Welcome to…

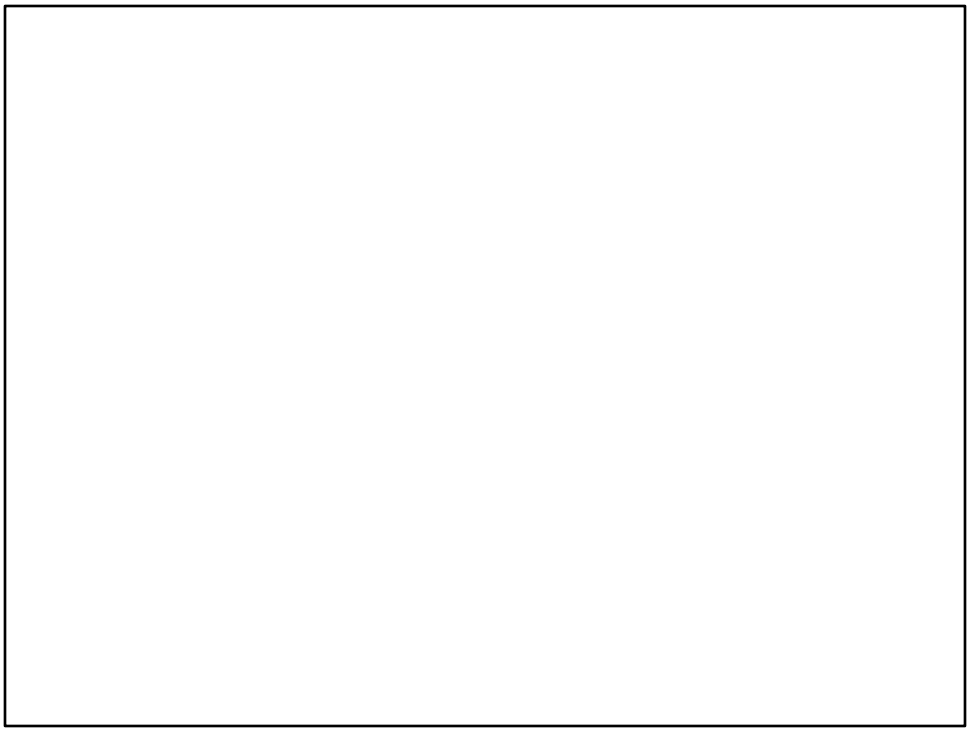
Is it "EARTH + BALL" or "globe"?: Profoundly deaf child develops language proficiency in ASL and spoken English

Kim Atwill, Ph.D.
Shelby Atwill, Au.D.
June 2018

kim@thegriffincenter.org

Intro self:
Educational interpreter
Teacher of the deaf in mainstream and state school for the deaf
Educational diagnostician
PhD in Educational Psychology
Intro Shelby:
Used signs as baby,
Chronic ear infections
5 years as Pediatric Audiologist specializing in on-going support of children who have hearing loss

Explain title



Place holder for video of Child (now) age 6.5.

Purpose

Share one child's development in ASL and LSL to dispel myths:

- Children using ASL will not develop age-appropriate LSL skills.
- Children whose teachers focus on LSL development will not develop ASL.
- Profoundly deaf children will not develop age-appropriate LSL skills.
- Parents who are deaf do not want their children to develop LSL skills.

The proposed session will use data from the ASL and LSL development of a now six-year-old profoundly deaf child, Samantha*. The purpose will be to use Samantha's development to dispel commonly held myths in the early education of children with HL, including:

Purpose

Provide practical guidance on how to achieve ASL/LSL bilingualism:

- **Child** with hearing loss—
  - child first, HL second
- **Interaction with** child is priority.
- ASL expertise on Day 1 **not necessary**.
- Challenging, but…"First learnings are powerful"!

Provide parents with encouragement to learn as their child learns. Set themselves up for success and don't be too hard on self.

Help parents see their child as a child <u>first and foremost</u>

Much more than just seeing the hearing loss

SO: Give parents the message that <u>THEY</u> HAVE THE POWER TO INFLUENCE THEIR CHILD'S COMMUNICATION AND FUTURE. They can:

have **high expectations** for their child

give their child **autonomy** and **responsibility**

be **confident in their ability to parent** a child with hearing loss

Common concerns of parents

Turn and talk: What do you want for your child/student(s)?

- Happy healthy adults
- Literate
- Employed

Turn and talk: What are your fears?

- Can I do it?
- Will it be expensive?
- What resources can help?

Family and friends accept HL
Historically literacy rates are dismal
Deaf people can do anything except hear—but some can and do learn to hear through assistive technology

Time, money, support…YES!

As I share the case study, we will note what parents and teachers can do and what all can notice that their children are doing to confirm their efforts are working!

2017 ASDC Presentation

Sign and Spoken Language Interface: Applied Brain Language Research (Gagne and Contreras)

- Language ≠ Speech
- Interaction between language development and cognitive growth

LANGAUGE ≠ SPEECH

- Speech--ability to make sounds through movements of your mouth
- Language--ability to understand and use words, grammar, and pragmatics.
  - Speech is one way to express language
  - Others include sign and …

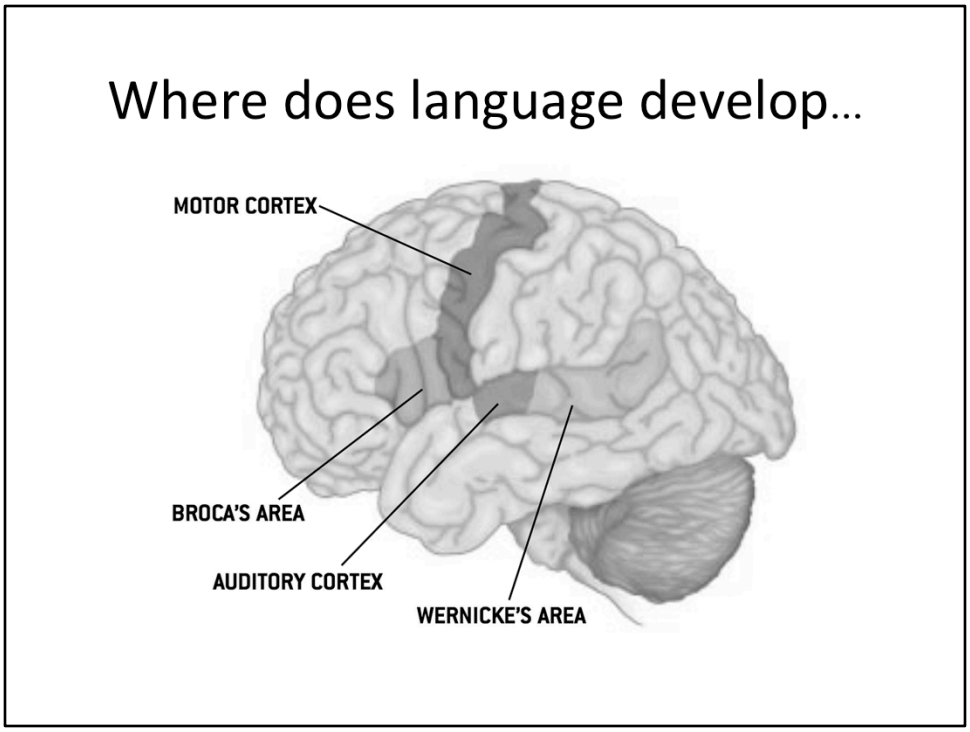
Language is in our mind—all the words we know, how we put these words into sentences, and how we understand and express ideas and feelings

Facial expressions, gestures, 'ca-ching', ba-zinga

Characteristics common to ALL languages?

- Culturally transmitted ✓
- Transitory
- Semantics (words that mean something) ✓
- Grammar (rules for combining words/phonemes)
- 'Words' = arbitrary combo of meaningless units ✓
  - Phonemes in Spoken English (How many???)
  - In ASL: ✓
    - Handshape = 40-50 ✓
    - Orientation = 5
    - Location = 5
    - Movement = 6
    - Facial expression = 20+
      - mouth morphemes (most are bound)

Spoken languages—unlimited number of words, unlimited number of ways phonemes can be arranged, always growing
Signed languages—fewer words due to fewer possibilities for combinations, Hawaiian-- (45 X 5 X 5 X 6 = 6000), but new combos occurring for new ideas

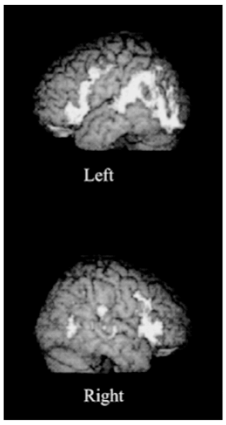


Cerebral cortex—all the folds

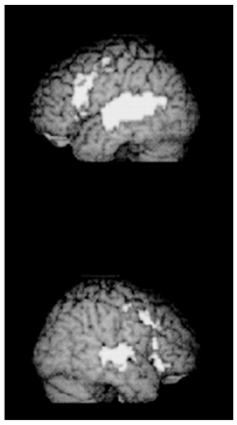
Temporal lobe: Wernicke's area and 'auditory cortex—language perception
Frontal lobe: Broca's area—language processing and production
Parietal lobe: Physical act of making a sign or saying word

