

**AUDITORY PROCESSING
LANGUAGE PROCESSING
ATTENTION DEFICIT
AUDITORY MEMORY**

SUZANNE M. FOLEY, M.S., AU.D. CCC-A
DOCTOR OF AUDIOLOGY
FOLEYAUDIOLOGY@GMAIL.COM
FOLEYAUDIOLOGY.PBWORKS.COM

1

**DR. SUZANNE FOLEY
DOCTOR OF AUDIOLOGY**

- Private Practice:APD/Balance/Pedes
- First Steps hearing tests
- Industrial Audiology
- Early Hearing Detection and Intervention Director
- Adjunct Faculty
- National Speaker- Bureau of Education and Research
- 18 years at VA
- Extern Supervisor- 20 years



2

**EhDI –EARLY HEARING
DETECTION AND INTERVENTION
PROGRAM AT ISDH**

- Information on table
- Please submit diagnostic information on any child diagnosed with hearing loss through age 3 – www.hearing.in.gov
- 2017 stats reviewed at EhDI update session today 3:30pm
- Goal of EhDI is to monitor all data from universal newborn hearing screening to diagnosis and provide ongoing support to families.
- Guide by Your Side
- Family Conference April 25th at ISD
- Newsletter list up front

3

Hearing is considered a foundation
for the general education
of all children

- Classrooms are auditory verbal -60-70% of instruction is auditory
- Academic and instruction is presented with the assumption that the child can hear, attend and understand voice
- High correlation between auditory, language and reading disorders
- Flexer, 1994 "On any given day, due to ear infections or middle ear fluid, 30% of kindergarten and first graders were not hearing enough to perceive the word-sound distinctions that underline the development of academic competence"

4

**HOW DO WE IMPROVE TREATMENT?
DIFFERENTIALLY DIAGNOSE**

- Evaluate/identify deficit areas to rule out or rule in to puzzle
- Review test results (psychoeducational/slp)
- Watch the students and their behavior
- Be specific –what is the student doing?
- Do not say "Did you hear me?"
 - Ask: "What did I just say?"
 - Oliver-Disney

5

APD DEFINITION
BY SUZANNE FOLEY

Normal peripheral hearing
APD=Ear to the Brain

Does the Child hear ?

CAT= CAT

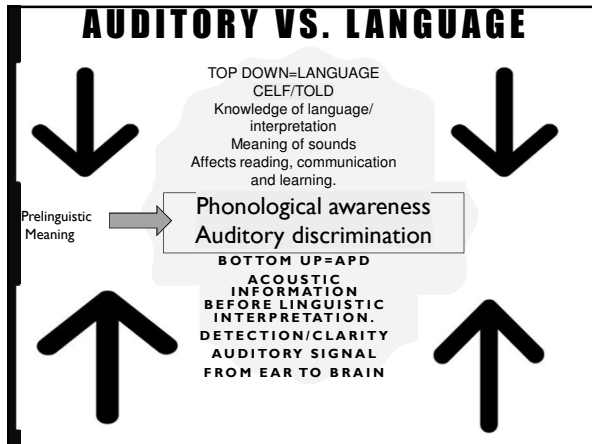
Or

CATCH = CAT

APD Testing DOES NOT test meaning,
interpretation or analysis
that is evident in reading, writing or oral
expression.

APD=Clarity

6



7

PHONOLOGICAL AWARENESS

- Why is PA in SLP world?????

Most important skill to develop language, memory and reading!

• Evaluate it!	Critical for preschoolers
• Train others and share resources	Home programming
• Add to therapy	

8

APD IMPACT ON ACADEMICS

- Where is child struggling **academically**? What subjects? Tests/homework? APD: language/reading
- **Communication** abilities? Verbal interactions, use of descriptive words? Pragmatic skills?
- **Reading problems**? Phonological Awareness (closest to APD), sight words (symbol imagery), reading comprehension (LP or ADD)??
- Evaluate/Screen for APD, phonological awareness, auditory memory, Language processing, **ESPECIALLY** if standard language assessments are normal.

