



NSF supported Science of Learning Center on Visual Language and Visual Learning, SBE-0541953, Gallaudet University.

## VISUAL LANGUAGE & VISUAL LEARNING RESEARCH BRIEF:



# ADVANTAGES OF EARLY VISUAL LANGUAGE

JANUARY 2011



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### Key Findings on the Advantages of Early Visual Language:

- The brain is most receptive to language acquisition during “sensitive periods” early in a child’s development.
- Deaf and hard of hearing children who receive early intervention services have been found to have better language outcomes up to age five.
- High levels of family involvement have been found to produce greater language development outcomes in deaf and hard of hearing children.
- Acquiring a complete first language during early childhood is critical for later reading comprehension.
- Learning two languages [that is, American Sign Language (ASL) and English] is advantageous for deaf and hard of hearing children.
- A mother’s signing skills are predictive of later language development in deaf or hard of hearing children.
- A language foundation is an important factor in spoken language development.

## Early Hearing Detection and Intervention

For almost twenty-five years, since the passage of PL 99-457 in 1986, young deaf and hard of hearing children and their families have received early intervention services. Age of identification has been found to be an important factor; therefore providers of early identification and intervention services aim to screen, diagnose, and provide services by 6 months of age.<sup>1,2,3,4</sup> However, early language acquisition is not necessarily a medical event. Early language intervention requires specialists who are knowledgeable of both visual and spoken language development. They work with families to make informed communication and educational decisions.

Over the past 20 years, numerous studies have consistently found that the earlier hearing loss is identified and the earlier intervention services are initiated, the more positive the outcomes will be for language development.<sup>1,2,3,4,5,6,7</sup> In a recent study, deaf and hard of hearing children who received early intervention services prior to three months of age had better language outcomes.<sup>8</sup> Certainly, during infancy and early childhood, sensitive periods for language acquisition correlate with the brain's development.<sup>9</sup> Additionally, early identification has been found to moderate factors that previously had negative effects on language development: for example, socio-economic status, family ethnicity, and the presence of additional disabilities.<sup>1,3,7</sup>

## Multiple Pathways to Language Learning

Each deaf child acquires language in his or her own unique way. Level of hearing loss, cause of hearing loss, age when hearing loss occurred, the extent of benefit from hearing technologies, presence of additional disabilities, and family dynamics vary from child to child. Multi-sensory approaches to language acquisition ensure that when one pathway is less effective, another pathway can be used as

an avenue for language learning. Early research in bilingual education found cognitive benefits from learning two languages; bilinguals have been reported to have greater cognitive flexibility and greater sensitivity to linguistic meaning than monolingual children.<sup>10,11,12</sup> Deaf children can experience similar cognitive benefits from learning American Sign Language and a spoken language through print and listening and speaking when appropriate.<sup>13</sup>

## Academic Performance of Deaf and Hard of Hearing Students

Early language has ramifications for academic achievement. Deaf and hard of hearing children underperform in comparison with hearing children of similar ages in most content areas, and especially in the area of reading.<sup>14,15,16</sup> This is a long-standing trend that has not changed regardless of the use of various communication methodologies and the invention of new hearing technologies.<sup>17</sup> Despite uneven outcomes,<sup>18</sup> some cochlear implant teams are now advising families of children with implants to participate only in auditory-verbal therapy, and in doing so, are ignoring the enormous potential of a visual pathway to learning.<sup>19</sup> The lack of early and fully accessible visual language exposure may be a contributing factor to the low levels of reading achievement in the deaf population.<sup>13,14,15,16,20,21,22</sup>

Delay of language acquisition can have negative consequences on cognition, academic achievement, and social and emotional health.<sup>13,17,18,23,24,25</sup>

In contrast to children using auditory-verbal therapy, most children from deaf families enter school ready to learn because as infants and toddlers they acquired a complete first language through communicating with family members who are fluent in ASL.<sup>26</sup> These children tend to perform similarly to what is expected of hearing children at the same age.<sup>8</sup> Given signing adult language

models, deaf children with hearing parents can also acquire visual language competence and become literate.<sup>13,27</sup>

