What Does It Take For Children With Hearing Loss To Learn To Listen, Talk and Read?

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Fetal Hearing Development: A Timeline

Weeks of Pregnancy	Development
4–5	Cells in embryo start to arrange themselves into baby's face, brain, nose, ears, and eyes.
9	Indentions appear where baby's ears will grow.
18	Indentions appear where baby's ears will grow.
24	Baby is more sensitive to sound.
25–26	Baby responds to noise/voices in the womb.

EARLY DETECTION OF HEARING LOSS

- Identifying hearing loss at a very early age is important because children with hearing loss often fall behind their peers in speech and language development, cognitive skills and social skills
- If the hearing loss isn't treated these deficits can lead to other issues such as isolation, low self-esteem, learning difficulties and behavioural problems

EARLY DETECTION OF HEARING LOSS

- **Republic Act 9709 -** Act that establishes the Universal Newborn Hearing Screening for the Prevention, Early Diagnosis, and Intervention of Hearing Loss

- provides for the **mandatory hearing screening of all Filipino newborns.**

Before 1 month old – screen the child

By 3 months old – repeat screening if initial test failed for proper diagnosis of hearing loss

Before 6 months – if positive for hearing loss, fit appropriate hearing technology

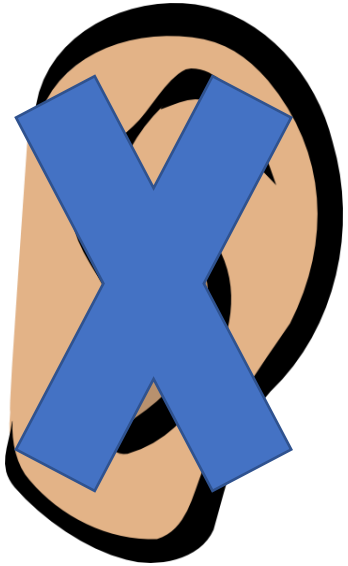
EARLY DETECTION OF HEARING LOSS

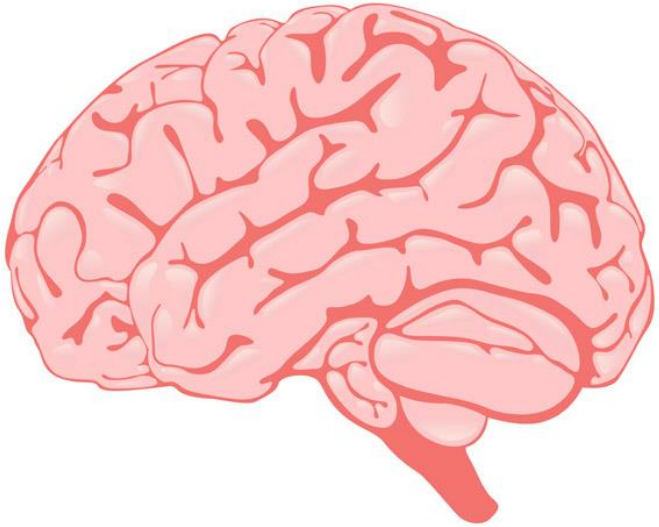
- **Early Hearing Detection and Intervention (EHDI) Act**
  - Originally enacted in 2000, the Early Hearing Detection and Intervention (EHDI) Act provides funding for early hearing detection and intervention programs nationwide. **The goal of the EHDI program is to identify hearing loss at an early age, and to provide early intervention to ensure every child develops communication and social skills commensurate with their cognitive abilities**

EARLY DETECTION OF HEARING LOSS

- **1-3-6 PLAN**
- **1**: All newborns will be screened for hearing loss before 1 month of age, preferably before hospital discharge.
- **3**: All infants who screen positive will have a diagnostic audiological evaluation before 3 months of age.
- **6**: All infants identified with a hearing loss will receive appropriate early intervention services before 6 months of age.

