All deaf children should be taught a sign language

Poorna Kushalnagar and Gaurav Mathur
10 October 2015
Our team of specialists in cognitive science, education, linguistics, pediatrics, and psychology

Tom Humphries    Poorna Kushalnagar
Gaurav Mathur    Donna Jo Napoli
Carol Padden    Christian Rathmann
Scott Smith
What We Need Language For

Obvious uses of language in daily communication

• Expressing our ideas
• Understanding others’ ideas; access to information
• Developing an identity
• Making friends, telling and catching jokes
Less Obvious

Engaging in cognitive activities that require a solid first language base

• Literacy
• **Organization of memory**  (Ronnberg 2003; Pisoni and Cleary 2004; Burkholder and Pisoni 2006)
• **Number manipulation**  (Gregory 1998; Kelly and Gaustad 2006; Blatto-Vallee et al. 2007; Convertino et al. 2009)
• **Novel problem solving**  (Kronenberger et al. 2014)
• **Theory of Mind**  (Courtin 2000; Meristo et al. 2007)
Deaf children

Reactions at birth
- Doctor says, “I’m sorry….”
- “diagnosis”
- “treatment”, “cure”

Reality
- Baby is healthy
- Determination of auditory status
- Baby needs language (conscious effort)
What is language?

Cognitive faculty with two modalities:
- oral/aural
- manual/visual

Both entirely capable of expressing everything language needs to express, both handled by the language mechanism in the brain.

- aphasia evidence (Corina 1998 and later)
- first language acquisition evidence (Meier & Newport 1990 and later)
- language processing evidence (Emmorey 2001 and later)
- neurolinguistics (Neville 1990 among many)
- second language learning (Newport 1990)
Brain plasticity

The brain changes over our lives; some plasticity is lost. This affects various cognitive abilities, which impact educational outcomes. With respect to language:

- First language acquisition critical period is around 5 years old (evidence from wild children, abused and neglected children, deaf children)
- Speech acquisition critical period may be as early as 18 months

Conclusion: the window of opportunity for acquiring a first language is small.
Training the brain

“Hearing… but not as you know it” video

Take the example of a lecture.
Training the brain

“Hearing… but not as you know it” video

This person was 19 mos. old when she was implanted, so she already had much auditory experience. And still you can see how hard it is for her to process that impoverished information.

It takes work

• Hours daily, every week, month, year throughout childhood
• Then rehabilitation regularly every few years as adult
• Team: parent, audiologist, child, sometimes language specialist
Factors that influence Cochlear Implant success

Optimal conditions:

- Age
- Best implant apparatus
- Best site of surgery
- Regular training
- Best family characteristics (motivation, SE status)
Variability

Despite optimal conditions, results are variable and *it is impossible to predict who will get no speech benefit.*

**Why?** This is not a question of improving technology *(unlike computers).* This is a question of improving brain-machine interface, and we simply don’t yet know enough about the brain.
Unlike spoken languages, sign languages are accessible to all deaf children, and therefore all deaf children should be taught a sign language from the moment of determination of auditory status.
Benefits of a sign language over only speech

Full competence in a language and all the cognitive activities that rely on it.
Benefits of a sign language over only speech

Language skills are best predictor of literacy skills for all children (Temple et al. 2013).

Sign language skills are best predictor of literacy skills for deaf children (Prinz and Strong 1998; Mayberry, del Giudice and Lieberman 2011; Miller et al. 2012).
Benefits of a sign language over only speech

- Effortless expression of own language
- Less fatigue = positive impact on overall cognitive health
  - Using speech is constant work; the brain and spirit need the opportunity to give and receive communication without stress.
Bilingualism

A sign language + competence in a spoken language or in the written form of a spoken language = bilingualism.

Benefits accrue:

• Better mental flexibility (Kushalnagar et al. 2010)
• More complex language usage (in both the spoken and the sign language – Klatter-Folmer et al. 2006)
• Delay in onset of dementia (Bialystok et al. 2004, 2007)
Take-away Message

There is no reason to deny a child a sign language and there is every reason to give a child a sign language.

Giving a deaf child a sign language protects their cognitive health.

Not giving a deaf child a sign language puts their cognitive health at risk.
How to deliver the message

We publish in journals in:
education, law, medicine, religion
We are trying to get into publications for:
parents, speech and hearing professionals

You can translate our articles and are welcome to work with whatever you wish. We will provide Word versions if needed.

We need a presence on social media:
Youtube, Facebook, Twitter.
Our publications thus far


Continued


