

Listening and Language Development in children with hearing loss: UHL

Pia Leeming 20/5/2019
pia@hearathome.com.au



What does research tell us about language learning?

- Critical period for learning language
- No. of words a child hears in first 3 years of life impacts intellectual learning
- Interaction is the key
- Language is “caught” not taught



#1 There is a critical period for language learning





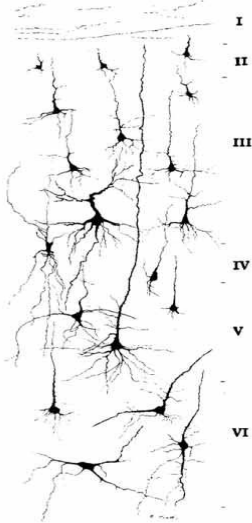
Babies brains are set up to acquire language early

- Human capacity for acquiring language is not yet fully understood
- Humans are born with a preference for listening to speech
- Humans born with 100 billion neurons in the brain
- Weighs only 25% as much as adult brains at birth
- What changes is the *wiring*, the synaptic connections, very malleable
- In the first 3 years of life, there is more rapid and robust brain growth than during any other time
- “Learning” is the increase in number of synaptic connections between neurons
- Increase from 2500 connections per neuron at birth to 15 000 per neuron at 3 years

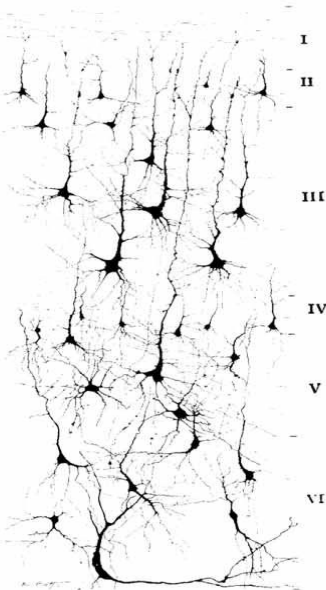


Postnatal
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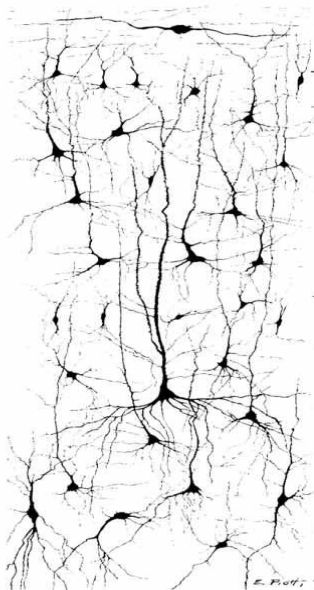
Newborn



