Chapter 2
Communication Options

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Historical Perspective & Current Demographics

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The history of education for children who are deaf or hard of hearing (D/HH) includes many stories of children and families learning to communicate in a variety of ways (see the *Origins of Deaf Education: From Alphabets to America* chapter). The decision regarding communication mode is often a difficult one for families (Eleweke & Rodda, 2000; Li, Bain, & Steinberg, 2003; Meadow-Orlans, Mertens, & Sass-Lehrer, 2003). Over 95% of parents of children who are D/HH are hearing, and many of these parents have never met an individual who is deaf. With newborn hearing screening, many parents are learning about their child's hearing loss in the first months of life. As families explore the various communication options, they may encounter strong opinions in professionals and individuals. Families have the right to make an informed decision for their children regarding communication modality, and they need resources to support the decision-making process. Several organizations provide useful information in learning about communication choices (see *Table 1*).

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There continues to be much controversy regarding the choice of using spoken language, American Sign Language (ASL), or a sign system with children who are D/HH. In 2015, the American Academy of Pediatrics published an article presenting the varied views of a panel of professionals and parents (Mellon, 2015). Gravel and O'Gara (2003) stressed that there is no available evidence that one communication option is optimal for all young children who are D/HH and listed the needs of families related to choosing a communication option for their child, including the need for unbiased, objective information from knowledgeable individuals regarding all communication options; arranged contacts with families who are successful users of each communication option; and regular assessment of the child's progress using the chosen approach.

Table 1
Organizations That Provide Resources on Communication Options

Organization	Description of Purpose from Organization Website
Alexander Graham Bell Association for the Deaf and Hard of Hearing (AG Bell) https://www.agbell.org/	AG Bell helps families, health care providers, and education professionals understand childhood hearing loss and the importance of early diagnosis and intervention. Through advocacy, education, research, and financial aid, AG Bell helps to ensure that every child and adult with hearing loss has the opportunity to listen, talk, and thrive in mainstream society.
American Society for Deaf Children (ASDC) http://deafchildren.org/	ASDC is committed to empowering diverse families with children who are D/HH and youth by embracing full access to language-rich environments through mentoring, advocacy, resources, and collaborative networks.
Beginnings http://ncbegin.org/	BEGINNINGS for Parents of Children Who Are Deaf or Hard of Hearing, Inc., was established to provide emotional support and access to information as a central resource for families with children who are D/HH, age birth through 21. The mission of BEGINNINGS is to inform and empower parents as they make decisions about their child.
Hands & Voices http://www.handsandvoices.org/	Hands & Voices is a nonprofit, parent-driven organization dedicated to supporting families of children who are D/HH. We are nonbiased about communication methodologies and believe that families can make the best choices for their child if they have access to good information and support.

Initiatives, such as The Radical Middle (http://radicalmiddledhh.org/) and the Common Ground Project (http://ceasd.org/child-first/common-ground-project), encourage cooperation among professionals to support parents in making decisions for their children.

The mission of The Radical Middle is "to create a community of practice among researchers, teachers, parents, and the deaf community around a common goal of philosophical partnership as it applies to communication choices and educational options for children who are D/HH."

The Common Ground Project is a collaborative effort between the OPTION Schools (https://optionschools.org/), which support listening and spoken language (LSL), and the Conference of Educational Administrators at Schools for the Deaf (CEASD, http://ceasd.org/)—the organization of state schools for the deaf that primarily uses ASL for instruction to help all infants, children, and youth who are D/HH succeed.

While complete information on the communication mode primarily used to teach students who are D/HH is not readily available, *Table 2* shows data for 37,351 students from the 2009-2010 Gallaudet Annual Survey of Deaf Children and Youth (Gallaudet Research Institute, 2011). Based on this data:

- 53% of those students were taught with spoken language.
- 27% were taught with sign language only.
- 12% were taught with sign-supported spoken language.
- 5% used spoken language with cues.

The survey also reported that 23% of families regularly signed in the home and less than 6% reported using ASL in the home. This survey includes data on approximately half of the students who are D/HH in the U.S. (38th Annual Report to Congress on the Implementation of IDEA, 2016) and reflects a larger number of students in self-contained deaf education settings than in the data from the IDEA report.

