



Foundational Skills Resources & How They Benefit the Brain and Cognitive Development of Deaf Children

Dr. Melissa Herzig
Assistant Director, PhD in Educational Neuroscience & VL2 Education and Research Translation Manager

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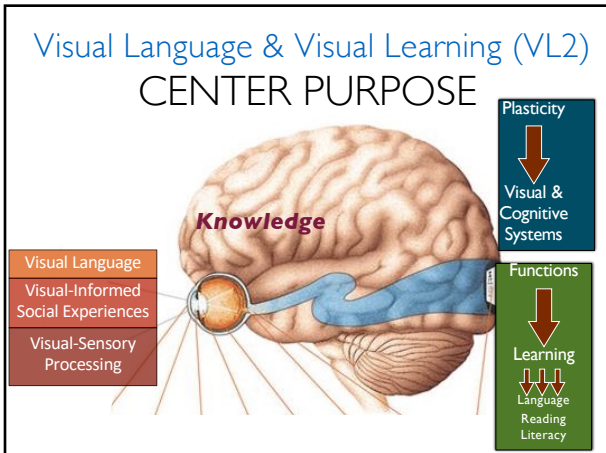
WELCOME

Introduction

Foundation Skills & Bilingualism

Resources & Questions

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Research

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Does it make any difference on what basis the child learns foundation skills from?

Sign?



Auditory input?

Speech?

Visual input?

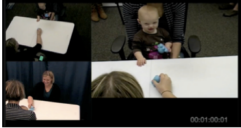
When, which, more than one?

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Early Sign Language Experiences

- Children exposed to and use ASL have better and frequent eye contact with the caregiver
- Learn more about the world while also gaining social skills
- Stronger vocabularies → language → reading → literacy development

All that helps with learning and communicating efficiently at home and at school



Most, Rothem, & Luntz, 2009; Singleton & Crume, 2010; Lieberman, Hatrak, & Mayberry, 2011; Lieberman, Hatrak, & Mayberry, 2014; Singleton, Brooks & Meltzoff, in progress

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Socio-emotional Development & Language

Research shows the connection between language deprivation and neurocognitive processing, indicating that early exposure to a visually based language and culture leads to

- optimal visual engagement
- executive functions,
- and socio-cognitive skills

Deficits in social-emotional development among DHH children is a result of language deprivation, not hearing loss

Corina & Singleton, 2009; Hall et al., 2019

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Early Language Experience-Babbling



Petitto & Marentette, 1991

Petitto, et al. 1991

Deaf children-
babbling on the hands at 6 months

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Children hit the same milestones if given early language access.
(No reason to withhold language)



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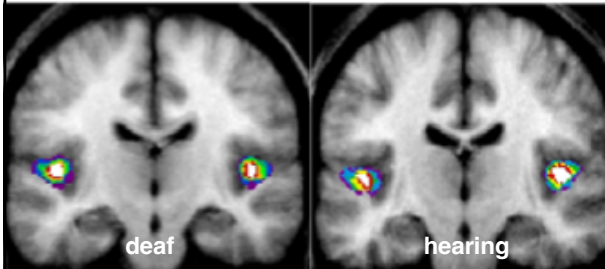
Biological Need for Language

- This biological process includes the segmentation of languages on the hands in signed languages. (rhythm & patterns)
- Exposure to natural sign language in early life helps the brain develop visual sign phonology (VSP)
- sound and sign phonology are equally important in language learning and reading

Petito, L. A., Langdon, C., Stone, A., Andrich, D., Kartheiser, G., & Cochran, C. (2016).

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Visual Phonology (ASL) & Sound Phonology (English) activate the identical brain tissue



Petitto et al 2000; Kovelman, et al & Petitto, 2008; 2009

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Fingerspelling

Fingerspelling has sonority: It is not simply a representation of printed letters on the hands
(Stone, Petitto, & Bosworth, 2017).

Fingerspelling is a strong link between ASL and English print
(Allen, 2015)



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Fingerspelling & Reading


Early ASL receptive proficiency

↓

Stronger Letter Recognition Skills

↓

Learning to Read



This applies to children whose parents (hearing or deaf) use sign language

Allen, 2015; Allen & Moreere, 2013

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Language Learning & Reading

- Deaf children need EARLY exposure to Sign Language, and exposure to Visual Sign Phonology for optimal English reading success
- It's Biological.
- Bilingualism strengthens the Brain



Petitto, L. A., Langdon, C., Stone, A., Andriola, D., Kartheiser, G., & Cochran, C. (2016).

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Early bilingual exposure does not block the development of speech, but late exposure may impair language and cognitive development.

Davidson, Lillo-Martin, Chen-Pichler, 2013; Hassanzadeh, 2012; Tomasuolo, Fellini, Di Renzo, & Voltera 2010; Jemenez, Pino & Hemuz, 2009; Uhlen, Bergman, Hagg, & Erikson, 2005; Connor, Hieber, Arts, & Zvolan, 2000.

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Numeracy

- Research findings show that there are no neural difference in brain for processing (ASL or Spoken English)
- Data supports a FUNCTIONAL role of ASL phonology in multiplication proficiency
- This shows that early sign language skills supports normal numeracy development

Berteletti, I., Kimbley, S.E., Sullivan, S.J., Quandt, L.C., and Miyakoshi, M. (2022)

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Does it make any difference on what basis the child learns foundation skills from? YES!

- Early foundational skills development impacts language learning, numeracy development, socio-emotional development, and readiness for school.

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Foundational Skills Resources for Families

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My ABC Book

Let's Learn Numbers 0 - 10

- count (●●●●●)
- American Sign Language (ASL)
- fingerspell (one, two, three)
- read (three **)
- write (three **)
- draw (OOO)

Sunday

Su M T W Th F Sa

Foundational Skills Resources
VL2family.org

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Foundational Skills Resources

- The optimal time for all children to build a strong language foundation is between ages 0-4. During this time, children need regular and clear access to language. These early visual language skills will boost academic achievement, social skills, and social-emotional development. Early access to sign language builds the foundation your child needs for lifelong success.

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Learn the Alphabet

- Your child build the alphabet knowledge by recognizing the shapes of fingerspelled and printed letters, upper and lowercase letters, and letter writing. Activities include tracing the letters and linking the letters to the fingerspelled alphabet, identifying, matching, and filling in the blanks. Download the cards, chart and worksheets.

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Learn the Numbers

Let's Learn Numbers 0 - 10

- count (●●●●●)
- American Sign Language (ASL)
- fingerspell (one, two, three)
- read (three **)
- write (three **)
- draw (OOO)

The worksheets will help your child make connections between numerals (1,2,3), printed words (one, two, three), signed numbers in ASL, and symbols (three dots). These will serve as building blocks for more numeracy skills such as sorting, counting, patterning, etc. Download the cards, charts, and activity worksheets for free.

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Word Recognition

- Your child can learn to recognize basic vocabulary words. Knowing those words and using them can help build social skills and their ability to express themselves. These worksheets will support their development of the foundational skills needed to recognize words, learn to read, and to communicate.

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