

Increase the Gain by Training Your Brain!

PARENTS- YOU CAN HELP TRAIN THE BRAIN!!!!

DAVID C. FAHNLE, MA
DALLAS REGIONAL DAY SCHOOL FOR THE DEAF

PURPOSES OF THIS PRESENTATION.....

- PROVIDE SOME BASICS ABOUT BRAIN DEVELOPMENT
- DISCUSS THE CARE AND FEEDING OF THE BRAIN
- PROVIDE EXAMPLES OF HOW TO TRAIN YOUR CHILD'S BRAIN WITH A VARIETY OF ACTIVITIES

Today's session will have
THREE distinct parts:

- How our brain develops and uses memory
- How we can help our children develop a better language processing memory
- Your questions, comments, ideas and concerns

PART I- HOW WE DEVELOP AND USE MEMORY

EVERYONE HAS A STARTING POINT

- Your I.Q. is governed by your verbal and non-verbal experiences.
- When you are born, your brain is malleable- a little like Play-Doh.
- Is your I.Q. set in stone?
- What are some of the components measured by I.Q.?



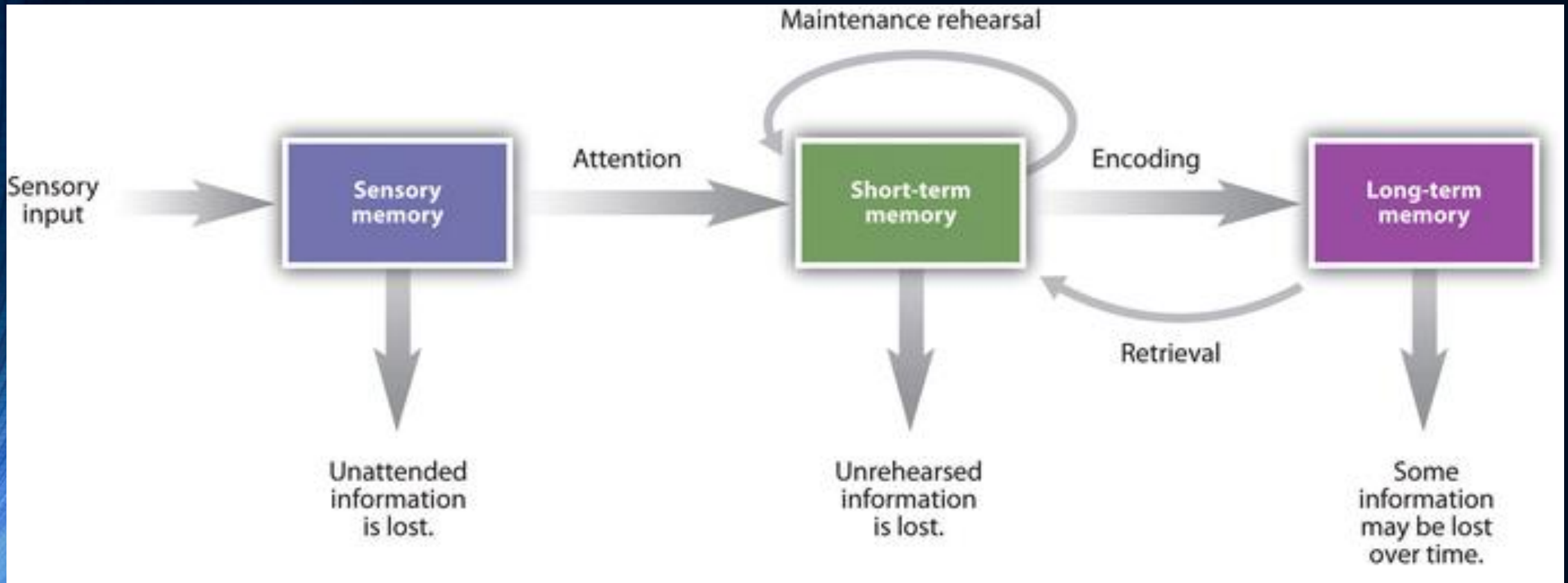
COMPONENTS MEASURED BY I.Q. TESTING.....

- Verbal I.Q.- Those components of thinking that involve the use of language, vocabulary, word/sentence relationships.
- Non verbal I.Q.- Those components of thinking that involve the use of numbers, shapes , pictures and spatial relationships.
- These elements of I.Q. form your Crystallized Intelligence- What you know from your experiences.
- Crystallized Intelligence governs how well you retrieve information (working memory).

What are some interesting facts about brain development?