Data gathered in North Carolina reflects an increasing number of families choosing an LSL approach for infants and toddlers who are D/HH (Alberg, 2011). In 2001, 69% of families chose an LSL approach, and in 2011, 90% of families chose to use LSL with their children.

Table 2
Information on Communication Mode from the 2009-2010 Gallaudet Annual Survey

Communication Mode Primarily Used to Teach Students	Nation	
	Number	Percentage
Total Known Information	37,351	100.0
Spoken Language Only	19,805	53.0
Sign Language Only	10,228	27.4
Sign-Supported Spoken Language (SIMCOM)	4,514	12.1
Spoken Language with Cues	1,872	5.0
Other	932	2.5

Communication Options

Originally published in 1989, Sue Schwartz (2007) wrote a guide about communication choices for parents of children who are D/HH that was updated in 1996 and 2007. Much has changed in the ten years since the third edition was published, but the format of that text provides a model for presenting information about each communication mode used by children who are D/HH that we will use in this chapter. For our description of communication options, we will use a framework that looks at approaches that primarily use LSL and approaches that primarily use a manual approach (see *Table 3*). While many terms are used to describe approaches, we will use the terms below for this chapter and describe related terms in the text.

Table 3
Communication Modalities Used in Deaf Education

LSL Approaches

- Auditory Verbal
- Auditory Oral

Manual Approaches

- Cued Speech (CS)
- Manually Coded English (MCE)
- American Sign Language (ASL)

A number of models have been published that reflect a continuum of the various communication approaches (Geers & Brenner, 2003; Gravel & O'Gara, 2003; Nussbaum, Waddy-Smith, & Doyle, 2012). These approaches vary in the emphasis placed on using hearing assistive technology, various forms of sign language, or cues to clarify spoken language. Some children will use a combination of approaches, and some individuals may change the approach they use at different stages of their lives and in different settings.

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LSL

Historically, a variety of terms were used to identify approaches that primarily focused on developing spoken language without the use of sign language. Written accounts of these approaches can be found in the literature going back several centuries (see *Origins of Deaf Education: From Alphabet to America* chapter for a description of deaf education using various communication modes). Today with the advances in hearing technology, the term "LSL" is most often used to describe the communication mode that focuses on the development of spoken language without the use of sign language.

According to Hearing First

"The LSL approach teaches a child spoken language through listening" (www.hearingfirst.org).

When children who are D/HH are identified early, have appropriate hearing technology, and learn to listen through LSL techniques, they learn spoken language in a similar way to their hearing peers. The approach is developmental and follows milestones for skills at ages when children are most primed to learn.

The principles of an LSL approach or auditory-verbal practice were originally developed by Doreen Pollack and have been revised and adapted periodically. *Table 4* provides the current principles of the LSL specialist (LSLS) Auditory-Verbal Education from the AG Bell Academy. Descriptions of strategies used in an LSL approach are provided in the *Listening & Learning to Talk* chapter.

Professional Preparation

Professionals prepared to facilitate the development of LSL need to acquire specialized knowledge and skills to be effective. White (2006) noted that only eight teacher preparation programs focused on preparing teachers to use an LSL approach. While some of those programs have closed and others have begun, the current seven programs continue to represent less than 15% of the teacher preparation programs in deaf education. The Consortium of Teacher Preparation Programs for Listening and Spoken Language includes preparation programs that emphasize this approach (see *Table 5* for universities in the consortium). While some public school programs and private school programs that belong to the Option Schools (https://optionschools.org/) are able to provide quality field experiences for future professionals aspiring to use an LSL approach, it can be challenging for future teachers and speech-language pathologists to receive preservice field experience with strong support for LSL.

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Table 4
Principles of LSLS Auditory-Verbal Education (LSLS Cert. AVEd™)*

An LSL educator (LSLS Cert. AVEd™) teaches children with hearing loss to listen and talk exclusively though LSL instruction.

