

The logo for the CLERC Center at Gallaudet is centered on a dark blue background. It features the word "CLERC" in a large, white, sans-serif font. A stylized graphic element, consisting of three curved, overlapping shapes in red, orange, and blue, is positioned to the left of the "C" in "CLERC". Below "CLERC" is the word "CENTER" in the same white, sans-serif font. At the bottom of the logo is the phrase "AT GALLAUDET" in a smaller, yellow, sans-serif font.

CLERC
CENTER
AT GALLAUDET

Housekeeping



POLL #1

Which best
describes
your role?
Select all
that apply.



Teacher



Professional



Parent/Caregiver/Family Member



Community

POLL #2

Which
educational
setting are you
currently in?



School for the Deaf



General Education



College/University



State or Federal Educational Offices



Home Schooling

The Power of “AND” in Deaf Education

Language
and the Brain
at School and
at Home

POLL #3

How familiar
are you with
today's topic?



Very familiar 🧠



Somewhat familiar 😎



A little familiar 😊



Not familiar at all 😞

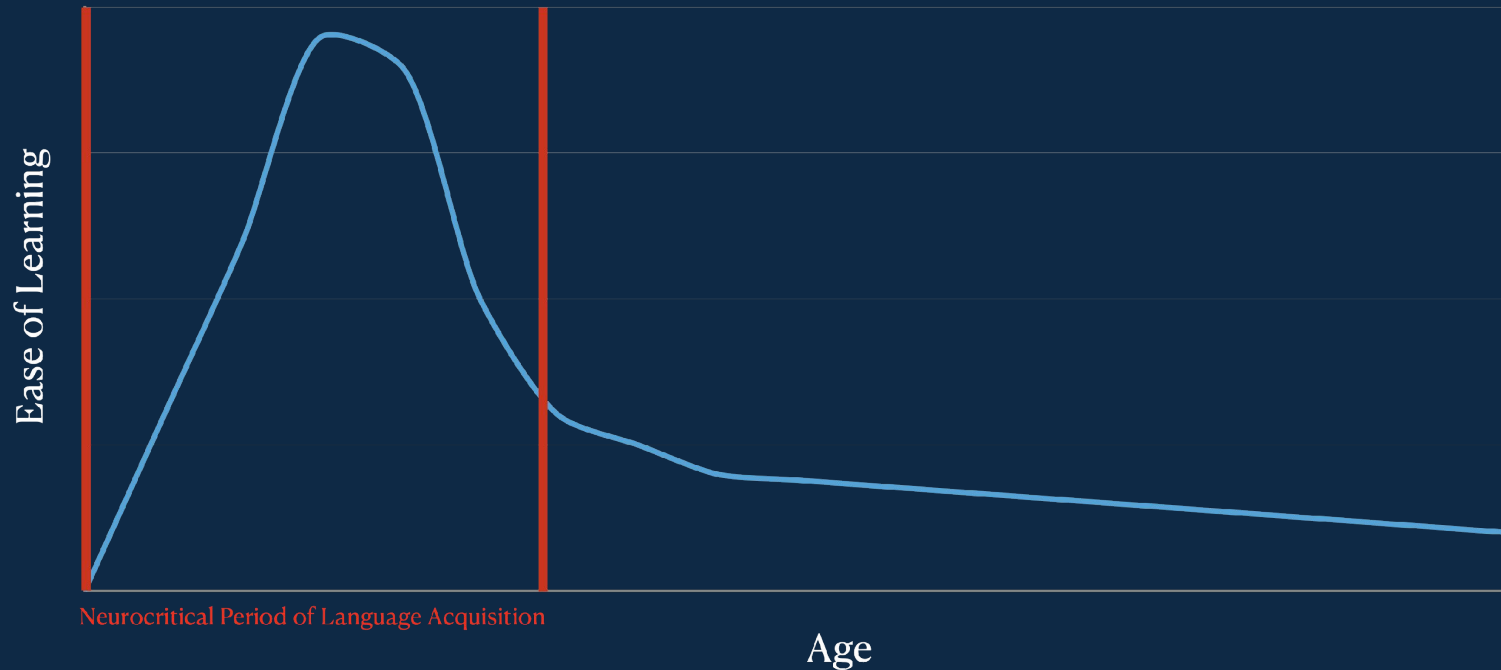
Wyatte Hall, PhD

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Director, Visual Language Access and Acquisition Lab
Co-Director, Future Deaf Scientists Program
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Director, Language Deprivation Track
Deaf Child Resilience Center
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First language learning is both
biological- and **experience-driven.**



Uncontroversial facts about signed languages:

- They have their own grammar and rules just like any spoken language.
- They constantly evolve through everyday use just like any spoken language.
- Anyone can learn them with enough exposure and/or practice just like any spoken language.
- Many countries have their own signed languages just like countries have their own spoken languages.
- Regional variations and accents are prevalent just like any spoken language.
- Children, deaf and hearing, grow up perfectly healthy with immersive, long-lasting exposure just like any hearing child does with spoken language.