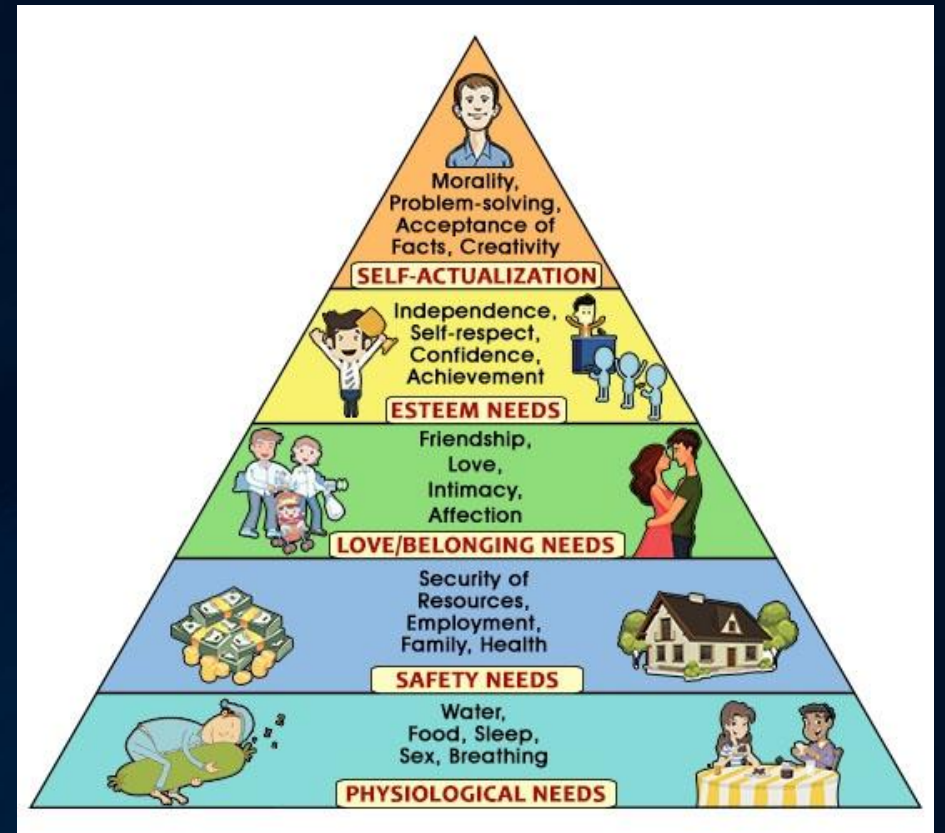
- From birth to 6 months, the infant's brain can react to phonemes from any language in the world.
- At six months, this capacity is lost.
- At 20 months, a child knows about 130 words.
- At 24 months, a child knows about 300 words.
- Third grade achievement is directly related to early language exposure.
- If a child is to develop perfect pitch, they must do so before age 7.
- To speak a foreign language with the correct accent, you must learn to speak it by puberty.

How does information move from short term to long term memory?



What are some things that affect your memory?

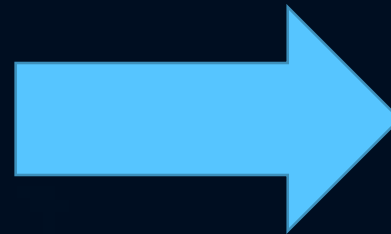
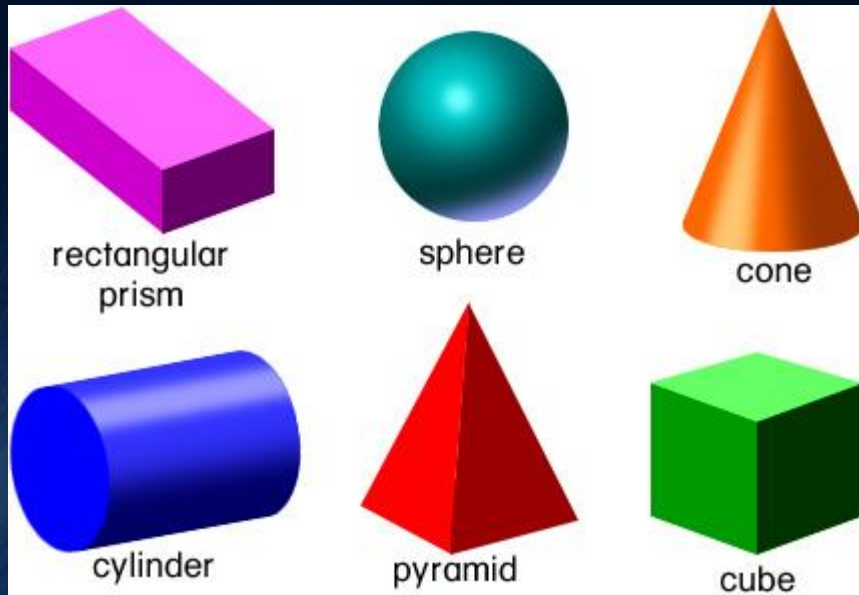
- Your last interaction with another person
- Your nutrition (avocados, beets, blueberries, bone broth, broccoli, celery, coconut oil, dark chocolate, egg yolks, extra virgin olive oil, green leafy vegetables, rosemary, salmon, turmeric, walnuts are good for your brain)
- Stress (Why do ministers say, "Repeat after me," and usually speak in 6-7 word phrases?)
- Your emotional interpretation of an action, statement or event
- Your interest/investment in the topic(s)
- The amount of sleep/rest from the previous night