Let’s Look At The Big Picture



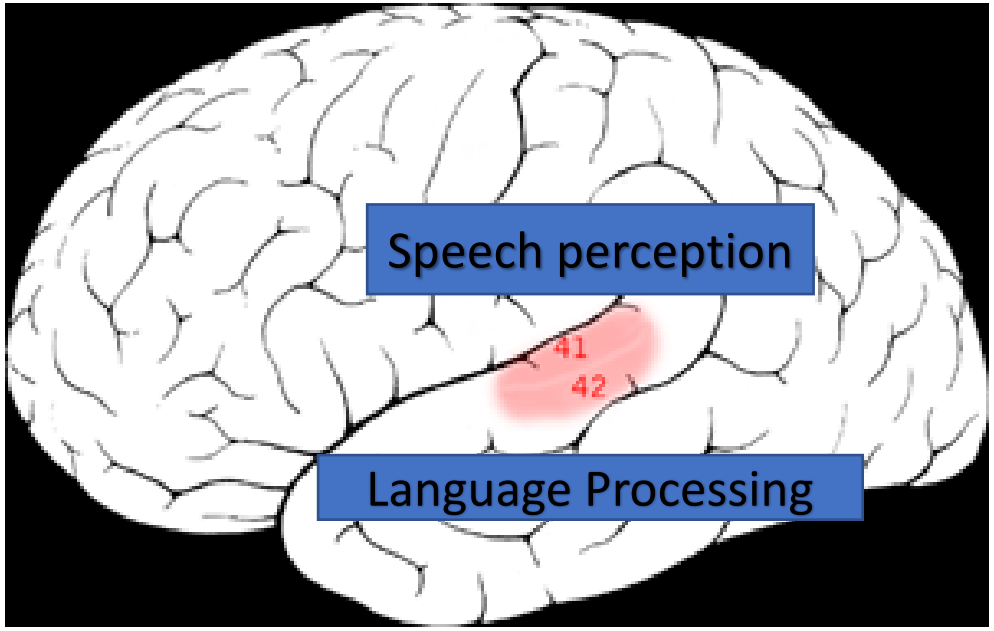


Hearing loss is not about the ears; it’s about the brain! We hear with the brain; the ears are just a way in.

(Flexer, C. 2011)

The Auditory Cortex

It is the region of the brain that is responsible for the ability to hear



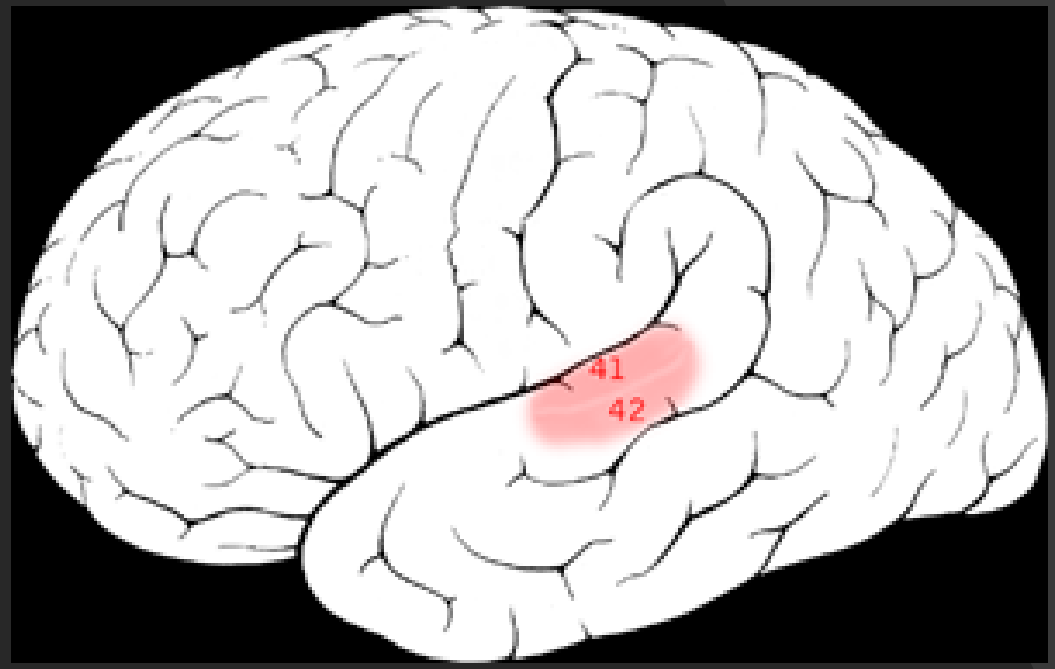
Critical Period for Auditory Cortex Development

The cortex matures in stages/columns, and the level of maturity depends on the richness of exposure and experience

