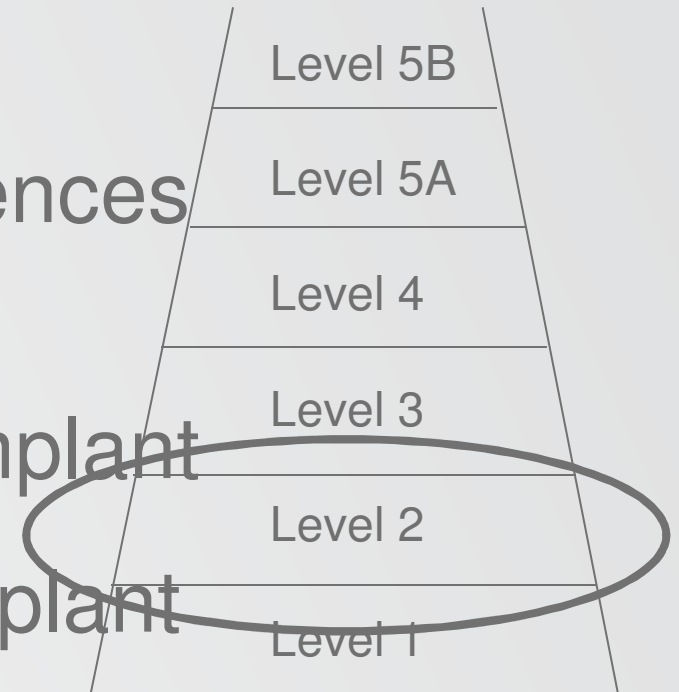
## Timelines-Auditory Level 2 (under age 2)

### Level 2: Suprasegmental Discrimination/Association

Goal: Discriminate between familiar words/phrases/sentences by suprasegmental

Emerging: 3 months post-implant

Red Flag: 6 months post-implant



## Auditory Level 2: Suprasegmental-Discrimination/Association (age 2)

(over

**Low Goal:** Discriminate between long versus intermittent speech (1 of 2).

**High Goal:** Discriminate between 1 of 4 words/phrases/sentences that differ in length/intonation.

**Mastery:** Identify 8/10 presentations in a closed set using 3 different closed sets of stimuli

## Timeline Auditory Level 2

	comparable	functional	assist
<b>Low Goal:</b>	1-2 m	1-3 m	1-4 m
<b>High Goal:</b>	1-3 m	4-6 m	7-13 m

## **Auditory Level 3: Segmental-Association/Identification**

- Speech Sound Difference in Isolation
- Vowel and Consonant Difference in Same Length Words
- Vowel Only Difference in Words
- Consonant Only Difference in Words







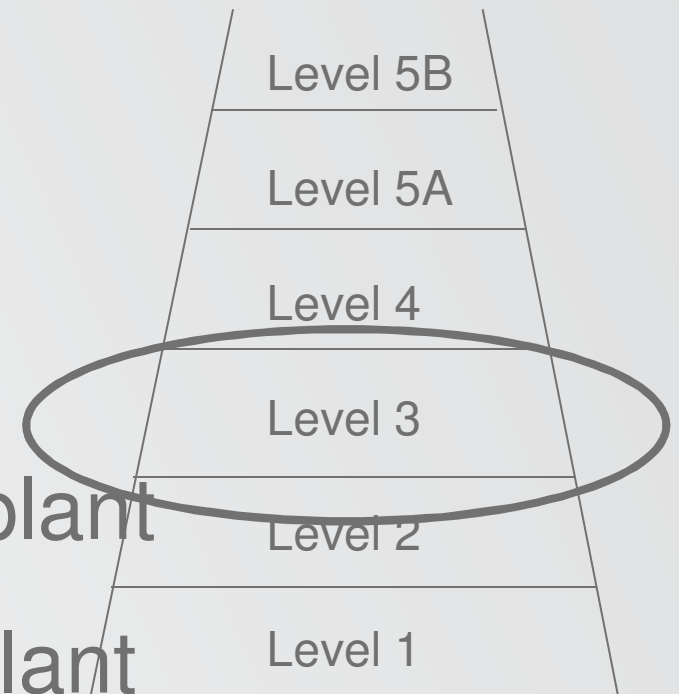
## Timelines-Auditory Level 3 (under age 2)

### **Level 3: Segmental Association/Identification**

Goal: Identify 10 - 15  
familiar words

Emerging: 6 months post-implant

Red Flag: 9 months post-implant



## Auditory Level 3: Segmental-Association/Identification (age 2)

(over

**Low Goal:** Identify 1 of 2 monosyllabic words that differ by large vowel and consonant contrasts.

**High Goal:** Identify 1 of 12 words that differ by vowels and consonants.

**Mastery:** Identifies correct target word 12/15 presentations in a closed set using 3 different closed set of stimuli

## Timeline Auditory Level 3

	<b>comparable</b>	<b>functional</b>	<b>assist</b>
<b>Low Goal:</b>	2-5 m	4-6 m	8-13 m
<b>High Goal:</b>	3-6 m	7-9 m	14-18 m

## **Auditory Level 4: Identification**

- One Key Word in Sentence Context
- Two Key Words in Sentence Context
- Three Key Words in Sentence Context
- Four+ Key Words in Sentence Context



## Auditory Level 4: Identification

**Low Goal:** Identify 1 key word in a short sentence context given a choice of 3 key words.

**High Goal:** Identify 4 to 4+ key words in a longer sentence context given a contained set.

**Mastery:** Follow 12/15 directives

## Timelines Auditory Level 4

	<b>comparable</b>	<b>functional</b>	<b>assist</b>
<b>Low Goal:</b>	4-8 m	7-9 m	14-18 m
<b>High Goal:</b>	9-15m	10-23 m	36+m