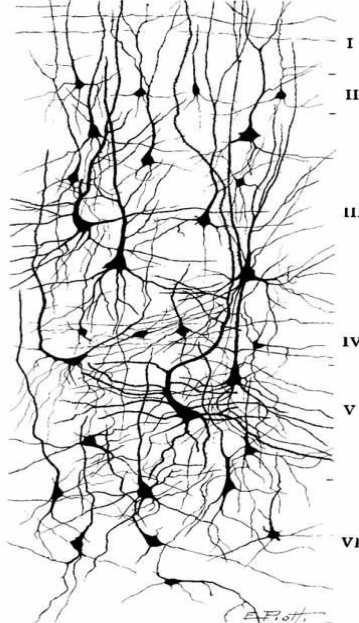
1 Month



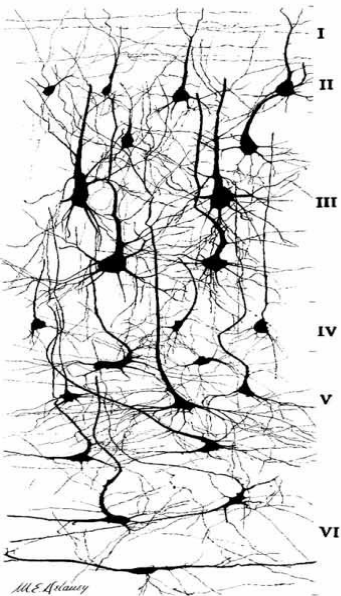
3 Month



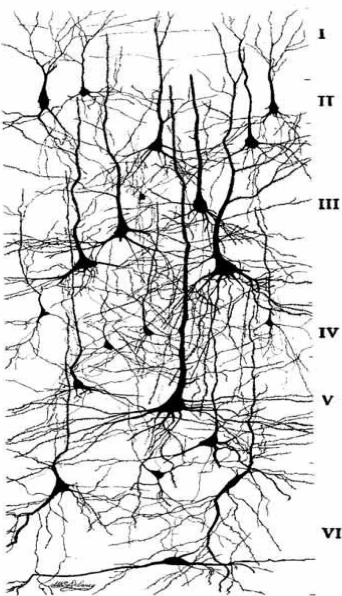
6 Month



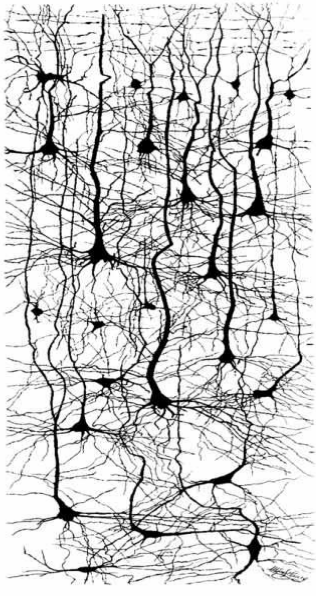
1 year



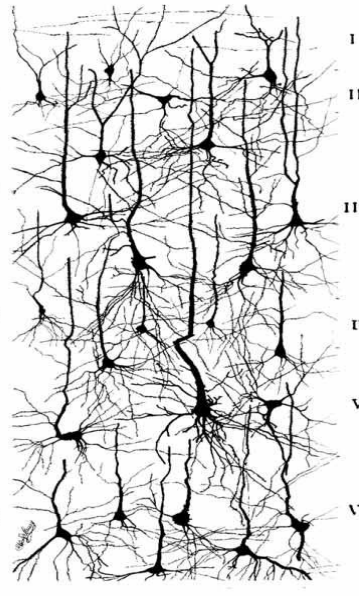
2 years



4 years



6 years



Babies brains are set up to acquire language early

- Connections between neurons happen when parent and child interact – makes your baby's brain grow
- By 6-7 months of age your baby can tell the difference between individual sounds of all languages
- By 10 months of age your baby can only tell the difference in sounds from in their mother tongue



Language learning is a brain event – connections and pruning

- Mothers are “brain developers”
- 80% of a child’s language learning is completed by 3 years of age



#2 To learn language, we need to hear lots of it “near and clear”



Hart & Risley Study (1994)

- Children who hear more words from birth to age three years have more sophisticated language skills than children who don't hear as many words
- Talk is the greatest tool parents can use to develop their child's intellectual skills
- Children of talkative parents were also talkative.
- Parents talked more to their first born than to their other children
- The more television time in a child's day, the lower his or her language ability scores tended to be.



“Reading” books increases word count



- Follow the baby’s lead – talk about what your baby is looking at
- Attract auditory attention by making your voice interesting
- It’s not necessary to *read* initially, talk about the pictures
- Pause, pause, pause and wait for your baby to “talk” – take turns
- Finish when your baby is telling you they have had enough e.g. pushing the book away



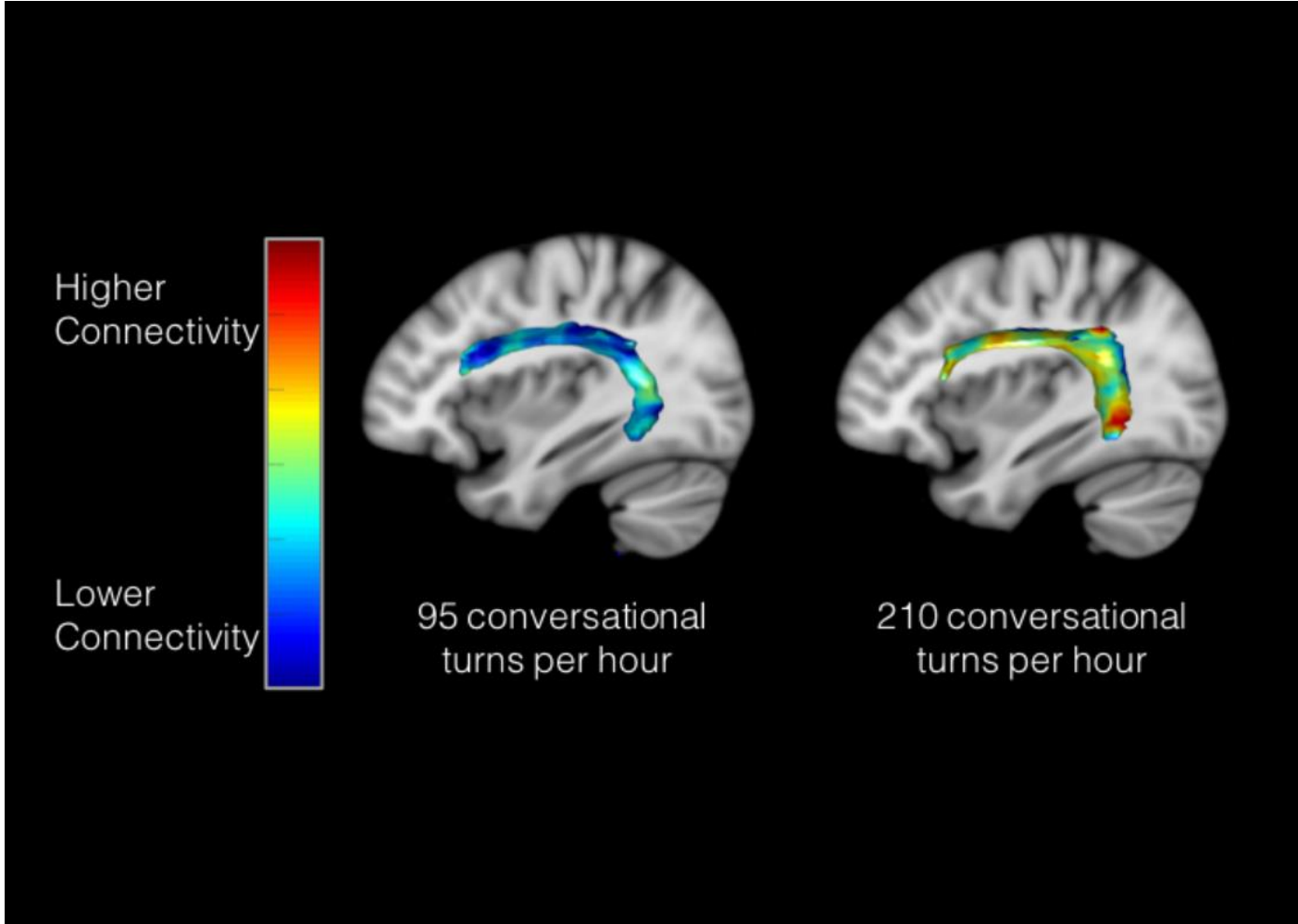
#3 Interaction is the key to language learning