## The Advantage of Early Visual Language

Delay in the acquisition of a first language produces poorer language performance,<sup>28,29,30,31</sup> regardless if the language choice is a signed language or a spoken language.<sup>9</sup> In addition, without access to a complete linguistic code during early development, it is difficult for deaf and hard of hearing children's language acquisition to parallel that of hearing children.<sup>32</sup>

Fortunately, the language areas of the brain have no preference for language input.<sup>24,33,34</sup> The most accessible pathway for full access to linguistic information for many deaf children is through vision.<sup>13</sup> Visual languages such as American Sign Language are natural language systems.<sup>9,20</sup> Visual languages are not merely signs that represent spoken language; they function independently from spoken languages and have fully developed grammatical systems.<sup>35</sup>

Some innovative early intervention programs have recognized the need for early visual language learning in children receiving implants. In one such program, a study revealed that children who were exposed to sign language while waiting for cochlear implants developed receptive language: they understood comments, questions, explanations, commands, and they were signing simple phrases.<sup>36</sup> In these programs, children achieving the most effective language outcomes signed early, suggesting that having access to early language, regardless of the modality, can provide a base on which skills in a different language modality can be built.<sup>36,37</sup> After implantation, these children developed spoken language. The sign lexicon that the children acquired before implantation most likely facilitated rapid mapping onto speech.<sup>36,37,38</sup>

## Signed Language and Spoken Language Development

Early language experiences create the ability to learn throughout the lifespan, regardless of the mode of communication.<sup>9</sup> Signed language is sometimes withheld from deaf children in the belief that it interferes with speech development.<sup>19</sup> However, there is no evidence that using a signed language with deaf and hard of hearing children impedes spoken language development.<sup>19,39</sup> Rather, spoken language skills increase as children learn more gestures and signs.<sup>25,40,41</sup> Proficiency in ASL has been shown to positively influence spoken language development and the development of English literacy in deaf students.<sup>16,42,43,44</sup> It is language that facilitates spoken language, not the mode of communication.<sup>45</sup>

## Benefits of Bilingualism

There are linguistic and educational benefits of learning two languages (for example, American Sign Language and spoken/written English).<sup>46</sup> Deaf children can acquire two languages simultaneously when adult language models follow language allocation strategies, where the amount of exposure to a spoken/written language is increased as the child acquires first language competence.<sup>47</sup> ASL, in many cases, functions as a first language or (L1), which supports the acquisition of spoken/written English as a second language (L2). On the whole, bilingual research has shown that fluency in a first language is a strong predictor of second language skill; competence in a second language is a function of proficiency in a first language.<sup>48,49</sup>

## Family Involvement

Family involvement is a critical factor in the language development of deaf and hard of hearing children, especially those with hearing parents.<sup>2</sup> It is important to note that high levels of family involvement produce higher language outcomes.<sup>2</sup> In addition, maternal signing skill appears to be another powerful indicator that results in better



language performance in deaf and hard of hearing children.<sup>6,18</sup> Further, these factors have been found to buffer the negative effects of late enrollment in early intervention programs.<sup>2</sup>

## Integration of Research in Education

VL<sup>2</sup> publishes research briefs as a resource for educators and parents. The goal is to inform the education community of research findings, to summarize relevant scholarship, and to present recommendations that educators and parents can use when addressing the multifaceted challenges of educating deaf and hard of hearing children.

The information provided in this brief is intended to clarify the importance of early visual language development in deaf and hard of hearing infants and toddlers.

Research briefs are available at [vl2.gallaudet.edu](http://vl2.gallaudet.edu).

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#### credits

Writer: Sharon Baker, Ed.D  
Editor: Kristen Harmon, Ph.D.  
Design: Melissa Malzkuhn, M.A.  
Consultant: Diane Clark, Ph.D.