## **Auditory Level 5A:**

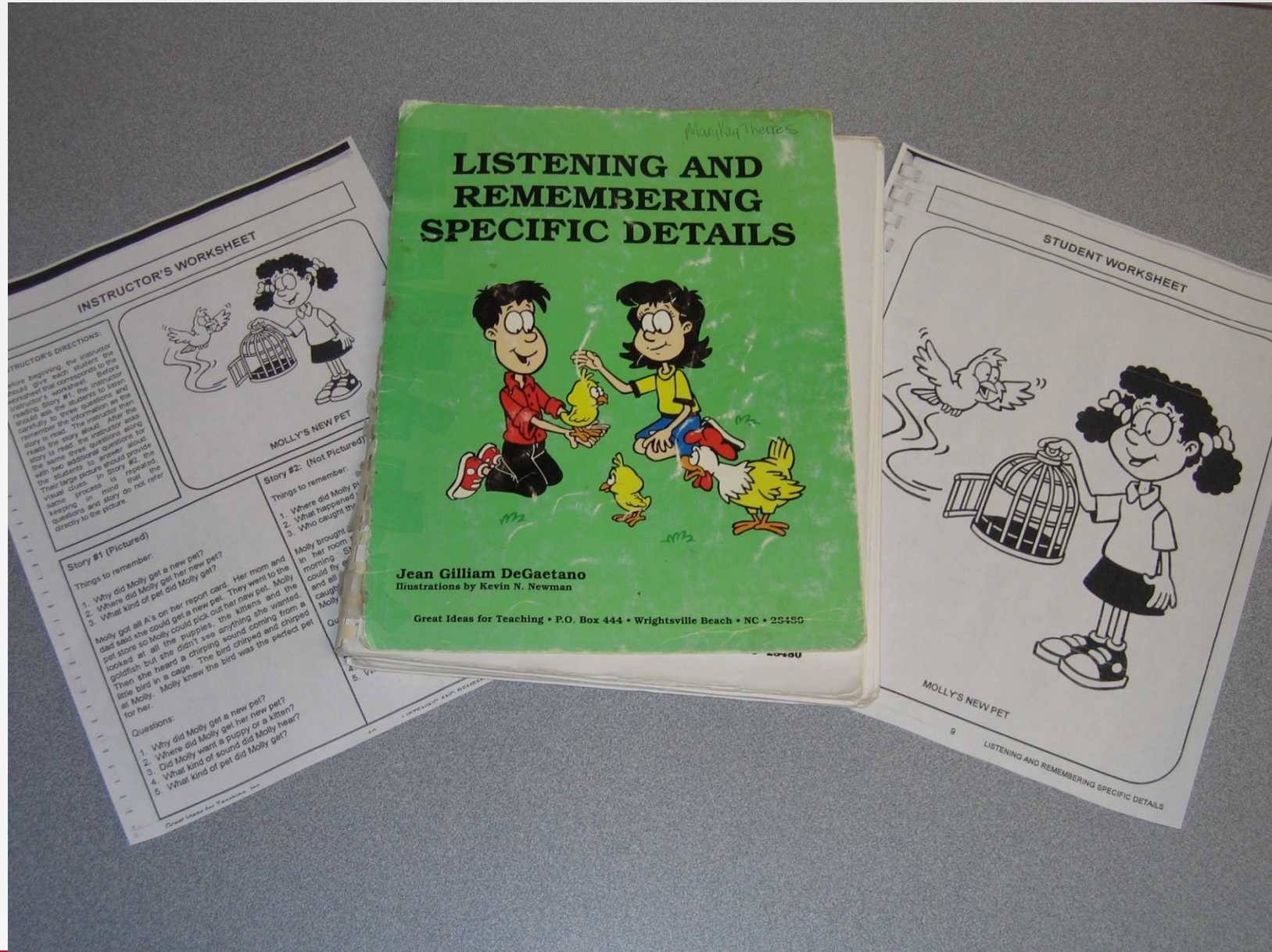
### **Processing/Comprehension**

- Advanced Vocabulary Development
- Auditory Word-Play Association
- Answer Simple Questions
- Understand Sentences Containing Details and Elements
- Answer Simple Questions About Short Paragraph









**INSTRUCTOR'S WORKSHEET**

**MOLLY'S NEW PET**

**INSTRUCTOR'S DIRECTIONS:**  
 Before beginning, the instructor should give each student the worksheet that corresponds to the instructor's worksheet. Before reading Story #1, the instructor should ask the students to listen carefully to the information and remember the information along with the story aloud. After the story is read, the instructor asks the same three questions for each of the two additional stories with two additional questions for the students to answer. The large picture should provide the same process as the repeated questions and story do not refer directly to the picture.

**Story #1 (Pictured)**  
 Things to remember:  
 1. Why did Molly get a new pet?  
 2. Where did Molly get her new pet?  
 3. What kind of pet did Molly get?  
 Molly got all A's on her report card. Her mom and dad said she could get a new pet. They went to the pet store so Molly could pick out her new pet. Molly looked at all the puppies, the kittens and the goldfish but she didn't see anything she wanted. Then she heard a chirping sound coming from a little bird in a cage. The bird chirped and chirped all Molly. Molly knew the bird was the perfect pet for her.

**Questions:**  
 1. Why did Molly get a new pet?  
 2. Where did Molly get her new pet?  
 3. Did Molly want a puppy or a kitten?  
 4. What kind of sound did Molly hear?  
 5. What kind of pet did Molly get?