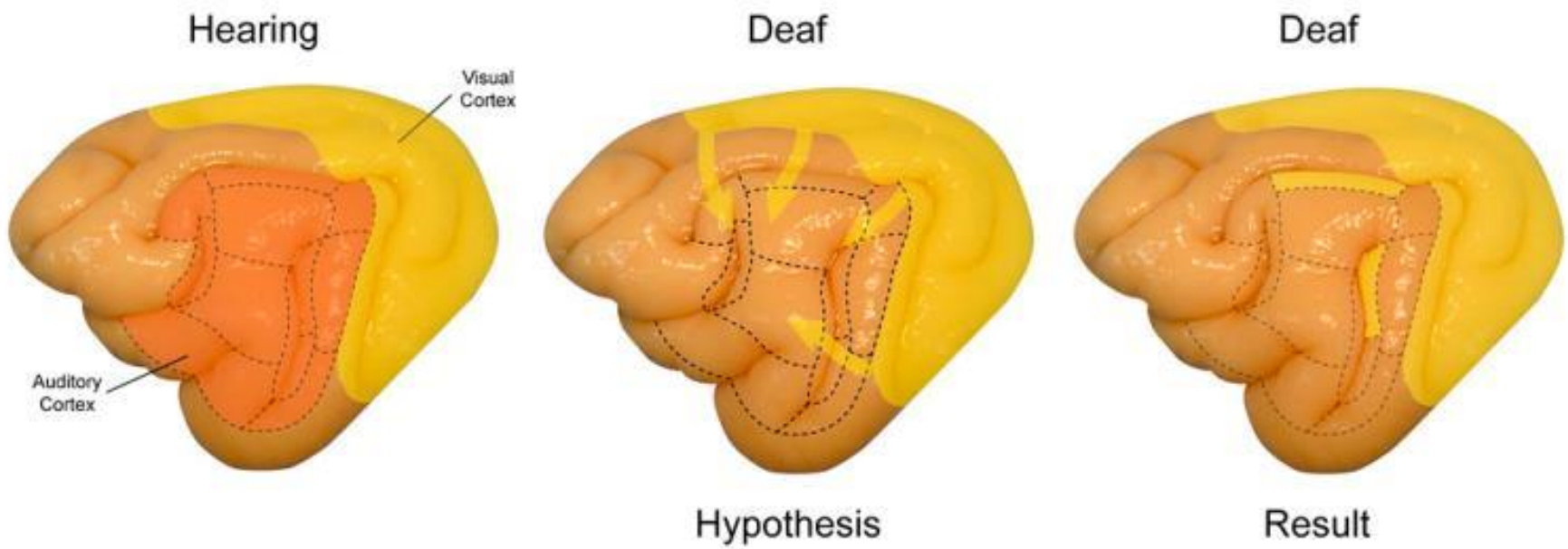
Level one of the cortex probably matures by 12 months. This 1st stage, the “setup” stage for the cortex, has the brain being “always-on.”

In this period, all it takes to develop auditory pathways is exposure to sound

(Merzenich, M. 2010)



The Hearing vs Non-Hearing Brain



Infant Auditory-Verbal Development

At 4.5 months of age babies recognize and prefer to listen to their own name.

By 6 months of age, babies get the idea that objects and people have names

By 9 months of age, babies are sensitive to native stress patterns and pauses in infant-directed speech

(Golinkoff, R. 2013)

Hearing Loss and the Auditory Brain

If babies don't hear till they are one year of age, they need massive auditory input to make up for the deficit