9

CAUSES/CASE HISTORY

- Articulation-errors longer than normal
- Delayed language development
- History of chronic otitis media
- Jaundice
- 1% have a problem identified on

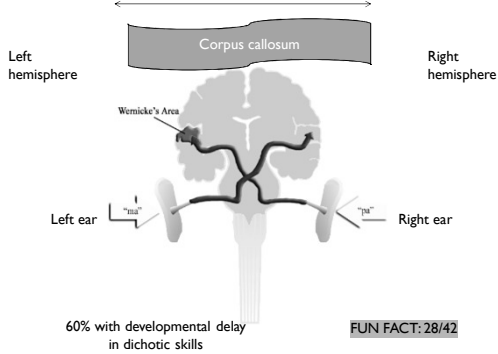
CT/MRI

****60% of APD is delay in auditory development- Right ear Advantage******



10

RIGHT EAR ADVANTAGE



11

UMBRELLA ISSUES

- Auditory , language, reading and writing skills affected by:
 - Executive Function
 - Memory
 - Attention
 - Cognition
 - Working Memory
 - Sensory integration

12

CHANGES TO EVALUATION AND TREATMENT OF APD

- ASHA / AAA – documents on PB works page
- Evaluation should identify specific skill deficits, not “apd”
- Treatment should be “deficit specific”
- Direct intervention due to neuroplasticity instead of just accommodations
- CAPD vs APD
- APD SIMULATION
- https://www.soundskills.co.nz/_literature_104671/Click_to_listen_to_an_Audio_Simulation_of_APD.mp3

13

SLP ROLE IN APD

- Gatekeeper for APD
- Screen for APD to rule it out or in!
- Evaluate, Treat and Teach strategies for auditory memory
- Identify behaviors consistent with ADD vs APD
- Provide direct treatment for APD (bottom up auditory training) Yes, there is evidence it works!!
- Provide education and training to teachers, staff, parents and students regarding academic strategies and home programming
- Compensatory strategies at a minimum for all children on our caseloads!

14

QUESTIONNAIRES

- Fishers Auditory Problems Checklist
- Sifter-Preschool and Secondary
- CHAPS
- Screening checklist: pbworks
- http://omnie.ocali.org/dash.php?cat=dash_tab_mn
(Under APD-referral checklist)

15

SCREENING TESTS

- Differential Screening Test of Processing-Linguistics- good for school based clinicians-refer to APD or to SLP. \$95.00 ages 6-12
 - 3 APD subtests: dichotic digits/temporal/auditory discrimination
 - 2 phonological awareness/3 linguistic subtests<http://linguistics.com/products/product/display?itemid=10387>
- SCAN-3 -Screening Test of Auditory Processing-subtests for screen/diagnosis (Pearson \$309)
- Auditory Skills Assessment: Pearson (preschool age)
- Evaluate: Auditory Discrimination and Phonological Awareness

16

SLP TESTS FOR APD SCREENING

- TAPS-3/4= auditory memory-digits vs words
 - Now Language processing test (\$195)
- Auditory Processing Abilities Test (academictherapy.com) \$130
- LAC/Pat-Phonological awareness
- Language tests with no visual subtests-recalling sentences
- Lower receptive language than expressive

17

PSYCHO-EDUCATIONAL TESTS AS SCREENING FOR APD

- Digit Memory
- Word/Sentence Memory
- Lower verbal IQ than performance
- IQ = Language Loaded
- Non verbal IQ test
- IQ AND APD TESTS

18

PRESCHOOL AGE

- Children in speech and language
- Therapy issues-home programming
 - Auditory, visual and motor
- Screenings for SIN-can do 3-6yrs old
- PSI/Goldman Fristoe Auditory Discrimination
- Implement strategies
- Continue monitoring of phonological awareness/reading skills
- Test at age six or seven
- Auditory Skills Assessment-Pearson

19

CURRENT INFLUENCES ON BRAIN DEVELOPMENT

- MOST POWERFUL FACTOR TO DETERMINE LEARNING POTENTIAL WAS EARLY LANGUAGE ENVIRONMENT: HOW MUCH AND HOW A PARENT TALKS TO THEIR CHILD
- Louder homes, reduced discussion and verbal interactions, poor diet
- Emotional toxicity (stress and adrenaline) decreases development of the brain for self regulation and executive function skills
- Critical age is 0-30 months-time when brain improves neural connections and "prunes" unused connections that lead to **potential**
- Multi media/multi –tasking divides brain attention
- Brain cannot do two cognitive processes simultaneously.
- Stability affects brain function-do children feel safe and home/school?
- Young brains determine length of focus by stimuli input
 - Short/multiple stimuli-results in shorter potentials

20

HOW CAN WE HELP!??