*Marilyn Therres*

**LISTENING AND REMEMBERING SPECIFIC DETAILS**

**Jean Gilliam DeGaetano**  
 Illustrations by Kevin N. Newman

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**STUDENT WORKSHEET**

**MOLLY'S NEW PET**

9  
 LISTENING AND REMEMBERING SPECIFIC DETAILS

## Auditory Level 5A: Processing/Comprehension

**Low Goal:** Identify 1 of 6 objects/pictures when presented with description or function.

**High Goal:** Answer simple who, where, and what doing questions when presented with a 5-sentence paragraph about a picture.

**Mastery:** **low**-identify 8/10 objects  
**high**-answer 4/6 varying questions  
from 4 different stories

## Timeline Auditory Level 5A

	<b>comparable</b>	<b>functional</b>	<b>assist</b>
<b>Low Goal:</b>	12-16 m	14-20 m	na
<b>High Goal:</b>	14-26 m	16-33 m	na

## **Auditory Level 5B:**

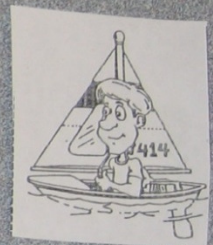
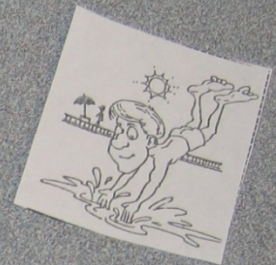
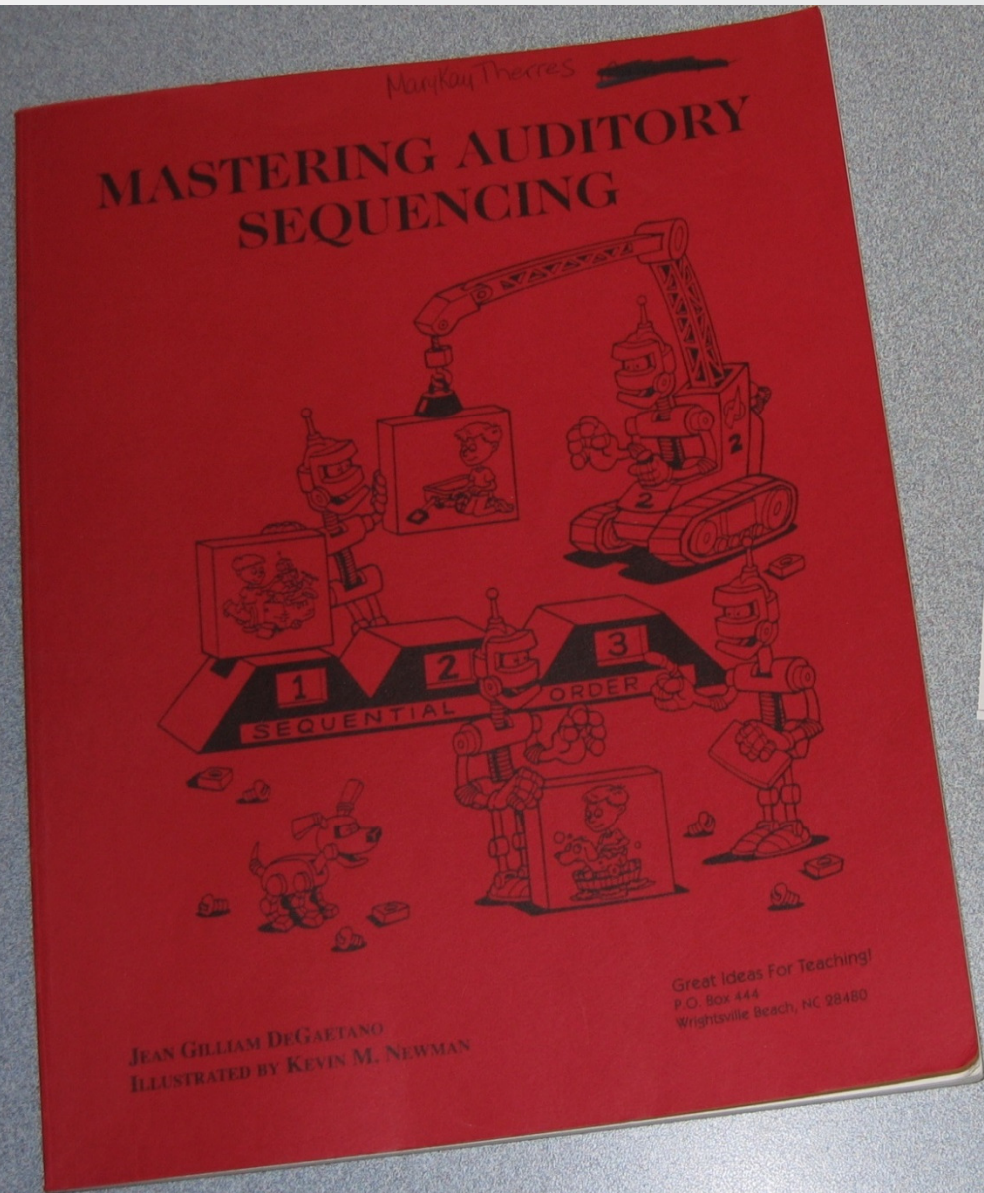
### **Processing/Comprehension**

- Answer Complex Questions
- Answer Complex Questions about Paragraph
- Sequence With/Without Visual Support
- Increase Cognitive Language Skills
- Follow Conversation With Familiar Topic
- Follow Open-Ended Conversation