Interaction is the key to language learning

- Language learning has an emotional base
- Babies are **unable** to learn language from tv or electronic sources
- *Brain derived neurotrophic factor* (BDNF) is a hormone in the brain which creates neural connections. It is released when interaction occurs between baby and parent.
- We need to have conversations with our babies – turn taking is a critical factor for brain development





How do you have *conversations* with your baby/toddler?

- Copy the sounds your baby make
- Talk about what your baby is looking at, feeling or thinking about
- Pause, pause and pause some more (count to 5 if you have to)
- Be aware of your baby's turn in the conversation
- Attract auditory attention by singing, elongating words, using funny sounds
- Look at books together and draw your baby's *acoustic* attention....



#4 Language is “caught” not “taught”



Language is “caught” not “taught”

Parents can’t teach children how to talk

For language to be “caught” it needs to be:

1. within the child’s **listening bubble** (language needs to be near and clear)
2. of interest to the child
3. interactive and meaningful to the child



Otherwise “incidental” language learning will not happen



What is incidental learning?

Incidental learning is the process of **learning** something without the intention of doing so – it just happens!

With a unilateral hearing loss background **noise** and **distance** are barriers to children “catching” all the language that is happening around them.

Children learn 90% of what they know through incidental learning – hearing others talk enables children to connect concepts and words

Incidental learning is a problem for children with UHL if the acoustic environment is not considered.



What's it like to have a unilateral hearing loss?



How can we apply this information about language learning to children with unilateral hearing loss?



Unilateral Hearing Loss – Potential Impact on Language Learning

- 1 out of every 3 children with only one typically hearing ear will develop delays in the number of words they say by the time they are 15 – 18 months old.
- Children with unilateral hearing loss are at 10 times the risk for school problems/difficulties



Noisy homes

- Humans have 2 ears to enable listening in noise
- Children with only one typically hearing ear will:
 1. Need more time to locate sound
 2. Use more effort to focus on speech when in background noise
 3. More likely tune out
 4. Not hear all the sounds of speech



Be aware of competing noises and turn off/reduce



20,000 words a day.....



Talk about what you are doing as you go about your day



Consider the acoustic environment (are your words *near* and *clear*?)



Download a self level meter app and aim for 50dB noise floor



Potential for many missed opportunities over time
– need to consider acoustic environment.

- Picture a child learning language as a cup that family members fill drop by drop every day.
- With every drop the child has the potential to “catch” new words
- Everyday children with only one typically hearing hear will miss part of the language that is said around them
- Children exposed to **many** words will be less affected by missing some



Recommendations to support language learning for children with UHL in the home

- Keep background noise to a minimum – tv, electronic noise OFF!
- Have conversations with your child throughout the day
- **Read** lots of books – this will keep your word exposure high
- Remember, daily routines (that are repeated many times in a day) are language learning opportunities e.g. nappy change, meal times, nap time routines
- Be a family that is content to be “at home”



Recommendations to support language learning for children with UHL in the home

- Speak into your baby's typically hearing ear (near and clear), especially while forming the foundations of language
- Think about your child's positioning when in a noisy environment – put poorer ear to noise
- Have a hearing aid fitted or a cochlear implant where appropriate
- Be engaged with an early intervention service provider and have regular check ups to ensure your baby is “on track”

<https://raisingchildren.net.au/babies/development/language-development/language-development-0-8>



Home scenario #1

- You are in the kitchen washing dishes and your toddler enters and begins playing with plastic containers from the cupboard.



Home scenario #2

- You are outside hanging washing on the line and your toddler is playing with the pegs in the basket.



Home scenario #3

- You are changing your baby's nappy when you baby vocalises /bu/...



The 3 “T’s”

- **Tune in** – talk about what the child is interested in, follow his or her lead, or get the child interested in what you are doing
- **Talk more** – use rich and varied language
- **Take turns** – view child as conversational partner



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Thank you for listening.....

Questions ?