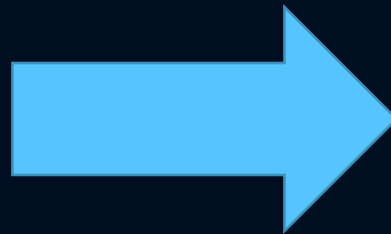
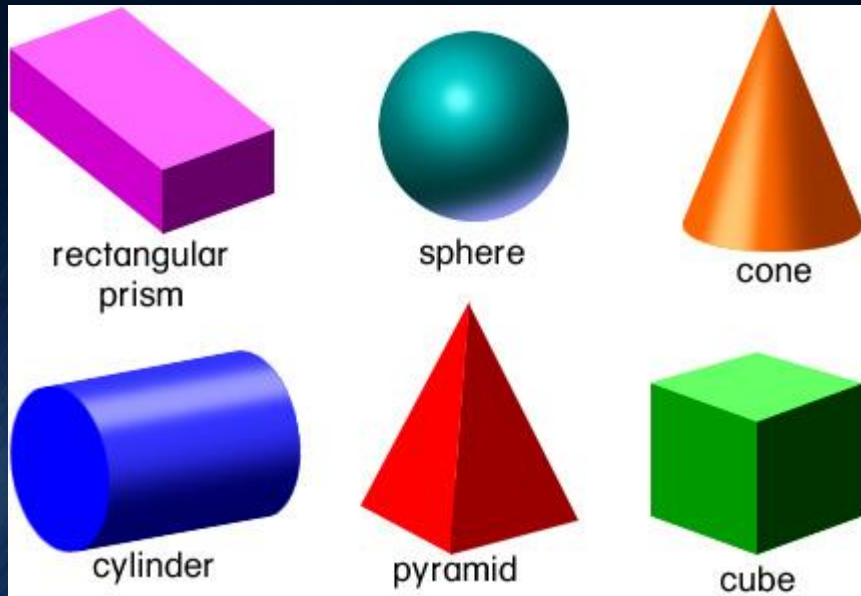
Children encode and decode meaningful experiences according to their own “filing systems.”

The challenge is for everyone else to be able to read and understand those memory files.

How is my child storing events/information/concepts/ideas? (i.e.- What is a cylinder?)



How is my child storing events/information/ideas/memories? (i.e.- What is a cylinder?)



How is my child storing events/information/ideas/memories?

Try this: Provide a reminder of a specific event- "Remember when we went to the beach? I'm going to show you some colors. (BLUE, GREEN, RED, PURPLE, ORANGE, YELLOW)

Tell me which color reminds you of the trip to the beach? "

Listener responds and then you ask: "Why does this color remind you of the beach? "

Realistic: "Yellow because the sand is yellow. Blue because the water is blue."

Emotional: "Red because I got a bad sunburn. Purple because I had a purple swimsuit."

PART II- HOW WE HELP
CHILDREN DEVELOP A BETTER
LANGUAGE PROCESSING
MEMORY

“The development of a mature central auditory system is a necessary component for the eventual development of age-appropriate auditory memory capabilities.”

WOOD, KELLY L., “A CRITICAL PERIOD OF DEVELOPMENT FOR AUDITORY MEMORY AND THE AUDITORY SCAFFOLDING HYPOTHESIS” (2013) INDEPENDENT STUDIES AND CAPSTONES, PAPER 673. PROGRAM IN AUDIOLOGY AND COMMUNICATION SCIENCES, WASHINGTON UNIVERSITY SCHOOL OF MEDICINE. [HTTP://DIGITALCOMMONS.WUSTL.EDU/PACS_CAPSTONES/673](http://digitalcommons.wustl.edu/pacs_capstones/673)

CLOSED SET VS. OPEN SET

CLOSED SET- A SET OF TASKS OR ACTIVITIES THAT ARE GOVERNED BY WHAT IS OBSERVED OR EXPECTED BY THE LISTENER IN THE ENVIRONMENT.

(EX. AT HOME, AT 5:00 P.M., YOU SAY, "TIME FOR DINNER" AND THE LISTENER COMES TO THE TABLE)

OPEN SET- A SET OF TASKS OR ACTIVITIES THAT ARE OUTSIDE THE NORM OF WHAT IS OBSERVED OR EXPECTED BY THE LISTENER IN THE ENVIRONMENT.