Where does language develop…

…**in brain of ASL user?**

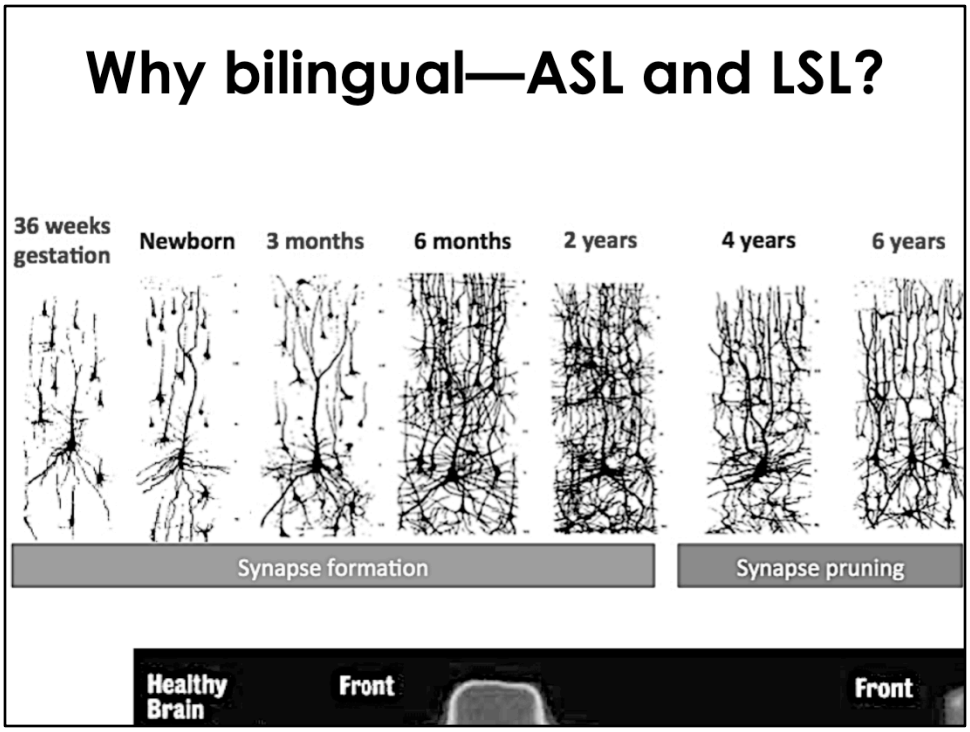


…**in brain of spoken language?**



LEFT sides almost identical (includes occipital lobe in rear for visual reception—but also auditory cortex!),
right shows slight differences due to modal variations (oral motor in LSL versus gross/ fine motor in ASL).

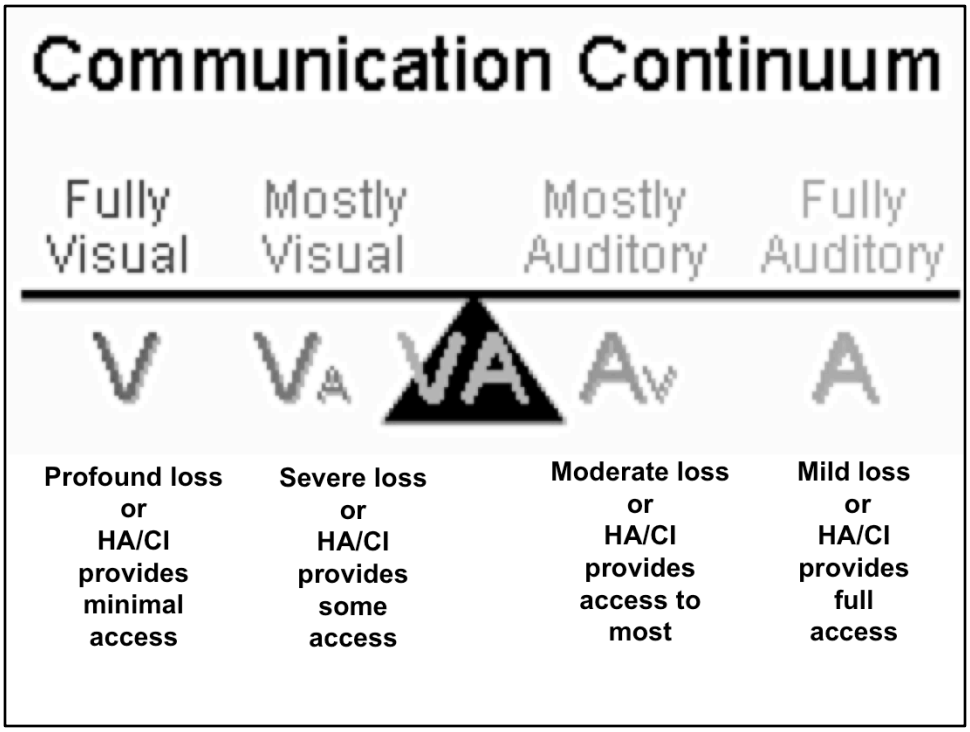
twenty-somethings that learned Basque when they were four or five years old. “We thought that there would be no difference between these subjects and native speakers, but there were. **At four years old, the first language has already taken a priority space in the brain**, and the second language has to fight for its own place.

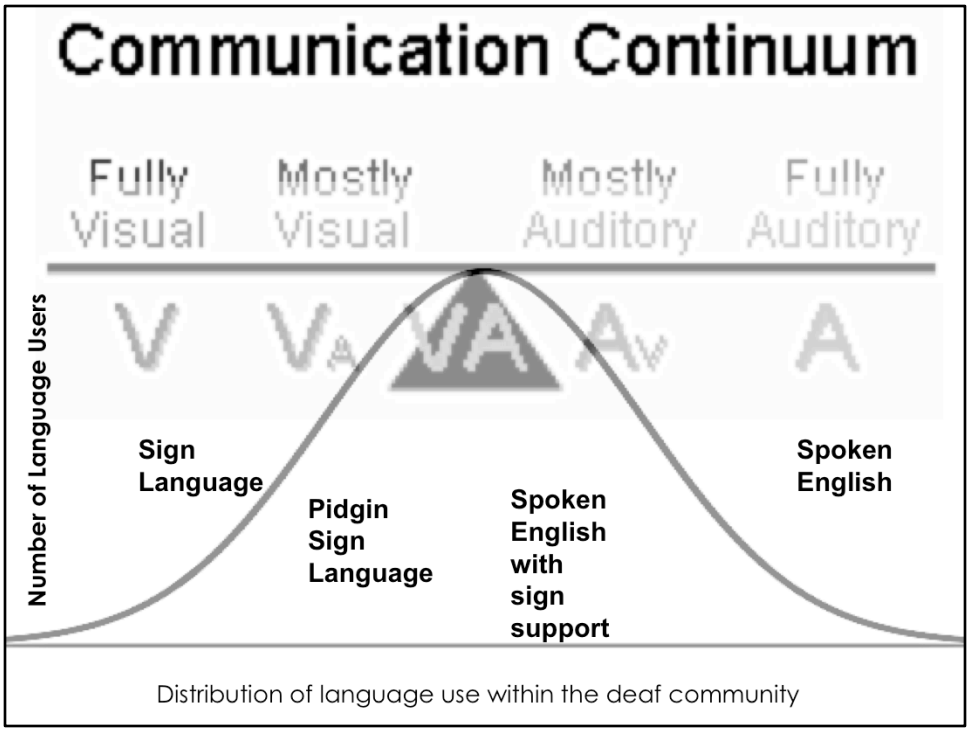


Huttenlocher & Dabholkar, 1997; Paolicelli et al., 2011

Romanian orphanage—neglect results in minimal synapse formation, and not just pruning, but 'death' to regions

Deaf individuals with little to no language exposure show less PHYSICAL brain growth (smaller volume!) [Lenneberg, 1967; Pénicaud et al. 2013]


Communication Continuum
Fully Visual
Mostly Visual
Mostly Auditory
Fully Auditory
V
VA
VA
AV
A
Profound loss or HA/CI provides minimal access
Severe loss or HA/CI provides some access
Moderate loss or HA/CI provides access to most
Mild loss or HA/CI provides full access



bilingual's language mode is a continuum ranging from a monolingual language mode, through an intermediate language mode, to a bilingual language mode, depending upon the activation levels of a bilingual's two languages.

Meet Samantha*

- Both parents are deaf—mom uses ASL and speech (CI at 12 years)
- Born full term--did not pass hearing screening (1 wk)
- ASL and spoken English
- 3 months--identified profound sensorineural hearing loss (genetic)
- 4 months—received two digital hearing aids
- 4 months—began LSL therapy
- 18 months—activated cochlear implant, right ear
- 33 months—oral-only preK
- 44 months—activated cochlear implant, left ear
- 58 months—entered kindergarten

*not her real name ☺

Note:
Complicated birth due to mother with Type 1 Diabetes
HL was progressive in left ear—started at moderate/profound

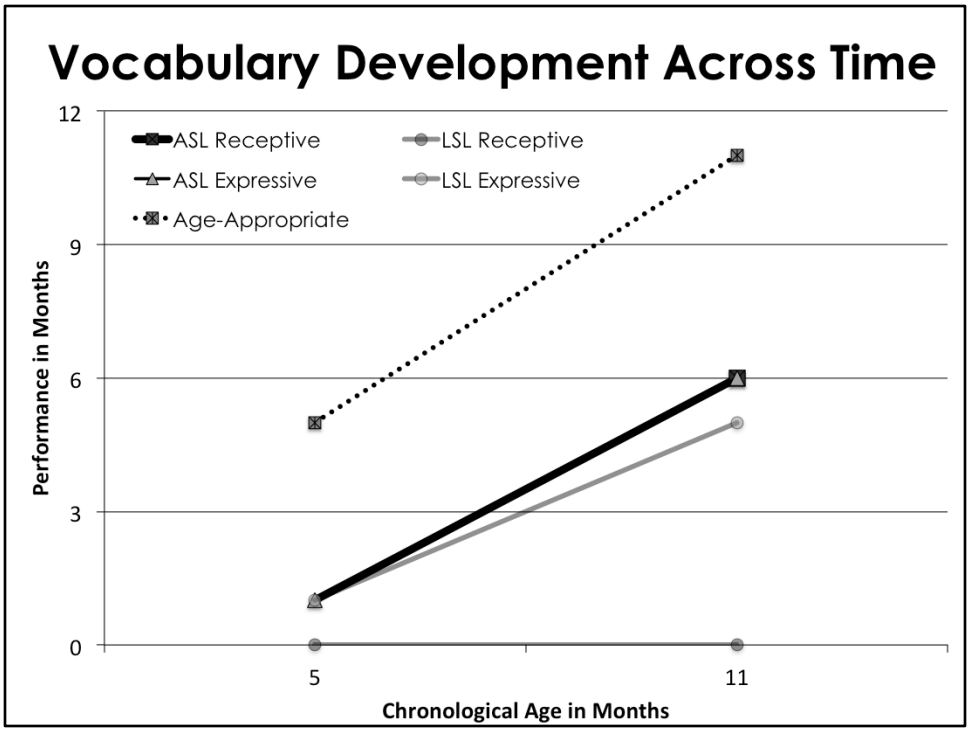
Not dominant genetic, but is same as mom. This genetic form is known for progressive loss.