1	Promote early diagnosis of hearing loss in infants, toddlers, and young children—followed by immediate audiologic assessment and use of appropriate state-of-the-art hearing technology to ensure maximum benefits of auditory stimulation.
2	Promote immediate audiologic management and development of LSL for children as their primary mode of communication.
3	Create and maintain acoustically controlled environments that support listening and talking for the acquisition of spoken language throughout the child's daily activities.
4	Guide and coach parents** to become effective facilitators of their child's LSL development in all aspects of the child's life.
5	Provide effective teaching with families and children in settings such as homes, classrooms, therapy rooms, hospitals, or clinics.
6	Provide focused and individualized instruction to the child through lesson plans and classroom activities while maximizing LSL.
7	Collaborate with parents and professionals to develop goals, objectives, and strategies for achieving the natural developmental patterns of audition, speech, language, cognition, and communication.
8	Promote each child's ability to self-monitor spoken language through listening.
9	Use diagnostic assessments to develop individualized objectives, monitor progress, and evaluate the effectiveness of the teaching activities.
10	Promote education in regular classrooms with peers who have typical hearing as early as possible when the child has the skills to do so successfully.

—Adopted by the AG Bell Academy for Listening and Spoken Language®, July 26, 2007.

*An auditory-verbal practice requires all ten principles.

**The term "parents" also includes grandparents, relatives, guardians, and any caregivers who interact with the child.

Table 5
Teacher Preparation Programs with an Emphasis on LSL

University	Location
California Lutheran University	Thousand Oaks
Fontbonne University	St. Louis and Northeast Collaborative
John Tracy/Marymount	Los Angeles
University of Southern Mississippi	Hattiesburg & Jackson, MS
University of Texas Health Science Center—San Antonio	San Antonio & Houston
Utah State University	Logan
Washington University	St. Louis

The AG Bell Academy for LSL sets standards for the knowledge and skills of LSL professionals in deaf education and is the certifying organization. The rigorous process of becoming an LSLS includes mentoring, professional development, and successful completion of an exam. According the AG Bell Academy website (2017), "LSLS certified professionals are licensed audiologists, speech-language pathologists, or educators of the deaf who have voluntarily attained a high level of specialty education and experience in LSL theory and practice." LSL professionals focus on education and family support to promote optimal acquisition of spoken language. They coach caregivers in developing spoken language through listening and in advocating for inclusion in general education. As of August 1, 2020, there are 943 certified LSLSs.

Families Choosing an LSL Approach

A valuable way to learn about the LSL approach is to read or listen to the stories of families who have chosen this approach for their children and from individuals who are D/HH and using LSL. Several family stories can be found at the AG Bell website (http://www.agbell.org/families/family-resources). Lydia Denworth chronicles the experience of her family and her son in *I Can Hear You Whisper: An Intimate Journey through the Science of Sound and Language* (2014). *Journey with Our Children*, published for the 10th anniversary of the Moog Center for Deaf Education, and *Auditory-Verbal Therapy and Practice* (Estabrooks, 2006) include accounts of children and families using LSL.

Educational Programs for Students Using an LSL Approach

Both public and private schools serving children who are D/HH provide LSL education and related services. The Option Schools organization is comprised of 40 private LSL programs and schools. Some of these programs receive funding from public school districts whose students attend the programs. Some public school districts have strong LSL programs staffed by certified LSLSs. Families who choose an LSL approach for their children often advocate with school districts to provide LSL services and may decide to relocate in an effort to access quality LSL programs.

One example of an Option Schools program that provides LSL services is St. Joseph Institute for the Deaf (SJID; https://sjid.org/). SJID has been serving the individual needs of children who are D/HH since 1837. As leaders in the educational field of LSL, the program provides a wide variety of services focusing on children, ages birth to 18, with a primary focus on young children. The school works directly with families to assess, educate, and prepare children to transition into a mainstream, traditional school with their siblings and community peers. The staff is a group of highly trained professionals with the sole mission of helping young children

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While many families and professionals consider CS to be an LSL approach to communication, it also uses the support of visual cues.

learn to listen, speak, and develop academically and socially with the intent of preparing them to transition into their local school with great success. Over 75% of the staff is certified or in the preparation of becoming an LSLS CertAVEd or LSLS Cert AVT. With campuses in Indianapolis and St. Louis, SJID provides educational and audiological services for children in early intervention, center-based preschool, and primary classes, as well as mainstream services. Since 2011, the innovative iHear telehealth program, using unique video conferencing software, provides one-on-one, real-time therapy sessions with an SJID educator. iHear serves children across the U.S. and around the world.

