

Todd LaMarr, MA, is a professor in the department of Early Childhood Education at American River College in Sacramento, Calif. He received his bachelor's degree in deaf studies and ASL and his master's degree in child development from California State University, Sacramento. Previously, LaMarr taught preschool and worked with elementary and high school deaf and hard of hearing students. An alumnus of Gallaudet University's Science of Learning Center on Visual Language and Visual Learning, LaMarr has worked at the University of California, Davis and Stanford University, researching the language and brain development of children learning American Sign Language.

The Importance of Quantity and Quality of ASL

with Young Deaf and Hard of Hearing Children

By Todd LaMarr and Lisalee D. Egbert

A critical part of parental advocacy is being informed. Sometimes this means educators must stay on top of research and share what they learn with parents. This may be especially important in the case of research on early language exposure.

Exposing our youngest children to language—whether it is English, American Sign Language (ASL), or any other fully developed language—is essential. Early language experience leads to stronger kindergarten language ability, which is one of the best predictors of later academic success (Pace et al., 2019). This is the reason that educators advocate using ASL with deaf and hard of hearing children. Through use of ASL, deaf and hard of hearing children are ensured full access to a full language. Research indicates, however, that it is not only the use of a language but also the amount of the language and the way adults use that language that is critical to the child's development. In fact, studies done with hearing children indicate that it is the quantity and quality of the language that children receive that affects their cognitive and academic outcomes (Gilkerson et al., 2018; Marchman & Fernald, 2008).

Language Quantity, and Quality What the Science Shows

Studies with hearing children showed that the quantity of language—the sheer number of words that a child experiences—varied greatly among families. In a day's time, 2- to 4-month-old infants heard an average of 15,071 words from adults, but there was a difference of almost 6,000 words between the infant who heard the greatest and the infant who heard

Photos by Matthew Vita



Above: One unique strategy Deaf parents use with their deaf or hard of hearing child is to make the signs on the book itself or on the child.

the fewest number of words (Gilkerson et al., 2017). These day-to-day differences in the quantity of language exposure added up and compounded over time, leading to a difference of potentially 30 million words received by a child's fourth birthday (Hart & Risley, 1995). This difference had early and long-lasting effects. Parents who exposed their children to a larger quantity of language at 18 months had children with larger vocabularies and faster language processing six months later (Hurtado, Marchman, & Fernald, 2008). Children who heard more words in the first two years of life demonstrated better language and cognitive abilities eight years later (Gilkerson et al., 2018).

While quantity is important, so, too, is the quality of language to which children are exposed. Researchers have found that quality of language—the way parents use language with children—also differs among families, and these differences also impact later abilities. One measure of language quality concerns how children experience language. Hearing children can experience language when their parents talk directly to them and when they overhear it being used in their environment. Hearing children who more frequently experienced language through being talked to directly had larger vocabularies and faster language

processing abilities than other children (Weisleder & Fernald, 2013). Another way to measure the quality of language is through the amount of turn-taking that a child experiences. Turn-taking is the intimate exchange of communication between the adult and the child that occurs in conversation. For the first year of life, infants and parents engage in about 200-300 back-and-forth interactions per day (Gilkerson et al., 2017). Hearing children who experienced more conversational turn-taking with their parents gained more vocabulary (Cabell et al., 2015) and exhibited greater activation in language areas of the brain (Romeo et al., 2018).

Research with Hearing Children Implications for Deaf and Hard of Hearing Children

The lessons learned from research with hearing children can easily be applied to deaf and hard of hearing children. While educators have long advocated early use of ASL for deaf and hard of hearing children in order for them to experience the benefit of full language access,

Lisalee D. Egbert, PhD, is a two-term member of the Maryland Governor's Office for the Deaf and Hard of Hearing Advisory Council and sits on the Maryland Cultural and Linguistic Competence Committee related to mental health services for deaf and hard of hearing individuals. Egbert received a Civic Engagement Award for service in social justice, diversity, and equality. She also serves in the Early Hearing Detection and Intervention (EHDI) Program for the Maryland Department of Health and for the Parents' Place of Maryland as well as the EHDI Screening and Beyond Advisory Committee. She and her husband are deaf, and they have two hard of hearing and two hearing children.

