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## Learning Sign Language as a Second Language

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Sign languages are natural languages. This means that sign languages are often learned as second languages, just like spoken languages. Unlike spoken languages, however, sign languages are expressed with the hands, arms, and face and understood through the eyes. This means there are two kinds of second sign language learning: unimodal second language learning, where a person knows two or more sign languages, and bimodal second language learning, where a person knows one or more sign languages and one or more spoken languages. An important question, then, is whether the sensory-modality of the first and second languages changes what we know about second language learning over the life span. Another important question is whether and how the age of first language learning affects the ultimate outcome of second language learning. Clearly several factors in the second language must be considered in any account of second language learning of sign languages, sensorimotor modality, the temporal order of the first and second language learning, and the ages when the first and second languages are learned. Here we focus first on second language (L2) learning when the first language (L1) learning begins in early childhood. We consider both simultaneous and sequential L1 and L2 learning. Next we consider L2 learning in the case where L1 learning begins after early childhood.

### Learning Two Languages in Infancy

Babies whose parents use a sign language with them in infancy often learn two languages simultaneously. One kind of L2 learning is by hearing babies whose deaf parents use a sign language with them. They typically acquire both a sign language and a spoken language. This is an example of bimodal bilingualism. The ages when these babies reach their early

language milestones – such as the appearance of the first word, the first 50 words, and the first word combinations – are similar to those of babies learning two spoken languages and babies learning only one language, signed or spoken (Petitto *et al.*, 2001). The early vocabularies of babies acquiring both a signed and a spoken language are semantically similar across the two languages, although the specific vocabulary items are not identical. Fewer than a third of the vocabulary items the child knows in each language are translation equivalents, similar to children acquiring two spoken languages. The vocabulary sizes of babies learning a signed and a spoken language simultaneously are similar to those of babies learning only one spoken language, especially when the lexical items of the two languages are considered together, as is the case for babies learning two spoken languages (Holowka *et al.*, 2002; Pearson *et al.*, 1993).

Babies who are deaf and whose parents use a sign language with them from birth often learn an L2 at the same time. The L2 may be another sign language, but unfortunately little is known about bilingualism in the visual modality. More is known about bimodal bilingualism. For example, when learning both SLN (Sign Language of the Netherlands) and Dutch, one deaf baby was observed to begin learning vocabulary in SLN. The child then used the sign vocabulary to help learn Dutch vocabulary items up to 36 months. In an intermediate stage, the child both signed and spoke vocabulary items. The child eventually separated the vocabularies of the two languages and either expressed signs without speaking or spoke words without signing. Around the same age, the child showed an awareness that the word order patterns of SLN and Dutch are not the same (Hoiting, 1998).

### Learning Two Languages Sequentially

Adults and adolescents frequently learn sign languages as second languages. Hearing adults may learn sign languages for professional reasons. Teachers, interpreters, therapists, and researchers working with

children and adults who are deaf often learn sign language in university courses designed for them. The first stage of adult L2 learning of sign languages is characterized by a marked reliance on the perceived iconic features of signs. Beginning signers use iconicity as a mnemonic aid to remember new vocabulary items for both sign expression and recognition (Campbell *et al.*, 1992). Beginning sign learners often want to know the mimetic 'reason' for every sign form. Although sign languages are rooted in manual gesture, they are not iconic by nature. To the contrary, all sign languages have phonological structure, that is, meaningless articulatory units that combine to make the words of the language. Research shows that signers manipulate the phonological structure of sign languages during language comprehension and expression, just as phonological structure is a basic part of listening to and speaking a spoken language.

A key difference between adult L2 learning and infant learning of sign languages is that iconicity plays no role in infants' vocabulary learning. Moreover, iconicity plays no role in the human mind's comprehension of sign language for both L2 and L1 signers who are highly proficient. Beginning signers may recruit what they already know that is close in nature to sign language, namely in gesture and pantomime. This may help beginning signers learn how to position their fingers, hands, and arms in making signs and serve as a means to remember the meanings of the signs they are seeing for the first time. The strategy may be analogous to beginning speakers of a second language using the sound patterns of their native language to help themselves remember the sound patterns of a new spoken L2 they are learning. Clearly L2 learners abandon this strategy once they learn the phonological structure of the sign language.

Beyond vocabulary learning, L2 learners of sign languages must also master morphology and syntax. One problem for L2 learners is that the syntax and morphology of natural sign languages are not always taught in sign language courses. Many courses primarily teach the frozen lexicon of sign languages, excluding classifier constructions, along with finger spelling. This teaching method inadvertently encourages beginning L2 learners to express sign language vocabulary using the word order patterns of their spoken L1. The result is a kind of pidgin where L2 content words (vocabulary for people, actions, internal states, and objects) are signed according to the word order of the L1 and devoid of the morphology and syntax of any language.

Adults and adolescents who are deaf and who acquired an L1 in early childhood often learn sign languages as second languages. For example, L1 learners

of a sign language may later learn some other sign language as an L2, an example of bilingualism in the visual modality. This is common where sign languages are in close geographical proximity, as is the case for LSQ (Langue des signes québécoise) and ASL (American Sign Language) in Canada. Another possible example of bilingualism in the visual modality is the L2 sign language learning by deaf adults and adolescents who are proficient in a spoken L1, which is often in a read and lip-read form. These L2 learners are more likely to immerse themselves in Deaf communities than hearing L2 learners of sign languages and for this reason are more likely to achieve higher levels of ultimate proficiency than their hearing L2 peers.