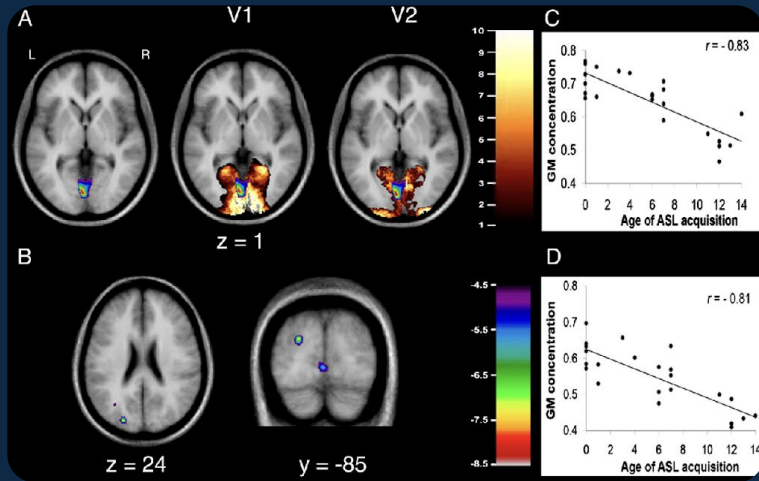


The Power of “AND” in Deaf Education

Language
and the Brain
at School and
at Home

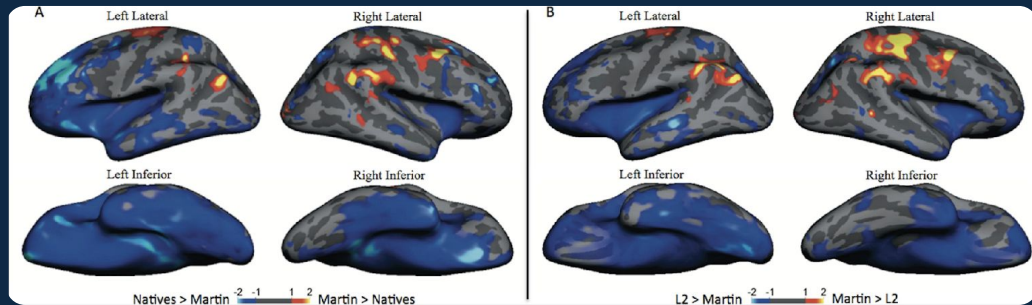
More language
exposure = **more** brain
development.





Gray-matter concentration in occipital cortex decreases with increased age of acquisition. (Pénicaud et al., 2013)

Atypical neurolinguistic processing seen in brain of Martin, exposed to sign language at 21. (Mayberry et al., 2018)



“... effects of early language deprivation [can lead to underdevelopment and less myelination of language pathways] ... growth of the brain language pathways is not solely ... biological maturation but requires language acquisition during childhood ... for the **brain language system to develop and connect in the expected fashion.**”

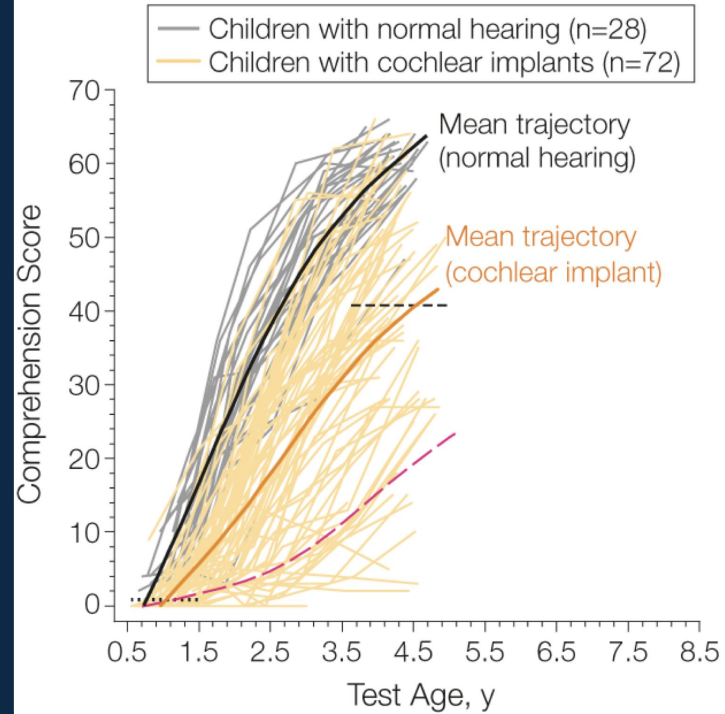
(Cheng, Halgren, & Mayberry, 2018, p. 148)

There is **no evidence that learning multiple languages in different modalities harms development.**

There is a lot of evidence that delayed and inconsistent exposure to fully accessible language(s) can negatively impact brain and overall healthy development.