Among public school programs available for students who are D/HH, Bergen County Special Services District in New Jersey is one example of a pre-K through 12th grade program located in a school district that offers families the choice of LSL services. The students receive center-based services in local public school settings allowing for inclusion opportunities and interaction with age-appropriate, typically hearing peers. Audiological and auditory-verbal therapy services are provided individually, in small groups, and through classroom language infusion. These supportive environments involve parents in auditory verbal sessions at the pre-K level and evening group sessions.

Two more programs in the region provide services for children who are D/HH. The Sound Solutions program provides itinerant services and therapies to students in their local public and parochial schools throughout northern New Jersey. Workshops are regularly provided to school personnel to provide guidance in the optimal use of hearing assistive technology (hearing aids and/or cochlear implants), maintenance of the best possible listening environment, and the impact of hearing loss on learning. The STARS Early Intervention program in Bergen County partners with area medical centers to provide services to families and their infants/toddlers through consultations, direct services, evening groups, infant and toddler groups.

Another example of LSL services can be found in the *Listening & Spoken Language Preschool Programs* chapter, which includes a description of early childhood deaf education services at Central Institute for the Deaf.

While many families and professionals consider CS to be an LSL approach to communication, it also uses the support of visual cues, so it will be described in the following section on manual approaches.

Manual Approaches

When considering the approaches to manual communication, there is a distinction between languages and systems. For this reason, manual approaches need to be categorized as something other than "signing," as signing implies sign language, which is not the only manual method of communication for D/HH. A sign system refers to invented simultaneous methods of speech and sign, such as Signing Exact English. For this reason, the term "manual approaches" will be used to describe languages and codes that rely heavily on the use of visual methods of communication. Manual approaches in the U.S. include:

ASL

Cued Speech (CS)

MCE/Sign Systems:
- Conceptually Accurate Signed English (CASE)
- Pidgin Signed English (PSE)
- Seeing Essential English (SEE 1)/Morphemic Sign System (MSS)
- Signing Exact English (SEE 2)

In this chapter, sign language refers to ASL—a visual language that differs from an invented sign system. Historically, the Rochester Method—a code using fingerspelling—was also used, but this system is no longer used as a primary mode of communication. Sign Systems are often called Manually Coded English, Sign Supported Spoken Language, or Simultaneous Communication. The term *Signed Exact English* is also found in the literature, often referring to Seeing Essential English and/or Signing Exact English. The term *Total Communication* has been defined in a variety of ways. In this chapter, Total Communication is defined as a multimodal form of communication that includes visual, auditory, tactile, written, and symbolic communication. The authors have made every effort to accurately use terms, but the reader should be aware that professionals use these terms in a variety of ways. It is important to clarify the terms as used. Although tools, such as *See the Sound Visual Phonics*, can also be considered an access method, the tool is not used as a primary method of communication, so it will not be included in this examination.

These manual approaches to communication can be examined on a spectrum from "heavily dependent upon English" to "unique language from English" (see *Figure 1*). This spectrum will allow us to categorize communication on a continuum of visual support. The definition and research related to each of these is provided in *Table 6*. Later in this chapter, the use of multimodal approaches will be discussed.

Professional Preparation

The preparation for using ASL or sign systems for preservice teachers varies drastically from program to program. For example, programs that have a focus on LSL will likely have minimal, if any, coursework in manual communication, although many children who use LSL also pair speech with a sign system. Comprehensive deaf education university preparation programs are likely to have two to three courses in sign systems. However, mastery in any manual system of communication in as little as three semesters is rare.

Bilingual-bicultural programs that focus on ASL as the primary mode of communication are likely to have intense coursework in ASL but may not have mastery in other sign systems. Few university programs focus on coursework in CS—though many integrate exposure to CS as a speech tool in their coursework. Like the variation in program preparation, the level of mastery required to complete teacher preparation programs also varies. While some universities require assessments, such as the American Sign Language Proficiency Interview (ASLPI) issued through Gallaudet University, others require the National Technical Institute of the Deaf's (NTID) Sign Language Proficiency Interview (SLPI). Still others require in-house proficiency or only coursework completion. Evaluations may focus on just one communication system and count as an evaluation for all manual systems.