(EX. AT HOME AT 5:00 PM., YOU SAY, "TURN OFF THE LIGHT AND GET READY FOR BED.")

Self-Help for the Listener- How do I Prepare to Remember What I'm Hearing?

Using self-talk

Using verbal rehearsal to remember the number of items

Concrete objects that match the number of items or a paper with the correct number of blanks drawn that correspond to the number of items that you must listen to.

Start by allowing some notetaking, since we want to establish responsible work behaviors tied to listening.

“Take out your planners and write down the homework for tonight.”

A few simple listening tasks as warm ups:

- Start with reading lists of digits and having the listener repeat them back in the correct order. The point to begin practice is the point where errors are noted. Example: "Cannot repeat four digits given by the speaker" All practice focuses on that number of digits in the correct order until there is 90% mastery. ***NOTE THAT THE AVERAGE PERSON STRUGGLES WITH RECALLING MORE THAN SEVEN DIGITS.***
- The next task is to read lists of digits and have the listener repeat them back in the opposite order. This is the way to test how the brain works in encoding and decoding details in a specific order. Example: Speaker says: " 1, 3,5,7" Listener says" 7,5,3,1"

Now more complexity:

- Start with speaking simple strings of letters and having the listener repeat the letters back in the correct order. The point to begin practice is the point where errors are noted. Example: "Cannot repeat four letters given by the speaker" All practice focuses on that number of letters in the correct order until there is 90% mastery. ***This is not about spelling words at this point . It is ONLY about remembering and repeating letter patterns.***
- ***Ex. Repeat these letters back in the correct order: " a r e", "l a r k", " e m o j l", "r s t m o v"***

And adding to the complexity.....

I am going to say some letters to you and I want you to tell me the words that those letters spell:

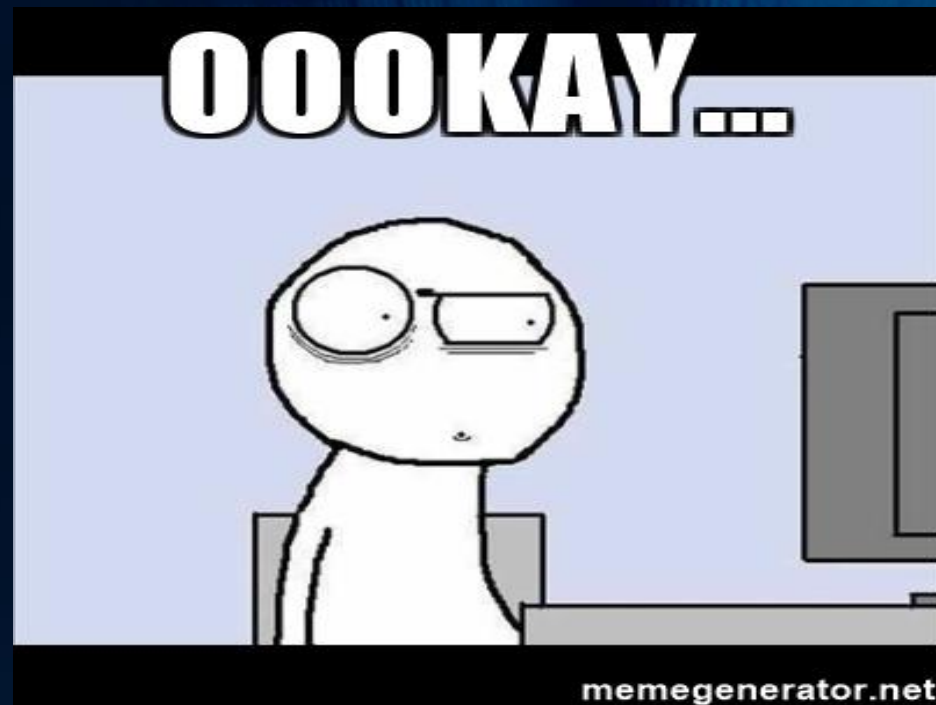
"c a r".... "car"

"f a r m".... "farm"

"c h a i r".... "chair"

"p e n c i l".... "pencil"

AND NOW, A DEMO.....



What is a good place to start with developing auditory memory?