Age <18 mo



(Niparko et al., 2010)

“... enormous variability in auditory, speech, and language functioning after implantation.”

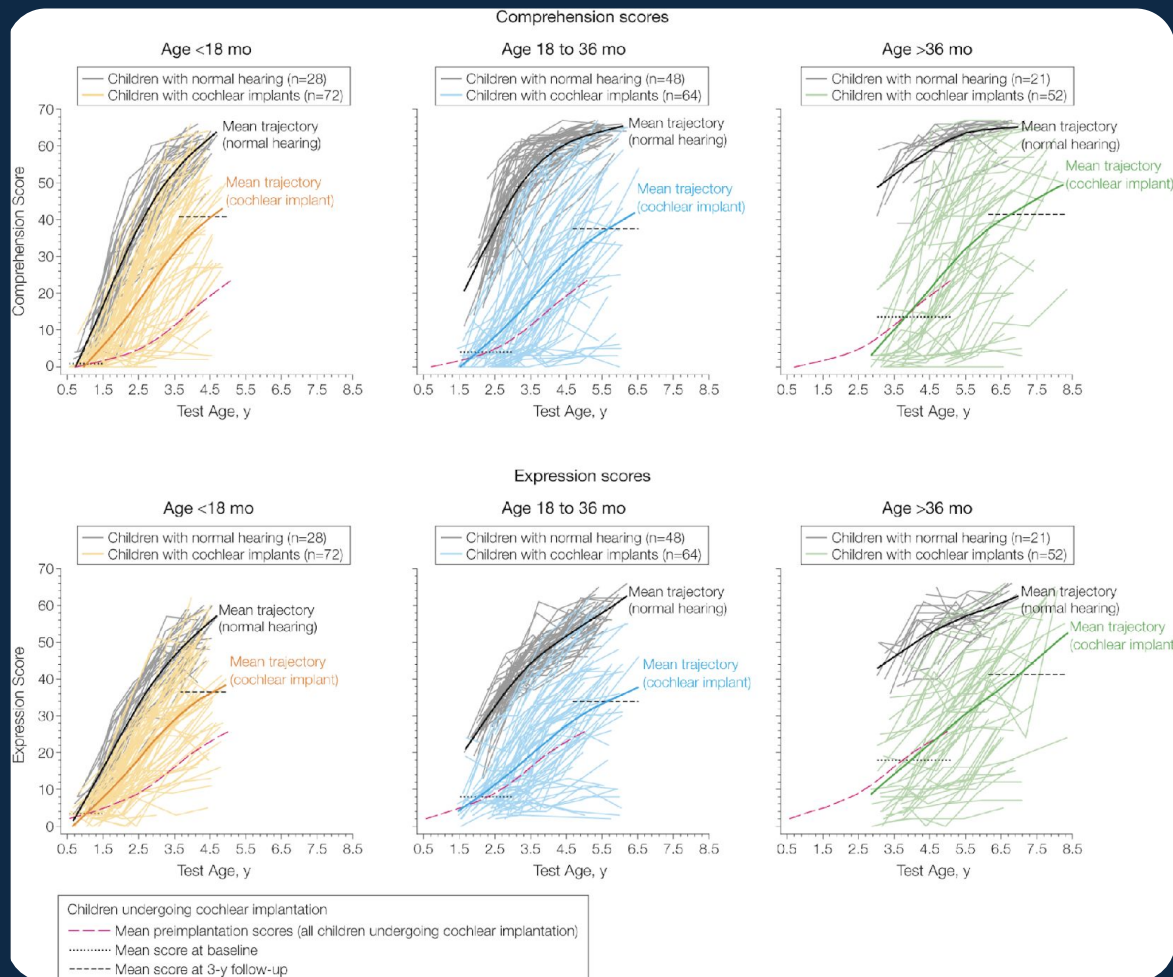
(Kral et al., 2016, p. 614)

“... large inter-individual variability in linguistic and auditory performance.”

(Chiselli et al., 2016)

“... parents must make decisions without any guarantees about the level of benefit their children will receive from having cochlear implants.”

(Hype, Punch, & Komesaroff, 2010, p. 162)



Can signed language
fluency **support** spoken
language acquisition?