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Families Choosing Manual Methods

In a technology-driven society, there are more ways to access manual methods of communication than ever. The best language opportunities come from direct interaction with proficient modality users. Though not recommended as the primary method of ASL instruction by the National Association of the Deaf, many families use video and online resources to learn sign-based systems. Gallaudet University provides a resource center with a vast array of curriculum and resources for families using sign-based systems (https://goo.gl/MI622d). Likewise, the National Cued Speech Association provides families interested in learning CS

Figure 1
Manual Communication Options

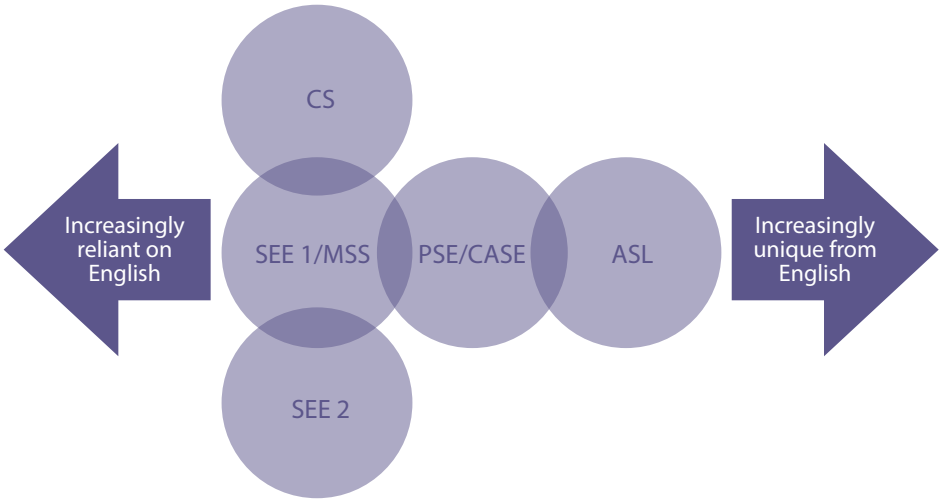

Table 6
ASL and Sign Systems

Manual Approach	Definition	Expressive/ Receptive Language	User & Family Role	Positive Aspects	Challenges
ASL	A complete language with all features, including phonology (cherology), morphology, semantics, syntax, and pragmatics. This approach to communication relies fully on visual communication. As there is no written form, English is instructed through bilingual and second language acquisition methods. Sign languages, including ASL, are not a universal language and vary by region and country.	***Expressive.*** ASL is only expressive directly through the air and has no written form. Written English will need to be learned. ***Receptive.*** Receptive language is fully visual. Use of printed language will be as a second language user. ***Role of Hearing & Speech.*** No use of residual hearing or speech is required.	***User.*** The user is a native deaf person with full expressive and receptive language in ASL. They will be bilingual in ASL and English (or another written language). ***Family.*** Families must learn or use ASL at all times for access to communication. Families must integrate deaf user into deaf community activities and events for full inclusion in cultural identity.	• Deaf persons who use ASL are fully accepted into a culture that emphasizes pride in their identity and natural language. • There is no requirement of speech or hearing, allowing all D/HH persons access to modality. • ASL is a full language that does not interfere with English development (Hoffmeister, 2000). • Rate of transmission is natural to perceptual and motor capabilities (Bornstein, 1990). • ASL has a natural prosody that is not present in other sign systems (Hoffmeister, 1990).	• 95% of children who are D/HH are born to hearing families and will not have a native user as a language model. • Weak language models result in lower academic outcomes (Calderon & Greenberg, 2003). • Students will function as English language users, as ASL does not translate to English directly (Hoffmeister & Caldwell-Harris, 2014). • Lack of qualified interpreters (Schick, Williams, & Kupermintz, 2006). • Continued societal belief that signing will disable the user and/or rejection of inclusion because of need for interpreters (Hall, 2017; Humphries et al., 2017). • Because of the interaction of hearing and deaf users, few deaf people use a pure form of ASL; most use some contrived system of blended ASL with manual English systems (Bornstein, 1990). • Outside of residential schools, teachers self-report lower ASL abilities than those teachers serving students in the more restrictive environment (Allen & Karchmer, 1990).