Recall of one familiar word or idea

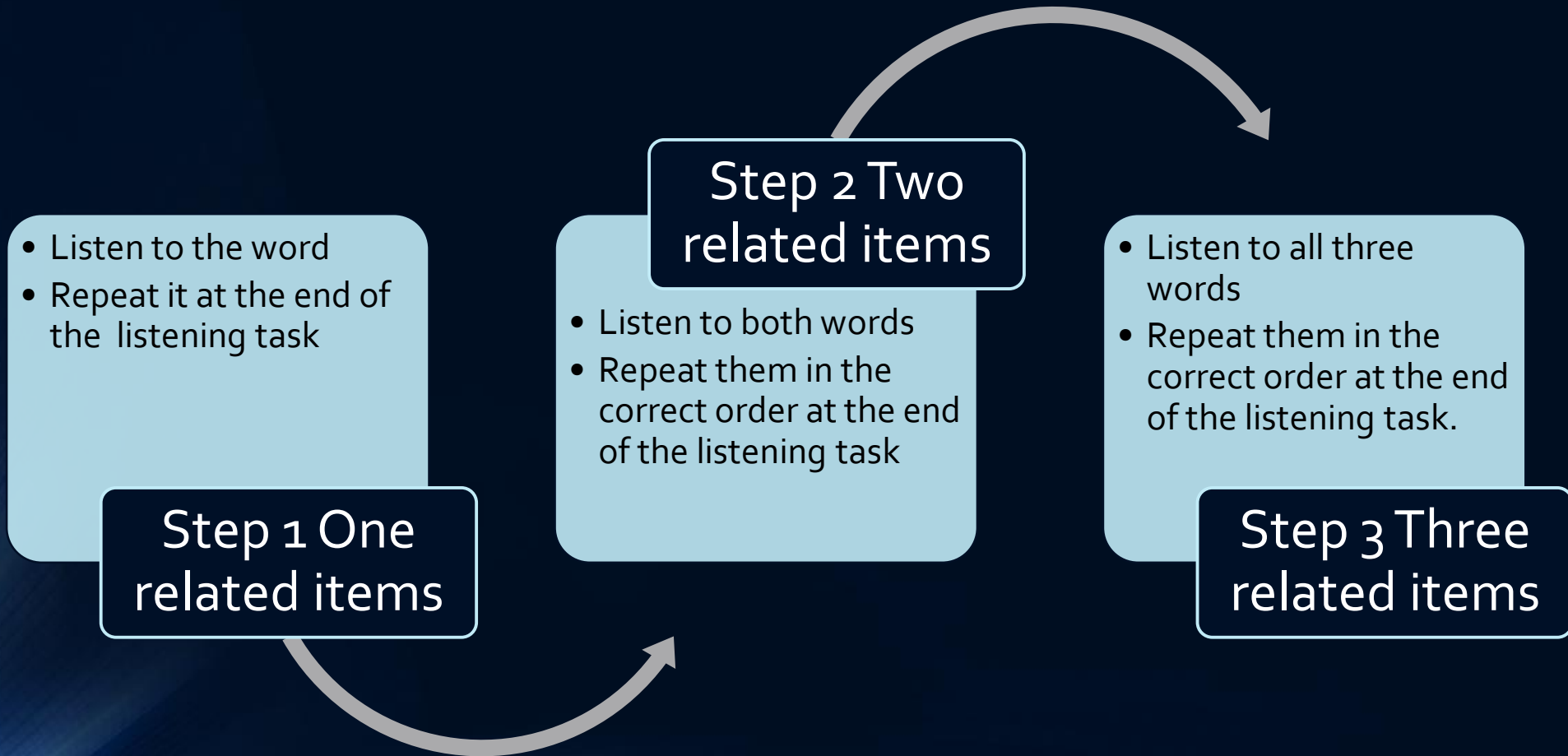
- Select a topic based on the age/interest of the listener
- Name one idea/thing from that topic for the listener. Ex. "banana."
- Speak for about one minute on the topic of "fruit" to the listener.
- Ask the listener to repeat the one idea/thing that you told the listener at the beginning.