The authors welcome questions and comments about this article at LaMarrT@arc.losrios.edu.

we should also advise parents and educators of young deaf and hard of hearing children to increase the quantity and improve the quality of the sign language to which their children are exposed. This means taking advantage of opportunities when together and signing more. It also means signing to the child directly and engaging in turn-taking that encourages children's participation in conversation.

The discussion of ASL quantity and quality can seem very intimidating, especially for parents who are still learning ASL, but parents do not need to be fluent signers to do this. Research has shown that even for parents who are still learning ASL, the quantity and quality of their sign language interactions with their deaf or hard of hearing child can make a substantial positive difference in their child's development (Allen, 2015; Allen & Enns, 2013). Furthermore, we can encourage parents to turn their daily routines and chores into rich language experiences. For example, before going to the grocery store, they can help their child create the grocery list, learning the signs for each item of food they expect to buy. Once in the store, parents and children can discuss the color, size, shape, weight, and texture of each product as well as their differences and similarities.

Further, resources exist to help both parent and child learn new signs and see ASL used by skilled native signers. These resources can help increase the quantity of signs and the quality of signing to which a child is exposed as well as allow parents to enjoy materials with their children. For example:

- A free library of ASL signs, including an ASL/English dictionary (www.lifeprint.com)
- Children's stories produced in ASL (www.dawnsign.com)
- Bilingual English/ASL story apps developed for children (<http://Vl2storybookapps.com>)

By increasing the amount of ASL deaf and hard of hearing children experience and ensuring we engage our children directly with visual strategies, we have the potential to impact their early language and cognitive abilities and, later, academic achievement.



The Visual Difference Mentors and Reading

One of the reasons that hearing parents may be hesitant to sign more and engage in quality interactions with their deaf or hard of hearing child is that this requires visual and language strategies with which hearing parents are often not familiar (Lieberman, Hatrak, & Mayberry, 2014; Spencer, Bodner-Johnson, & Gutfreund, 1992). A way to improve quality language interactions is to elicit the support of Deaf individuals to serve as mentors to hearing family members.

A Deaf Mentor can model strategies for engaging young deaf or hard of hearing children, such as getting and keeping their attention. They can also provide Deaf cultural knowledge and strategies for signing. In one study, after Deaf Mentors visited their homes, hearing parents learned important strategies, such as getting a child's attention, and strategies to improve quality language interactions. Families who were visited by a Deaf Mentor had deaf children who demonstrated larger vocabularies and more advanced English skills compared to deaf children whose families did not work with a mentor (Watkins, Pittman, & Walden, 1998).

Reading is a great way to increase the number of signs a child is exposed to and offers opportunities to practice high-quality strategies unique to reading with deaf and hard of hearing children (Swanwick & Watson, 2005). To increase sign exposure, parents can learn the signs beforehand to introduce new signs to the child. A few unique strategies Deaf parents use are to make the signs on the book itself or on the child and to sit across from the child so the child can easily see both the book and the parent signing.

Resources exist to help parents learn visual strategies for interacting with and reading to their deaf or hard of hearing children and help them increase the language quality that they provide. These include:

- A collection of research-based briefs for families and educators, from Gallaudet University's Science of Learning Center on Visual Language and Visual Learning (<https://vl2parentspackage.org>), that includes topics such as "Visual Attention and Deafness" and "Family Involvement in ASL Acquisition"
- A free webcast, "Language Learning Through the Eye and Ear," from the Laurent Clerc National Deaf Education Center (<http://clerccenter.gallaudet.edu>), for parents about

how deaf and hard of hearing children acquire language and supportive strategies

Advocating for Language Quantity and Quality Matter

As both educators and parents, we believe that as we advocate for the value of sign language in the lives of deaf and hard of hearing children, we must also explain and advocate for the importance of increasing the quantity and

improving the quality of the sign language that our deaf and hard of hearing children receive. It is essential that we support parents as they learn new visual strategies for interacting with their deaf or hard of hearing children. We must make parents aware not only of the importance of learning and using ASL but also of the importance of using it more often and more effectively. This means understanding the significance of “quantity” and “quality” of language

exposure and explaining it to parents.