Also, hypotonia…you will see motor skills delayed but she is catching up.

Samantha at 11 months

- Video place holder

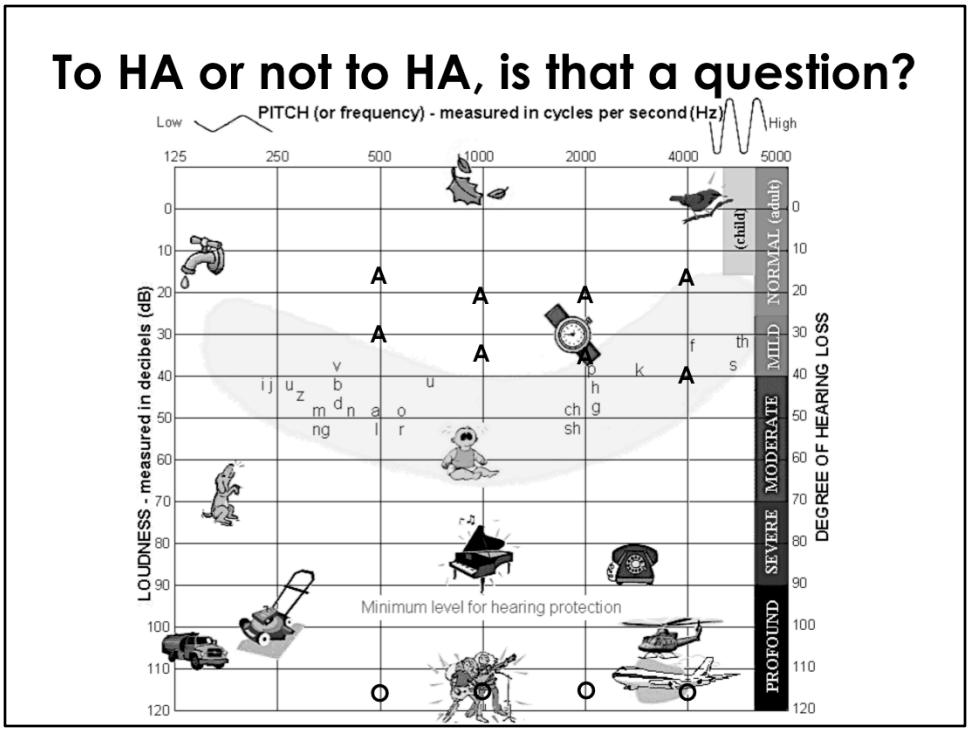
Language interaction strategies:
GOAL is to ‘set-up’ naturalistic, conversation-based ‘events’ that uses child interests and initiations as opportunities to model and prompt language in everyday contexts.



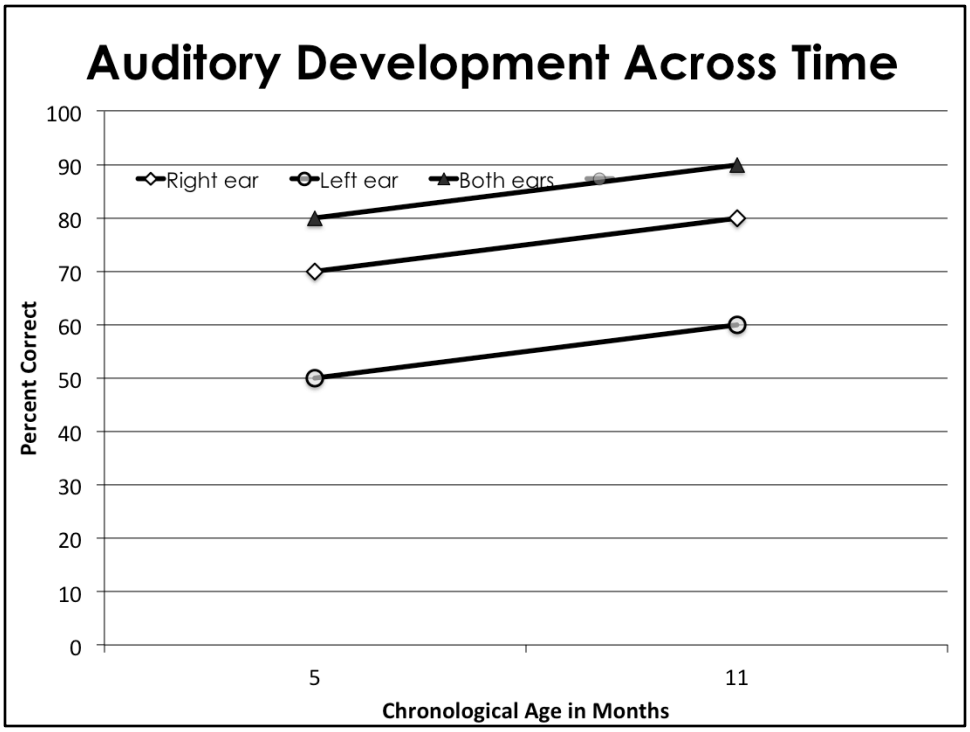
4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)



Communication Options: Signing child and HA/CI use = not only safety, but even profoundly deaf children can perceive the LOW frequency / tone of voice elements of LSL which is KEY for bonding in the early years.



4 months—received two digital hearing aids
4 months—began LSL therapy

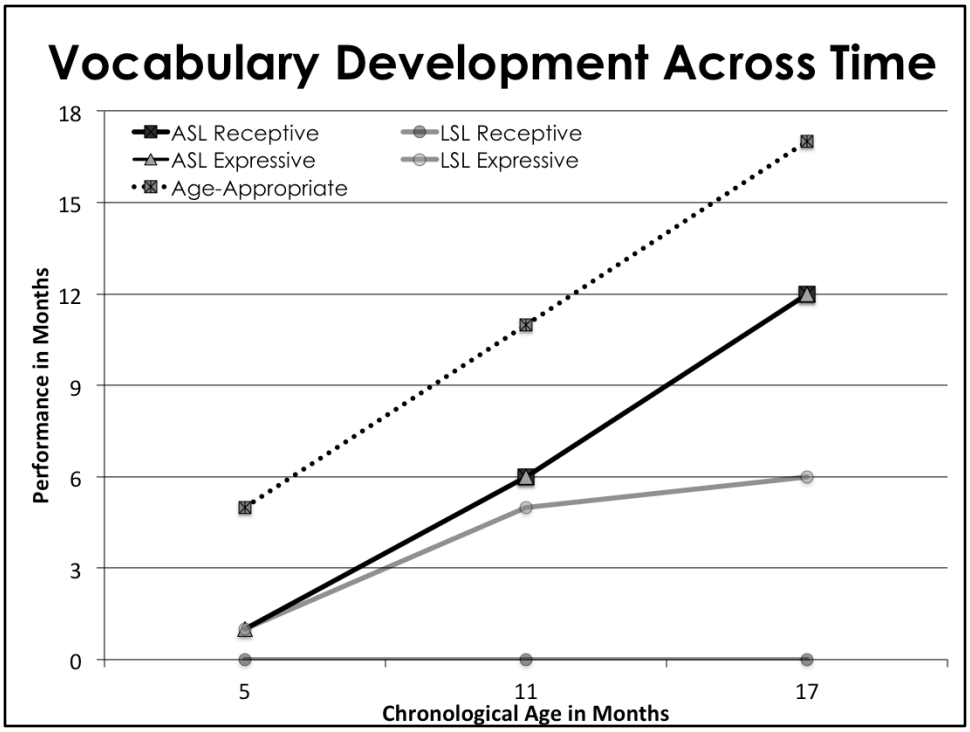
ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

Samantha at 17 months

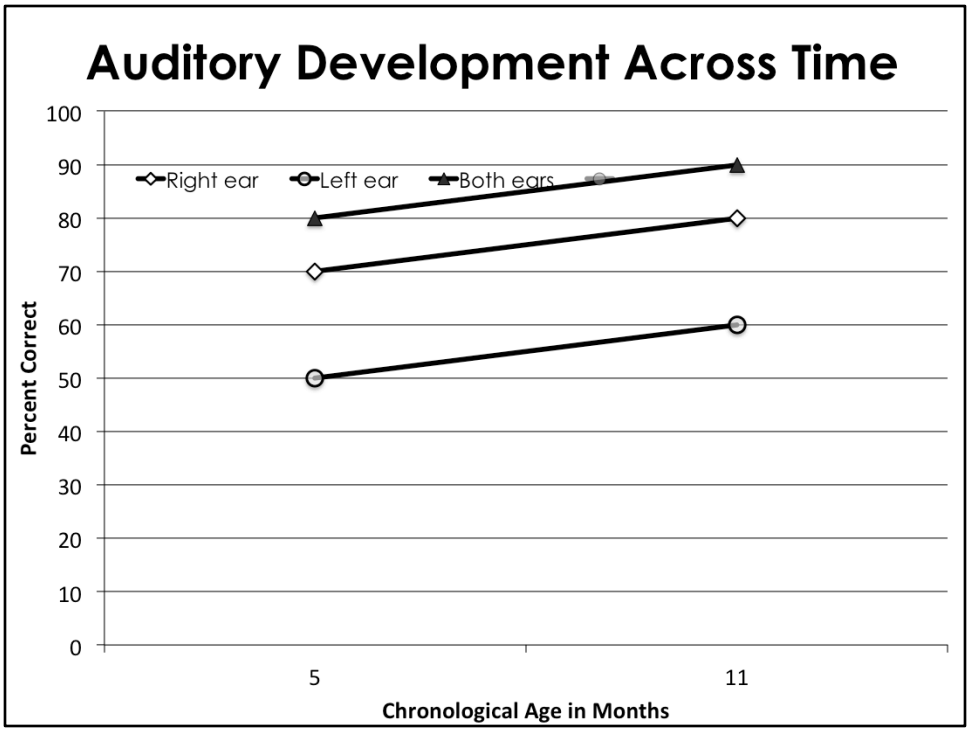
- Video place holder

At Samantha's level.
Do whatever Samantha is doing.
Follows Samantha's lead.
Avoids directions and let Samantha lead the play.
Chooses toys that are interesting and engaging.
Puts away toys that aren't being used.
Substitutes undesired activities with desired activities.
EXPECTS a response…set up the activity to 'require' communication