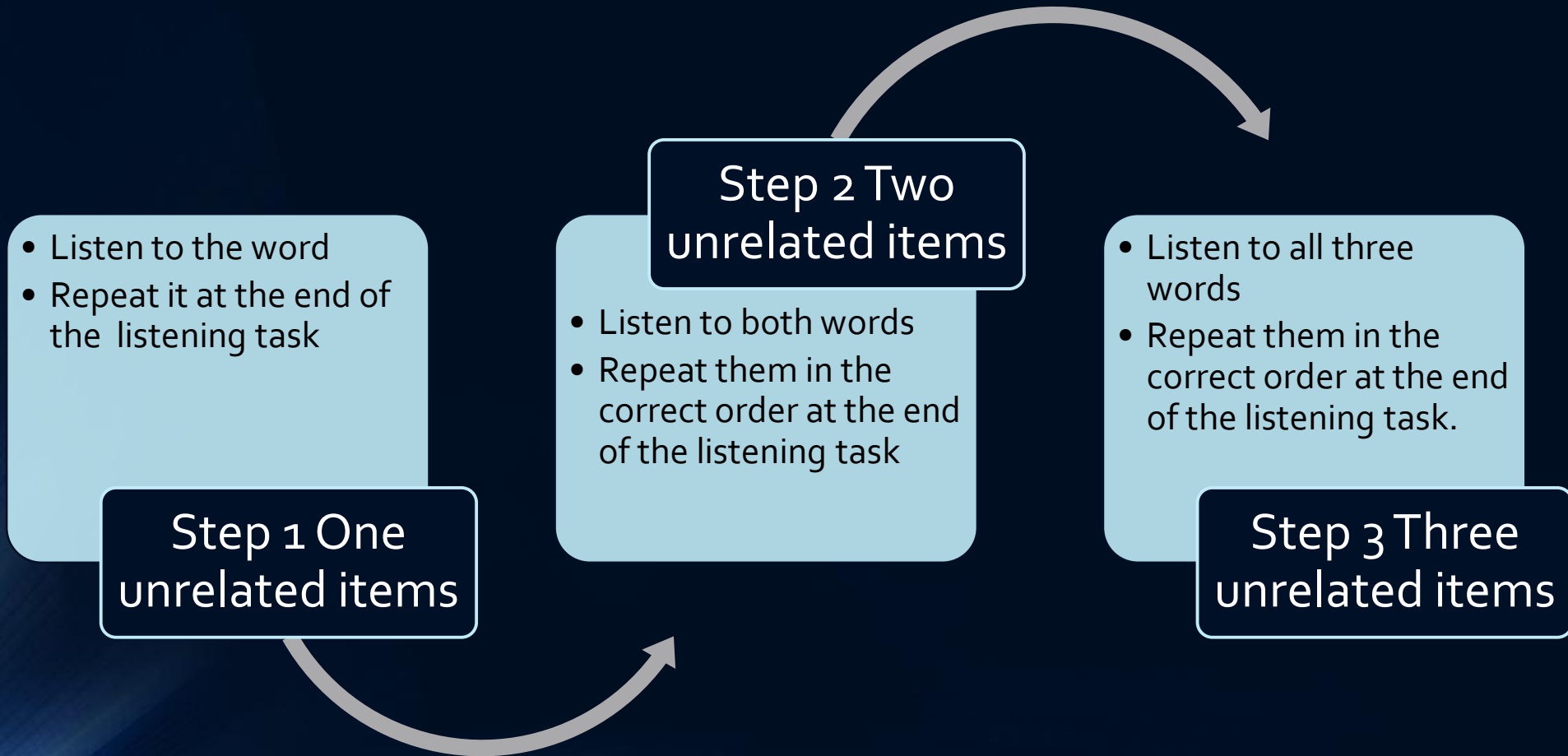
AND NOW, ANOTHER DEMO.....



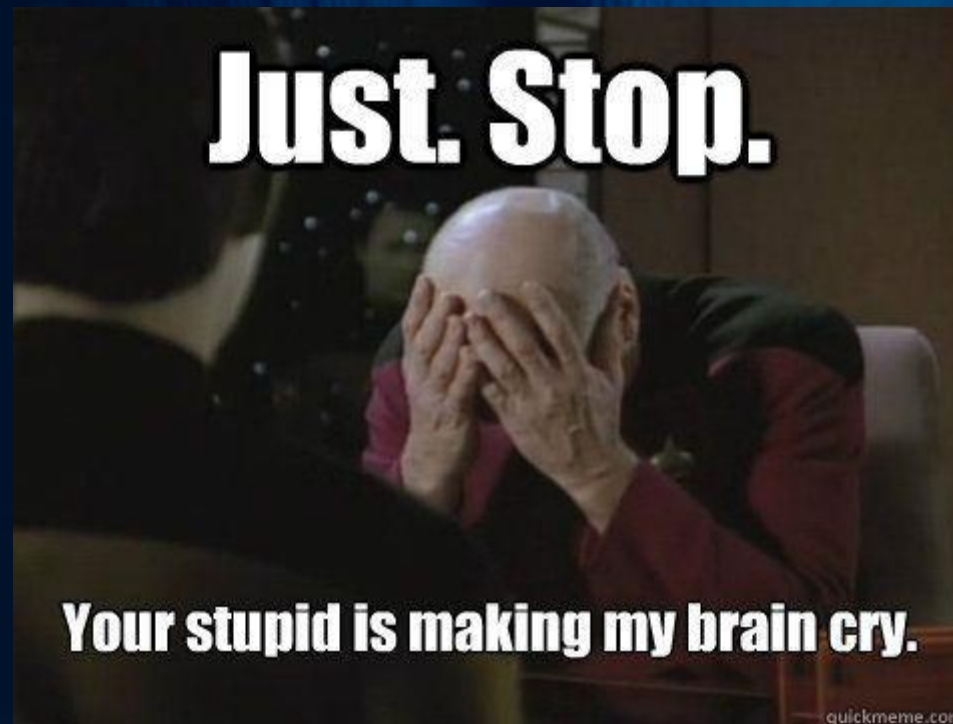
Next step- build on the amount and complexity of the information you present.



And then? Move away from the familiar to the unfamiliar.....