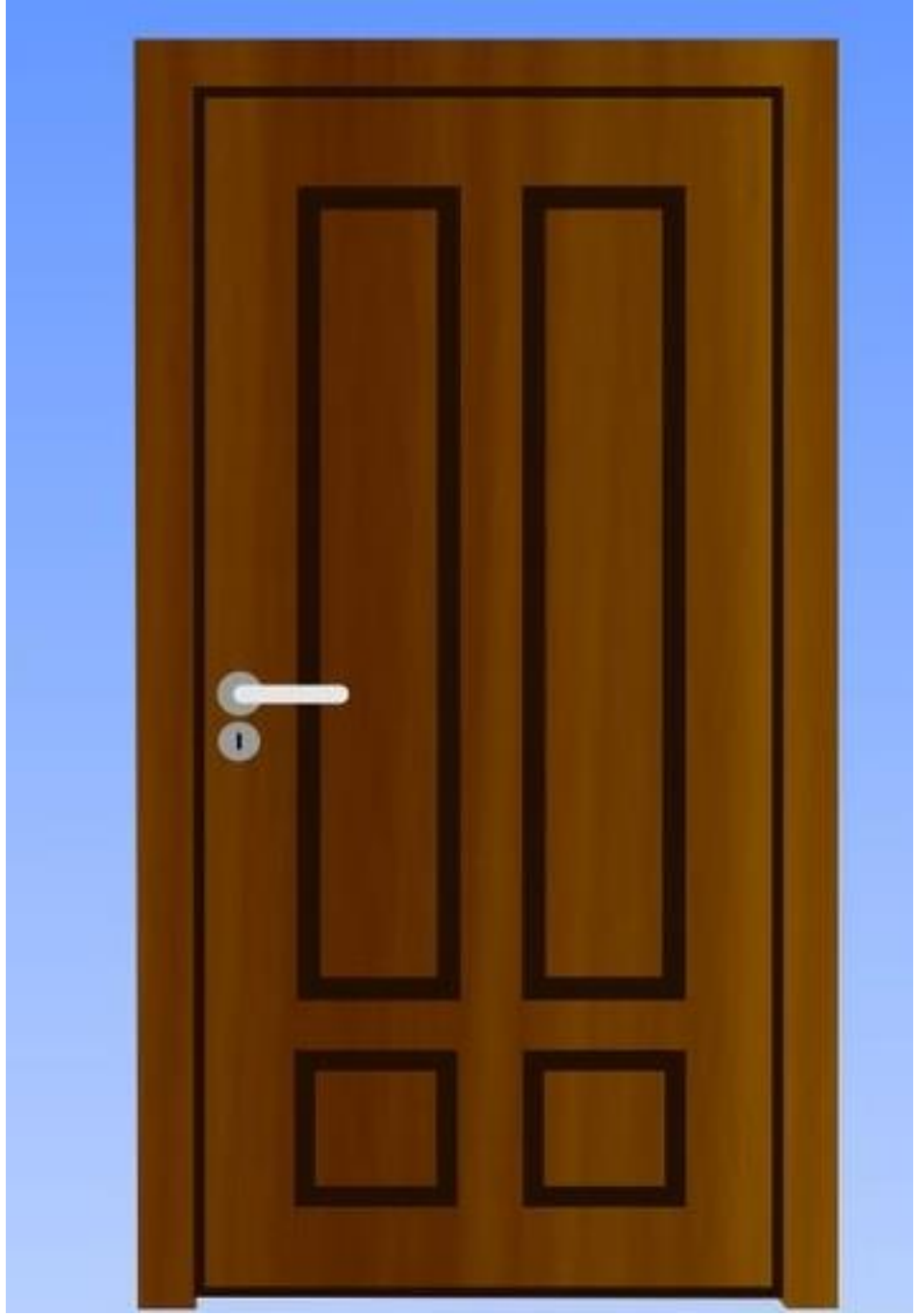
This means that we have to fit that hearing technology early, and then create an environment that is rich in auditory language communication when the desired outcome of the family is listening and spoken language

(Flexer, C. 2011)

Deaf Baby Hearing For The First Time

REMEMBER!

- This is not the time to “wait and see.” This is a “wait for failure” model of services
- You have a short critical window for your child to develop listening and spoken language
- Act quickly!!!



Hearing loss is a **doorway problem!**

The ear is the “doorway to the brain” for sound

Hearing loss obstructs that doorway, preventing, sound from reaching the brain

(Flexer, C. 2011)

Brain Access Tools

The “math” of Hearing Technology

Babies listen for about a year before they say their first word. If a baby with hearing loss is awake for 8 hours a day and only **wears hearing aids for 2 hours** then he will only be able to **‘tune in’ to the hearing world 25% of the time. It may take up to 4 years for his first word.**

A normally hearing toddler or preschooler listens for about 12 waking hours a day, 365 days per year. This adds up to 4,380 listening hours per year

If a toddler or preschooler only wears his hearing technology at school (2.75 hours/day), **it would take more than 9 years** of preschool for the child to have as much listening experience as a hearing preschooler who hears at all waking hours (12hours/day)

Strategies for Consistent Hearing Technology Use All Waking Hours

Parents must practice putting on the hearing technology with their child's audiologist until they feel at ease. More family members than just Mommy need to know how to put them on

(Rossi, K. 2003)

Strategies for Consistent Hearing Technology Use All Waking Hours

Put the hearing aids on first thing in the morning so they felt normal on the head; never, never take a day off

Sing whenever the child pulls off the hearing aid; child will want to ‘hear music’.

Start with a few short periods of wear each day. Establish blocks of time. Then, extend the wearing time.

(Rossi, K. 2003)

Strategies for Consistent Hearing Technology Use All Waking Hours

Have a special box with surprises inside and take it out only during the blocks of time when you are going to work on hearing technology use. Get the box out prior to attempting hearing technology use so the child is busy and may not fight hearing technology wear.