4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



4 months—received two digital hearing aids
4 months—began LSL therapy

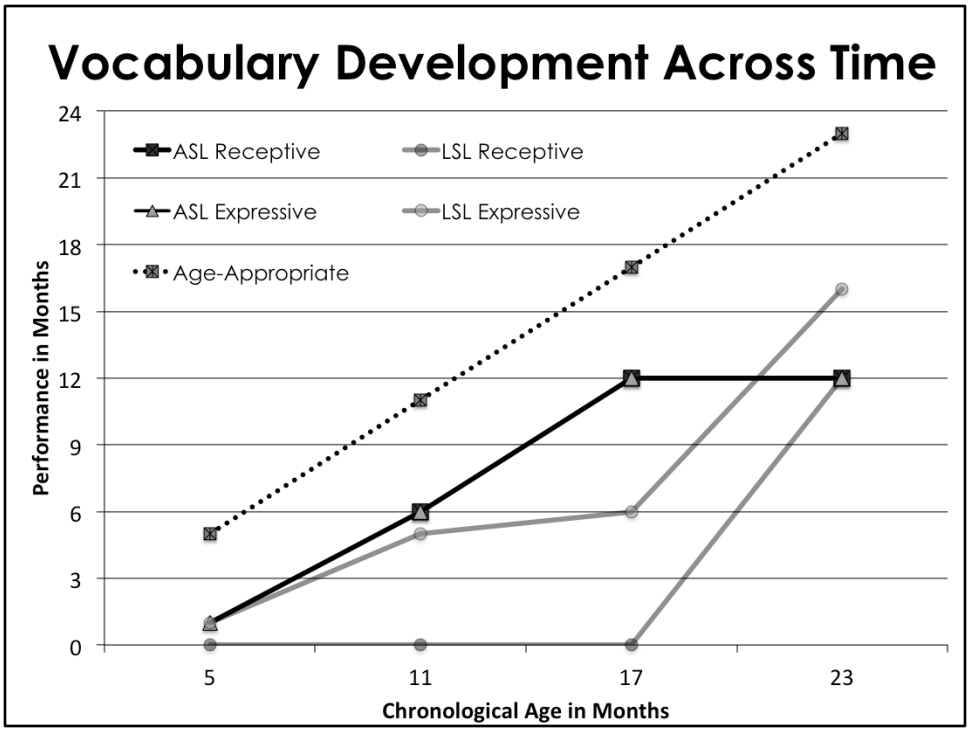
ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

Samantha at 23 months

- Video place holder

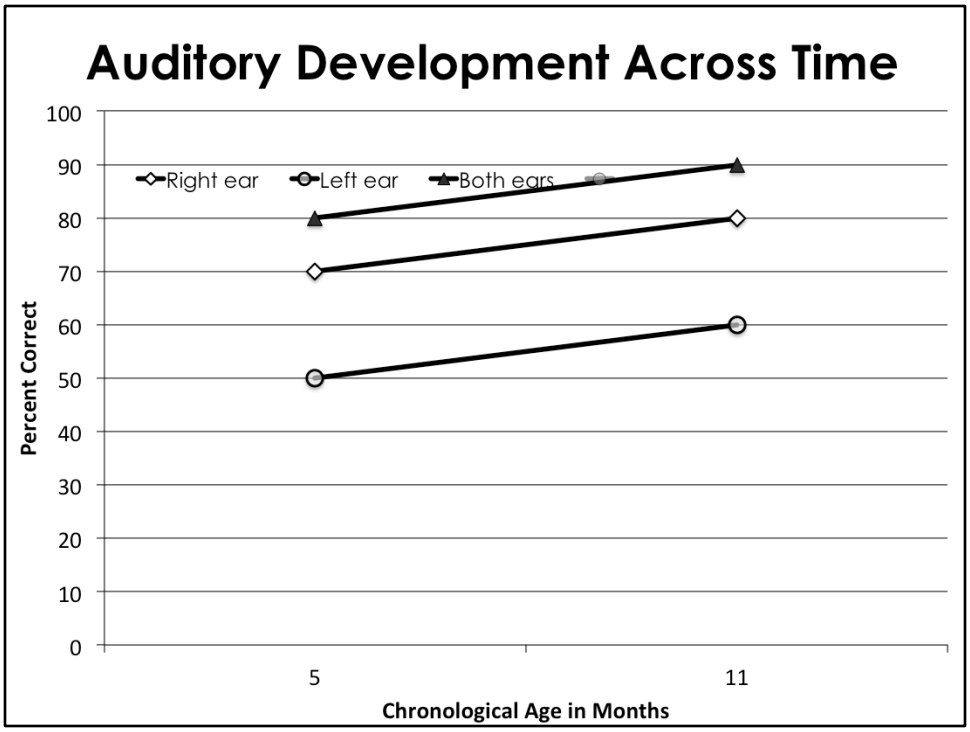
Responds by talking about what Samantha is doing.
Language is most meaningful because it's related to what Samantha is doing OR in response to what she is communicating.



4 months—received two digital hearing aids
4 months—began LSL therapy
18 months—cochlear implant, right ear

1-2 years , 50 signs (two sign phrase or point with sign), who or what?
From 18 to 24 months move from 50 up to 200 signs.

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

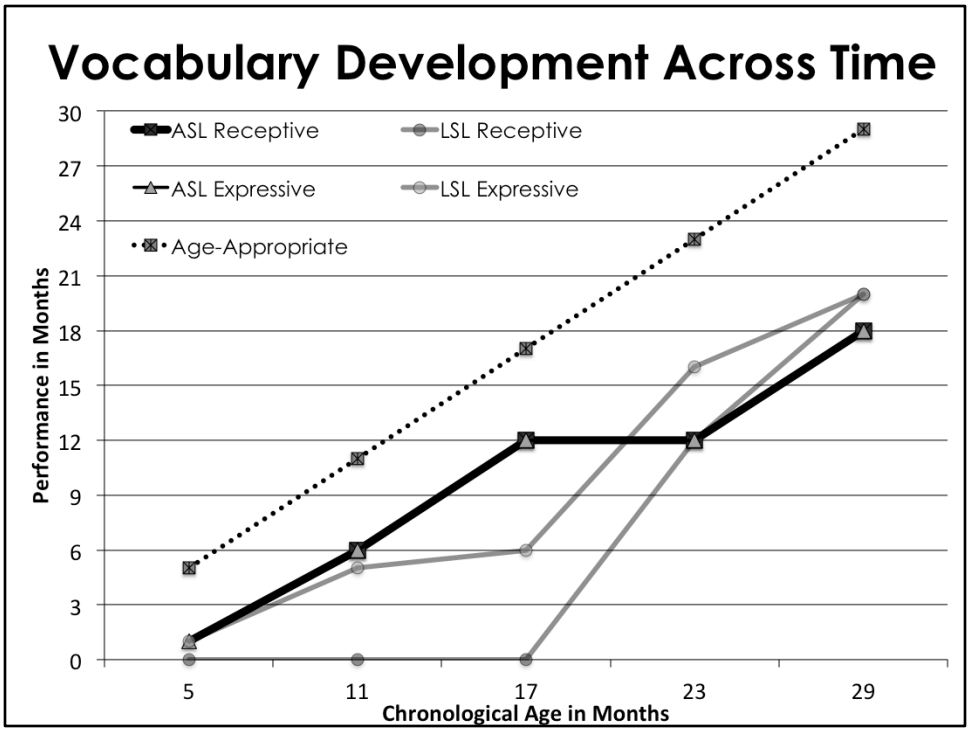
Samantha at 29 months

- Video place holder

Mom is' Mirroring': imitates the child's nonverbal behaviors and/or attempts at communication
Mom is 'Mapping': "maps" language onto these actions, by describing these actions…and adding appropriate communication
Mom is 'Modeling': modeling language that fits the activity

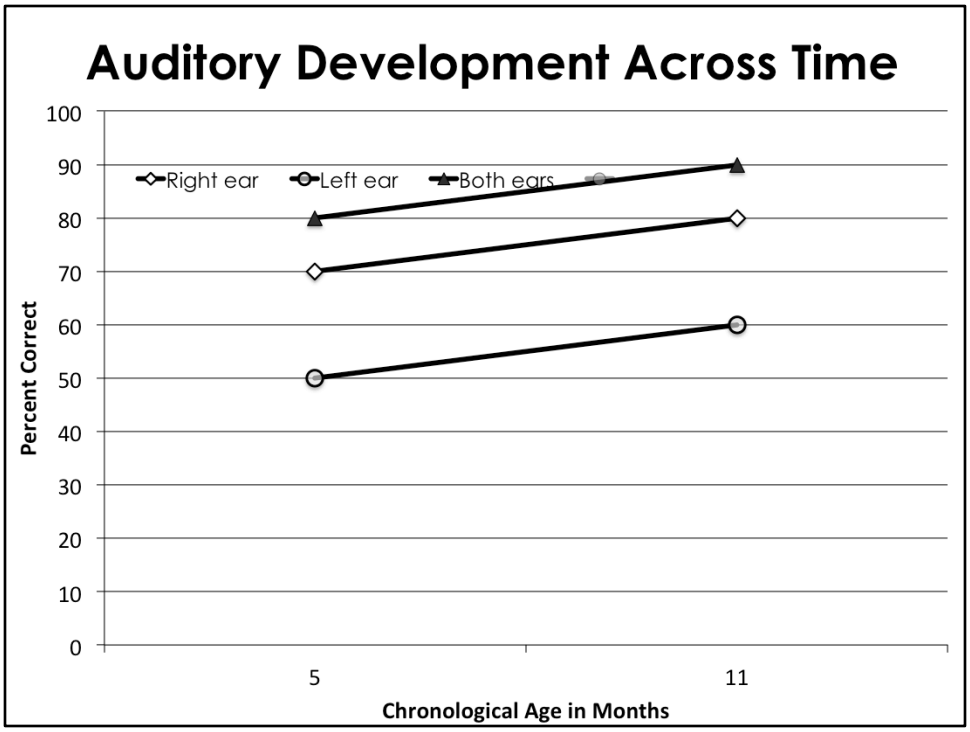
Children learn language through modeling.

Contingent modeling that is in response to a child' s communication is the most powerful form of modeling.