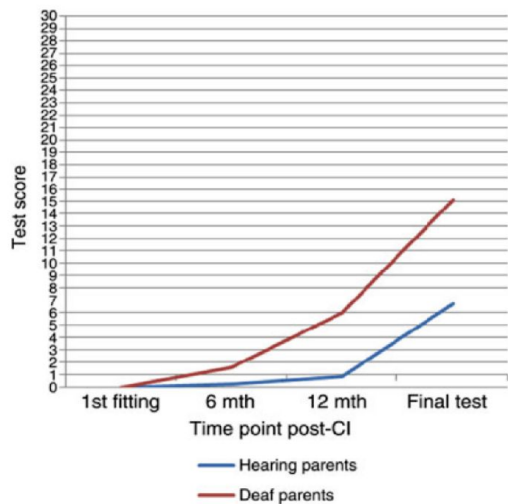


FIG. 3

Results for the Sentence Imitation Test in deaf children with hearing parents and those with deaf parents. Mth = months; CI = cochlear implantation

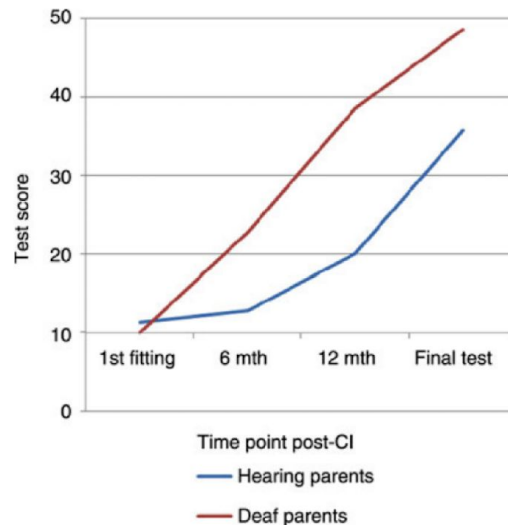


FIG. 2

Results for the Speech Intelligibility Rating scale in deaf children with hearing parents and those with deaf parents. Mth = months; CI = cochlear implantation

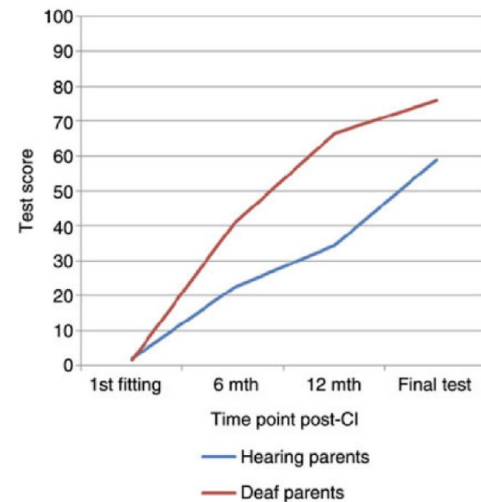


FIG. 1

Results for the Persian Auditory Perception Test for the Hearing Impaired in deaf children with hearing parents and those with deaf parents. Mth = months; CI = cochlear implantation

(Hassanzadeh, 2012)

“Without a period of language deprivation [before implantation], children can develop spoken language skills ... sign language input does no harm ... The participants were not implanted especially early, but they did have access to language from the day they were born.”

(Davidson, Lillo-Martin, & Chen Pichler, 2014, p. 247)

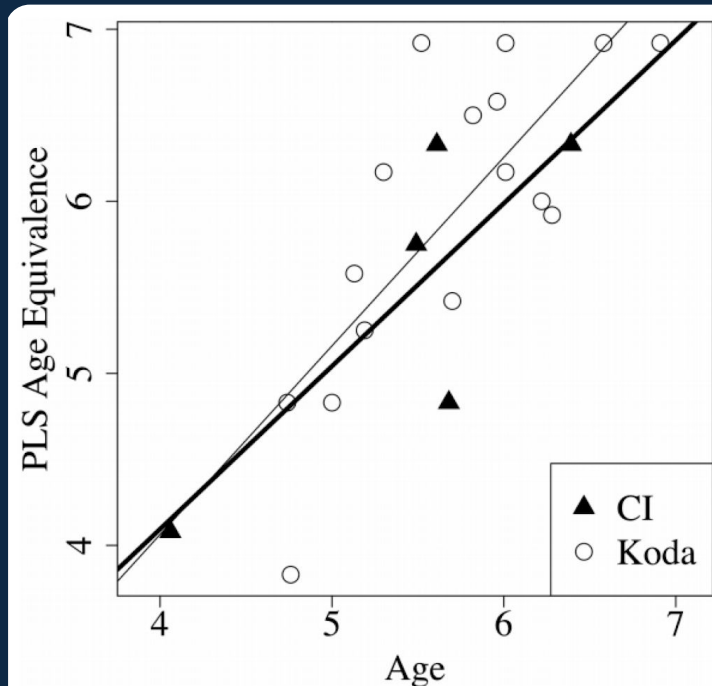


Figure 2 Preschool Language Scales (PLS) age equivalence scores for cochlear implant (CI) and koda participants. The individual linear regression of CI scores by age is represented by the darker line and kodas with the lighter line.