Associate hearing technology use with pleasurable experiences and not with “getting in trouble.”

(Rossi, K. 2003)

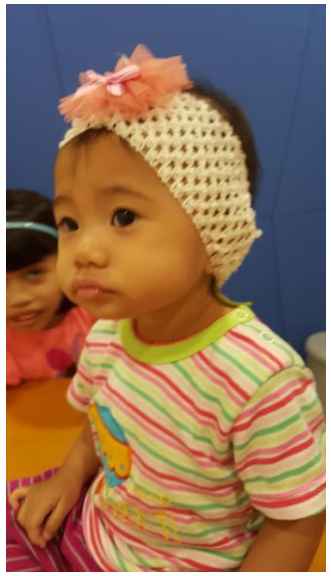
Strategies for Consistent Hearing Technology Use All Waking Hours

If the child pulls the hearing technology off, put them back on immediately

If the parents give in and let the child decide when it's time to wear the hearing technology or not, the child soon learns that he/she is in control and has gained enormous power over his/her parents

Anticipate when your child is getting tired of wearing the hearing technology. As parents, make the decision to take it out before your child does

(Rossi, K. 2003)



Strategies for Consistent Hearing Technology Use All Waking Hours

Ask your audiologists about hearing technology retention accessories like clips, caps, tape, etc.

Water Wings, Anyone?

REMEMBER!!!

If the child's technology is not worn every waking moment, no other intervention will suffice if the family's desired outcome is listening, spoken language and literacy

EARLY INTERVENTION

- In addition to getting the hearing devices fitted for your baby's hearing loss, you'll need to enroll in early intervention.
- For your baby to learn to listen and talk, you'll need to work with **a listening and spoken language (LSL) early interventionist** to grow your child's brain and take full advantage of the hearing technology that is available. The first step is to enroll as quickly as possible in an early intervention program with **a service provider skilled in listening and spoken language.**

EARLY INTERVENTION

A specialized program to help a child immediately after detection.

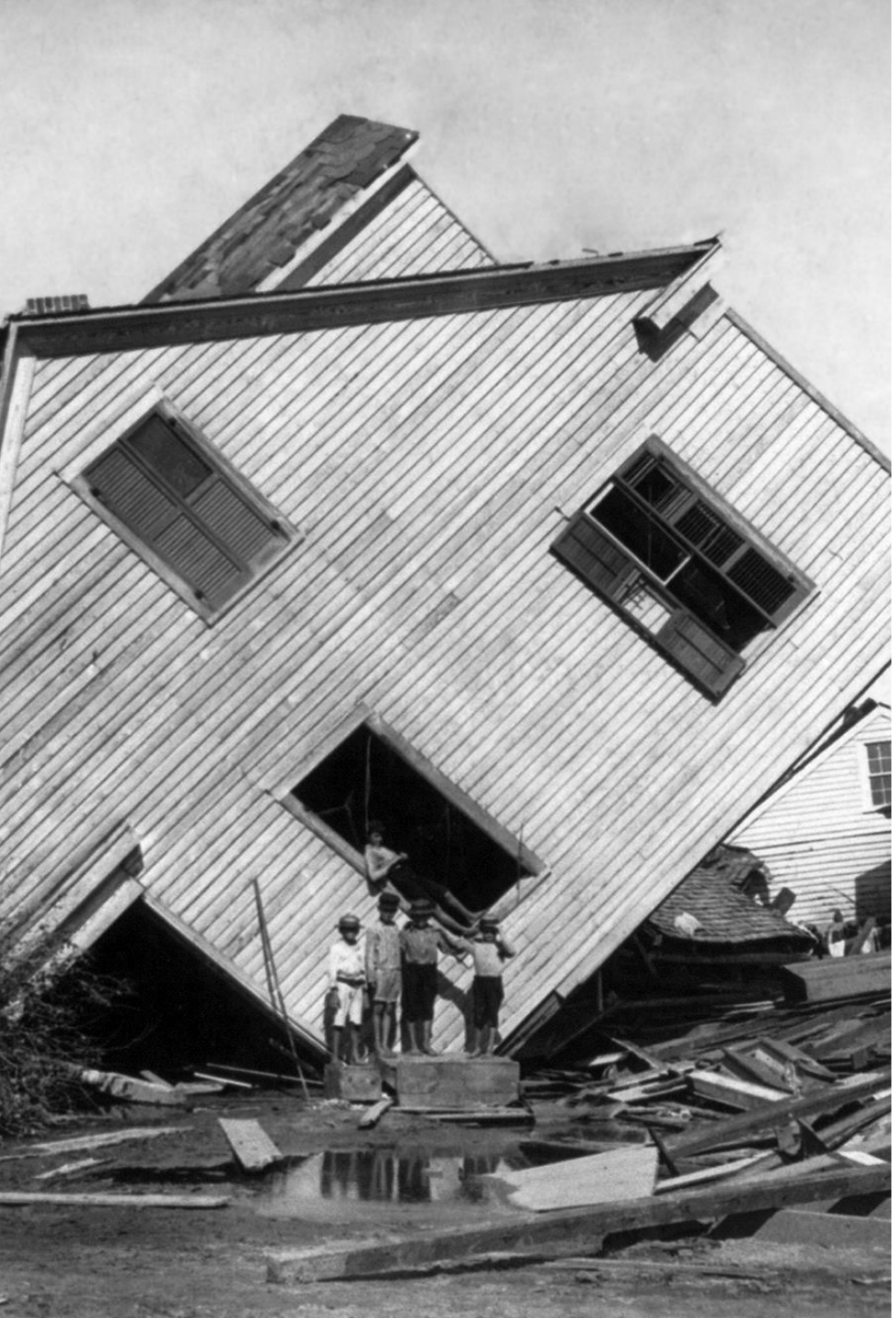
Time is of the essence **because a child's brain is programmed to learn language during the first 6 years of life – the first 3 years being the most critical.**