- Tune in, Talk More, Take Turns (30 millions words-Dana Suskind)
- Provide 0-30 month olds with baby talk, self talk, parallel talk
- Water and nutrition-at school and counsel parents
- Improve myelin development to make connections: Fla study
- Therapy: Make it experiential!!!! (Blake, Grocery) – scavenger hunt
- Increase verbal interactions-train parents!!!
 - Variety of vocabulary and family conversational habits affect IQ/Lang
 - Use meaningful words/facial expressions/gestures with activities
 - Self and parallel talk
 - Increased verbal interactions between parents and child improved vocabulary regardless of socioeconomic status.

21

DIAGNOSIS OF APD

- Must be made by audiologist-test names
- Can co-exist with other conditions
- Remove visual and language aspect of testing
- Rule out hearing loss and other conditions-average IQ
- Age of diagnosis 7 and over. Screenings from 3-5 yrs old.
- No gold standard of testing
- 60% of all APD can improve auditory function with interventions
- Purpose of diagnosis should be for remediation options
- Incidence is 3-5% of school age population-severe
- 60-70% of SLI have APD deficits (now or in the past)
- Higher ratio of males to females

22

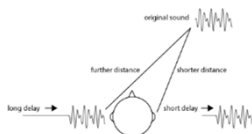
APD SKILLS

- BINAURAL INTERACTION
 - TEMPORAL PROCESSING
 - AUDITORY CLOSURE/DISCRIMINATION
 - DICHOTIC SKILLS
 - BINAURAL INTEGRATION
 - BINAURAL SEPARATION
- List of APD tests in PB Works

23

BINAURAL INTERACTION

- Cannot tell where sound is coming from
- Localization/lateralization
- Watch for unilateral hearing loss
- Not common
- Occurs at the brainstem level
- Tests: Spondee fusion/Masking Level Difference



24

AUDITORY CLOSURE/DISCRIMINATION

- Cannot fill in the blanks of what is not heard clearly
- Ability to hear differences in similar sounds
- Affected by poor acoustics, rapid speakers
- *Related academic issues: receptive language, decreased decoding (sounding out words), phonological awareness, difficulty hearing in noise.*
- Tests: Monaural low redundancy tests: Filtered words, Auditory figure Ground, SSI-ICM, Time Compressed Speech Tests

25

DICHOTIC SKILLS

- 60% of APD have this type of deficit
- Due to developmental delay in auditory skills
- Will improve through age 12
- Right ear advantage/left ear weakness
- *Related issues: short term auditory memory, clumsy/uncoordinated, poor verbal to motor tasks*
- Can't walk and talk
- Overwhelmed in noise
- **Binaural Integration**-both ears work together
- **Binaural Separation**-directed listening
- Phone examples



26

TEMPORAL PROCESSING

- Cannot hear timing changes in speech
- Misunderstand voice changes with sarcasm, humor and questions
- Timing of pauses and stress in speech changes meaning
- *Related issues: Poor rhyming, pragmatic issues, slow processors, weak nonverbal skills (IQ)*
- Tests: Duration Pattern Test, Pitch Pattern Test



27

APD RESOURCES-HANDOUTS

- Bellis, T. (2002) *When the Brain Can't Hear*, Pocket Books. (A Book for Parents)
- Foli, Karen (2002) *Like Sound Through Water*, Atria Books, New York.
- http://omnie.ocali.org/dash.php?cat=dash_tab_mn Resources under APD
- Terri Bellis: Assessment and Management of CAPD in Educational Settings textbook
- <https://www.speakingofspeech.com/iep-goal-bank.html> (IEP Goals) (on pbworks page)

28

APD IN SCHOOLS

- Treatment for significant APD will not come from school-needs more intensive intervention-private therapy, CBAT, etc
- APD does not qualify as OHI for 504
- Try for Communication disorder IEP with SLP
- Commonly misdiagnosed with Language Processing and Attention issues

29

TREATMENT OPTIONS

Suggestions on pbworks page

Improving Signal Quality-Accommodation-Bottom up

- Environmental Controls
- Classroom and Home strategies
- Assistive Listening Devices-FM systems
- CBAT
- **Traditional therapy-School/Private SLP**
- **Auditory training**



Enhancing Language Resources Remediation-Top Down

- Educational Programming
- Traditional therapy
- Reading programs
- Compensatory Strategies

30

TREATING APD

- No “cure-all” treatment, management approach, or intervention for all cases of APD
- Treatment must be diagnosis/skill driven
- Any treatment should include advocacy, therapy and academic application to demonstrate skills
- Importance of managing listening environment / compensatory strategies