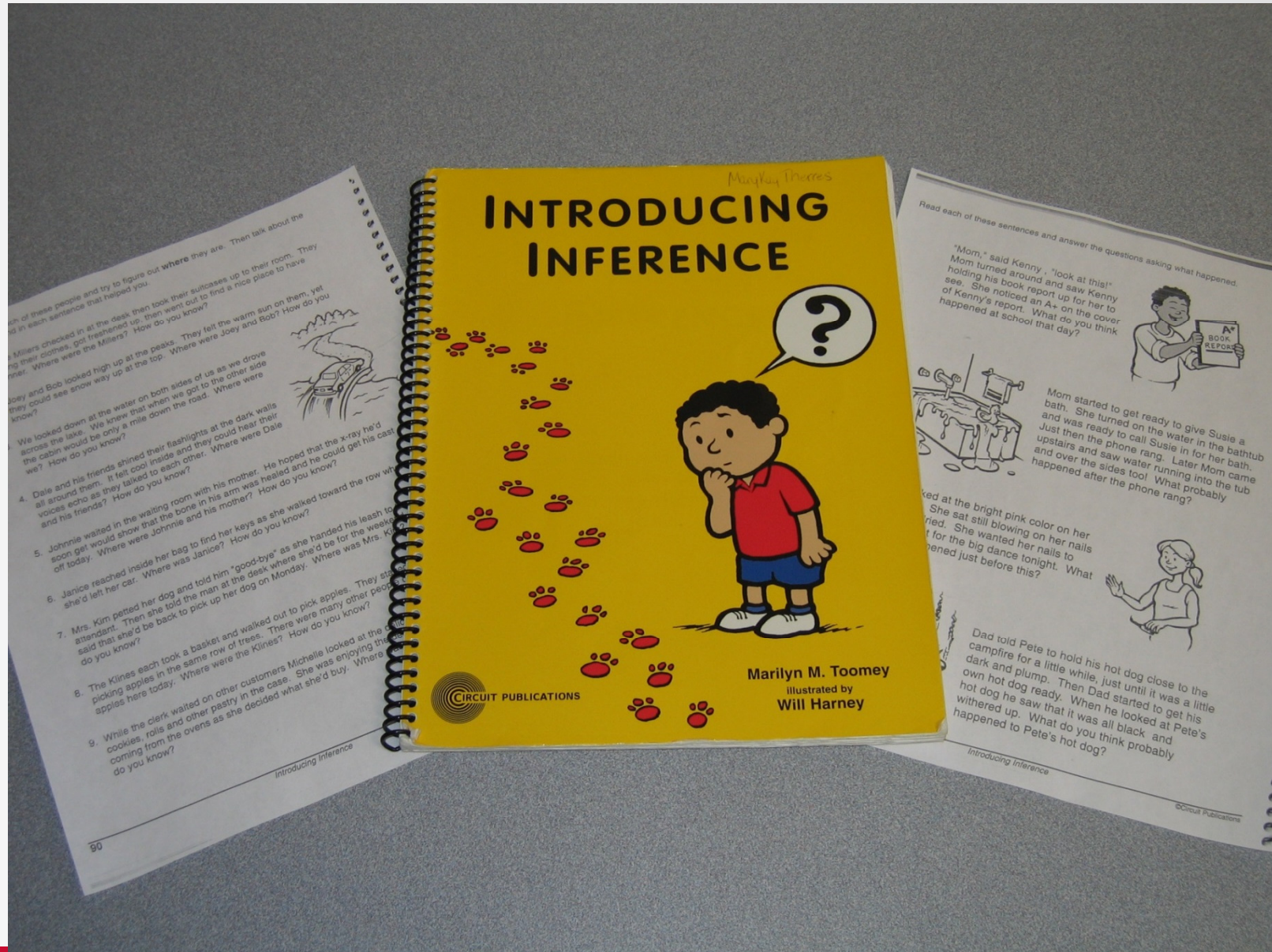
## Level 5B Increase Cognitive Language Skills

- Infer
- Interpret and Paraphrase
- Problem Solve
- Identify Missing Information
- Define and Explain
- Cause and Effect/Predicting
- Identify Main and Supporting Ideas about a Story
- Humor
- Figurative Language









# INTRODUCING INFERENCE

Marilyn M. Toomey



Marilyn M. Toomey  
Illustrated by  
Will Harney



...ch of these people and try to figure out **where** they are. Then talk about the ...  
...id in each sentence that helped you.

...Millers checked in at the desk then look their suitcases up to their room. They ...  
...ng their clothes, got freshened up, then went out to find a nice place to have ...  
...ner. Where were the Millers? How do you know?

...Joey and Bob looked high up at the peaks. They felt the warm sun on them, yet ...  
...they could see snow way up at the top. Where were Joey and Bob? How do you ...  
...know?

We looked down at the water on both sides of us as we drove ...  
...across the lake. We knew that when we got to the other side ...  
...the cabin would be only a mile down the road. Where were ...  
...we? How do you know?

4. Dale and his friends shined their flashlights at the dark walls ...  
...all around them. It felt cool inside and they could hear their ...  
...voices echo as they talked to each other. Where were Dale ...  
...and his friends? How do you know?

5. Johnnie waited in the waiting room with his mother. He hoped that the x-ray he'd ...  
...soon get would show that the bone in his arm was healed and he could get his cast ...  
...off today. Where were Johnnie and his mother? How do you know?

6. Janice reached inside her bag to find her keys as she walked toward the row vi ...  
...she'd left her car. Where was Janice? How do you know?