After this period, it is very difficult to acquire language and speech skills.

Early intervention involves **fitting children with hearing aids**, **providing counselling and support** for parents, and **teaching parents how to stimulate speech and language in their child.**

- “When a baby is born, their brain is ready to develop all the structures that support language development and speech perception and production. You need to have the auditory input in order to develop that structure and make it work. **The earlier you intervene and give them sound, the better outcome for their quality of life.”**

Prof. Colette McKay



How's Your Foundation?

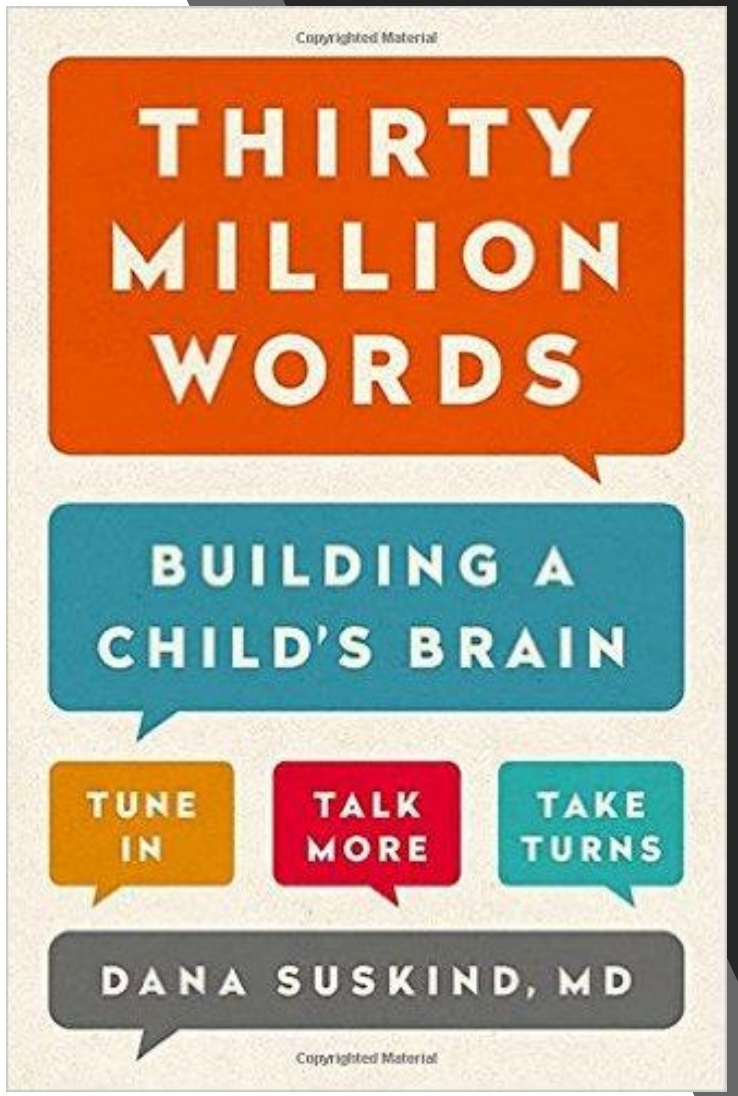
For children who are best prepared for grade 1, 46 million words are heard by age 4 (Hart and Risely, 1999)

20,000 hours of listening are needed as a basis for reading (Dehaene, S. 2009)

How Words Grow a Baby's Brain

We transform hard science
into accessible and
easy-to-remember concepts.