AND NOW, YET ANOTHER
DEMO.....



What's the limit for this type of listening activity?

- The average person can successfully hold three or four ideas or activities in his/her memory at once.
- For this reason, people use Mnemonics for greater amounts of information that they need to remember :(HOMES, EGBDF, FACE, IP MAT)

Don't forget storytelling as a way to build listening skills.

- Familiar stories or Fairy Tales. Use the CLOZE method to let the listener try to fill in the missing part.
- Familiar events told and retold by your family.
- Jokes or pun that have been retold. Ex : "Who's on First?"
- Rehearsing a simple play.

Jack and the Beanstalk

IN PICTURES

PART III- QUESTIONS,
COMMENTS, IDEAS,
CONCERNS

THANK YOU FOR YOUR KIND
ATTENTION!

DAVID C. FAHNLE
dfahnle@dallasisd.org

Some great resources:

Garber, Ashley S., "Auditory Building Blocks: Focus on Auditory Memory." (2013), Cochlear Americas,

<https://www.audiologyonline.com/articles/auditory-comprehension-focus-on-memory-11380>

Mense, Beatrice, Debney, Sue and Druce, Tanya, "ready set remember: Short –term memory activities" (2006) Australian Council for Educational Research, www.acerpress.com.au

Wood, Kelly L., "A critical period of development for auditory memory and the auditory scaffolding hypothesis" (2013) Independent studies and Capstones, paper 673. Program in Audiology and Communication Sciences, Washington University School of Medicine.

http://digitalcommons.wustl.edu/pacs_capstones/673

Auditory Memory

Katie Brennan, M.S., CCC-SLP

Auditory memory is an important building block for developing language understanding. Some children who are deaf or hard of hearing may have difficulty with auditory memory which may cause them to have trouble learning efficiently. Working on auditory memory skills can help build expectations for listening to longer strings of words as demands for vocabulary and language grow. Auditory memory development may have a positive impact on English language competence both in spoken and written forms.

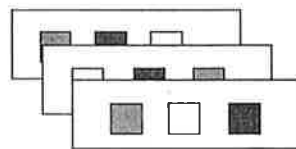
When targeting auditory memory development with a child, work through a hierarchy of difficulty. Begin with listening for two critical elements or important items in a phrase. As a child's auditory memory skills progress, targets can increase in number of important items a child is expected to remember (i.e., 2 critical elements, 3 critical elements, etc.). Repeating items in the correct sequence adds an additional level of difficulty. Repeating lists of items is not the only goal. Functional language, including multiple step directions and sequences, should always be considered when selecting targets.

Goal: Child will repeat a list of 3 items.

Targets: Ingredients for his favorite recipe (e.g., flour, sugar, eggs, etc.)
Supplies for art class (e.g., paper, paint, smock, etc.)
Steps in a daily routine (e.g., get toothbrush, put toothpaste on brush, etc.)
Favorite colors (e.g., pink, yellow, blue)

Goal: Child will identify two critical elements in a phrase.

Targets: Get your *shoes* and your *backpack*.
Put your *shoes* in the *closet*.



The following are some guidelines when selecting targets:

- Words should be very familiar. This is not a vocabulary learning task.
- Words should be easy to say. This is not an articulation task.
- Words should be very acoustically different. This is not a speech perception task.

Parents, educators, and therapists can use a number of strategies to help children develop auditory memory skills.

- **Acoustic highlighting:** emphasize the important words by saying them louder and longer.
- **Auditory-only:** This is an *auditory* memory task. Use a speech hoop or sit side by side to remove speechreading cues.
- **Pause:** pause before and after important items to indicate it's time to listen
- **WAIT:** allow time for the child to process your message before providing repetition or support
- **Model:** show the child how you remember lists. Demonstrate "self-talk" and verbal rehearsal (repeating the items to yourself).

- **Create visual helpers:** provide visual indicators of the number of items a child is expected to remember. This could be 3 blank lines on a piece of paper or two boxes where the child will place selected toys.
- **Repeat:** to build auditory memory skills, repeat the message exactly as it was said the first time. Repeat the whole message, not just the part the child missed. The objective is remembering the words in sequence, not simply repeating individual words.

References:

Carotta, Cline & Brennan. (2012). Auditory Consultant Resource Network Handbook. Boys Town National Research Hospital.

Garber, A. (2013, Jan 11). Auditory Comprehension: Focus on Memory for Professionals. Retrieved from: <http://www.audiologyonline.com/articles/auditory-comprehension-focus-on-memory-11380>.

Speech and Language Therapy
Auditory Memory Development Strategies

Pupils who have difficulties in this area may have:

- **an inability to retain** more than one or two items of information from a lesson presented orally
- **difficulty recalling information** after a period of time, unless given specific support strategies
- **difficulty in recalling information** in the correct sequence
- **visual/spatial strengths** (learn better from charts, diagrams, videos, demonstrations and other visual materials)
- **a good visual memory** (be able to visualise information and present it in the form of mindmaps, diagrams, charts, posters, illustrations)
- **kinaesthetic strengths** (learn better when actively involved in a lesson through movement and touch).

