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Using Signs in Early Intervention

Presented By:
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Moderated By:
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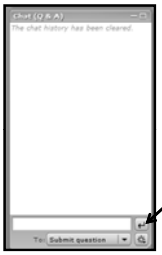

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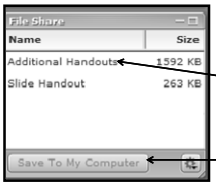

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Using Sign in Early Intervention

SpeechPathology.com

Brenda Seal 02-17-11

Brenda Seal, Ph.D.
Professor of Hearing, Speech, & Language Sciences at Gallaudet

Professor Emeritae of Communication Sciences & Disorders

JAMES MADISON UNIVERSITY

At the end of this lecture, you should be able to:

1. Describe important milestones in the development of manual activity in the first 12 months of an infant's life
2. Sequence the developmental acquisition of gestures and explain their predictive values for vocabulary development
3. Incorporate skills in observing babies' manual activity with formal instruments that explore gestural use and sign acquisition
4. Produce and demonstrate 25 "first signs" to promote in early intervention and for babies that are (a)typically developing
5. Demonstrate at least three signing strategies to use with parents

At birth:

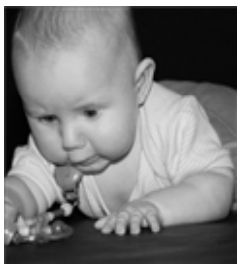
The suckle reflex and the **palmar reflex** are easily observed by new mothers. Parents are often surprised by the strength of the baby's grip and may praise their newborn's grasp as an early communicative act.

Over the next few weeks:

The hands are prominent extensions of the upper limbs, grasping reflexively at any object or person. The palmar grasp comes under increasing willful motor control and disappears altogether in typically-developing babies by 5 to 6 months.

Other important milestones that also occur in the first half of the first year are often missed by SLPs:

- **Willful motor control** moves proximally→ distally.
- **Swiping or batting** at objects that attract attention facilitate reaching.
- Fingers and thumb extend to sweep up objects and flex to contain them, facilitating **holding.**



Increased back and neck support lead to independent seating around 6 months and new practice fields for manual motor (and oral motor) development.

The second half of the first year:
Increased control of the forefinger and thumb by 9 months **(the pincer grasp)** coincides with **improved eye-hand coordination, social play and improved imitating.**

Enriched parent-baby play:

- Peek-a-boo
- Patty-cake
- Itsy-Bitsy Spider
- Open-Shut Them
- Wave "bye bye"
- Banging spoons and other utensils

Assessing Infant Gesture

Communication and Symbolic Behavior Scales™ (CSBS) By Amy M. Wetherby, Ph.D., CCC-SLP, & Barry M. Prizant, Ph.D., CCC-SLP

6 months – 24 months for typically-developing babies and up to 72 months for atypical children

The MacArthur-Bates Communicative Development Inventories (CDI) (Fenson, Marchman, Thal, Dale, Bates, & Reznick (2007).

8 months – 18 months for words and gestures

16 – 30 months for words and sentences

Important Indicators of Spoken Language Acquisition:

Diectic Gestures

- Pointing
- Requesting
- Giving
- Taking
- Showing

http://www.champuru.net/blog/2009/09/04/11-months-old/

Research in **infant gesture** is in its infancy.

- Theories of *language-gesture parallelism* or *temporal synchrony* (much like embodiment theories) support Piagetian hypotheses.
- Elizabeth Bates and her colleagues (Bates, Thal, Fenson, Whitesell, Oakes, 1977; Bates, Benigni, Bretherton, Camaioni, & Volterra, 1979) brought infant gestures and their role in early communication to our attention.

- Esther Thelen (1979), Ray Kent (1984) , John Locke (1995) (and others) drew attention to rhythmic arm activity (banging) that increases substantially with the onset of infant babble.
- Jana Iverson and Ester Thelen (1999) suggested that speech and gesture have developmental origins in early hand-mouth linkages with rhythmic limb movement that "entrains" early vocalizations.