31

AUDITORY TRAINING BASICS

- Auditory training changes central auditory performance
- Frequent, intense, and challenging auditory training = most significant improvement in auditory skills
- Evidence suggests that maximum benefit requires 45-90 minutes/day for several weeks (Bellis)-can mean home programming
- Wide variety of approaches and techniques (CBAT, home programming, private tx)
- Goal: 30 min 5 x week on deficit specific activities for 6 to 8 weeks



32

APPS-SEE REFERENCES

- <http://www.hamaguchiapps.com/>
- Acoustic Pioneer-eval: Feather Squadron
- <https://acousticpioneer.com/auditorytraininggames.html>
- Brain HQ-adults and adolescents
- www.virtualspeechcenter.com
 - Auditory Processing Studio, Workout
- Super Duper Inc.
- Zulilly-Super Duper items for sale
- APPS Wheel-Pbworks
- Ultimate Hangman
- Popplet Lite/Popplet (\$4.99)
- Minimal Pairs Academy
- www.successforkidswithhearingloss.com: Karen Anderson
- <http://bit.ly/Apps4HLListeningTherapy> (Tina Childress)
- www.speechbubble.com

33

AUDITORY PROCESSING VS ATTENTION DEFICIT

TYPES OF ADD/ADHD

- ADHD-HI
Hyperactive/Impulsive
- ADHD-I : Inattentive (higher incidence in girls)
- ADHD-Combined

APD SKILLS

- Auditory closure
- Temporal-timing
- Dichotic
- Binaural integration
- Binaural separation

34

DIFFERENTIAL DIAGNOSIS

- Look at Behaviors-can't follow multiple directions? Have them repeat directions for accuracy.
- Rule out APD or identify specific type of APD and related behaviors
- Tests of ADHD as controversial as those for APD
- Behavioral checklists/standardized testing for ADD
- Evaluate other evaluations
- APD: Lower verbal IQ, lower receptive language
- ADD: weak executive function/working memory
 - Look at TAPS-3 reversed number memory
 - Psychoeducational evaluations
 - Response patterns in ADD/APD-5 correct/5 incorrect
 - Unusual error patterns in testing
- ADD inattentive type most similar to APD

35

DIFFERENT BEHAVIORS

ADD

- Physical anomalies: Sleep/wake cycles, bladder/bowel control, alcohol/drugs
- Distracted by different stimuli: visual, tactile, smell, auditory
- Social issues are impacted by impulsive Expression due to lack of self control
- Impulsive/topic changing
 - Baseball game/don't ignore
 - Write it down/teach strategy

APD

- Exhausted from listening
- Distracted by auditory information.
- Social issues due to misunderstanding RECEPTIVE information and/or lack of expressive involvement.

36

DIFFERENT BEHAVIORS

ADD

- Academic performance is inconsistent/lack of retention
- Forgets assignments
- Good on homework, not tests-spelling words Thurs pm, not Friday test
- Fidgety behaviors/always moving/disruptive (ADHD)

APD

- Slow development of academic performance-delays
- Difficulty learning through auditory channel.
- No behavior problems

37

EXECUTIVE FUNCTION

“The ability to regulate adapt and control our behaviors, responses and actions for both present demands and for future oriented goals. Include: Attention, inhibition, working memory, fluency, strategic planning, initiation, flexibility and self monitoring”

Coordinate and integration skills

Each section of the orchestra can be good, but the conductor brings all sections together for the overall effect of the song.

So, there can be deficit areas in addition to EF deficits

38

DIRECT THERAPY DIFFERENT APPROACHES

ADD

- Decrease impulsive responses
- Shorter treatment sessions
- Use of reinforcement-
POSITIVE-reinforce the behavior you want
- Behavioral counseling
- Estimate timing
 - Watchminder/timers

APD

- Improve timeliness of responses (fast responses)
- Use of reinforcement for increased self esteem
- Communication counseling

39

MEDICATION TREATMENT FOR ADD/ADHD

Medication is prescribed in 88% of children diagnosed with ADD/ADHD
Studies show medication NOT helpful for APD
Several medications available for different types of attention
Dosage makes a difference!
Medication is only PART of treatment
Behavior modification is critical!
Counseling-ADD/ADHD coaches
Optional treatments – diet, bio (neuro) feedback – handout
Protein important for synthesizing neurotransmitters
School age children: 28-45 grams per day
Common elimination diets: Dairy, wheat/gluten, eggs, corn, nuts