4 months—received two digital hearing aids
4 months—began LSL therapy
18 months—cochlear implant, right ear

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



4 months—received two digital hearing aids
4 months—began LSL therapy

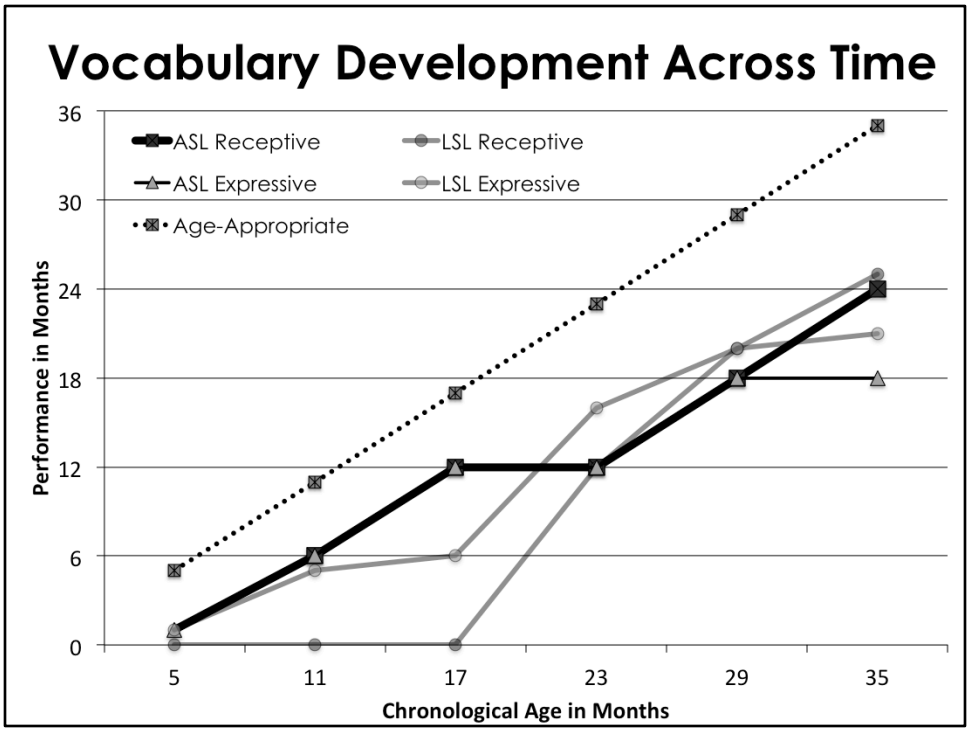
ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

Samantha at 35 months

- Video place holder

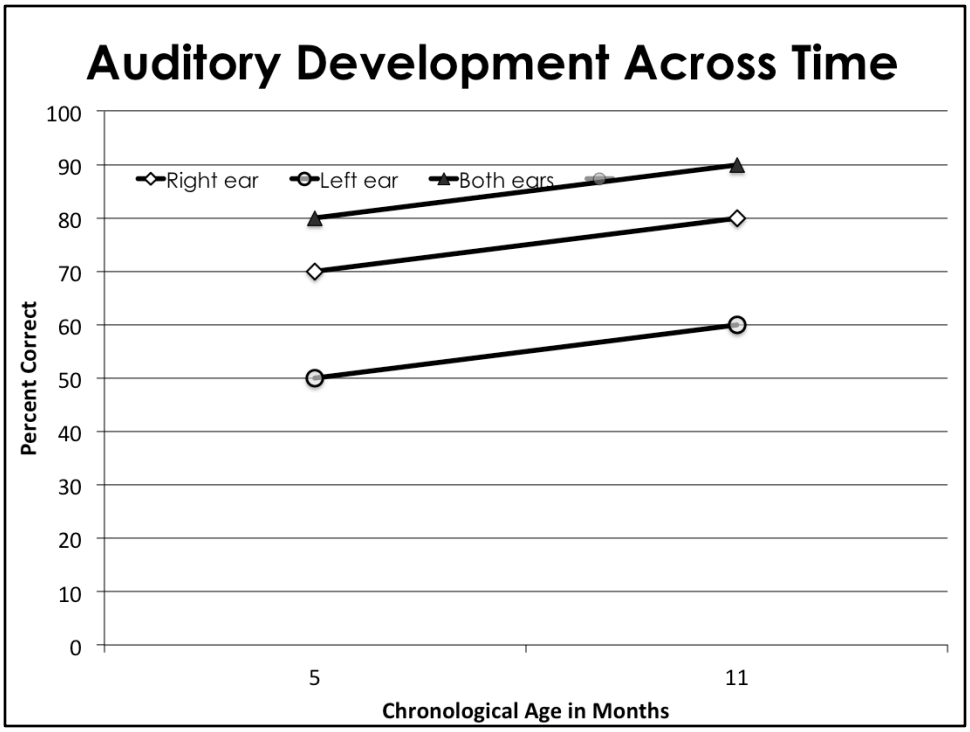
Teaching play:
Linking words with engaging activities maximizes opportunities for teaching language.
Choosing toys that are interesting keeps child engaged.
Expanding play activities allows more language modeling and facilitates language learning.



18 months—cochlear implant, right ear
33 months—oral-only preK

2-3 years, 250 signs, fingerspell (aprrox), negative sign (no, none, not-want), emotions w/FE (happy, sad, mad)

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



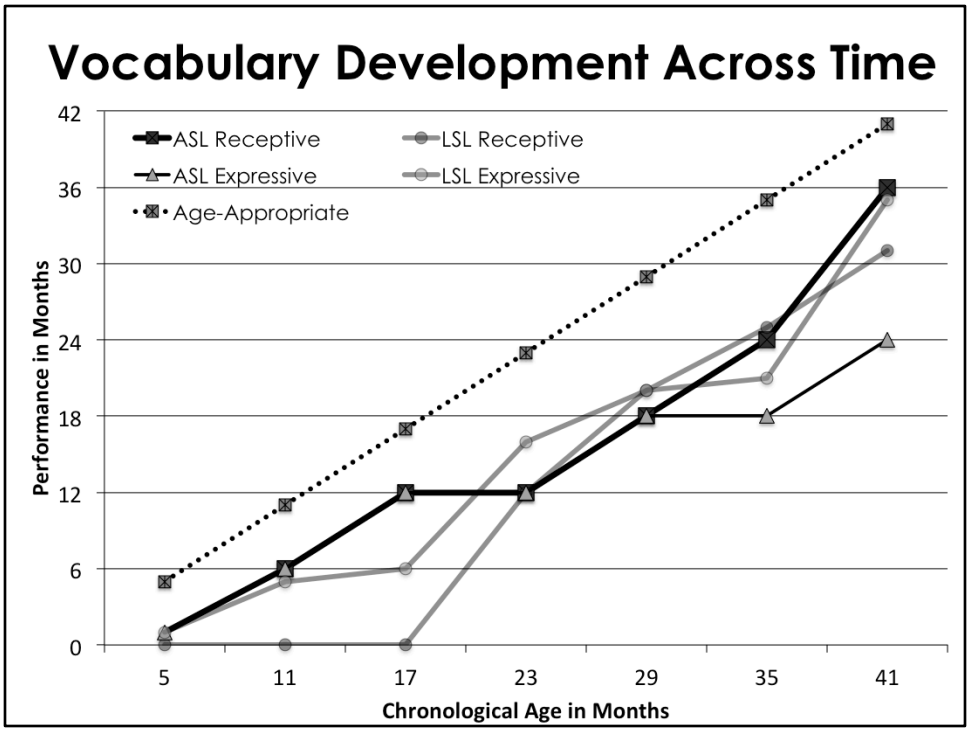
4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

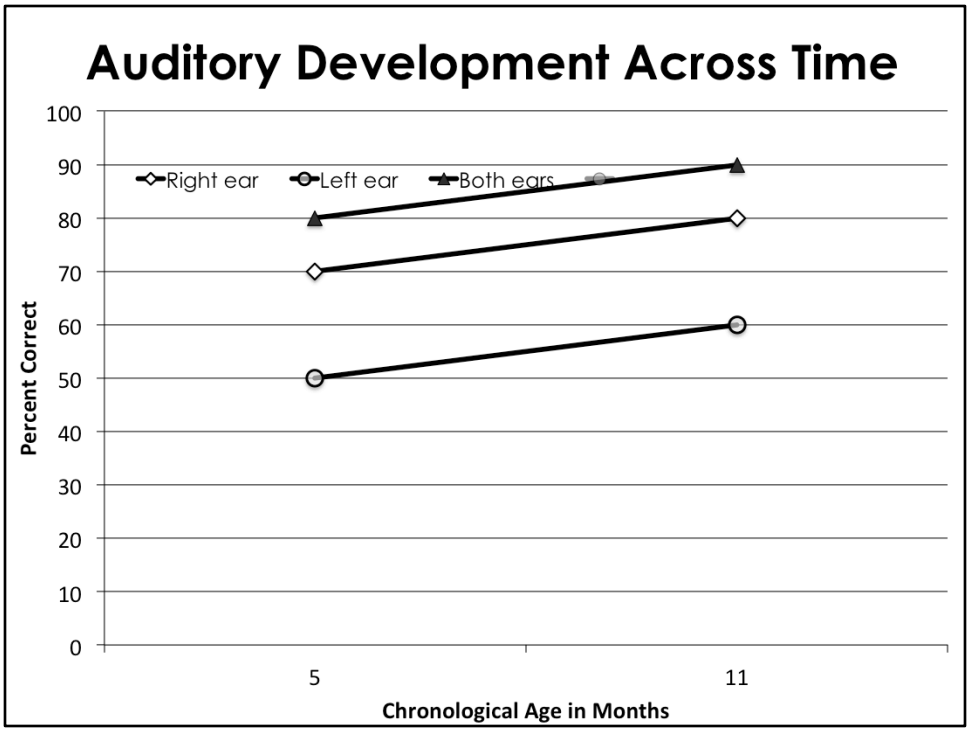
Taking turns communicating and allowing time for Samantha to communicate. Play a game of "communication catch": S communicates…mom responds (and waits)…S communicates…mom responds (and waits)
Only say something after S communicates…WAIT and expect communication!