Marilyn Vihman's Infant Lab at York University (Department of Language and Linguistic Sciences)

Infant babble's role in spoken language acquisition
Infant gesture's relationship to spoken language acquisition
Relationship between early gesture and early babble

Manual Activity Research

- Retrospective analysis of manual activity of **10 typically-developing British babies** in a longitudinal investigation of vocal activity
- Videotaping began **at 9 months** and continued regularly until **the babies reached their first 25 words or** they reached **18 months of age**
- Coded presence/absence of manual activity during babbling; handshapes used (by Stokoe notation); other descriptive information (sequencing, transitive/intransitive information).

Manual Activity Research:

- Manual activity was abundant in the babies' tapes as they **reached for, grasped, held, and manipulated toys,** and often **without vocal activity.**
- In contrast, **vocal activity almost never occurred (< 2% of the time) without accompanying manual activity.**
- Strong evidence of **predictable and stable handshapes** (5, C, and A/S handshapes) corresponding to specific and stable consonants (b/p, t/d, and k/g) **months before the babies' first gestures or first words.**

Gesture inventories of 160 typically developing children (part of a FIRST WORDS Project that's tracking 1000 children between 6 and 24 months of age for 5 years) revealed gestures and consonants early in the second year of life—around 13 to 15 months—correlated highly with their inventories of words at 18 to 20 months old (Watt, Wetherby, & Shumway, 2006).

The British Babies:

- From educated affluent families
- At least 8 mothers reported using Baby Signing with their babies

The Hype and Controversy Surrounding Baby Sign

- Unprecedented interest in Baby Signing
- High visibility on YouTube and the Internet
- Unusually strong claims
- Lack of empirical evidence to support the claims

http://www.attachmentparentingdoctor.com/sign_language.html

The Baby Sign Explosion

The Baby Sign Movement

Baby Sign Language

Born 2 Sign Infant Sign Language

Baby Signs

Sign Language For Babies

The Baby Sign Explosion

Claims of Popular Websites

As Disney's Baby Einstein products explain, baby signs grant the [hearing] infant **the improved ability to express** his or her simple needs through gesture before he or she has mastered speech – **as early as 6 months**.

The Baby Sign Explosion

Social and Emotional Gains

Happier babies turn into happier toddlers able to express themselves in the right way.

– Baby Sign Language Basics

- **Reduced feelings of frustration**
- **Feelings of accomplishment, empowerment, and pride**
- **Improved feelings of self-esteem and self-confidence**
- **Stronger parent-infant relationships**

The Baby Sign Explosion

Language Development

- **Signing serves as a scaffold for the acquisition of spoken language**
- **Kinesthetic elements of signing reinforce developing speech skills**
- **Signing improves receptive language skills**
- **Signing improves expressive speech skills**
- **Signing facilitates vocabulary**
- **Signing leads to more complex sentences**

The Baby Sign Explosion

Cognitive Benefits

Using many modes of input strengthens connections in the brain and therefore benefits academic development. *– Baby Signs 4 U*

- **Attention**
- **Listening**
- **Memory**
- **Improved visual, auditory, and kinesthetic integration**
- **Improved learning**
- **Creative thinking**
- **Spatial reasoning**
- **Increased IQ**

The Baby Sign Explosion

These widespread claims:

- Are supported almost entirely by anecdotal reports
- Have limited evidence from research, descriptive or experimental
- Tend to refer to research in naïve ways, suggesting causation from correlation studies, and generalizing results to unreasonable claims
- Are promoted by parents whose self-learned expertise in signing has no validity
- Fail to distinguish gesture from signing

Baby Sign Research

Research in Language Outcomes

Goodwyn, Acredolo, and Brown (2000) evaluated "the effect on verbal language development of purposefully encouraging hearing infants **to use simple gestures as symbols** for objects, requests, and conditions" (p. 81).