Manual Approach	Definition	Expressive/ Receptive Language	User & Family Role	Positive Aspects	Challenges
CS	A visual code for phonology of a language (e.g., English) that combines hand shapes (consonants) and placements (vowels) with mouth morphemes (speech reading) to provide exact transliteration of spoken language. CS is uniquely paired to distinguish mouth morpheme homophones through cues and places.	***Expressive.*** Expressive CS users may use voice only with no cues or use mouth movements paired with cues. ***Receptive.*** Receptive CS requires speech reading paired with cues. Many users receptively use speech reading only when conversation partners do not cue. Hearing is not necessary but is commonly used in conjunction with cues. ***Role of Hearing & Speech.*** Hearing and speech are not required. However, speech reading and mouth morphemes are necessary. Pairing with hearing assistive technology is common but not required.	***User.*** The user is responsible for using cue receptively and expressively in partnership with their native spoken language and speech reading. ***Family.*** The family must learn the cue system through a workshop or individual training (~8-18 hours) and then use the system consistently to build fluency.	• Long-term commitment to communication method by families (Kipila & Williams-Scott, 1990). • Ease of access to multiple languages (Kipila & Williams-Scott, 1990). • Directly relates to the phonemic structure of language, providing word-attack strategies (Bornstein, 1990). • Early CS users perform more similarly in early literacy skills to hearing peers than with other modalities (Koo, Crain, LaSasso, & Eden, 2008; LaSasso, Crain, & Leybaert, 2003).	• There are fewer users of CS than any other modality, resulting in fewer communication partners. • There is a shortage of CS transliterators (interpreters). • CS is rejected by the deaf community as being an "audist approach" to communication (Blume, 1994). • A majority of the research on CS is from French users and may not be generalizable to English-speaking populations, though trends are similar.

Manual Approach	Definition	Expressive/ Receptive Language	User & Family Role	Positive Aspects	Challenges
CASE/PSE	A flexible use of ASL and English to bridge the communication barriers between users of MCE and ASL. CASE is often used by interpreting professionals. It is a form of PSE that tends to use a wider variety of ASL concept signs in conjunction with English order. Often described as "contact sign" that is resulted from the interaction of the contact between deaf native users and hearing English users (Reilly & McIntire, 1980).	***Expressive.*** Expressive language may be sign only, sign and speech, or speech only. Expressive language is in English word order but may not contain all morphemes. Conceptually accurate signs are encouraged. ***Receptive.*** Receptive language is typically visual, though pairing is common between visual and auditory methods, including speech reading. ***Role of Hearing & Speech.*** Hearing and speech are not necessary but frequently occur as supplements to bridge oral and signed communication. Hearing assistive technology is common.	***User.*** It is the responsibility of the user to modify language to meet the needs of non-native users of sign-based system. Though ASL may be language used with deaf persons, modifications are made for communication needs of nonusers of ASL. ***Family.*** Family must use signed language for communication. Family may or may not participate in deaf community.	• Easier for hearing parents to learn than a full language (Bornstein, 1990).	• The application of English features to ASL results in constructions that are incongruent to native users of either language (Bornstein, 1990).

Manual Approach	Definition	Expressive/ Receptive Language	User & Family Role	Positive Aspects	Challenges
SEE 1 & SEE 2	Two similar systems of MCE that use English grammatical order with the loan of signs. SEE 1 and SEE 2 differ in that SEE 1 breaks words at the morpheme level (BUTTER+FLY+S), while SEE 2 breaks words at the affix level (BUTTERFLY+S). Both rely heavily on initialization. See Rendel, Bargones, Blake, Luetke, & Stryker (2018) for recent information on Seeing Exact English.	***Expressive.*** Expressive language is in English word order using a variety of English phonemes and affixes. Signs may or may not be conceptually accurate. (The same word may be used for "run" in all cases, though signs may be different.) Expressive language matches printed dominant language.	***User.*** User must visually process all conversation. User may or may not also be required to process spoken language. ***Family.*** Family must learn sign system.	• The use of affixes directly translate to printed English (Bornstein, 1990). • Increased knowledge of morphological structures of English (Neilsen, Luetke, McLean, & Stryker, 2016).	• Transmission/ translation time is unnatural and elongated compared to other sign forms (Bornstein, 1990). • Inconsistencies in the application of affixes is frequent (Bornstein, 1990). • Excessive breaking up of words, over-initialization, irresponsible creation of signs, improper inflection, overuse, lack of prosody, omissions, lack of consistency (Gustason, 1990). • Dissynchrony of speech and sign signals impacts speech and speech reading (Bornstein, 1990).