7. Mrs. Kim petted her dog and told him "good-bye" as she handed his leash to ...  
...attendant. Then she told the man at the desk where she'd be for the week ...  
...said that she'd be back to pick up her dog on Monday. Where was Mrs. Ki ...  
...do you know?


8. The Klines each took a basket and walked out to pick apples. They sta ...  
...picking apples in the same row of trees. There were many other peop ...  
...said that she'd be back to pick up her dog on Monday. Where was Mrs. Ki ...  
...do you know?

9. While the clerk waited on other customers Michelle looked at the d ...  
...cookies, rolls and other pastry in the case. She was enjoying the ...  
...coming from the ovens as she decided what she'd buy. Where ...  
...do you know?

Introducing Inference


Read each of these sentences and answer the questions asking what happened.

"Mom," said Kenny, "look at this!"  
Mom turned around and saw Kenny ...  
...holding his book report up for her to ...  
...see. She noticed an A+ on the cover ...  
...of Kenny's report. What do you think ...  
...happened at school that day?



Mom started to get ready to give Susie a ...  
...bath. She turned on the water in the bathtub ...  
...and was ready to call Susie in for her bath. ...  
...Just then the phone rang. Later Mom came ...  
...upstairs and saw water running into the tub ...  
...and over the sides too! What probably ...  
...happened after the phone rang?

...ked at the bright pink color on her ...  
...She sat still blowing on her nails ...  
...ned. She wanted her nails to ...  
...t for the big dance tonight. What ...  
...happened just before this?



Dad told Pete to hold his hot dog close to the ...  
...campfire for a little while, just until it was a little ...  
...dark and plump. Then Dad started to get his ...  
...own hot dog ready. When he looked at Pete's ...  
...hot dog he saw that it was all black and ...  
...withered up. What do you think probably ...  
...happened to Pete's hot dog?

Introducing Inference



## Auditory Level 5B: Processing/Comprehension

**Low Goal:** Sequence a 4-part picture story presented to child auditorily given 4 pictures that do not have a visual order.

**High Goal:** Listen to 2 – 3 sentences and infer meaning.

**Mastery:** low-sequence 6 different stories  
high-correctly infer from 8/10  
presentations

## Timeline Auditory Level 5B

	<b>comparable</b>	<b>functional</b>	<b>assist</b>
<b>Low Goal:</b>	16-24 m	18-30 m	na
<b>High Goal:</b>	24-36 m	30-36+ m	na

# Auditory/Receptive Language

Year 1: awareness, attaching meaning to routine, familiar vocabulary, starting to follow simple directions

- “open the door”
- “Show me your eyes”
- “Where is mommy?”
- “Time to go bye-bye”
- “Get your shoes and give them to daddy”

# Auditory/Receptive Language

Year 2: building auditory memory, following multi-step directions, beginning develop simple processing/comprehension skills (answering questions, identifying by description)

- “Get me an apple, banana and an orange”
- “Time to eat, turn off the TV and go wash your hands”
- “What is daddy doing?” “Where did your sister go?”
- “What is something to eat that is yellow, long and you peel it?”

## Auditory/Receptive Language

Year 3: has “surface structure” language (vocabulary, auditory memory, simple processing) and developing “deep structure”- advanced processing/comprehension (verbal reasoning skills, chunks of information, complex questions)

- “Mom was baking a cake and smoke started coming out of the oven, what happened?”
- Answering questions about a story-retain/recall
- “Why is the little girl sad?”

## 12 Essential Strategies

1. Acoustic highlighting
2. Auditory sandwich
3. Check for comprehension
4. Ask what they heard
5. Parent (or other) as model
6. Repetition
7. Rephrase
8. Pause/wait time
9. Expand
10. Extend
11. Clarification
12. Sabotage

## 12 Essential Strategies

- 1. Acoustic highlighting:** a sound or a sound in a word, word or phrase is slightly emphasized (highlighted) to draw child's attention to it. Can be used in any spoken language throughout the world.
- 2. Auditory sandwich:** gives the child three chances to listen: listen alone, 2. listen with support, listen alone. Supports can include point/gesture, show a picture/toy/object, speech read or sign.



- 3. Check for comprehension:** ask child specific questions about information presented.
- 4. Ask what they heard:** have child repeat. Particularly useful when checking auditory memory or auditory discrimination.
- 5. Parent (or other) as a model:** to provide appropriate response for child; after modeled then child is given chance to respond.



- 6. Repetition:** use if child does not understand or misses part of something. DO NOT OVERUSE.
- 7. Rephrase:** say it a different way or at a simpler level.
- 8. Pause/wait time:** pausing and waiting with anticipation encourages a child to listen and follow through with a task rather than waiting for the speaker to repeat. Some children require longer auditory processing time. Also used when encouraging a child to spontaneously verbalize.



- 9. Expand:** response to child in which word order is the same and utterance is made longer and/or grammatically correct. Recast into adult syntactic form.
- 10. Extend:** respond to child's utterance in conversational way, providing a bit of new information that is related to what the child had to say.
- 11. Clarification:** skill to teach child; child learns to self-advocate when breakdowns in communication occur; requests specific information rather than "I didn't hear you", "say it again".

