Visual languages: A crucial part of early language acquisition for DHH children

Bernice Adekeye & Emily (Wojahn) Small

PhD Students, Critical Studies in the Education of Deaf Learners
Gallaudet University
Washington, DC

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Visual Language Is	Visual Language Is Not
Communication of signs	Manual communication system
Spontaneously developed ● Accessible, ● Natural, ● Uninhibited	Artificial
Ex. ASL, Manual babbling in Deaf and hearing babies (Gesture)	Ex. MCE, SEE, SimComm

Baker, 2011; Hall et al., 2019; NAD, 2015; Petitto & Marentettes, 1991; Petitto et al., 2004.

What they say/Common Fears/Myths	What we know
A child will be confused when exposed to two languages concurrently (Shydlo, 2017; Simms et al., 2017)	A child has the capacity to develop two languages concurrently (Petitto, 2009)
Visual Takeover Hypothesis (Tremblay et al., 2010; Champoux et al., 2009)	The brain has the capacity to process both languages concurrently (Petitto, 2009)
Auditory Scaffolding Hypothesis (Conway et al., 2009)	Multiple sensory approaches do not hinder one another (Larson 1971)
Emphasize spoken language instead of language (Hall et al., 2019; NAD, 2015)	Full and complete language should be goal, not just spoken language (Hall et al., 2019)

Shortfalls of speech-only approach

Biological neural capacities throughout infancy and early childhood

- Speech-only intervention is associated with initial language delays because Deaf babies are born without prenatal language exposure opportunity
- Early strong neurological pathways formed in the brain, later pruned for fewer stronger pathways leading to language and cognitive development
- The infant brain is wired to recognize visual input earlier than auditory input

Bouchard et al., 2009; Harvard University, n.d.; Humphries et al., 2016.

Shortfalls of speech-only approach

Spoken language intervention outcomes vary.

- using CI, hearing aids, speech training vary more greatly than
- Only 2 out of 5 children fit with listening technologies achieve expressive speech ability.
- Limited and varied spoken language intervention outcome.

Bouchard et al., 2009; Peterson, Pisoni, & Miyamoto, 2010; Tamati, Pisoni, & Moberly, 2022; Davidson et al., 2015.

Shortfalls of speech-only approach

It is not spontaneous for a DHH child.

It is not

- accessible,
- readily available,
- smooth and swift to assimilate.

Hall et al., 2019; NAD, 2015

Benefits of inclusion of visual languages

The use of early ASL promotes what we know about biological, neural capacities and the development of language and cognition

- Use of visual language is a protective factor for future linguistic and cognitive development
- Oral languages are not necessary for whole-child development of DHH children.
- Children in a total communication program with CIs showed greater rate of growth in expressive vocabulary than those in the oral communication education group.
- Use of sign language in early education for deaf children with CIs has a positive impact on the development of expressive and receptive vocabulary.Usage of early baby signs precedes the ability for verbalization.
- Children with large ASL vocabularies are more likely to have spoken English vocabularies in the average range based on norms for hearing monolingual children.
- Early baby signs / gestures support spoken language development in typical hearing children.
- Visual language as scaffold to spoken language

Hall et al., 2019; McDonald Connor et al., 2000; NAD, 2015; Petitto, Holowka, Sergio, Levy, & Ostry, 2004; Pontecorvo et al., n.d.; Zeyl, 2019.; **Davidson et al.,**

Benefits of inclusion of visual languages

Visual language learning is spontaneous for DHH children.

- All deaf children, regardless of hearing level or technological input, are primarily visual processors of information.
- Visual languages, such as ASL, are fully accessible to Deaf children.

Erting, 2003; Lieberman et al., 2022.

Benefits of inclusion of visual languages

Consistent intervention outcomes:

- Native signing deaf children (Deaf children of Deaf Adults)
- Native signing hearing children (Hearing Children of Deaf Adults)
- Non-signing hearing children

Davidson et al, 2014

Key design elements:

1. Multidisciplinary approach: Legal, medical, education, technology

- Provide information about all languages at diagnosis
- Revisit language opportunities and policies regularly
- Identify the strengths of your program–what are the skills within your agency?
- Discuss and review language outcomes and milestones at periodic and annual reviews
- Seek out additional training opportunities in the areas that may need additional support
- Consider technology available (apps; classes; telepractice, etc.)
- Professional collaboration

Key design elements, part 2:

2. Purposeful, strategic planning of bimodal bilingual early intervention

- Provide information about all language opportunities right away
- Be aware of your own bias and gaps in knowledge
- Plan who, where and when

Key design elements, part 3:

3. Whole child assessment

- Visual language
- Oral language
- Socio-emotional development
- Cognitive development

Thank you!