Photo courtesy of Centers for Disease Control and Prevention

with a variety of in-person and online tools to learn CS (http://www.cuedspeech.org/resources/learning). Modern Sign Press provides an online subscription dictionary to support families using SEE as a primary mode of communication (https://www.signingexactenglish.com/). The SEE Center (https://seecenter.org/) provides virtual classes and an app in SEE. Additionally, Gallaudet provides a comprehensive list of publishers that have printed and digital resources available related to D/HH communication needs (https://goo.gl/FtcaZU).

Educational Programs for Children Using Manual Methods

Most residential state schools use an ASL approach, but local public schools, charter schools, and private schools also use an ASL approach. Specific programs, such as the Kendall School and Model Secondary School at Gallaudet University in Washington, DC, serve as prime models of ASL bilingual-bicultural models. These programs offer a critical component in the development of manual modalities: peers and role models. Programs, such as the Northwest School for Deaf and Hard of Hearing Children in Washington State and the SEE Center in Alamitos, CA, offer programs and training for families using Signing Exact English. Comprehensive programs, including CS use, such as the Illinois School for the Deaf and the Alexander Graham Bell Montessori School, both in Illinois, offer programs incorporating simultaneous communication with a specific supplement of CS. A list of many programs for D/HH, including their educational philosophy, may be found at http://goo.gl/tqY4aG . This list is continually evolving and may be modified through the feedback option to the author.

ASL provides a community unlike any other modality of communication. It provides a rich history and an ever-present voice of self-worth and pride in one's deaf gain.

Multimodal Approaches

While LSL approaches and manual approaches are addressed here as differing methods of communication for children who are D/HH, it is important to consider that these methods are often not used exclusively. Many children using the LSL approach learn to sign as adults. Many children using SEE learn ASL at some point in their lives. Nor are these options always at odds. In Seattle, for example, all three options exit, and administrators of the programs support finding the most appropriate option for families. Historically in the field of deaf education, there is a great divide between the modalities of LSL and manual modalities. Contextually, it is vital to recognize that this divide continues and originates in discrimination. It is unjust to downplay the long-lasting impact of the Milan Conference of 1880, which declared sign language an "inferior" and "handicapping" form of communication. Likewise, it is foolish to ignore the improvement of technology in the 21st century to provide auditory stimulation that has never been possible in earlier history. While the 20th century saw a great declaration of "us vs. them" or "sign vs oral," as professionals, we must acknowledge the research that provides insight into the benefits and problems with each mode.

ASL provides a community unlike any other modality of communication. It provides a rich history and an ever-present voice of self-worth and pride in one's deaf gain. Unfortunately because of the reality that 95% of deaf children are born to hearing families, ASL—unless fully learned by families—also proves to be a barrier in familial relationships—though it does not have to be. Cochlear implants and hearing aids help to bridge that communication barrier in families and workplaces—providing for direct auditory and verbal communication. However, the reality that is faced is that the deaf person is forever responsible for filling in the vast system of communication that is still missed, because hearing assistive technology is not perfect.

Many deaf users of hearing assistive technology paired with LSL report that they are still isolated from the hearing world—as at the end of the day, they are still deaf and struggling to decipher the spoken word. CS is an often forgotten modality that provides rich access to spoken language through a manual modality—seeming to be the best of all worlds. However, CS is rejected by the deaf world, has limited skilled professionals in the educational world, and remains relatively unrepresented in research. English-based sign systems provide the structure of English that is favored in the academic world, but like ASL comes with the difficulty of language role models and communication in a predominately

hearing family or workplace. In short, it seems that all communication modalities have positive features and challenges. Each case of deafness is unique and should not be analyzed on a "one-size-fits-all" model. Families may use a combination of approaches.

Research can demonstrate the positive and negative aspects of each communication modality. In the words of Spencer and Marschark (2010), "Our inability to 'prove' a best method can be seen as a negative finding but also can be interpreted in a more positive light: Some children have been shown to achieve relatively rapid and high levels of language development in each of the approaches surveyed" (p. 80). Even in ideal visual environments or with perfect hearing assistive technology, children have struggled to develop communication and required a change in communication modality for success. The choice of modality should be individualized and based on the multifaceted needs and values of the family and the child. Professionals should provide families with information about all methods without bias. Unfortunately, all options are not presented as equal players in the communication choice (Borum, 2012; Eleweke & Rodda, 2000; Li, Bain, & Steinberg, 2003; Young et al., 2006).