40

ADD CLASSROOM ACCOMMODATIONS

- Teach editing skills-review your tests/work for careless mistakes
- Extended test taking time with resource assistance to stay on track
 - Also teach those strategies
- Give extra time to respond in class
- Written assignments along with verbal for poor memory
- Seating-not disruptive to other children
- ADHD-movement – hold ball, chew gum, fidget spinners, Velcro, paper clips, therabands, tennis ball on chairs, exercise ball
- Tests: give word bank or allow use of formulas
- Grading: drop lowest grade, allow extra credit on weak areas
- Music while studying-no lyrics: Alpha Binaural Beats
- Online textbooks or extra set of textbooks to reduce missed assignments

41

FOLEY FAMILY TABLE

- Evaluate each communication disorder first
- Recognize different types of ADD/ADHD and watch behaviors
- Include memory skills and executive function (formal or informal)
 - Behavior Rating Inventory of Executive Function (BRIEF)
- Add working memory and EF skill training into therapy and into classroom accommodations
- Train teachers
- Review type of ADD/ADHD and related Executive Functions

42

ADD RESOURCES BEHAVIOR MANAGEMENT HANDOUT

- *Teaching Teens with ADD and ADHD* –Chris Dendy, M.S.
- *Understanding Girls with ADHD*-Patricia Quinn/Kathleen Nadeau
- *Parenting Children with ADHD*- Vincent Monstra
- *Strong Willed Child*- James Dobson
- *Parenting the Strong Willed Child* -Rex Forehand
- *Raising Your Spirited Child*- Mary Kurcinka
- *Disconnected Kids*, Robert Mellilo
- *Explosive Child*-Ross Greene, Ph.D.
- *1-2-3 Magic*:Thomas Phelan-younger children
- *The Family ADHD Solution:A Scientific Approach*. Mark Bertin MD
- Addudemag.com –free newsletters via email/trainings
- Chadd.org
- *Adult ADD/ADHD resources-pb works*

43

RESOURCES EXECUTIVE FUNCTION

The Source: Development of Executive Functions: Jill Fahy/Gail Richard
Executive Skills in Children and Adolescents: A practical guide to assessment and intervention and *Smart But Scattered*, both by Peg Dawson and Richard Guare

Promoting Executive Function in the Classroom (What Works Best for Special Needs Learners) by Lynne Meltzer.

Sarah Ward: www.efpractice.com

Russell Barkley: *Executive Functions*: 2012 book

Delis Kaplan Executive Function System-Pearson

<https://jillkuzma.wordpress.com> – Social/Emotional management

Smarts Executive Function Program

<https://www.researchchild.org/smarts/> or <https://smarts-ef.org/>

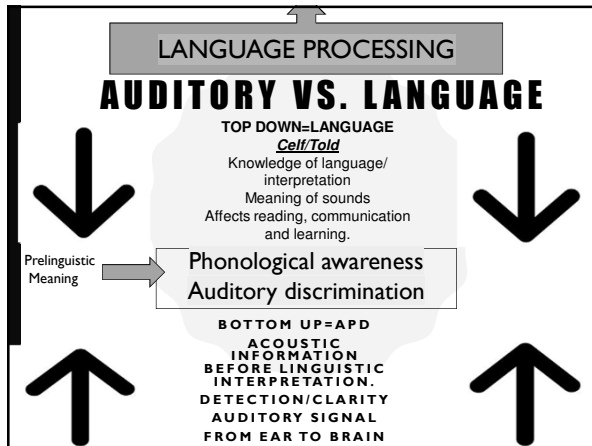
44

LANGUAGE VS AUDITORY PROCESSING

HINT: IT IS LIKELY LANGUAGE
PROCESSING
FOLEYAUDIOLOGY.PBWORKS.COM

CAPD=APD

45



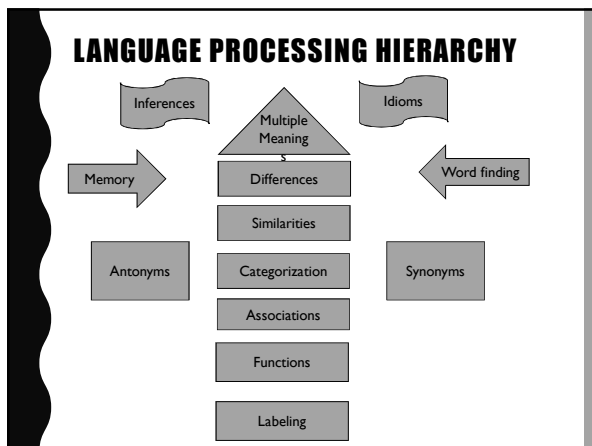
46

DEFINITION-GAIL RICHARD

“A Language Processing problem is difficulty with accessing acquired language abilities (ie: vocabulary) and efficiently integrating those skills to formulate more complex thoughts and formulate a response (verbal, behavior, gesture or written)”.