## **12.Sabotage:** two ways

- adult creates a problem or makes a mistake to block a goal of the child, thereby creating a context in which the child needs to communicate if he/she wants to overcome the difficulty and proceed with the activity
- adult makes a mistake to give child opportunity to identify and correct the mistake

# Conclusion on Hierarchy, Goals and **MED**<sup>9</sup>**EL** Timelines

- Determine factors that may impact expectations for developing listening and verbal language
- Based on these factors can project outcomes, focus on therapy and techniques to be used- one size does not fit all
- Use monitoring tools, hierarchy of skill development to determine if child making appropriate progress expected
- If not, red flags, re-assess all areas and address
- Do not set expectations to low

# Ways to Monitor Auditory Development

LittEARS® Auditory Questionnaire (LEAQ)

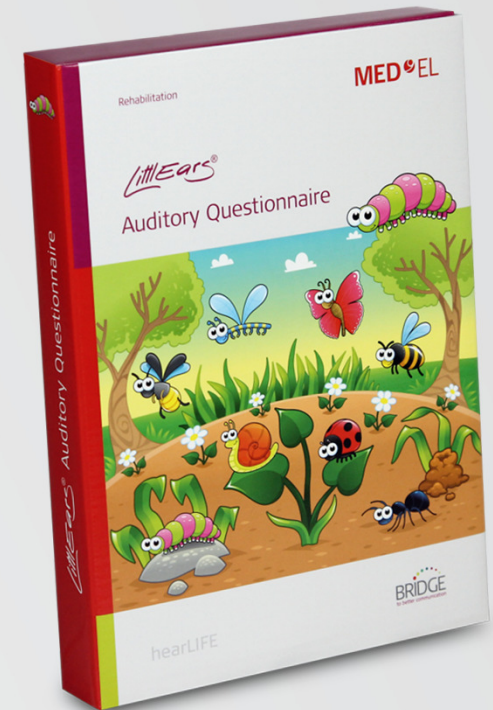
Auditory Skills Checklist

AuSpLan



# LittleEARS® Auditory Questionnaire

1. Normed
2. Acceptable for reimbursement



Can be used to...

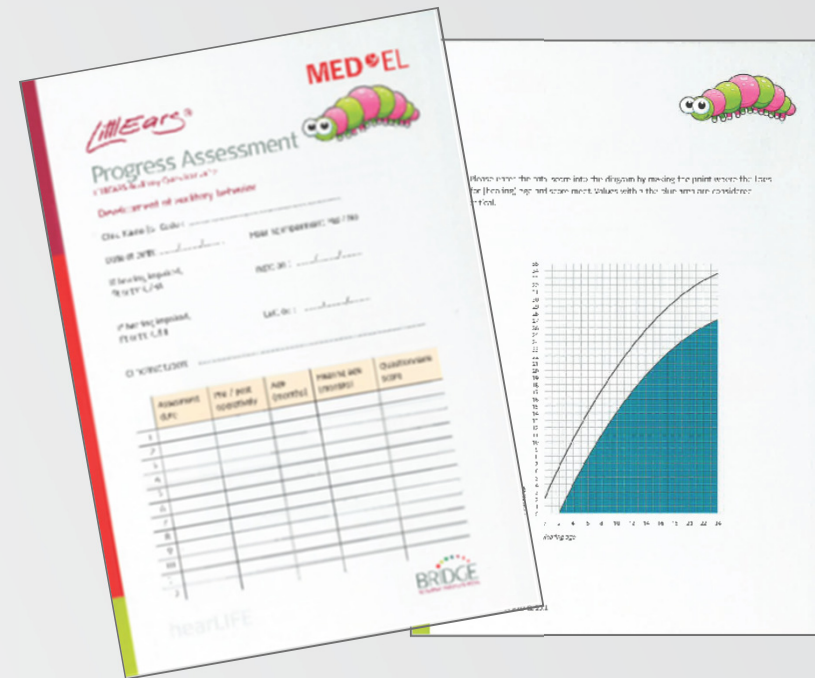
- 1) Initially assess the status of skills development
- 2) Over time document progress





# Progress Assessment Form

If used over a longer period of time, the results may be in the Assessment



## How to use LittleEARS Auditory Questionnaire?

A Parent-friendly questionnaire that can be used  
to reassess every 3-6 months

A very popular tool used by professionals in Early  
Intervention!

## Reliability?

“Studies show that parent evaluation is a suitable method to assess development in early childhood and to reflect the children’s everyday behavior.”

(Bates et al, 1988)

LittleEARS Auditory Questionnaire

## Objectivity of the LittleEARS Auditory Questionnaire

Scores were compared:

- 1) Parents completing the questionnaire under professional guidance versus completing the questionnaire alone.

Results: no significant differences

## Objectivity of the LittleEARS Auditory Questionnaire

Scores were compared:

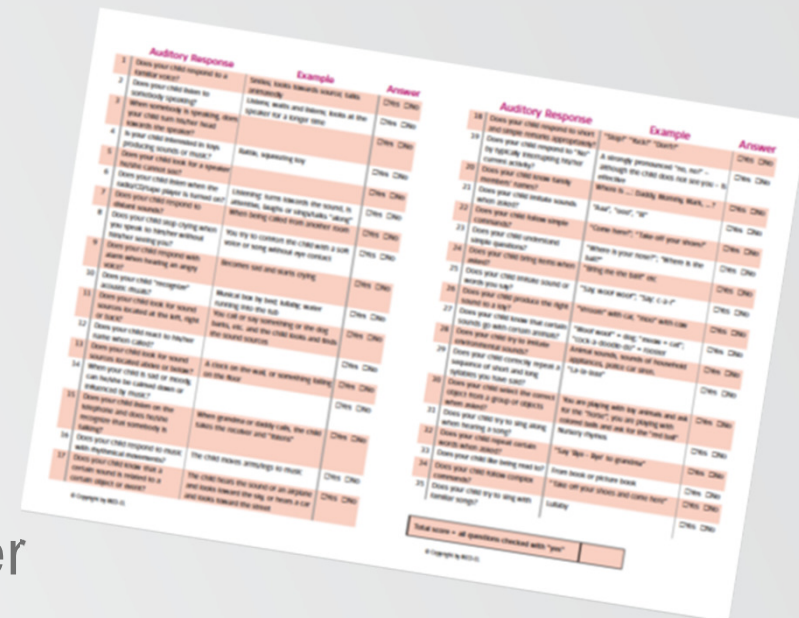
- 2) Gender differences: Boys versus girls

Results: No significant differences

# Implementing the LittleEARS Auditory Questionnaire

Parents are asked...