32	39	32
Sign Training (focus on signing)	No Intervention	Verbal Training (focus on labeling)

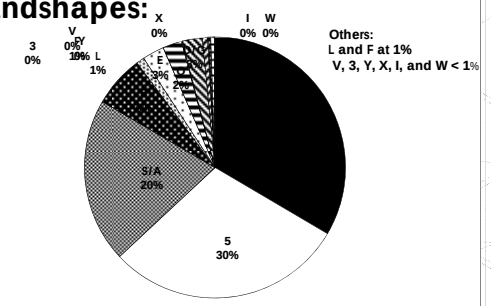
- Advantage for the Sign Training group

INS 2011

Spoken Language Acquisition in Hearing Babies Exposed to Sign and Hearing Babies Not Exposed to Sign: YeKyung An and Brenda Seal

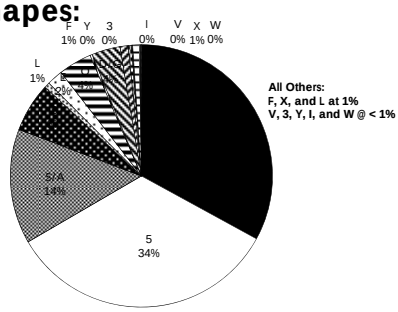
Results for EBS Babies

Beyond the 3 "cardinal" handshapes:



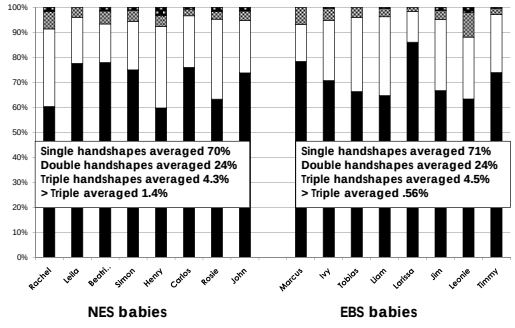
Results for NES Babies

Beyond the 3 "cardinal" handshapes:



Comparative Results

Handshape complexity:



No statistical difference in their age at first 4 words

- 1 child in the non-signing group failed to reach this milestone
- *t* (13) = .374; p > .05

Group Statistics

Sign or Nonsign	N	Mean	Std. Dev.
No Signing Exposure	7	100.43	56.080
Signing Exposure	8	90.75	44.232

No statistical difference in their age at first 10 words

- 3 children (all males) in the NES group failed to reach this milestone
- *t* (11) = -1.021; p > .05

Group Statistics

Sign or Nonsign	N	Mean	Std. Dev.
No Signing Exposure	5	106.6	44.2
Signing Exposure	8	137	56.3

No statistical difference in their age at first 25 words

- 4 children (all males) in the NES group failed to reach this milestone
- 2 children (1 m, 1 f) in the EBS group failed to reach this milestone during the project
- *t* (8) = -1.44; p > .05

Group Statistics

Sign or Nonsign	N	Mean	Std. Dev.
No Signing Exposure	4	166	21.7
Signing Exposure	6	199.5	42.2

Implications

Our comparative results agree with Johnson et al.'s statement:

Little evidence that prelingual signing is either "**beneficial, harmful or harmless**" to babies with typical hearing (Johnson, Durieux-Smith, & Bloom, 2005, p. 245).

Other possibilities:

- **Parents who choose to learn signs and encourage their infants to sign are parents who may have already given their babies *a genetic advantage for* language learning.**
- **Parents who use gestures as they interact with their infants (for example, playing Peek-a-Boo, Itsy Bitsy Spider, and Pattycake) are parents who may have already given their babies *an interactive advantage* for learning language.**

Encouraging Developmentally Appropriate Signing

Relevance of this Information in Early Intervention: Hearing Loss

Hearing loss is our nation's number one birth defect.

(American Academy of Pediatrics, National Campaign for Hearing Health, National Center for Hearing Assessment and Management)

Identification and Diagnosis of Hearing Loss in Children

Universal Newborn Hearing Screenings

All states have UNHS for babies but 50% of babies who fail the screenings are lost to follow-up.