WHY? It allows your child more opportunities to communicate.
More opportunities = more practice = growth in communication skills. It teaches your child how to have a conversation…and to wait their turn…my turn, your turn



4 months—received two digital hearing aids
4 months—began LSL therapy
18 months—cochlear implant, right ear
33 months—oral-only preK

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



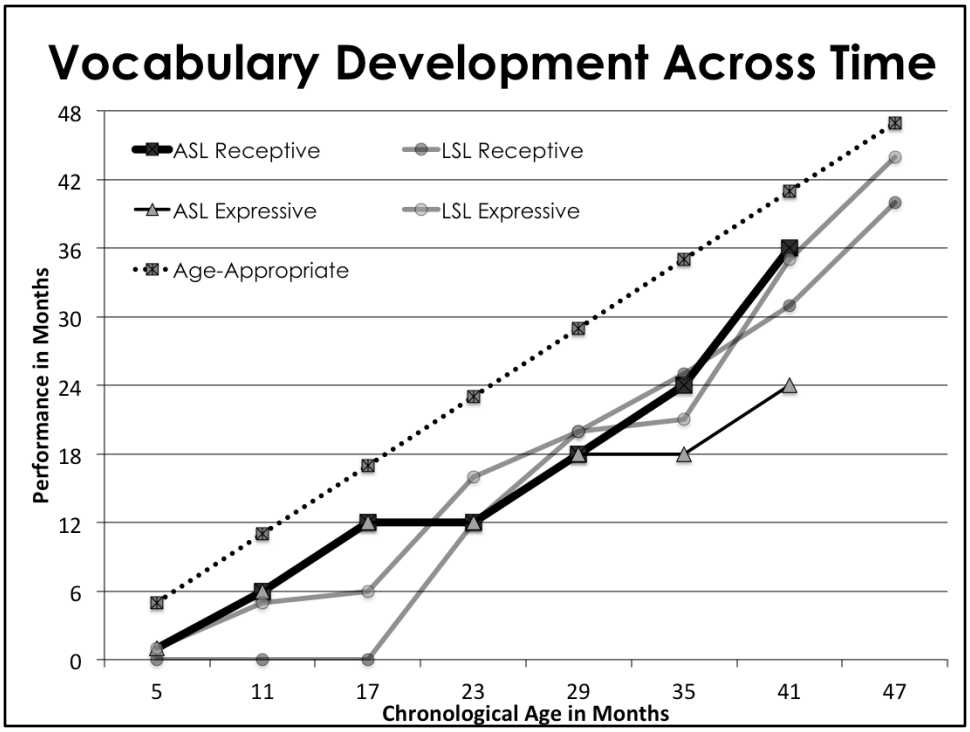
4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

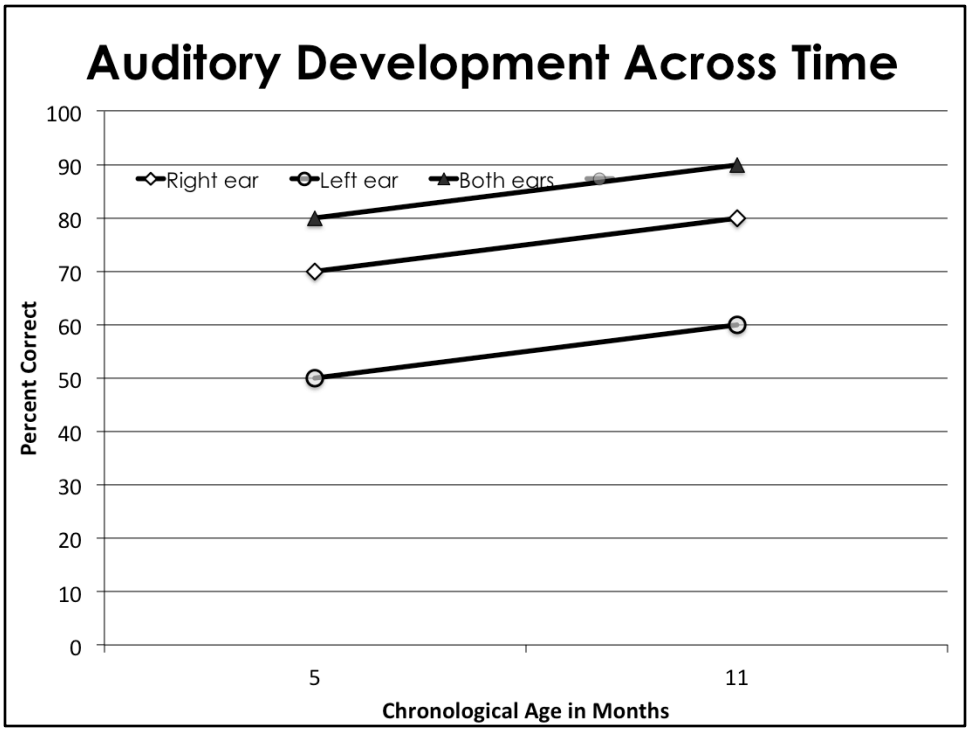
Samantha at 47 months

- Video place holder



18 months—cochlear implant, right ear
33 months—oral-only preK
44 months—cochlear implant, left ear
Mom 'changes' home language to spoken English with ASL support (Sim Com sign)

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



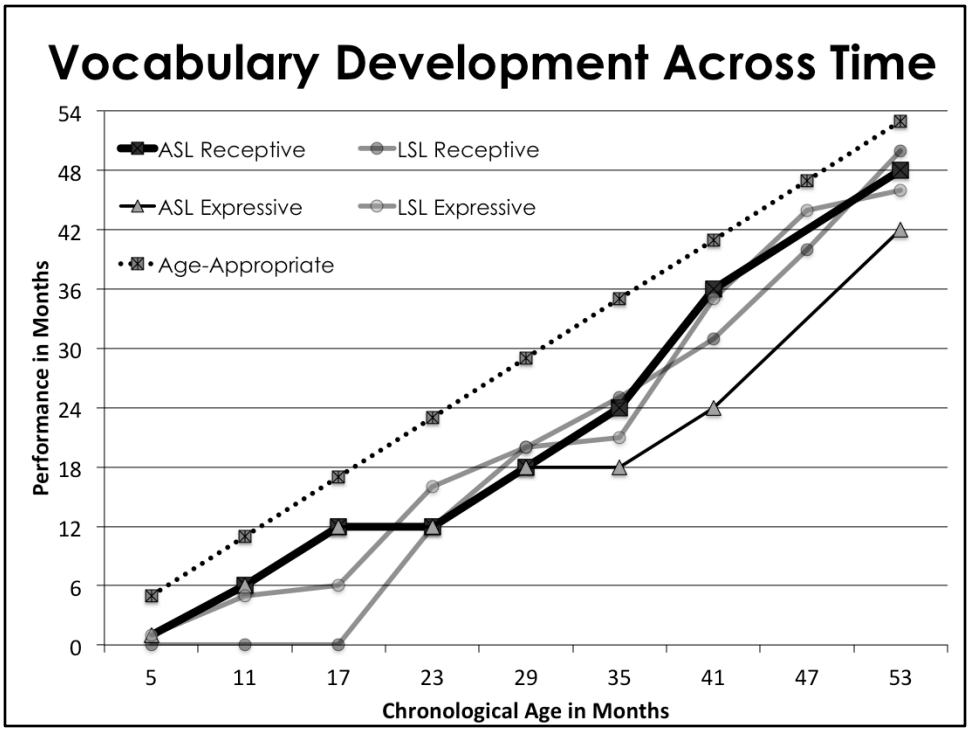
4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

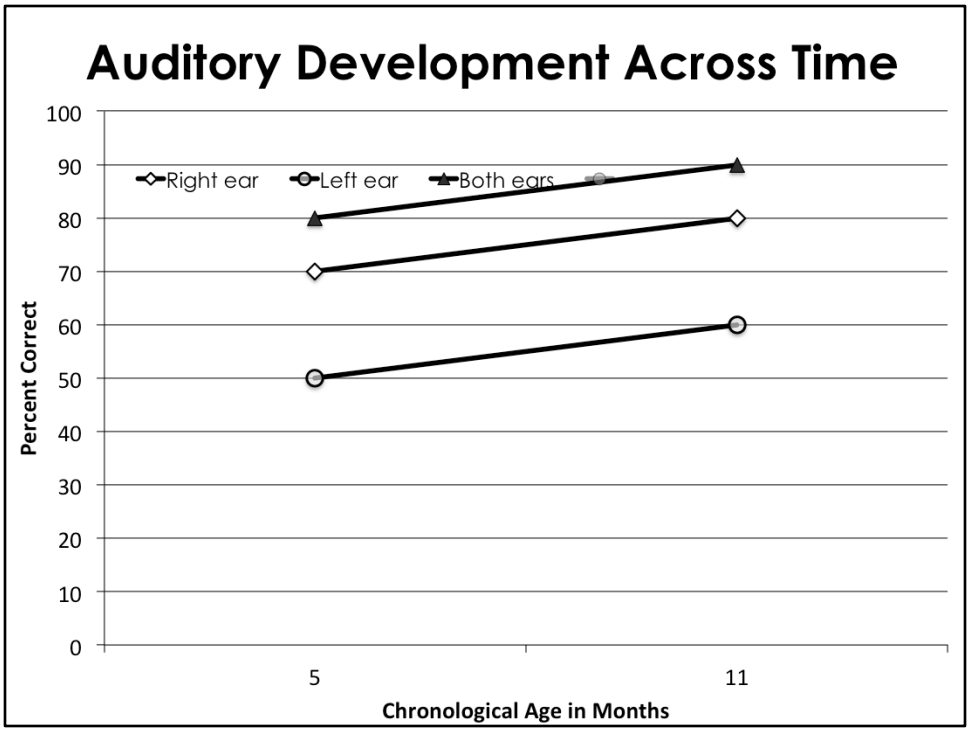
Samantha at 53 months

- Video place holder



18 months—cochlear implant, right ear
33 months—oral-only preK
44 months—cochlear implant, left ear
Mom 'changes' home language to spoken English with ASL support (Sim Com sign)

