

**Iowa School
for the Deaf**

Language Acquisition, Development, and Bilingualism in Young Deaf and Hard of Hearing Children

Deborah Cates, Ph.D.

January 21, 2026

Learning Outcomes

- Understand the stages of typical language acquisition
- Recognize common signs of language delay
- Apply strategies from bilingual language acquisition to support language development in DHH children

Clarifying Terminology

Language

A complex system of communication used by groups of people that shapes thought- tied to specific areas of the brain

Modality

The manner in which language is expressed (i.e. sign, speech, print, touch)

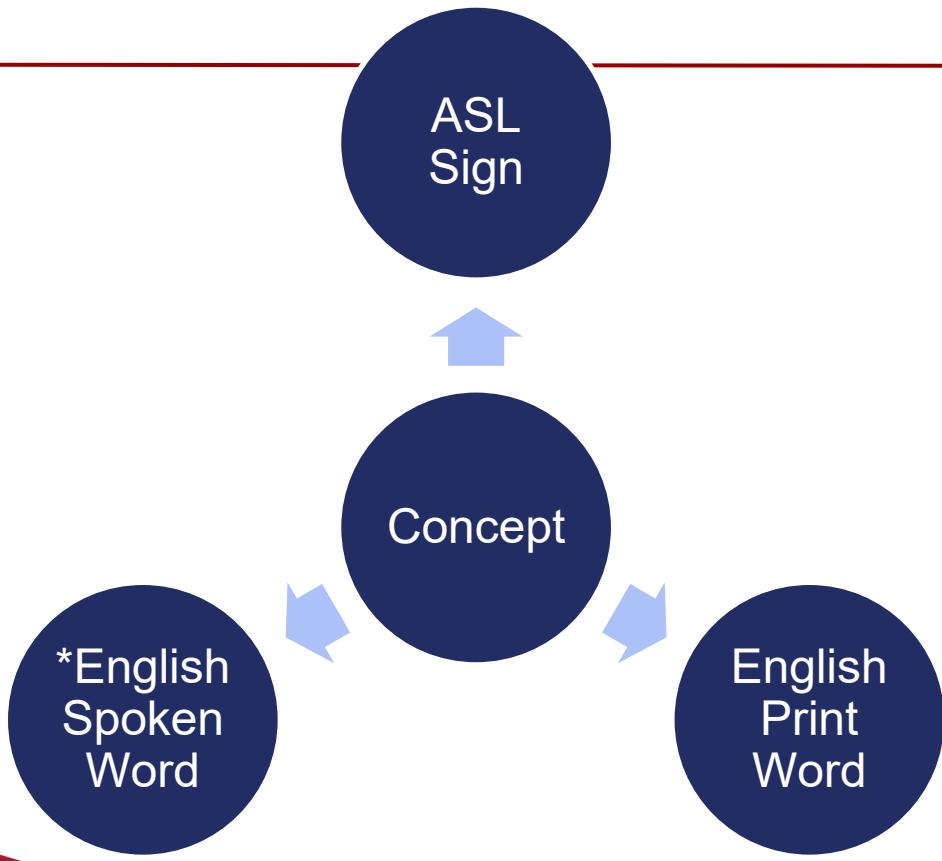
Communication

The act of conveying intentions to another



Iowa School
for the Deaf

How Bimodal Bilingualism Works



0-11 Months

- Responds to affect
- Responds to own name
- Understands common words
- Communicates in a variety of ways (crying, cooing, smiling)
- Can point to objects and express wants/needs
- “Babbling”
- Makes eye contact
- Initiates interaction with adults

8-20 Months

- Concentrates on most interesting thing(s) in environment
- Easily distracted by language around them
- Can answer simple wh-questions
- Understands more language than they can produce
- Understands that things have names
- Uses words to communicate
- Makes up their own words

16-26 Months

- Enjoys rhythmic patterns in language
- Understands verbs and instructions using them
- Puts two or more words together
- Uses a variety of word types

Effects of Delay

- An inability to arrange a narrative in sequential order
- Inability to organize facts into cause & effect relations
- Inability to explain “why” or “how”
- Lack of awareness of the conversational partner’s need for context- assumption that the partner “knows what’s meant”

Gulati, 2018

Language Acquisition and the Effects of Delayed Exposure



Iowa School
for the Deaf

Detailed Look at Language Milestones

 **Boston Children's Hospital**
Deaf and Hard of Hearing
Program

 LAURENT CLERC
NATIONAL DEAF EDUCATION CENTER

Setting Language in Motion: Family Supports and Early Intervention for Babies Who are Deaf or Hard of Hearing

Communication Language Milestones

The skills and milestones identified here are those that appear most often in research about early language development in children who are deaf or hard of hearing. This chart is not meant to be exhaustive but instead to highlight some of the critical milestones of language development. If there are any concerns about a baby's language development, his or her early intervention provider or pediatrician should be contacted.