As simple as it may seem, the science is clear: By increasing the amount of ASL deaf and hard of hearing children experience and ensuring we engage our children directly with visual strategies, we have the potential to impact their early language and cognitive abilities and, later, academic achievement. We owe this information to parents so that they can more effectively advocate for their children.

References

- Allen, T. E. (2015). ASL skills, fingerspelling ability, home communication context and early alphabetic knowledge of preschool-aged deaf children. *Sign Language Studies, 15*(3), 233-265.
- Allen, T. E., & Enns, C. J. (2013). A psychometric study of the ASL receptive skills test when administered to deaf 3-, 4-, and 5-year-old children. *Sign Language Studies, 14*(1), 58-79.
- Cabell, S. Q., Justice, L. M., McGinty, A. S., DeCoster, J., & Forston, L. D. (2015). Teacher-child conversations in preschool classrooms: Contributions to children's vocabulary development. *Early Childhood Research Quarterly, 30*, 80-92.
- Gilkerson, J., Richards, J. A., Warren, S. F., Montgomery, J. K., Greenwood, C. R., Kimbrough Oller, D., ... & Paul, T. D. (2017). Mapping the early language environment using all-day recordings and automated analysis. *American Journal of Speech-Language Pathology, 26*(2), 248-265.
- Gilkerson, J., Richards, J. A., Warren, S. F., Oller, D. K., Russo, R., & Vohr, B. (2018, October). Language experience in the second year of life and language outcomes in late childhood. *Pediatrics, 142*(4), e20174276.
- Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Baltimore: Paul H Brookes.
- Hurtado, N., Marchman, V. A., & Fernald, A. (2008). Does input influence uptake? Links between maternal talk, processing speed and vocabulary size in Spanish-learning children. *Developmental Science, 11*(6), F31-F39.
- Lieberman, A. M., Hatrak, M., & Mayberry, R. I. (2014). Learning to look for language: Development of joint attention in young deaf children. *Language Learning and Development, 10*(1), 19-35.
- Marchman, V. A., & Fernald, A. (2008). Speed of word recognition and vocabulary knowledge in infancy predict cognitive and language outcomes in later childhood. *Developmental Science, 11*(3), F9-F16.
- Pace, A., Alper, R., Burchinal, M. R., Golinkoff, R. M., & Hirsh-Pasek, K. (2019). Measuring success: Within and cross-domain predictors of academic and social trajectories in elementary school. *Early Childhood Research Quarterly, 46*, 112-125.
- Romeo, R. R., Leonard, J. A., Robinson, S. T., West, M. R., Mackey, A. P., Rowe, M. L., & Gabrieli, J. D. (2018). Beyond the 30-million-word gap: Children's conversational exposure is associated with language-related brain function. *Psychological Science, 29*(5), 700-710.
- Spencer, P. E., Bodner-Johnson, B. A., & Gutfreund, M. K. (1992). Interacting with infants with a hearing loss: What can we learn from mothers who are deaf? *Journal of Early Intervention, 16*(1), 64-78.
- Swanwick, R., & Watson, L. (2005). Literacy in the homes of young deaf children: Common and distinct features of spoken language and sign bilingual environments. *Journal of Early Childhood Literacy, 5*(1), 53-78.
- Watkins, S., Pittman, P., & Walden, B. (1998). The deaf mentor experimental project for young children who are deaf and their families. *American Annals of the Deaf, 143*(1), 29-34.
- Weisleder, A., & Fernald, A. (2013). Talking to children matters: Early language experience strengthens processing and builds vocabulary. *Psychological Science, 24*(11), 2143-2152.