- 1) Read the instructions thoroughly
- 2) If the behavior has been observed at least once, answer “yes.” If not, answer “no.”



Questionnaire may be completed in a variety of settings  
i.e. home, therapy or school

## Implementing the LittleEARS Questionnaire

If the parents find it difficult to respond  
“spontaneously,”

they may take it home to complete  
when the child is in a  
familiar environment

# Implementing the LittleEARS Auditory Questionnaire

Why?

Some children with hearing loss can develop additional skills throughout the questionnaire

Addresses the possibility of “swiss cheese” auditory skills



## Analysis

The items marked “yes” are added and entered in the appropriate box in the questionnaire

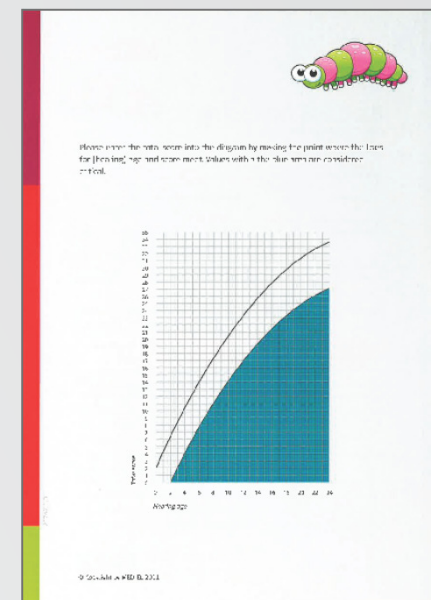
The sum total score is compared with the critical values in the table on the back of the LittleEARS Progress Assessment

This comparison facilitates the discussion of the current developmental status of the child’s auditory behavior

# Interpretation and Critical Values

Plot the hearing age in months and the sum on the chart

- 1) The blue area indicates that the child is in a critical stage in auditory development
- 2) Between the blue and the arc is an area of concern
- 3) On the arc or above is considered normal
- 4) Study showed that children who had received a cochlear implant under age 2 on average completed all items LEAQ by 16 months post implant



## Case Study

A mother brought her older child with hearing loss to a weekly auditory-verbal therapy session. Using the LittleEARS Auditory Questionnaire, the mother plotted the auditory skills development of her second child at the age of 7 months and the child scored in the normal range.

Four months later, the mother again completed the LittleEARS Auditory Questionnaire and the score indicated a hearing loss.

- A comprehensive audiological assessment was completed which indicated profound hearing loss.

## Developing Goals and Instruction

Sample Auditory Skill:

Does your child look for a speaker he/she cannot see?  
(sister crying in the other room)

- 1) Discuss other ways to identify this skill
- 2) Write a goal for an IFSP or IEP
- 3) Explicit instruction for promoting this auditory skill

## Developing Goals and Instruction

Does your child respond with alarm when hearing an angry voice? (Becomes sad and starts crying)

- 1) Discuss other ways to identify this skill
- 2) Write a goal for an IFSP or IEP
- 3) Explicit instruction for promoting this auditory skill

## Developing Goals and Instruction

Does your child produce the right sound to a toy?  
(“vroom” with a car, “moo” with a cow)

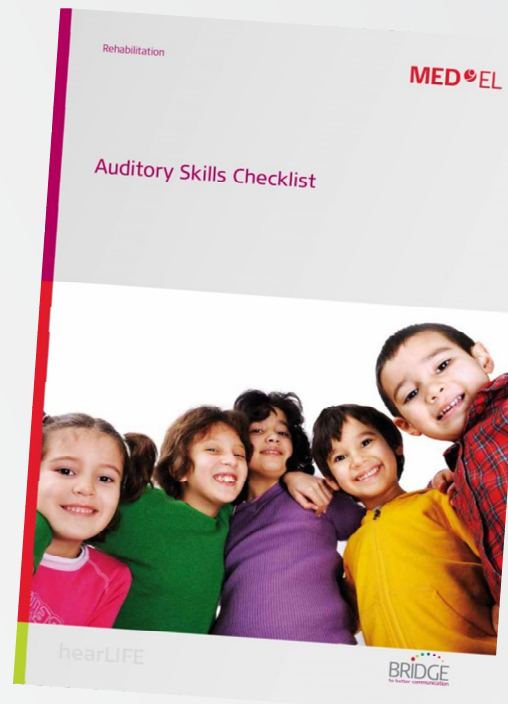
- 1) Discuss other ways to identify this skill
- 2) Write a goal for an IFSP or IEP
- 3) Explicit instruction for promoting this auditory skill

## LittleEARS Auditory Questionnaire

Any questions about the LittleEARS  
Auditory Questionnaire?

# Auditory Skills Checklist

- Developed by Nancy S. Caleffe-Schenck





# Auditory Skills Checklist

## Purpose:

- 1) Establish auditory goals
- 2) Track progress made in auditory areas related to spoken communication

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This checklist may be used to establish auditory goals, or track progress made in auditory areas related to spoken communication. It is expected that skills will overlap and several will be developing at the same time. Listening is an ever-changing process, and this list is not intended to be an exact order of skill development.