The choice of modality should be individualized and based on the multifaceted needs and values of the family and the child.

While advocates for LSL and ASL tend to argue against using a multimodal approach to communication, there are supporters for multimodal approaches (Kovelman et al., 2009; Nussbaum & Scott; 2011; Petitto et al., 2001; Petitto & Kovelman, 2003). The multimodal approach is not detrimental to one modality or the other but rather additive to the access of bilingual-bicultural development. This multimodal approach does not necessarily imply that simultaneous communication (sign and speech) is the desired outcome for children who are D/HH. Rather, the consideration of multiple modalities to support one another (e.g., training in ASL and spoken language; training in CS paired with English and ASL, etc.) may provide a fuller access to language.

Other research demonstrates a negative impact of using sign with a spoken language approach. Geers and colleagues (2017) analyzed the outcomes in speech, language, and listening for 97 children with cochlear implants and found that over 70% of children without sign language exposure achieved age-appropriate spoken language compared with 39% of those with sign language exposure. The children who used LSL without sign had more intelligible speech. Nittrouer (2009) found there was no additive benefit to using sign language with spoken language for children identified with hearing loss below 1 year of age, and for children identified at 1 year of age or older, there was a negative effect on their spoken language.

The argument of single modality of LSL, ASL, or sign system does not reflect the diversity of the field of deaf education, which can lead to limited service delivery models for children and their families. Nussbaum and Scott (2011) argued that in order to provide effective education practices, professionals must recognize characteristics that are intrinsic (i.e., age of identification, early language development, etiology, additional disabilities, resilience) and extrinsic (i.e., [re]habilitation, family history, family supports, home language) to children. Early use of ASL or signed English systems prior to cochlear implantation is argued to be a favorable transition tool that can be used to establish a language basis that can later be used as a scaffolding tool to spoken language (Malloy, 2003; Snoddon, 2008; Yoshinaga-Itano, 2006).

Other factors, such as hearing configuration and etiology, may prevent the full access to spoken language, which may be supported through the visual supplement of CS, signed English system, or ASL. However, like all communication options, the decision to combine methods of communication will not be successful without proficient adult models, true bilingual-bimodal instructional design, early interventions, intact language learning ability, strong models and supports for parents and families, and opportunities to use both modalities in isolation and combination for meaningful communication (Nussbaum & Scott, 2011; Rendel, Bargones, Blake, Luetke, & Stryker, 2018).

Like the diversity of instructional activities (i.e., visual, kinesthetic, auditory, social, etc.), professionals must recognize that multimodal approaches do not mean multimodal at all times. The use of manual systems paired with spoken language methods can be used:

- Only until age-appropriate listening and speech skills are demonstrated.
- As a bridge between modalities.
- As a second language.

The continuum of bimodal usage is diverse just as the continuum of manual modalities is diverse. The multimodal approach, if paired with professionals who understand the unique needs of bilingual learners, provides a multifaceted benefit to children with hearing loss, including the access to the dominate language and culture of the family, access and support from the minority deaf culture and language, and the advantage of communication access no matter the technology support (Marschark, Knoors, & Tang, 2014).

Photo courtesy of Advanced Bionics

In short, as professionals in deaf education, we must consider what is best for the child, even if that modality goes against our own personal beliefs on what is best for communication. This process should be a family-centered decision, with the roles of audiologist, speech language pathologist, teacher of the D/HH, and deaf community acting to support the needs of the child and family. As professionals, our role is to empower parents to identify their goals and aspirations for their child and provide access to information, resources, and educational support. Only when we approach the communication method decision in this way will the process become best practice. This family-centered perspective will require some professionals to step down from our position of power and authority among practitioners in a method, accept that our strengths might not meet the needs of all of those we serve, and that passing that responsibility on to another professional or sharing that responsibility with another professional is what will drive the future of deaf education forward.

As professionals, our role is to empower parents to identify their goals and aspirations for their child and provide access to information, resources, and educational support.

Resources

- AG Bell Association, https://www.agbell.org/
- Hands & Voices, http://www.handsandvoices.org/
- Laurent Clerc National Deaf Education Center, http://www3.gallaudet.edu/clerc-center/info-to-go/asl.html
- National Cued Speech Association, http://www.cuedspeech.org/

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