Another type of sequential L2 learning of sign languages is found in educational projects that teach BSL (British Sign Language) or ASL (American Sign Language) to kindergarten and elementary school children as a second language (Daniels, 2003). Other programs teach sign languages to hearing elementary school children to enhance their reading and spatial cognitive skills. Yet other programs use signs with hearing children who are delayed in their spoken language development, such as children with autism or Down syndrome. The sign learning in the latter instances is more properly considered L1 rather than L2 learning, however.

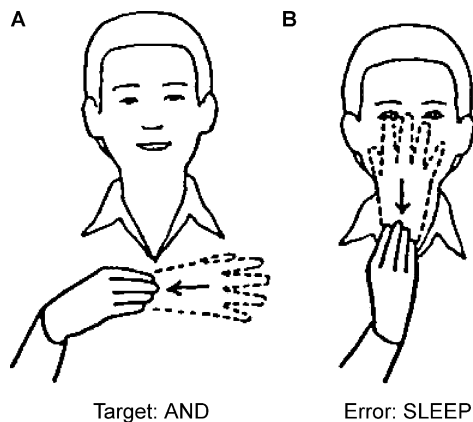
### Delayed L1 Learning and L2 Learning

The common definition of L2 learning is the learning of a second language simultaneously with, or subsequent to, learning a first language. Although L1 learning in early childhood is the norm for babies born with normal hearing, because they are immersed in spoken language, it is not the norm for babies born deaf. A minority learn sign language from birth because their parents use a sign language with them, as discussed earlier in this article. However, the majority of babies born deaf are isolated not only from the languages spoken around them but also from sign languages if their parents do not sign with them. Even after the initial diagnosis of hearing loss and onset of intervention services for the deaf child, sign languages are often withheld from them in the belief that doing so encourages deaf babies to learn to speak. Note that this is contrary to the popular trend in North America of teaching signs to hearing toddlers because it reduces frustration for the parent and child (Goodwyn *et al.*, 2000), and to the clinical case reports of deaf babies making faster progress learning spoken words after they have learned a sign lexicon. The important point to remember is that sign language learning for many deaf children and

adolescents is not L2 learning but is in reality L1 learning begun at an abnormally late age, i.e., after early childhood.

Learning an L1 for the first time after early childhood has a plethora of negative effects on adult language comprehension. For example, the ability to comprehend and remember sign language sentences and stories declines as the age of L1 sign language learning increases. This is apparent in the kinds of lexical mistakes that delayed L1 learners make when engaged in sign language comprehension and production tasks. They often make phonological errors, producing lexical items that are real signs but with forms that violate the semantic and syntactic framework of the sentence they are reproducing (see [Figure 1](#)). By contrast, L1 learners who learned sign language from birth, or shortly thereafter, make few lexical errors, and the ones they do make maintain the syntactic and semantic frame of the sentence they are reproducing. Delayed L1 learners also show a reduced ability to comprehend sign language.

The effects of delayed L1 learning are also apparent on grammatical knowledge of sign language. For example, delayed L1 learners are more likely to delete grammatical inflections from signs when producing sign language sentences, whereas early L1 learners either inflect signs or express the same meanings in separate lexical units. Highly delayed L1 learners have been observed to perform at near chance levels on grammatical tasks in sign language.



**Figure 1** Panel A shows the sign AND in the ASL sentence 'I ate too much turkey AND potato,' which was the target sentence. Panel B shows the phonologically based substitution error, which resulted in the sentence 'I ate too much turkey SLEEP potato.' Note that the target and error differ in only one phonological parameter: place of articulation. (From Mayberry R 1996. 'The importance of childhood to language acquisition.' In Goodman J C & Nusbaum J C (eds.) *The development of speech perception*, p. 68. Cambridge: MIT Press. Illustration by Betty Raskin © R. Mayberry, with permission.)

By contrast, early L1 learners of sign languages tend to be grammatically accurate.

Delayed L1 learning not only affects the ultimate proficiency with which the L1 can be understood and expressed but also affects the ultimate outcome of L2 learning crossmodally. Early L1 learners of sign languages often show near-native levels of L2 proficiency. For example, people who were born deaf and acquired a sign language early in life often show high levels of L2 learning of spoken languages in read and lip-read forms. By contrast, people who were born deaf and did not experience a fully perceptible language until after early childhood, i.e., delayed L1 learners, typically show low levels of L2 spoken language proficiency in read and lip-read forms. In other words, there is a strong relationship between the age when the L1 is learned and the L2 outcome, independent of the sensorimotor modalities of the languages. Although the linguistic, cognitive, or neural reasons that early L1 learning is necessary for L2 learning to be successful are not understood at present, it is clear that any discussion of L2 learning of sign languages requires consideration of the age when the L1 learning begins.

We return now to the two questions posed at the beginning of this article. First, does the sensorimotor modality of the first and second languages change what we know about how second languages are learned over the life span? The second question is how the age of first language learning affects the ultimate outcome of second language learning. Much of what we know about second language learning of sign languages suggests that there are few differences between second language learning of sign languages and of spoken languages, as has been previously found for infant L1 learning of sign languages compared with spoken languages. One exception appears to be the initial iconic strategy that adult second language learners of sign languages use to begin to parse and remember the phonological forms of signs. The second crucial difference is the age when individuals born deaf first experience a fully perceptible language. It appears that the timing of first language learning during the life span sets the course for all subsequent language learning regardless of the sensorimotor modality of the language learning.

*See also:* Bilingual Language Development: Early Years; Disorders of Sign Language; Iconicity: Sign Language; Language Development in Deaf Children with Hearing Parents; Language Development: Overview; Language Education of the Deaf; Modality Issues in Signed and Spoken Language; Sign Language: Acquisition; Sign Language: Interpreting; Sign Language: Overview.

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