Receptive Skills

Birth-6 months:

- Quiets and/or smiles when interactions occur
- Appears to recognize caregivers (and quiets if crying)
- Moves head in the direction of people
- Notices toys that are visually attractive
- Appears to attend to signed or spoken language
- Follows eye gaze
- Laughs when sees fingers approach to tickle
- Begins to respond to attention-getting behavior (e.g., waving, changes in vocalization, turning the lights on and off)

6-12 months:

- Enjoys games like Peek-a-Boo and Pat-a-Cake
- Responds to changes in facial expression
- Begins to recognize signs or speech for common items (e.g., more, cup, shoe, juice)
- Begins to respond to gestured or vocalized requests (e.g., "Come here.")
- Appears interested in the same items or objects as his or her parent(s)

MODULE FOUR
Launching Communication and Language Through Sign

1-2 years:

- Points to a few body parts when asked
- Follows simple commands and understands simple questions (e.g., "Roll the ball.")
- "Where's your shoe?"
- Attends to simple short stories
- Points to something when asked (e.g., "Where's the dog?")
- Recognizes own name
- Recognizes names of family members

2-3 years:

- Understands differences in meaning (e.g., go-stop, big-little, up-down)
- Follows two requests ("Get the book and put it on the table.")
- Receptive vocabulary range (signed or spoken) >150
- Understands how and when to take turns in a conversation
- Responds to questions (e.g., "Who?"; "What?")
- Has some understanding of when things occurred (e.g., "I ate yesterday")
- Can identify and match colors when asked
- Enjoys stories and imitates the actions, facial expressions, movement, and other characteristics of characters from a story

Expressive Skills

Birth-6 months:

- Smiles at a familiar person
- Makes pleasure sounds (e.g., cooing) and/or plays with hands
- Cries differently for different needs