To track progress, check the appropriate answer for each item. Skills should be noted only if the child has responded using auditory cues alone, without any visual information such as speechreading or sign language. Additional space is provided to note details, such as *whether* responses were prompted or occurred spontaneously.

Awareness to sound:		
Child nonverbally or verbally indicates the presence or absence of sound. Example: Child's eyes widen when he/she hears mother's voice; child vocalizes in response to initiation or cessation of a sound.	<input type="radio"/> Never observed	0
	<input type="radio"/> Observed once	1
	<input type="radio"/> Observed 3 or more times	2
Attention to sound:		
Child attends to what he/she hears for an extended period of time (a few seconds or longer). Example: Child pauses and listens to father's voice.	<input type="radio"/> Never observed	0
	<input type="radio"/> Observed once	1
	<input type="radio"/> Observed 3 or more times	2

## Auditory Skills Checklist

To track progress, check the appropriate answer for each item

Skills should be noted if the child responded using auditory cues only, without any visual information such as speech reading or sign language

## New scoring

Verbal scoring (i.e., Never observed,  
Observed once, Observed greater than 3  
times)

**and**

Number scoring (i.e., 0, 1, 2, 3, 4, 5) for total  
score of 77

## Scoring

### Intrasubject design

Are comparing child's score to his/her previous score to determine progress

## Scoring

Auditory skills develop in a hierarchal order (Awareness to Processing/Comprehension)

### Questions

1 to 7 address Awareness

8-12 address Discrimination

13-17 address Identification

18-27 address Comprehension

Given this context you can talk to parents about the progress the child is making with regards to auditory levels of development

## Auditory Skills Checklist-scoring example

Goal: Auditory Memory of Nursery Rhymes or songs: Child recites salient parts of a nursery rhyme or song.

None	0
Intonation	1
Actions	2
Keywords	3
Most or all words	4

Auditory memory of nursery rhymes or songs:		
Child recites salient parts of a nursery rhyme or song.	<input type="radio"/> None	0
	<input type="radio"/> Intonation	1
	<input type="radio"/> Actions	2
	<input type="radio"/> Keywords	3
	<input type="radio"/> Most or all words	4

## Auditory Skills Checklist

Additional space is provided to note details such as whether responses were prompted or occurred spontaneously

## Developing Goals and Instruction

Sample Auditory Skill - Indication of onset vs. offset of sound: Child is able to indicate when sounds stop and start. Child moves a toy while the adult is vocalizing, stopping when the adult's voice stops or plays musical chairs appropriately.

- 1) Discuss other ways to identify this skill
- 2) Write a goal for an IFSP or IEP
- 3) Explicit instruction for promoting this auditory skill



## Developing Goals and Instruction

Sample Auditory Skill- Self-monitoring of speech using auditory model: Child modifies his/her speech to more closely match an adult model. Examples: Child lowers pitch of voice after listening to adult produce a lower-pitched sound, approximates articulation (such as producing “mmm” in response to hearing “moo”), or modifies speech from “pour” to “more” to match a spoken cue. Acquisition of this skill indicates that the child is able to use audition to improve speech production.

## Developing Goals and Instruction

Sample Auditory Skill- Self-monitoring of speech using auditory model

- 1) Discuss other ways to identify this skill
- 2) Write a goal for an IFSP or IEP
- 3) Explicit instruction for promoting this auditory skill

## Developing Goals and Instruction

Sample Auditory Skill- Auditory memory of digits: Child repeats numbers or letters in sequential order, such as “3-6-2-7” or “b-d-t-r”

- 1) Discuss other ways to identify this skill
- 2) Write a goal for an IFSP or IEP
- 3) Explicit instruction for promoting this auditory skill

## Developing Goals and Instruction

Sample Auditory Skill- Use of electronic sound sources: Child is able to understand a message from an electronic sound source, such as a recording, loudspeaker or radio. This does not include systems coupled to the speech processor, such as FM systems. Example: Child understands the message from a school loudspeaker or repeats a phrase from the soundtrack of a video.

- 1) Discuss other ways to identify this skill
- 2) Write a goal for an IFSP or IEP
- 3) Explicit instruction for promoting this auditory skill

## Developing Goals and Instruction

Sample Auditory Skill- Understands in background noise:  
Child comprehends primary speaker in the presence of background of noise or competing messages, such as in a crowded waiting room, a noisy restaurant or while music is playing in the therapy room.

- 1) Discuss other ways to identify this skill
- 2) Write a goal for an IFSP or IEP
- 3) Explicit instruction for promoting this auditory skill

## Auditory Skills Checklist

The Auditory Skills Checklist is frequently used as a “teaching tool” for parents

- 1) parents of the child with hearing loss
- 2) professionals who have a student with hearing loss in their classroom for the first time



# Auditory Skills Checklist

Any questions about the Auditory Skills Checklist?

# Case Studies

## Audience participation

## **Task:**

1. Identify child's auditory skill level using AuSpLan, LittleEARS Auditory Questionnaire and Auditory Skills Checklist
2. Is child making progress that would be expected yes/no?
3. Develop auditory goals and any other recommendations

## Conclusion

- Determine factors that may impact expectations for developing listening and verbal language
- Based on these factors can project outcomes, focus on therapy and techniques to be used- one size does not fit all
- Use monitoring tools, hierarchy of skill development to determine if child making appropriate progress expected
- If not, red flags, re-assess all areas and address
- Do not set expectations to low
- Set appropriate goals

MaryKay Therres

[marykay.therres@medel.com](mailto:marykay.therres@medel.com)

Virgi Mills

[virgi.mills@medel.com](mailto:virgi.mills@medel.com)

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