EVALUATE FOR LP WHEN STANDARD LANGUAGE TESTS ARE NORMAL

47



48

BEHAVIORAL ASPECTS OF LPD

- Problems with following directions (can repeat back information accurately)
- Problems understanding stories or concepts (main idea)
- Trouble “getting to the point” or answering questions with the appropriate information
- Difficulty naming objects or people (without visual)
- Difficulty knowing what to expect based on information they are given (thinking and reasoning)

49

TESTING FOR LPD-AGE RANGES

Rule out APD—confirm the clarity of the signal – can the student repeat the information accurately but not follow direction—

Reduce visual stimuli in language tests

- TAPS-3/4-Test of Auditory Perceptual Skills –Auditory Comprehension/Reasoning (TAPS-4)
- Comprehensive Assessment of Spoken Language (CASL)
- Listening Comprehension Test -2 –Elementary and Adolescent
- TOPS-Test of Problem Solving-Elementary and Secondary
- TOWL-Test of Written Language
- Language Processing Test-3
- Word Test-3-Elementary and Word Test -2 Adolescent
- Test of Word Finding 2
- Test of Narrative Language
- CELF-5 Metalinguistics
- Auditory Processing Abilities Test
- TILLS-Test of Language and Literacy Skills-Brooks Publishing
- OPUS (Oral Passage Understanding Scale)- Pearson

50

“TV SCREEN”/WORKING MEMORY

- Affected by working memory-target memory
- Ability to visualize verbal and written information
- Use symbol imagery
- Visualizing and Verbalizing
- Expanded Expression Tool
- Help them see the picture
- No detail in the picture!

51

HIGHER LEVEL VOCABULARY

- Emotions-envy, despair, proud, disappointed, uninterested, nervous, confident (Drew)
- Clever Endeavour, Plexers, Taboo, Apples to Apples
- You tube : Simon's Cat-non-verbal awareness and Spanish soap operas
- Descriptive words-without visual representation
- Give relevant examples-movies, etc.
- Read two line story and have them make a title
- Riddles –examples
- Rain/snow: how are they the same/different
- Vocabularycartoons.com

52

WORD FINDING

- The most educationally significant communication disorder. ---OUTPUT
- Under-diagnosed and under-treated
- Poor expressive language vs receptive
- Word Finding Checklist –see PB works/handout
- Help series for Word Finding (linguisystems)
- Rocky's Mountain - Linguisystems
- Word Burst/Language Burst/Word Finding app
- Diane Germane-Word Finding Program
- Teachers give choice for response/cues/extra time
- Stuck for Words
- Word retrieval for adolescents and adults (book)

53

TREATMENT OPTIONS

Linguisystems

- Language Processing Treatment Activities
- Help series
- Spotlight book series-Listening Comprehension and Reasoning and Problem Solving

- Language Processing Treatment Activities-Gail Richard (Pro-Ed)

Visualizing and Verbalizing –Lbell

Buttons with face, house, clock as bookmarks

Expanded Expression Tool (EET) www.expandingexpression.com
<http://www.northernspeech.com/early-intervention-language-and-speech/eet-expanding-expression-tool-kitmdash2nd-edition/>

- <https://youtu.be/WrBEXEzN5CU>

Story, Grammar, Marker www.mindwingconcepts.com

Narrative Language Measure "Story Champs"

<https://www.languagedynamicsgroup.com/products/story-champs/story-champs-about/>

54

LPD RESOURCES

- Spingo –nouns/verbs/adj- 3 years to 4 th grade
- Reading Camp
- www.havefunteaching.com
- Superduperinc.com “What would” apps
- Advanced Sentences – Academic Vocabulary: Smarter Balance
- Songsforteaching.com – vocabulary building songs and raps for older students – can download
- Tribond game
- Flocabulary: vocabulary per grade level
- www.superpowerspeech.com
- www.thecommunicationwindow.com
- Between the Lines app
- “No-Glamour Auditory Processing”
- “WH” Chipper Chat (super-duper)