From The Clerc Center

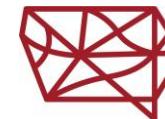


**Iowa School
for the Deaf**

Social Communication Skills – The Pragmatics Checklist

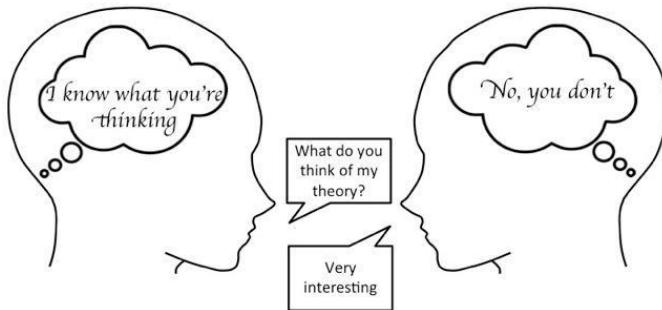
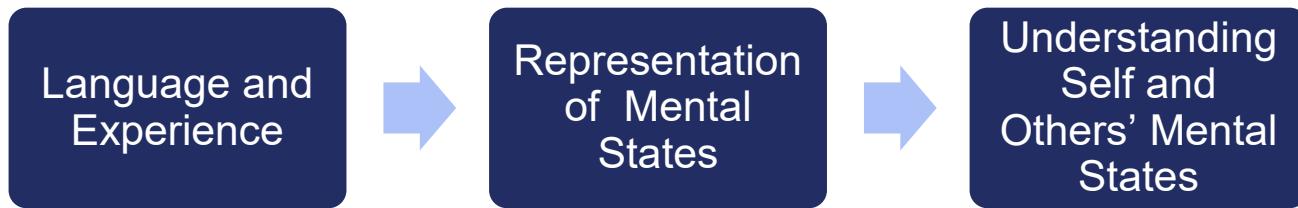
SOCIAL COMMUNICATION SKILLS – THE PRAGMATICS CHECKLIST					
Child's Name _____	Date _____	Completed by _____	Parent: These social communication skills develop over time. Read the behaviors below and place an X in the appropriate column that describes how your child uses words/language, no words/gestures – preverbal or does not yet show a behavior.		
Pragmatic Objective			Not Present	Uses NO Words/ gestures	Uses 1-3 Words
INSTRUMENTAL – States needs (I want...)			Uses Complete Language		
1. Makes polite requests					
2. Makes choices					
3. Gives description of an object wanted					
4. Expresses a specific personal need					
5. Requests help					
REGULATORY – Gives commands (Do as I tell you...)					
6. Gives directions to play a game					
7. Gives directions to make something					
8. Changes the style of commands or requests depending on who the child is speaking to and what the child wants					
PERSONAL – Expresses feelings					
9. Identifies feelings (I'm happy.)					
10. Expresses feelings (I'm happy because it's my birthday)					
11. Includes excuses or reasons					
12. Offers an opinion with support					
13. Complains					
14. Blames others					
INTERACTIONAL – Me and You...					
15. Provides pertinent information on request (2 or 3 of the following: name, address, phone, birthdate)					
16. Interacts with others in a polite manner					
17. Knows appropriate social rules such as greetings, farewells, thank you, getting attention					
18. Attends to the speaker					
19. Reviews/repeats an incomplete message					
20. Initiates a topic of conversation (doesn't just start talking in the middle of a topic)					
21. Maintains a conversation (doesn't just walk away)					
22. Ends a conversation appropriately into an already established conversation with others					
23. Interacts appropriately into an already established conversation with others					
24. Makes apologies or gives explanations of behavior					
25. Requests clarification					
26. States a problem					
27. Criticizes others					
28. Disagrees with others					
29. Compromises others					
30. Makes promises					
WANTING EXPLANATIONS - Tell me more...					
31. Asks questions to get more information					
32. Asks questions to systematically gather information as in "Twenty Questions"					
33. Asks questions because of curiosity					
34. Asks questions to problem solve (What should I do? How do I know?)					
35. Asks questions to make predictions (What will happen if...?)					
SHARES KNOWLEDGE & IMAGINATIONS - I've got something to tell you...					
36. Role plays as with different characters					
37. Role plays with props (e.g., banana as phone)					
38. Provides a description of a location which describes the main events					
39. Corrects re-tells a story which has been told to them					
40. Relates the content of a 4-5 frame picture story using correct events for each frame					
41. Creates an original story with a beginning, several logical events, and an end					
42. Explains the relationships between two objects, actions or situations					
43. Compares and contrasts qualities of two objects, actions or situations					
44. Tells a lie					
45. Expresses humor/sarcasm					
TOTAL FOR EACH COLUMN					
ACTIONS OF CHECKLIST: Gobin, B. (1996). Pragmatics Checklist adapted from Soren, C.S., 1984). The missing link in language development of deaf and hard of hearing children: Pragmatic Language Development. Semin Speech Pathol, 3(3/4), 297-303. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1213805/pdf					
Gobin, B., Beutelspacher, A., Bisch, B., & Yoshimura-Tanaka, C. (2012). The missing link in language development of deaf and hard of hearing children: Pragmatic Language Development. Semin Speech Pathol, 33(4), 297-303. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3451100/pdf					
The format of this information was designed by Karen L. Anderson, Ph.D. 2012. Supporting Success for Children with Hearing Loss http://www.successforchildrenwithhearingloss.com					

- Normed for DHH Children
- All items should be mastered by Age 6



Iowa School
for the Deaf

Theory of Mind



For more, see Schick et al, 2007



Iowa School
for the Deaf

Tips for Parents



- Engage attention before and while using language
- Use language intentionally
- Use language in context with visual and other experiential cues
- Be patient! Remember that language development will proceed in phases



Iowa School
for the Deaf

Tips for Parents



- Label everything- with print, sign, speech...
- Sign on materials to connect visuals to signs
- Support language attempts by modeling accurate production and grammar
- Model asking and answering questions
- Have high expectations!

References

Bavelier et al., 1998. Hemispheric specialization for English and ASL: left invariance-right variability. *Neuroreport*, 9, 1537–1542.

Brown, 1973. Brown, Roger. *A first language: The early stages*. Harvard U. Press.

Calvert et al., 2000. Evidence from functional magnetic resonance imaging of crossmodal binding in the human heteromodal cortex. *Curr. Biol.*, 10, 649–657.

Doucet et al., 2006. Cross-modal reorganization and speech perception in cochlear implant users. *Brain*, 129, 3376–3383.

Ferjan Ramirez et al., 2013. Neural language processing in adolescent first-language learners. *Cereb. Cortex*, 21, 21.

Giraud, H.J. & Lee, 2007. Predicting cochlear implant outcome from brain organisation in the deaf. *Restor. Neurol. Neurosci.*, 25, 381–390.

Giraud et al., 2001. Cross-modal plasticity underpins language recovery after cochlear implantation. *Neuron*, 30, 657–663.

Hirano et al., 2000. Functional differentiation of the auditory association area in prelingually deaf subjects. *Auris Nasus Larynx*, 27, 303–310.

References

Kral & Sharma, 2012. Developmental neuroplasticity after cochlear implantation. *Trends Neurosci.*, 35, 111–122.

Lee & Noppeney, 2011. Physical and perceptual factors shape the neural mechanisms that integrate audiovisual signals in speech comprehension. *J. Neurosci.*, 31, 11338–11350.

Lee et al., 2001. Cross-modal plasticity and cochlear implants. *Nature*, 409, 149–150.