How Words Grow a Baby's Brain



The Three Ts: Setting The Stage for Optimum Brain Development

The Three Ts is the core strategy of the Thirty Million Words® Initiative to help parents create and achieve a rich early language environment for the brain development of a baby and young child

Suskind, D. 2015

The Three Ts: Setting The Stage for Optimum Brain Development

- **The 1st T: TUNE IN**
  - Make a conscious effort to notice what a baby or child is focused on, then, when it's appropriate, talking with a child about it
  - Follow and respond to a child's lead
  - Represents the 1st step in harnessing the power of parent talk to build a child's brain
  - If a parent is not tuned in the other Ts will not work

Suskind, D. 2015

The Three Ts: Setting The Stage for Optimum Brain Development

- **The 2nd T: TALK MORE**
  - Refers to a parent's increased talking with a child, especially about what the child is focusing on

How to Talk More

1. ***Narration (Self-Talk)*** – another method of surrounding a child with language, parents talk about what they are doing

The routines parents take for granted are valuable to a young child; every word, every description transforming otherwise ordinary events into brain building!


Yeah. Ahh?

“Let Mommy take off your diaper. Oh, so wet. And smell it. Yuk, so stinky!”

“Now we can put on a new diaper.”

“Mmm…look at this new diaper. It’s white on the outside and blue on the inside.”

“And it’s not wet. Feel. It’s dry and so soft.”

“Isn’t that much better?”

“Let’s put your pretty pink pants back on.”

“Wet or dry, Mommy loves you!”

2. ***Parallel Talk –*** a commentary on what the child is doing

   “You have Mommy’s bag.”

   “My bag is so heavy”

   “Should we see what’s inside?”

   “Oh, you found my comb!”

   “ Do you want to comb your hair? It’s messy”

   “Ok, you comb your hair. Now, you look nice and neat!”

3. Decontextualized Language – not talking about the hear and now

At about the ages three and five, children begin to use language about things or events that they are not currently seeing or experiencing

a. important sign of intellectual progress

b. it takes a higher level of thinking for processing and responding

c. it has a significant relationship to a child's brain development

To use decontextualized language when Talking More entails using familiar words to talk about things that a child and parents have done together

Example: a toy recently played together

a recent trip to the mall

a friend or favourite relative

Being able to understand and respond to decontextualized language optimizes school learning since so much of academics involves decontextualized language without the advantage of a parent standing by to explain

4. Expansion, Extension and Scaffolding – are methods of staying one or two steps ahead of the child's ability to communicate, encouraging more elaborate, detailed communication, an important goal of Talk More

Examples:

a. Expansion – restates what the child is saying by filling in the blanks.

"Brownie dirty." – "Yes, Brownie is dirty."

b. Extension – uses words a child already knows as building blocks for more elaborate communication. This may include adding a verb, an adjective or a prepositional phrase.

“The ice cream is good” – “The strawberry ice cream tastes so good, but it is so cold!”

c. Scaffolding – when a child uses one word, parents respond with two or three; for a child who uses two or three words, parents uses short sentences

The Three Ts: Setting the Stage for Optimum Brain Development

- The 3rd T: TAKE TURNS
  - Engaging a child in a conversational exchange
  - The gold standard of parent-child interaction
  - The most valuable of the Three Ts when it comes to developing a child's brain
  - The key is for the parent to wait for the child to respond

One word that has a limiting effect to Taking Turns is “What?”

“What’s that?”

“What color?”

“What’s your name?”

“What” question does not help enhance conversational exchange or building vocabulary because they only ask a child to retrieve words he/she is already familiar with

Questions that are answered with a yes or no fall into the same category, doing little to keep a conversation going or teach the child anything new

Open-ended questions are the way to go!

-they are great conversation starters and continuers

- a simple “how” or “why” allows a child to respond with a wide range of words, thoughts and ideas

- “How?” and “Why?” start a thinking process that can lead, eventually to the skill of problem solving

“Why are you sad?”

“ How do you cut the paper?”

“ Why did Daddy get mad?”

“ It’s raining outside. How do we stay dry?”