What about **non-native signing parents** *and* **cochlear implants**?

On measures of spoken language abilities ... [and phonological working memory and short-term memory], deaf children ... who had **more exposure** to sign language, including a few months post-implantation, did not differ significantly from typically hearing children. Both of these groups scored significantly higher than deaf children who had **less exposure** to sign language and significantly better than the children who had **no exposure** to sign language.”

	CI-None M (SD)	CI-BI M (SD)	CI-BAI M (SD)	TH M (SD)	F(3, 36)	p	η^2
PSTM	10.60 (1.58)	16.20 (3.22)	23.40 (5.36)	24.60 (3.24)	32.96	<0.001*	0.73
PWM	2.70 (3.13)	6.70 (3.68)	14.10 (3.98)	15.80 (2.97)	31.76	<0.001*	0.73
Expressive language	55.30 (15.80)	63.90 (13.80)	88.30 (14.94)	100.40 (10.51)	22.71	<0.001*	0.65
Receptive language	65.70 (21.35)	84.20 (15.56)	110.60 (22.25)	121.00 (13.62)	18.32	<0.001*	0.60
Structure of language	25.30 (10.65)	35.80 (6.88)	63.40 (9.78)	71.10 (12.49)	46.30	<0.001*	0.79

(Delcenserie, Genesee, & Champoux, 2024)

Four groups of 10 children aged 6 years:

1. Sign exposure before (6m) and after CI (15m)
2. Sign exposure ONLY (4.5m) before CI
3. CI with no sign exposure
4. Hearing

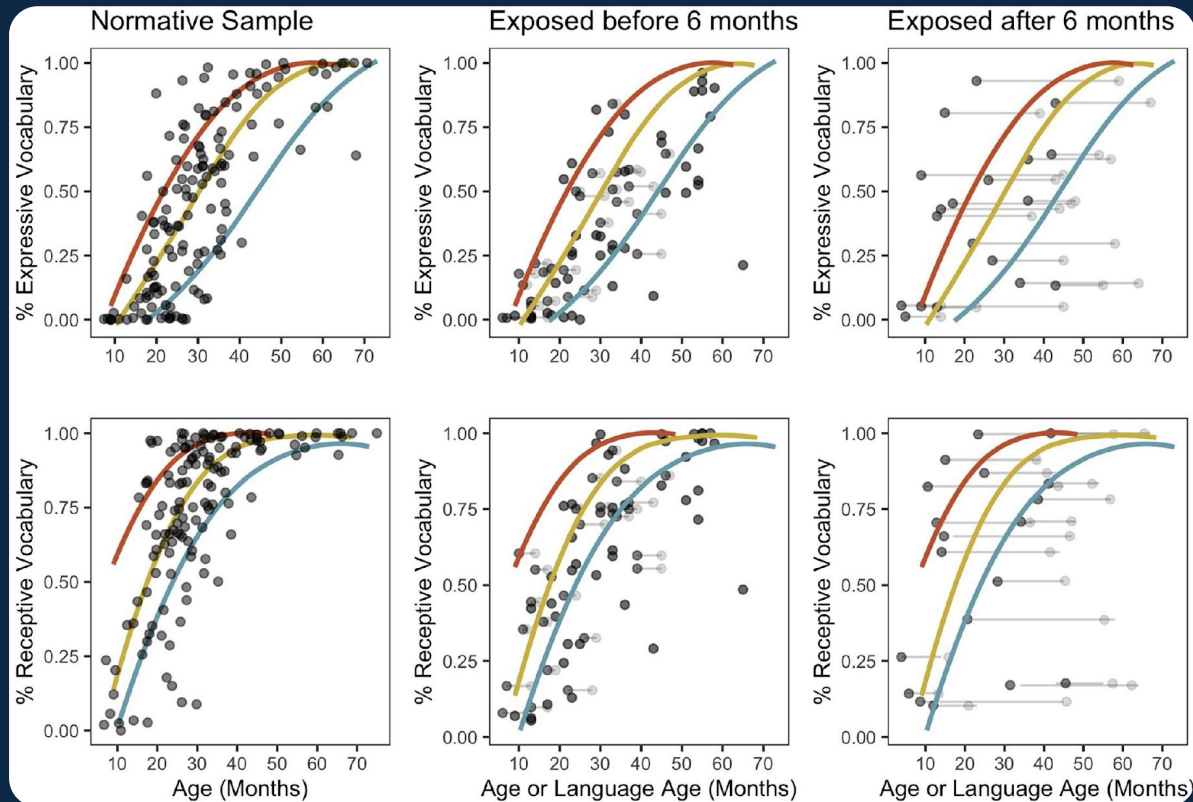
Deaf children who are signers before they receive a cochlear implant outperform non-signing children with cochlear implants. Cochlear implants are reliable sound access devices, but **they are not reliable first language acquisition devices.**