Lenneberg, 1967. *Biological Foundations of Language*. John Wiley and Sons Inc., New York

Lyness, Woll, Campbell, Cardin. 2013. How does visual language affect crossmodal plasticity and cochlear implant success?, *Neuroscience & Biobehavioral Reviews*, 37 (10), 2621-2630.

MacSweeney et al., 2002. Neural systems underlying British Sign Language and audio-visual English processing in native users. *Brain*, 125, 1583–1593.

MacSweeney et al., 2004. Dissociating linguistic and nonlinguistic gestural communication in the brain. *Neuroimage*, 22, 1605–1618.

MacSweeney et al., 2008. The signing brain: the neurobiology of sign language. *Trends Cogn. Sci.*, 12, 432–440.

References

Mayberry, & Fischer, 1989. Looking through phonological shape to lexical meaning: The bottleneck of non-native sign language processing. *Memory & Cognition*, 17(6), 740-754.

Mayberry & Lock, 2003. Age constraints on first versus second language acquisition: evidence for linguistic plasticity and epigenesis. *Brain Lang.*, 87, 369–384.

Mayberry, 2002. Cognitive development of deaf children: the interface of language and perception in neuropsychology. In S.J. Segalowitz (Ed.), *Handbook of Neuropsychology*, 8, Elsevier, Amsterdam, 71–107.

Mayberry et al., 2011. Age of acquisition effects on the functional organization of language in the adult brain. *Brain Lang.*, 119, 16–29.

McGettigan et al., 2012. Speech comprehension aided by multiple modalities: behavioural and neural interactions. *Neuropsychologia*, 50, 762–776.

Moores & Sweet, 1990. Factors predictive of school achievement. *Educational and developmental aspects of deafness*, 154-201.

Morford, 2002. Why does exposure to language matter. *The Evolution of Language out of Pre-language*, 53, 329.

Newport, 1990. Maturational constraints on language learning. *Cogn. Sci.*, 14, 11–28.

References

Newport, Bavelier & Neville, 2001. Critical thinking about critical periods: Perspectives on a critical period for language acquisition. *Language, brain and cognitive development: Essays in honor of Jacques Mehler*, 481-502.

Nikolopoulos et al., 2004. Development of spoken language grammar following cochlear implantation in prelingually deaf children. *Archives of Otolaryngology–Head & Neck Surgery*, 130(5), 629-633.

Nishimura et al., 1999. Sign language 'heard' in the auditory cortex. *Nature*, 397, 116.

Patterson et al., 2007. Where do you know what you know? The representation of semantic knowledge in the human brain. *Nat. Rev. Neurosci.*, 8, 976–987.

Penicaud, et al., 2013. Structural brain changes linked to delayed first language acquisition in congenitally deaf individuals. *Neuroimage*, 66, 42-49.

Penicaud, 2012. Structural brain changes linked to delayed first language acquisition in congenitally deaf individuals. *Neuroimage*, 11, 42–49.

Petitto et al., 2000. Speech-like cerebral activity in profoundly deaf people processing signed languages: implications for the neural basis of human language. *Proc. Natl. Acad. Sci. U.S.A.*, 97, 13961–13966.

Prinz & Prinz, 1979. Simultaneous acquisition of ASL and spoken English (in a hearing child of a deaf mother and hearing father): Phase I: Early lexical development. *Sign Language Studies*, 25(1), 283-296.

References

Prinz & Prinz, 1981. Acquisition of ASL and spoken English by a hearing child of a deaf mother and a hearing father: Phase II, early combinatorial patterns. *Sign language studies*, 30(1), 78-88.

Rouger et al., 2007. Evidence that cochlear-implanted deaf patients are better multisensory integrators. *Proc. Natl. Acad. Sci. U.S.A.*, 104, 7295–7300.

Schick et al., 2007. Language and theory of mind: A study of deaf children. *Child development*, 78(2), 376-396.

Singleton et al., 1998. From Sign to Word: Considering Modality Constraints in ASL/English Bilingual Education. *Topics in Language Disorders*, 18(4), 16-29.

Skotara et al., 2011. ERP correlates of intramodal and crossmodal L2 acquisition. *BMC Neurosci.*, 12, 1471–2202.

Spencer, 2004. Individual differences in language performance after cochlear implantation at one to three years of age: Child, family, and linguistic factors. *Journal of Deaf Studies and Deaf Education*, 9(4), 395-412.

Strong & Prinz, 1997. A study of the relationship between American Sign Language and English literacy. *Journal of Deaf Studies and Deaf Education*, 2(1), 37-46.

Swanson, 1997. Cochlear implants: the head-on collision between medical technology and the right to be deaf. *Canadian Medical Association Journal*, 157(7), 929-932.