“ Papa is not here to drive us to SM, so how can we get there?”

Three Ts in Action

How to Grow Auditory Brain Centers

(Flexer, C. 2011)

Above all, we want the parents to love, play and have fun with their child

Once the child receives a hearing technology, make sure he/she wears them every waking hour (at least 12 hours a day)

How to Grow Auditory Brain Centers

(C. Flexer, 2011)

Check the child's technology regularly. Equipment malfunction often

Minimize background noise. Turn of the TV!

Sing to your child. Fill his/her days with all kinds of music and songs

Speak slowly and clearly and in full sentences with correct grammar and lots of melody. Stay close.

How to Grow Auditory Brain Centers

(C. Flexer, 2011)

Focus your child on listening. Call attention to sounds around the room. Point to your ear. Use listening words such as “You heard that” and “You were listening.”

Emphasize sound before vision for auditory enrichment

Read, read, read aloud everyday. Try for 10 books per day!

How to Grow Auditory Brain Centers

(C. Flexer, 2011)

Name objects in the environment as you encounter them in daily routines

Talk about and describe how things, look and feel

Compare how objects or actions are similar and different in size shape, smell, color or texture

How to Grow Auditory Brain Centers

(C. Flexer, 2011)

Talk about where objects are located. You will use many prepositions such as in, on, under, behind, next to, between.

Describe sequences. Talk about the steps involved in activities as you are doing the activity. Sequencing is necessary for organization

What is Emergent Literacy?

a term that is used to explain a child's knowledge of reading and writing skills before they learn how to read and write words. It signals a belief that, in literate society, young children—even one- and two-year-olds—are in the process of becoming literate.

Emergent Literacy

During early speech and language development, children learn skills that are important to the development of literacy (reading and writing). This stage, known as emergent literacy, begins at birth and continues through the preschool years.

The Development of Emergent Literacy

- Children see and interact with print (e.g., books, magazines, grocery lists, etc) in everyday situations (e.g., home and preschool) well before they start elementary school

- They appreciate and enjoy print as they begin to recognize words that rhyme, scribble with crayons, point out logos and street signs and name some letters of the alphabet

The Connection Between Spoken Language and Literacy

- Spoken language is the foundation for the development of literacy for the simple reason that one must know and be able to use the language that is to be read.

- The experiences with talking and listening gained during the preschool period prepare children to learn to read and write during the early elementary school years.

Children With Hearing Loss Are At Risk for the Acquisition of Literacy Skills

- Historically, children with typical hearing have learned to read better than children with hearing loss, and, more recently, practitioners have observed that children with hearing loss who learn to listen and use spoken language do better at reading than those who do not learn to listen and use spoken language.

- Children with hearing loss who are unaided by hearing technology for a long time do not learn to listen and do not have abundant opportunities for practicing spoken language

Therefore…

- **It is critical that**

  1. the child begins to wear hearing technology as soon as possible

  2. the therapist and parents intervene intentionally to help these children learn to make spoken language meaningful and use it consistently for communication

Early Intervention is Critical

Emergent literacy instruction is most beneficial when it begins early in the preschool period because these difficulties are persistent and often affect children's further language and literacy learning throughout the school years.

How To Develop Emergent Literacy Skills

- Talk to the child and name objects, people, and events in the everyday environment.
- Repeat the child's strings of sounds (e.g., "dadadada, bababa") and add to them.
- Talk to the child during daily routine activities such as bath or mealtime and respond to his or her questions.
- Draw the child's attention to print in everyday settings such as traffic signs, store logos, and food containers.

How To Develop Emergent Literacy Skills

1

Introduce new vocabulary words during holidays, special activities such as going to birthday parties, outings, etc.

2

Engage the child in singing, rhyming games and nursery rhymes

3

Read pictures and story books that focus on sounds, rhymes and alliteration (words that start with the same sounds)

4

Reread the child's favourite book(s)

5

Focus your child's attention on books by pointing to words and pictures as you read

How To Develop Emergent Literacy Skills

- Provide a variety of materials to encourage drawing and scribbling (e.g., crayons, paper, markers, finger paints).
- Encourage your child to describe or tell a story about his/her drawing and write down the words

A Deaf Pre-schooler Reading a Book About Dinosaurs

Research indicates that **active participation of parents** is the single most important factor in predicting **successful outcomes** in newly diagnosed babies who are deaf or hard of hearing and who are in early intervention

Yoshinaga-Itano, Coulter, & Thomson, 2000

So, what does it take……?

Thank You All for Your Attention!