**Commit to learning
sign language and
don't stress about
your fluency.**

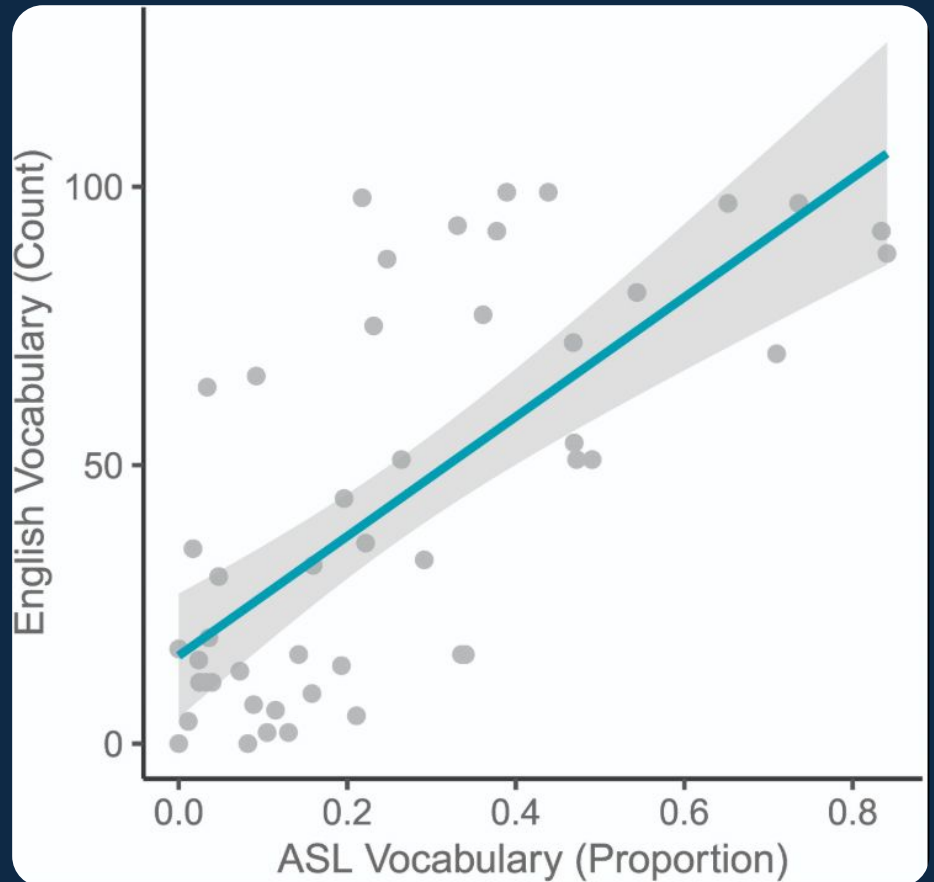


ASL Vocabulary and Hearing Parents



(Caselli, Pyers, & Lieberman, 2021)

“56 ASL-English bilingual DHH [deaf and hard of hearing] children with hearing parents had total vocabularies (combining ASL and English) ... equivalent to same-age hearing monolingual children. **Children with large ASL vocabularies were more likely to have spoken English vocabularies in the average range** based on norms for hearing monolingual children.”



(Pontecorvo et al., 2023)

Hearing parents beginning to learn signs with their deaf baby can promote timely language development with and without the cochlear implant. Continue to support and encourage the use of sign language at home.

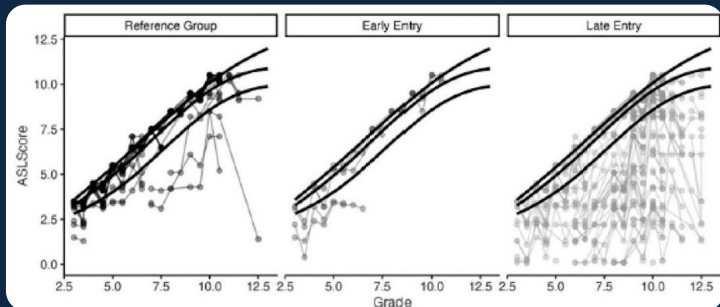


**The least restrictive
environment for deaf
children is one in which
they have **direct
instruction and full access**
to adult language models
and social peer groups.**