55

FOLEY FAMILY TABLE LANGUAGE PROCESSING

DO NOT DISCHARGE
ELEMENTARY
WITHOUT
EVALUATING LP

MONITOR OR
EVALUATE FOR WORD
FINDING

EARLY INTERVENTION:
PHONOLOGICAL
AWARENESS AND
PHONOLOGICAL
MEMORY

DIRECT VOCABULARY
INTERVENTION
“ACADEMIC
VOCABULARY”

56

MEMORY

57

GENERAL AUDITORY MEMORY

- Training in phonological awareness can improve short term auditory memory BUT must use phonological articulation features (how phonemes feel-Lips) Short term auditory memory highly correlated with phonological awareness and then to working memory
- Negatively impacted by poor self esteem
- Not being developed spontaneously in our students
- PHONOLOGICAL AWARENESS!!!! ALL AGES
- **ADHD students: harder due to lack of short term memory skills and lack of sleep---they know they cannot remember- increased anxiety without strategies**
- **Phonic rules, basic algebra formulas**
- **Affected by lack of sleep-ADHD**

58

AUDITORY MEMORY EXPECTATION PER AGE (CROWE ET AL. 2004) –HANDOUT-PB WORKS

Age	Numbers	Sentence Length (words) FAMILIAR WORDS
4-5	4 digits	7-8 words
5-6	4 digits	9 words
6-7	4 digits	10 words
7-8	4 digits	11 words
8-9	4 digits	13 words
9-10	4 digits	13 words
10-11	5 digits	14 words
11-12	5 digits	14 words

59

TYPES OF MEMORY

- Short Term Memory-earliest skill
- **Span of STM related to familiarity of stimuli**
- Working Memory
 - based on short term memory development
 - Role in early language development and executive function
- Visual Memory
- Long Term Memory

60

EVALUATE OR ADDRESS MEMORY SKILLS

- ADD to your battery of tests!!
- Taps-3-TAPS-4
- Phonological memory and awareness tasks (CTOPP)
- Phonological awareness and auditory memory highly correlated
- Language tests with word and sentence memory
- Psychological tests: digit and word memory
- Test of Memory and Learning-Pro Ed
- Children's Test of Non word repetition-Pearson
- Auditory Processing Abilities Test (Houghton Mifflin)
- Wide Range of Memory and Learning – 2 (WRAML)
- Michigan Memory Unrelated Sentences Test

61

THE "BASICS" OF AUDITORY MEMORY TREATMENT

- Improve acoustics (FM)
- Visual adds 20%
- Increase language and vocabulary familiarity
- Speech therapy to teach rehearsal, mnemonics
- Use music/tempo
- FM, behavior, study skills
- Attention first!
- Participation in an event (vs observation)
- Pre-teaching/Awareness
- ANY AGE: PHONOLOGICAL AWARENESS –better than drilling auditory memory

62

TREATMENT FOR SHORT TERM AUDITORY MEMORY

- Directed listening-list for repeated words in story
- Practice Listening and writing information
- Play telephone game
- Teach strategies and try them (trial and error)
- Software-Hear Builders-Auditory memory
- Home programming: Give parents suggestions
- Turn taking practice
- Drill with familiar words in categories first and go to unrelated words
- Use nonsense words
- *****Phonological Awareness and Memory*****

63

LONG TERM MEMORY DEFICITS

- The warehouse for preserving knowledge, skills and life experiences
- Critical for accessing previously learned information and for learning and retaining new information
- Difficulty following procedures
- Inability to remember rules as patterns (sound/letter correlation)
- Story recall on psychological tests
- **Due to an emotional experience: parallel parking**

64

WORKING MEMORY

- Ability to store and manipulate information (visual or auditory)
- Capacity is not "amount of storage" but is affected by ability for control and attention while protection from interference
- Visualization/Symbol Imagery
- EXECUTIVE FUNCTION!!
- Two parts of WM
 1. phonological memory (STM)
 - Decoding/spelling
 - Evaluate non word repetition
 2. functional memory
 - Listening comprehension
 - Reading comprehension

65

WORKING MEMORY REMEDIATION

- Use visual and auditory first and reduce visual
- Provide delay in stimuli*****
- Add game changers "after, before, instead of"
- I am going to Grandma's house and need to pack".....
- Air writing
- Add to picture using "wh" questions
- Have them make picture physically (they make it)
- Rapid naming tasks (phonological process of WM)
- Practice memory in reverse
- Use symbol imagery to improve visualization
- Improve vocabulary knowledge