Activities to develop auditory memory skills:

1. **Repeat and use information** – pupils could be asked to repeat a sequence of two or three colours and then thread beads or arrange cubes using that sequence. The pupils could also complete card number sequences in the same way.
2. **Reciting** – action rhymes, songs and jingles. Use the actions to aid the recall of key learning points.
3. **Memory and sequencing songs** – songs like Old Macdonald, Ten Green Bottles, One Man went to Mow.
4. **Story recall 1** – retell the main events of a story, using puppets and background scenery as cues.
5. **Story recall 2** – draw the main events in well-known, patterned stories (eg. Little Red Hen, The Gingerbread Man).
6. I went to market and I bought... – using real shopping items or pictures. Pupils have to recall the sequence of items bought.
7. **Recall simple sequences** – of personal experiences and events and share with the group or class.
8. **Recall verbal messages 1** – containing one or two elements and requiring a yes or no reply.
9. **Recall verbal messages 2** – containing one or two elements and requiring a simple sentence reply.
10. **Instructions** – recall and repeat task instructions containing one, then two, then three elements.
11. **Drawing 1** – story sequences from memory.
12. **Drawing 2** – the sequence of a simple activity.
13. **Explain** – the sequence of a simple activity.
14. **Recall** – days and events of the week.
15. **Alphabet sequences** – dot to dot, games and puzzles.
16. **Alphabet name game** – recall the sequence of the alphabet using names.

17. **Alphabet word game** – recall the sequence of the alphabet when using simple word banks.
18. **Draw a time sequence** – flow chart of the main events in the story.
19. **Organise sentences** – in the correct sequence, relating to a school event, using words and phrases that signal time as cues (e.g. after that, next).
20. **Mind-maps** – show the pupils how to use mind-maps to aid recall of key information
21. **Odd one Out** Child identifies odd one out of a list of spoken items. The number of items should fit in with their memory level and might be related by: category dog, cat, orange horse rhyming cake, shoe, make, bake initial phoneme ball, bush, box, toy
22. **Chaining Games** Child and adult take turns to add an item and/or detail to an increasing list. This might be a simple game of “I went shopping and I bought..”, or you can ask the child to include descriptions. Adult: “We went to the zoo and saw an elephant eating peanuts.” Child: “We went to the zoo and saw an elephant eating peanuts and a zebra with stripes” etc This idea can be adapted to similar games using food, furniture, clothes, vehicles etc.
23. **Expanding Sentences** Child and adult take turns to increase the sentence length “I watched T.V.” “I watched T.V. on Wednesday” “I watched T.V. on Wednesday and saw Neighbours” “I watched T.V. on Wednesday and saw Neighbours with my mum”.
24. **Recalling Information** Adult produces a sentence and then asks child a question. e.g. “I went to MacDonalds and ordered a Big Mac, a Coca Cola, some fries and a doughnut what did I buy?”. Child has to remember in correct sequence.
25. **Recalling Specific Information** As above - but adult asks more complex questions e.g. “what did I order first?” “what did I drink?” etc or “listen to these numbers 9,7,6,4,2 “what is the smallest number I said?”
26. **Making Deductions** “Listen to these words - play, tree, meat, cow, poet which one is a human being?”
27. **Recall of Story Information** Adult reads a paragraph from child’s current reading book or a short story and then asks the child questions about it.
28. **Riddles** Adult describes an object for the child to identify e.g. “I’m thinking of a fruit that has a smooth skin, it has a stone in the middle, it is juicy, it grows on a tree and is purple”. Adult continues giving clues until child guesses correctly.
29. **Recall of Spoken Sequence** of digits e.g. 5, 1, 6, 9 of colours e.g. red, blue, yellow, green of animals e.g. cat, dog, fox, sheep etc.
30. **Chinese Whispers** Adult gathers a small group of children together; a whisper is passed around the circle and the original sentence is compared with the final sentence.
31. **Recall of Item** In a group each child tells his neighbour the name of e.g. an animal, a bird, a fish at the beginning of a session, for them to recall at the end of the session.
32. **Creating Stories** Pick a story theme and come up with a first line. Can you make up a story together making sure that you stick to the theme.

33. **Orienteering Type Activities** Child follows verbal directions from adult e.g. "go to the gate, turn left, take 6 paces and return to me".
34. **Messages** Child takes messages of increasing complexity from one adult to another (prearranged if necessary!)"
35. **Drawing to Instruction** Adult draws a basic outline e.g. a house or a person, and child has to draw details as requested e.g. give the house a white door and 3 green windows".