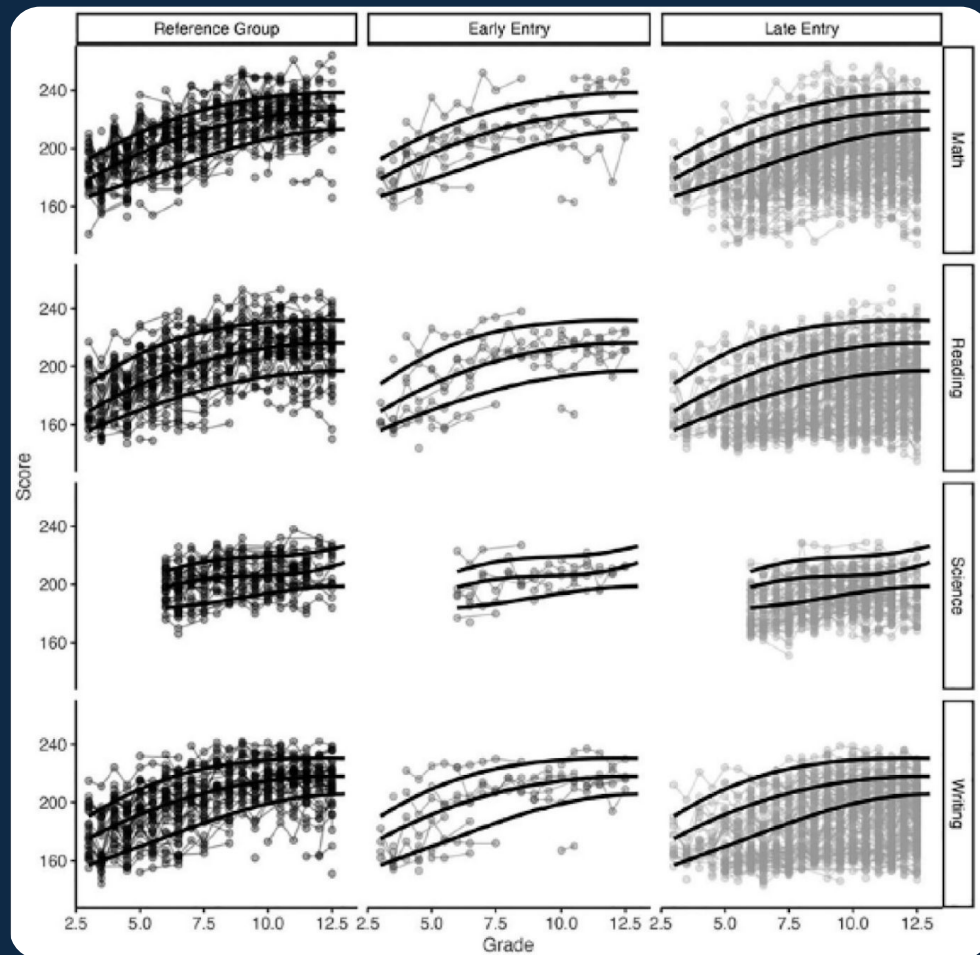
Age-Expected Language and Academic Outcomes for Deaf Children with Hearing Caregivers

Erin Finton, MA; Wyatte C. Hall, PhD; Michele Berke, PhD; Ronald Bye, MA; Stuart Ikeda, MA; and Naomi Caselli, PhD (2024)



Measure of Academic Progress (MAP) standardized testing

- Reading, writing/English grammar, math, science



3 Years Old

Schools for the deaf often receive their largest group of students as late transfers from mainstream public schools around sixth grade with avoidable language and social delays. Instead, earlier enrollment in language-rich environments maximizes academic, social, and language success.