66

STRATEGIES

- Use color to highlight key facts or code materials
- Acronym/Acrostic: "King Henry Died Monday" (kilo, hector, deka, meter)
- Sub localization rehearsal (strategy)
- Multi- sensory approach initially with goal to only need auditory stimuli.-visual reminders
- Abbreviations/Acronyms
- "Think and Listen"
- Association: "confiscate" when your mom took your phone

67

FOLEY FAMILY TABLE

- Start by evaluating short term auditory memory and phonological awareness and memory: Targeting these skills will improve overall language
- Add memory skill training to your sessions and just as importantly, in classroom/academic accommodation(504).
- Teach student strategies as memory will likely be deficit –must be done by trial and error-SHARE WITH PARENTS AND TEACHERS
- Teach student compensatory strategies and to use visual/writing
- OBSERVE CLASSROOM AND INSTRUCTIONS FOR APPROPRIATE LENGTH AND VOCABULARY.

68

FOR ALL STUDENTS APD, LD, SLI, ADD/ADHD

- ADVOCACY
- CLASSROOM STRATEGIES
- ACADEMIC PLANS/IEP
- COMMUNICATION STRATEGIES
- DIFFERENTIAL DIAGNOSIS

WE ARE THE EXPERTS-EDUCATE PARENTS AND
TEACHERS

69

FOLEY FAMILY TABLE

FOR ALL STUDENTS WITH LD/LPD/ADD/APD

Help our students learn to ask this question?

“What can I do right now to change the environment, myself or the message to improve my ability to listen and understand?”

70

STUDENT ADVOCACY

- To establish workable strategies for a student
- Students must understand why they have difficulties. (ie: preferential seating-do they know why?)
- Teach them visual stimuli helps!
- Teach student scripts on how to ask for repetition in class or during social interactions
- “Sophie Factor” – Find a friend in each class
- “Whole body Listening” or “Listening Bear”
- Test taking strategies
- “A Metacognitive Program for Treating APD” by Patricia McAleer Hamaguchi
- Social Skills
<http://www.boystowntraining.org/lesson-plans.html>

71

SCHOOL SUGGESTIONS

**SLP Role: Teacher training/education/resource

Goal: Improve access and retention of auditory information

- Classroom/Environment changes-FM, Preferential seating
- Academic Plan Changes
- Teaching style-accents/organization
- Teacher In-Service Handouts on PB works



72

SPECIFIC APD COMMUNICATION SUGGESTIONS

- Auditory Closure- REPETITION, NOT REPHRASE
- Temporal Processing- Slow rate of speech, Repeat once, then rephrase
 - Use dramatic speech inflection
- Dichotic (R/L hemisphere)- EITHER Listen OR Write-not both
 - Note taking friend. Use of smart pen. Record lecture

WHAT DID I JUST SAY?

73

GENERAL ACADEMIC ACCOMMODATIONS

- Extra set of textbooks/online for preteaching
- “Sophie factor” or note taking buddy
- Notes/outlines ahead of time printed
- Academic vocabulary training
- Watch movie before novel
- Teacher style-ADD-organized; SLI/APD-dynamic
- FM systems for all types of students-sound field
- Observe classrooms for noise levels –CDHHE
- Teachers talk slower; not louder (110w/min: 160 now)

74

ACADEMIC PLAN CHANGES

- Foreign language waiver/substitute
- Pre-teach vocabulary-Aztec/Incan
- Study Skills Training-note taking
- Multi – Sensory approach= Visual, Tactile and Auditory
- Hyperacusis: Sensitivity to sound
- Do not use headphones to block sound consistently
- Increase exposure to limit limbic system reaction
 - le: train noise at home

75

TECHNOLOGY IN CLASSROOM

- Smart Pens and Apple Pencils
- C pen reader pen/Dictionary Pen/Exam Reader
- Smart Boards- can record
- Speech to Text (Microsoft translator- free
<https://translator.microsoft.com/help/education/>)
- Kurzweil Speech to Text
- Learning Ally, Epic and Book Share -narrated textbooks
- Parent portals/Teacher websites
- Online document storage
- Googledocs-add ons-tools
- Read,Write, Google and Snap and Read
- Co-writer
- Inspiration Maps

76

Suzanne Foley, M.S., Au.D., CCC-A
Doctor of Audiology
7440 N. Shadeland Avenue
Suite 115
Indianapolis in 46250
phone: 317-573-4445
fax: 317-577-7330
foleyaudiology@gmail.com
<http://foleyaudiology.pbworks.com>

77