Bernice Adekeye

bernice.adekeye@gallaudet.edu,
gent2nice@yahoo.com

Emily (Wojahn) Small

emily.wojahn@gallaudet.edu

References

-Baker, S. (2011). Advantages of early visual languages. *VL2 Integration of Research and Education.* https://deafchildren.org/wp-content/uploads/2013/09/Advantages%20of%20Early%20Visual%20Languages.pdf

-Bouchard M., Ouellet C., Cohen H. (2009). Speech development in prelingually deaf children with cochlear implants. *Language and Linguistics Compass*, 3, 1–18.

-Champoux, F., Lepore, F., Gagné, J., & Théoret, H. (2009). Visual stimuli can impair auditory processing in cochlear implant users. *Neuropsychologia*, *47*, 17–22. doi:10.1016/j.neuropsychologia.2008.08.028

-Clark, M.D., Cue, K.R., Delgado, N.J. *et al.* (2020). Early Intervention Protocols: Proposing a Default Bimodal Bilingual Approach for Deaf Children. *Matern Child Health Journal,* 24, 1339–1344. https://doi.org/10.1007/s10995-020-03005-2

-Davidson, K., Lillo-Martin, D., & Pichler, D. C. (2014). Spoken English language development among native signing children with cochlear implants. Journal of Deaf Studies and Deaf Education

-Erting, C. J. (2003). Language and literacy development in deaf children. In B. Bodner-Johnson & M. Sass-Lehrer (Eds.), *The young deaf or hard of hearing child: A family-centered approach to early education* (pp. 373-398). Brookes.

-Hall, M. L., Hall, W. C., & Caselli, N. K. (2019). Deaf children need language, not (just) speech. *First Language*, 39(*4*), 367–395. https://doi.org/10.1177/0142723719834102

-Harvard University. (n.d.). *In Brief: The science of early childhood development.* Center on the Developing Child. https://harvardcenter.wpenginepowered.com/wp-content/uploads/2007/03/InBrief-The-Science-of-Early-Childhood-Development2.pdf

-Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D. J., Padden, C., Rathmann, C., & Smith, S. (2014). Bilingualism: A pearl to overcome certain perils of cochlear implants. *Journal of Medical Speech-Language Pathology, 21*(2), 107-125.

-Larson, T. (1971). Communication for the nonverbal child. Academic Therapy, 6(3), 305-312.

-Lieberman, A. M., Mitchiner, J., & Pontecorvo, E. (2022). Hearing parents learning American sign language with their deaf children: A mixed-methods survey. *Applied Linguistics Review*. https://doi.org/10.1515/applirev-2021-0120

References continued…

-McDonald Connor, C., Heiber, S., Arts, H. A., & Zwolan, T. A. (2000). Speech, vocabulary, and the education of children using cochlear implants: Oral or total communication? *Journal of Speech, Language, and Hearing Research, 43*(5), 1185-1204.

-National Association for the Deaf (2015) *Position Statement on Early Cognitive and Language Development and Education of Deaf and Hard of Hearing Children* Retrieved from: https://www.nad.org/about-us/position-statements/position-statement-on-early-cognitive-and-language-development-and-education-of-deaf-and-hard-of-hearing-children/.

-Peterson N. R., Pisoni D. B., Miyamoto R. T. (2010). Cochlear implants and spoken language processing abilities: Review and assessment of the literature. *Restorative Neurology and Neuroscience*, 28, 237–250.

-Petitto, L. A. (2009). New discoveries from the bilingual brain and mind across the life span: Implications for education. Mind, Brain and Education, 3(4), 185- 197.

-Petitto, L. A., Holowka, S., Sergio, L. E., Levy, B., & Ostry, D. J. (2004). Baby hands that move to the rhythm of language: hearing babies acquiring sign languages babble silently on the hands. Cognition, 93(1), 43–73. https://doi.org/10.1016/j.cognition.2003.10.007

-Petitto, L. A., & Marentette, P. F. (1991). Babbling in the manual mode: Evidence for the ontogeny of language. *Science, 251*(5000), 1493–1496. https://doi.org/10.1126/science.2006424

-Pontecorvo, E., Higgins, M., Mora, J., Lieberman, A. M., Pyers, J., & Caselli, N. (n.d.) Learning a sign language does not hinder acquisition of a spoken language.

-Shydlo, I. (2017, August 15). *Dispelling confusion about bilingual confusion.* Polyglot Parenting. https://polyglotparenting.com/blog/dispelling-confusion-about-bilingual-confusion/

-Simms, L. Scott, S. & Kite, B. (2017). *Maximizing Language Acquisition: ASL and Spoken English.* [Video Webinar]. Maximizing Language Acquisition: ASL and Spoken English.

-Tamati, T. N., Pisoni, D. B., & Moberly, A. C. (2022). Speech and language outcomes in adults and children with cochlear implants. *Annual review of linguistics*, 8, 299-319. https://doi.org/10.1146/annurev-linguistics-031220-011554

-Tremblay, C, Champoux, F., Lepore, F., & Théoret, H. (2010). Audiovisual fusion and cochlear implant proficiency. *Restorative Neurology and Neuroscience*, 28, 283–291