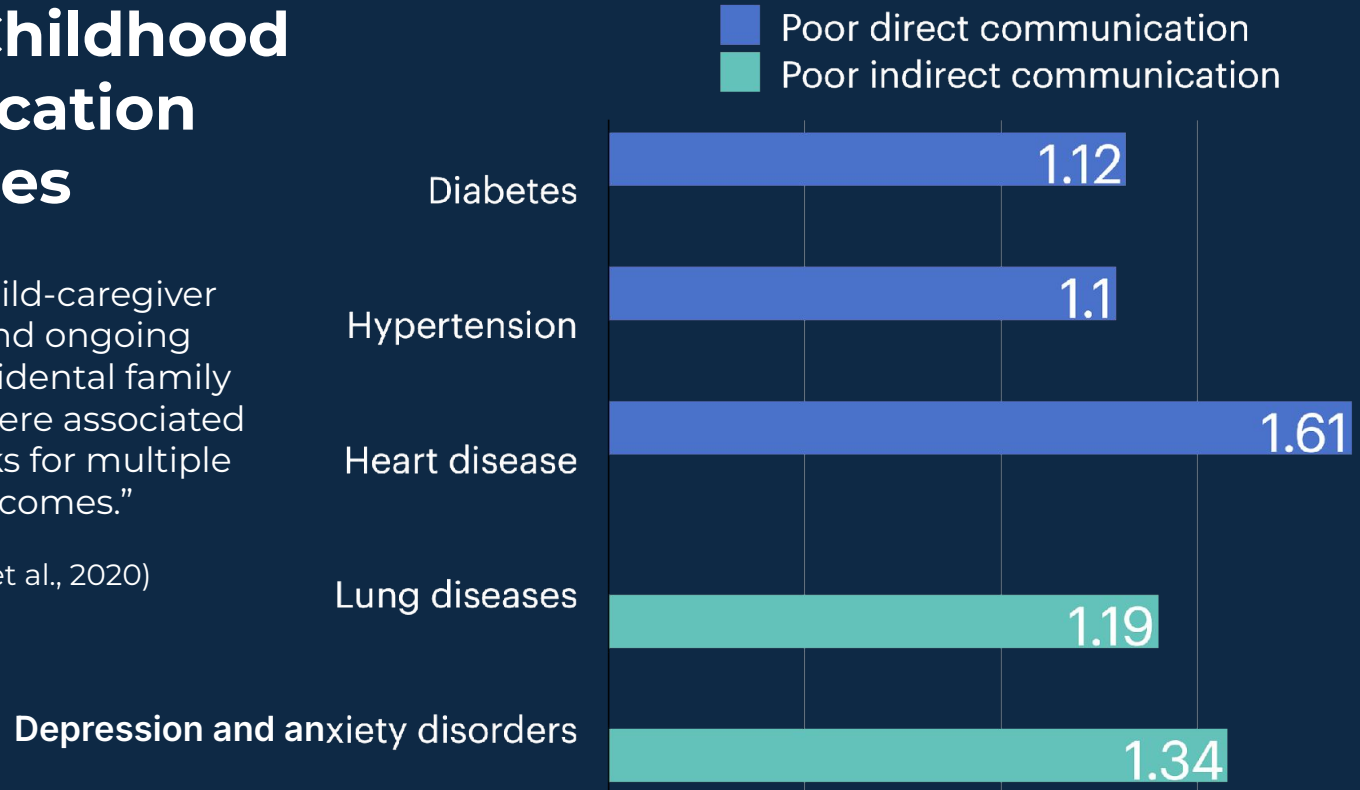
**Protect your child's
well-being and mental
health with accessible
communication.**



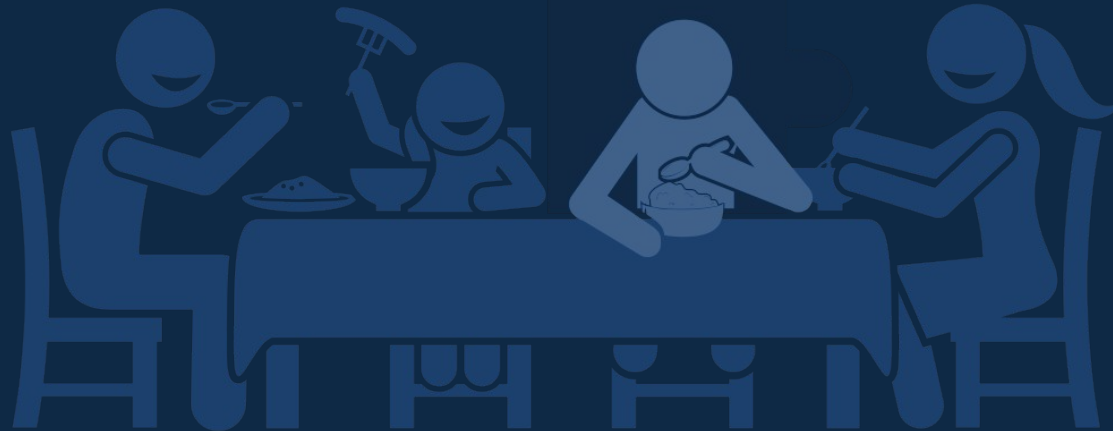
Adverse Childhood Communication Experiences

“... poorer direct child-caregiver communication and ongoing exclusion from incidental family communication were associated with increased risks for multiple chronic health outcomes.”

(Kushalnagar et al., 2020)



Many deaf people experience what is colloquially called “Dinner Table Syndrome,” where as children they miss a lot of direct and indirect conversations that are spoken within the home. **Family conversations are powerful contextual learning opportunities for children to learn** about the world, their health, and even their own family. Ensuring access to these types of opportunities can impact the overall well-being of your child.



Communication Before Cognition

Cognition **Before Communication**

Q&A

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The Power of “AND” in Deaf Education

Language
and the Brain
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at Home

Infographics
available for
download



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Inside Deaf Education
Cognition Before
Communication

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THANKYOU!

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