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



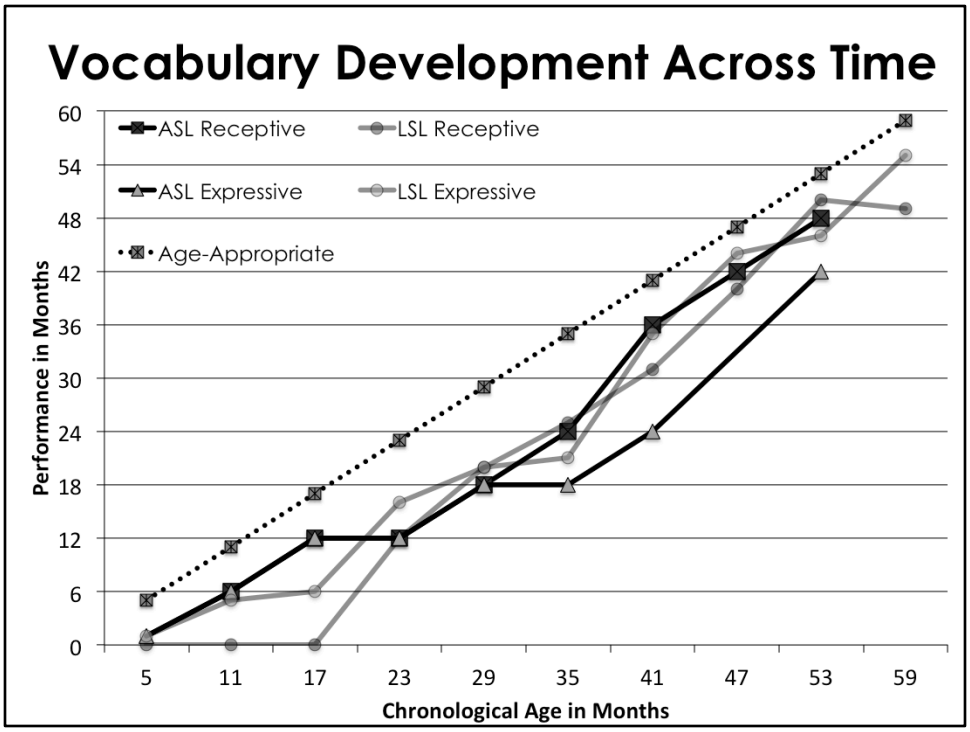
4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

Samantha at 59 months

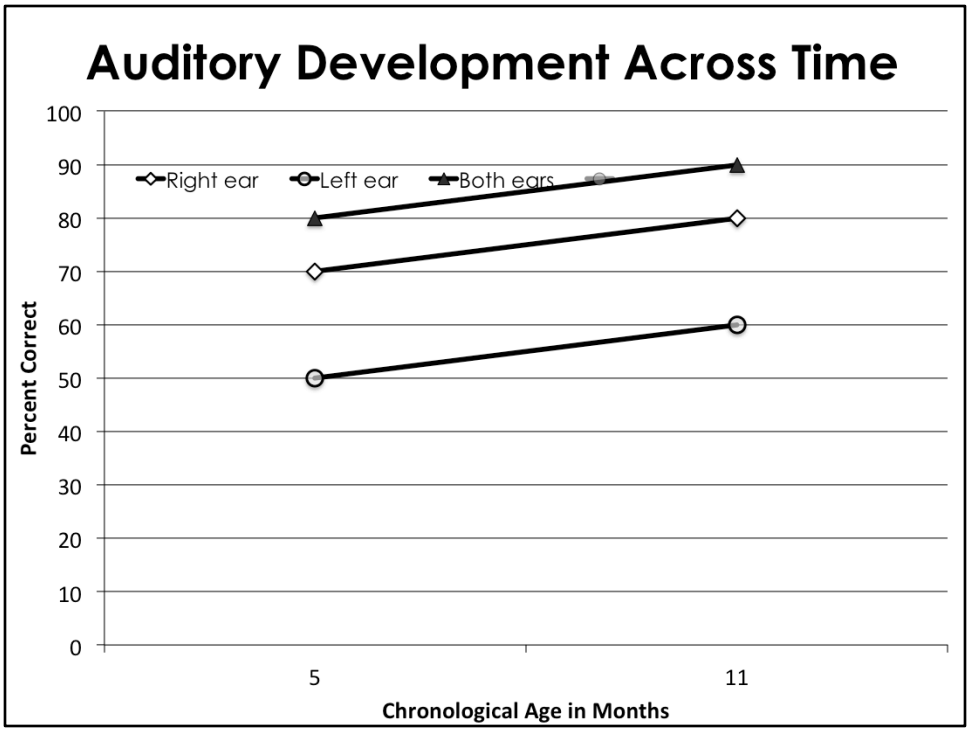
- Video place holder



18 months—cochlear implant, right ear
33 months—oral-only preK
44 months—cochlear implant, left ear

4-5…become more sophisticated—ASL has complex sentence formations (topicalization), and LSL has clauses and conditionals

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



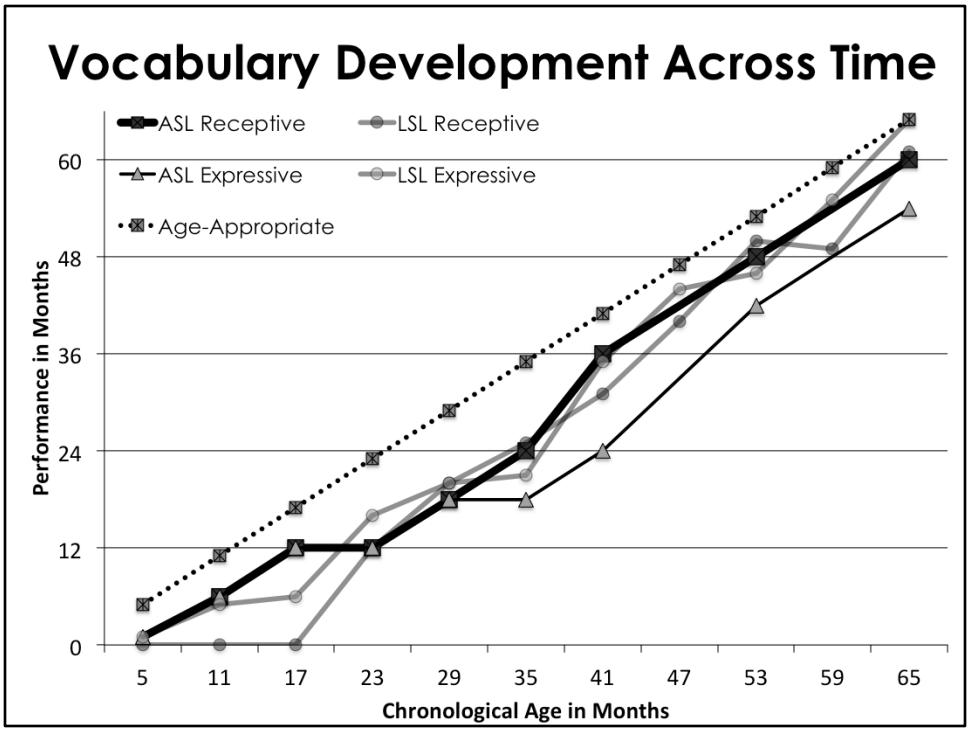
4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

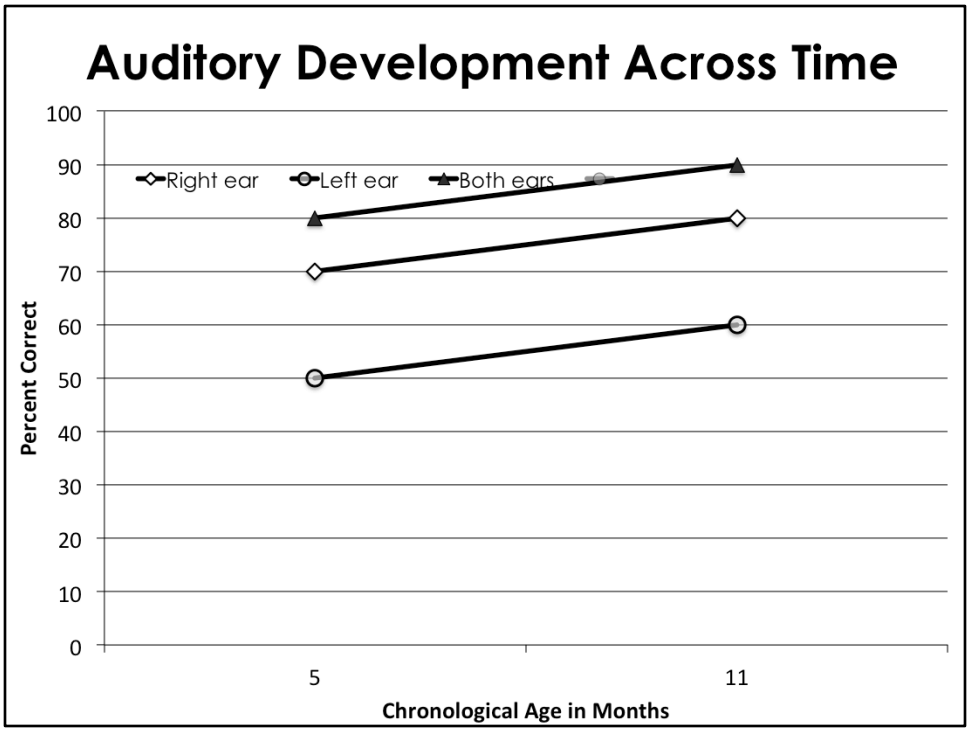
Samantha at 65 months

- Video place holder



18 months—cochlear implant, right ear
33 months—oral-only preK
44 months—cochlear implant, left ear