Today's goal: "Birth-3-6 Rule" or "1-3-6 Rule" (Joint Commission on Infant Hearing)

Demographics

One per 25 have mild-to-moderate or intermittent losses.	At least 30% have comorbid or co-occuring disabilities.
90 to 95% of deaf babies are born to hearing parents.	1.5 per 1000 have severe-to-profound loss.

Cultural Orientations to Child's Hearing Loss:

- **http://clerccenter.gallaudet.edu/**
- **http://www.handsandvoices.org/**
- **http://www.agbell.org**
- **http://www.babyhearing.org**
- **http://www.jtc.org/**
- **http://www.deafchildren.org/about.html**
- **http://deafness.about.com/od/articlesandnewsletters/a/parentdeafkids.htm**

Evidence of cultural sensitivity?

What happens to children who are identified late? To those with late access to early intervention?

Most reports showing **large deficits and delays in receptive and expressive vocabulary** (Moeller, Tomblin, Yoshinaga-Itano, Connor, & Jerger, 2007)

Children with Cochlear Implants

A sizeable cochlear implant literature exists that reports better post-implant outcomes in oral communication (OC) children than in total communication (TC) children.

If you've met one child with a cochlear implant .....

Then you've met ONE child with a cochlear implant.

Debra Nussbaum
Director of the Cochlear Implant Education Center at Gallaudet University

The **22 children from diverse backgrounds** (10 from minority families, 2 from hearing homes where English was not used, 2 from deaf/signing homes, 11 with additional disabilities) showed:

Consonant growth (manner, location, and voicing**)**
paralleled growth in signs (handshapes, locations, and movment)

First consonants (**m, b, w, h, d, n, g, and p)** aligned with first handshapes **(5, A/S, C, O, G, B, 3, and V)** and first locations (face, trunk, head, neutral space), and first movements(contact, toward, away, etc.).

Consonant and sign phoneme acquisition in signing children following cochlear implantation (Seal, Nussbaum, Belzner, Scott, & Waddy-Smith, In Press)

What other evidence supports the use of signs in Early Intervention?

Christine Yoshinaga-Itano (2005) and colleagues (Apuzzo & Yoshinaga-Itano, 1995; Maynet et al., 2000):

- "It has become relatively common for families to choose combinations" of sign language and spoken language for their children with hearing loss.
- The best predictor for speech development is expressive language development, whether measured in speech only, speech plus sign, or sign only.
- Babies enrolled in early intervention before 6 months of age demonstrate more consonants and more intelligible speech than those enrolled in intervention after 12 months.

What about parents who choose unisensory (e.g., Auditory Verbal) approaches?

Some well-intended AVTs, in rejecting signing for babies with hearing loss, inadvertently reject gesturing for babies.

Seal, B. (Nov 4, 2010)
ASHA Leader

How to Sign to Babies

Borrowing from ASL parents	With cautions from YouTube
• **Holding baby on the lap** with his/her back to the parent's stomach enables adult arms and hands to embrace the baby's arms and hands to form and move signs – perfect for book sharing. • **Signing on the baby's body** when carrying him/her gives tactile information about sign location and movement, and facial information is more easily matched with signs when carrying the baby. • **Encouraging parents** to use principles of "motherese" when they sign (**emphasizing signs by adjusting their rate, size, duration, and frequency**) is important in making them interesting and interactive.	

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The larger the number of gesture types a child demonstrates at 14 months, the larger the child's vocabulary at 5 years (Rowe & Goldin-Meadow, 2009a).

Children from higher SES families (and their parents) use almost twice the number of gestures than children (and parents) from lower SES levels (Rowe & Goldin-Meadow, 2009b) .

Implications for Other Clinical Populations

http://aackids.psu.edu/index.php/page/show/id/5

- **Need for retro- and prospective research on children who show delayed development in their upper limb and manual maturation**
- **Combining formal assessments with observational assessments (perhaps with an OT or PT to address movement range, frequency and complexity of early manual activity) should support decisions about signing as an unaided AAC**
- **Introducing signs that follow developmentally appropriate handshapes, locations, and movements and using them interactively**

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