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



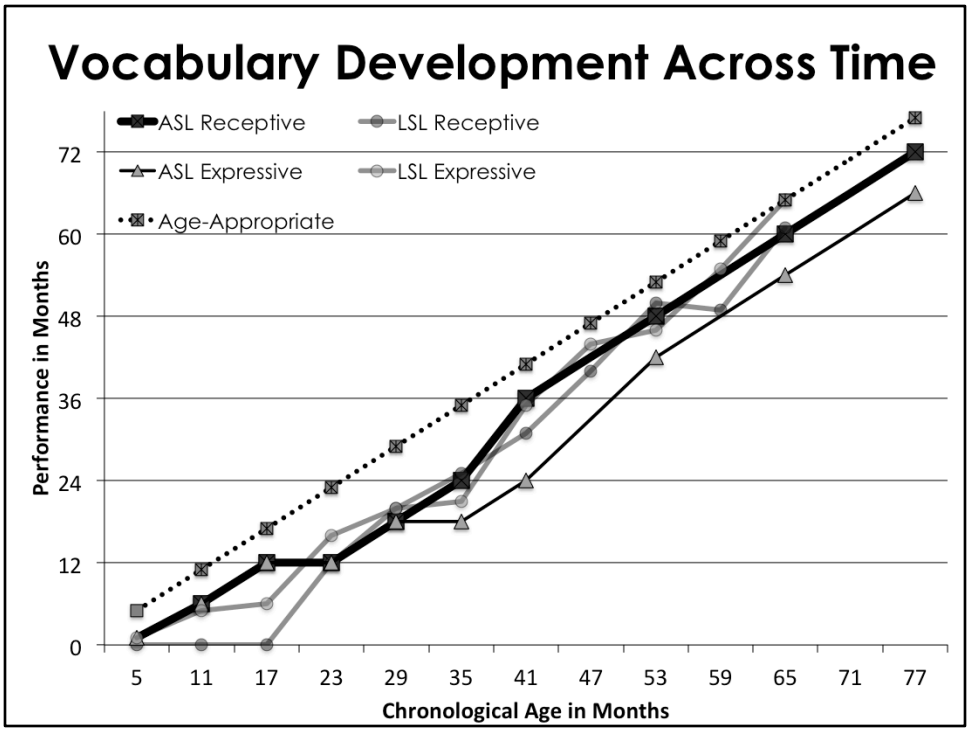
4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

Samantha at 77 months (now)

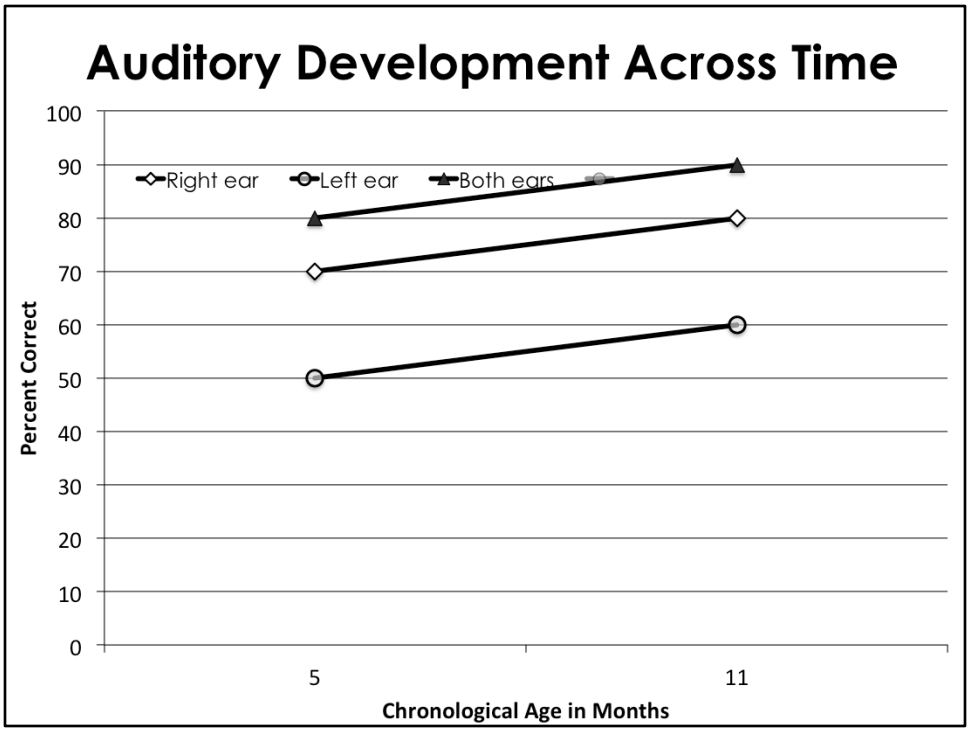
- Video place holder



18 months—cochlear implant, right ear
33 months—oral-only preK
44 months—cochlear implant, left ear
69 months—entered oral-only Kinder

Example of language interference:
Kim, can I just talk? I know it's a globe but now I don't know what this is in ASL. [GLOBE image will fade in…] http://asl-lex.org/
Borrow versus loan. In english and asl "Kim, please can you borrow to me your furry hatchimal?"

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.



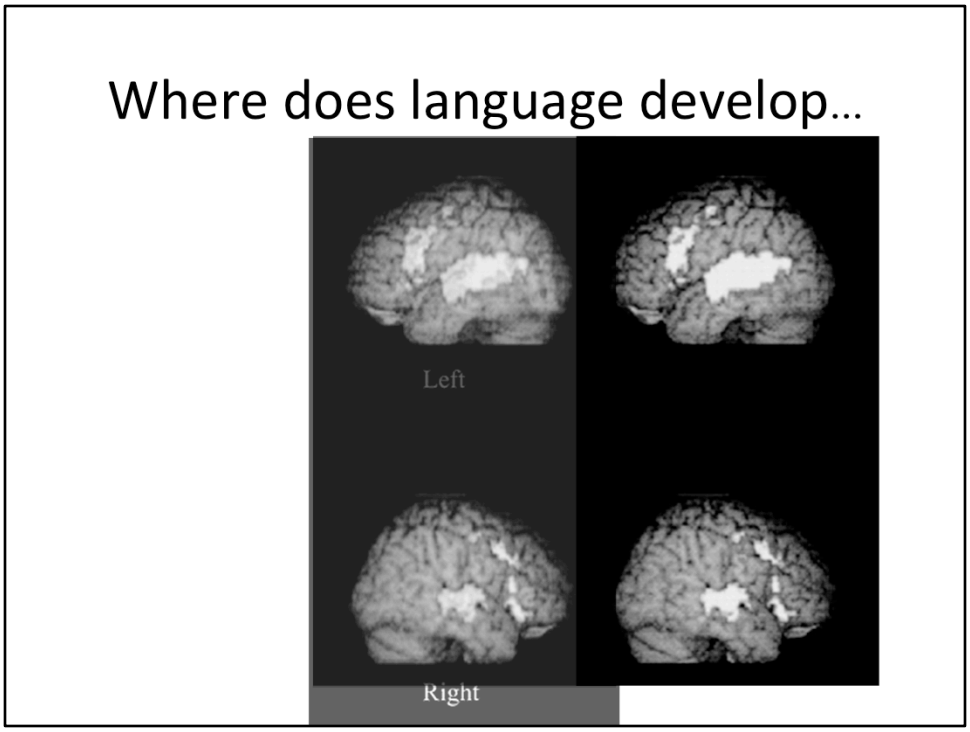
4 months—received two digital hearing aids
4 months—began LSL therapy

ASL Assessments—results not in one-month intervals, 2 or up to 6 month intervals. Not as fine grained.

Pass out: Developmental continuum, birth to age 4 of receptive language (draft only, non-published)

Result is…
Reading and writing at grade level!

Place holder for reading aloud from new book



Is bilingual lexical processing language-specific, or is there overlap and interaction between lexical processing in the two languages?
Early research suggests selective processing of the two languages in bilinguals, an idea that is not only plausible, but also intuitively attractive and cognitively efficient. Such a mechanism would protect a bilingual from spurious mappings onto the inappropriate lexicon.
Now, language inter-dependence
In general, though, cross-linguistic interference in the bilingual Stroop task is by now a well-established, frequently replicated phenomenon, and has generally been used to counter the selective processing account and to suggest that a bilingual's two lexicons can be activated virtually at the same time.
Three experiments elicited colour naming of coloured videos depicting colour ASL signs–either congruent or incongruent with video colour–and an unrelated condition. Results showed that colour identification is modulated by its congruency with the ASL sign,
Word frequency, rather than language, determines which lexicall entries are accessed, supporting the position that initial access in bilingual visual word recognition is language-independent.
The results yielded by the experiments reviewed so far do show that both lexicons can be active at the same time when there is lexical input from both languages. they do not demonstrate that both lexicons are active at the same time when there is no

Why has Samantha been successful?

Empirical evidence on language and practical lessons we can use:

- **A** language foundation is an important factor in spoken language development.
- Bilingualism is advantageous, especially for executive function.
- Language comprehension limits upper boundary for reading comprehension.
- **BUT:** 92% of children with HL born to hearing parents.
  - **Goal is children enter preschool (36 months) with**
    - **3-4 word/sign sentences,**
    - **350 or so words/signs**

Ellen Bialystok and Michelle Martin, two experts in bilingualism, explain in an article published in 2004 in the magazine *Developmental Science*, that "early bilingualism modifies and enhances the development of attention control in children while having little impact on how representations are analyzed."

Communication Continuum: Real classrooms with signers

- Sign supported speech = total communication = simultaneous communication
  - Works up to 3-4 word sentences
    - *Want more milk?*
  - At 3-4 words per sentence, child will show their language preference
    - 'Brain is basically lazy and will take the easiest path'

What happens when a hearing child is born to two signing deaf parents?
How do the hearing children learn to speak?
Why do hearing parents sign with their babies?
When do they stop signing?
At 3-4 words, easier modality is prioritized *depending on communication partner.*

IN the early years, what is language?

Communication!

- Any and all communication with your child
  - Requires **eye contact**
  - **Utilizes joint attention** to share information about world
  - Assures and comforts child as important and loved
- 'What works for the child is what makes the choice right'
  - Language(s) are right fit for child and family
  - Family is committed to the choice
    - Providing a language-rich environment is KEY, no matter the modality
- **FIRST LEARNINGS ARE POWERFUL!**
  - **What you do and say and how you do and say it…**

  …matters.

Notice and respond as much as possible and in all contexts throughout the day

Play
Meals
Routines (bath, car, dressing)

BUT FOR at least once a day for at least 15 minutes of concentrated and individualized adult-child time

Interpretation vs Translation

- [up to age 2.5] *Want more milk?*
- [up to age 4] *Do you want to play a game?*
- [up to adult] *Today we are going to learn about degrees of hearing loss.*

- Why too many deaf children with hearing parents flounder…
  - Develop critical language skills late
  - No true first language

To a Hearing Mother- Ella Mae Lentz