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Early Intervention Network: Evidence Summary

Factor 3: Early exposure to accessible language through sign is beneficial to language acquisition.

Annotated Evidence:

- Bailes, C. N., Erting, C. J., Erting, L. C., & Thumann-Prezioso, C. (2009). Language and literacy acquisition through parental mediation in American Sign Language. *Sign Language Studies, 9,* 417-456.

  This article reviews that children from deaf families have access to a fluent language model early, and they achieve similar developmental language milestones as spoken language milestones for hearing children.

- Grosjean, F. (2008). *Studying bilinguals*. New York: Oxford University Press.

  Chapter 13 discusses an overview of bilingualism and biculturalism within the deaf and hearing communities. The article supports a bilingual bicultural approach to teach children who are deaf and hard of hearing. The chapter emphasizes the need for early access to language, use of communication within the family, the need for language to promote cognitive development, the role that language has on acquiring world and everyday knowledge, and the role that language has in a child's ability to navigate between deaf and hearing communities.

- Joint Committee on Infant Hearing (JCIH). (April, 2013). Supplement to the JCIH 2007 Position Statement: Principles and guidelines for early intervention following confirmation that a child is deaf or hard of hearing. *PEDIATRICS, 131*(4). Available from: ***http://pediatrics.aappublications.org/content/early/2013/03/18/peds.2013-0008.full.pdf+html***

  This document provides comprehensive practice guidelines for early hearing detection and intervention (EHDI) programs on establishing strong early intervention (EI) systems to meet the needs of children who are deaf or hard of hearing. It stresses the importance of prompt, individualized, targeted, and high quality intervention utilizing service providers with optimal knowledge and skill levels. The document provides 12 practice goals and other associated guidelines and benchmarks for EI systems and programs.

- Kovelman, I., Shalinsky, M. H., White, K. S., Schmitt, S. N., Berens, M. S., & Paymer, N., et al. (2009). Dual language use in sign-speech bimodal bilinguals: fNIRS brain-imaging evidence. *Brain & Language*, *109*, 112

  The brain imaging study discussed in this article shows Wenicke's area in the brain (that processes language) is intensively activated for bilingual users (ASL and spoken English) and lesser so for those who are monolingual (only using ASL or only using English). The study shows that for effortless and errorless language, switching the specific posterior temporal brain region is involved.

- Mayberry, R. I., & Eichen, E. B. (1991). The long-lasting advantage of learning sign language in childhood: Another look at the critical period for language acquisition. *Journal of Memory and Language, 30*, 486-512.

  This study examines 49 signers who acquired sign between ages birth and 13 from fluent language users. It shows that the childhood advantage to developing a signed language is similar to that of developing a spoken language and that language acquisition is a developmentally time-locked phenomenon, supporting the critical period of language acquisition.

- Meadow-Orlans, K. P., Spencer, P. E., Koester, L. S., & Steinberg, A. C. (2004). Implications for intervention with infants and families. In K. P. Meadow-Orlans, P. E. Spencer, & L. S. Koester (Eds.), The world of deaf infants (pp. 218-228). New York: Oxford University Press.

  This article summarizes the research pertaining to early intervention presented in the book *The World of Deaf Infants*. It provides suggestions for parents on how to increase their child's visual performance and modify their interactive style to match the needs of their deaf child.

- Morford, J. P., & Mayberry, R. I. (2000). A reexamination of "early exposure" and its implications for language acquisition by eye. In C. Chamberlain, J. Morford, & R. Mayberry (Eds.), *Language acquisition by eye* (pp. 111-127). Mahwah, NJ: Lawrence Erlbaum.

  This selection emphasizes that children exposed to accessible language models early, consistently outperform those who are exposed later. It discusses that research shows if language exposure is delayed even by a few years, language deficits will occur. Also, the text suggests that specific neuronal processing patterns needed for language processing are not developed which then have a large impact on perceptual and production systems in the brain, which are needed for language.

- Nussbaum, D., Scott, S., & Simms, L. (2012). The "why" and how" of an ASL/English bimodal bilingual program. *Odyssey, 13*, 14-19. As retrieved July, 24, 2012. Available from: ***http://www.gallaudet.edu/Documents/Clerc/Odyssey2012.pdf***.

  The article reviews and discusses the possible benefits of utilizing an approach that allocates time and instruction in both spoken English and ASL based on the strengths of the child. It suggests that with appropriate planning and implementation of strategies in multiple avenues of the school system, (i.e. school-wide, individualized planning, and teacher planning) language and communication functioning may improve.

- Petitto, L. A., Katerelos, M., Levy, B. G., Gauna, K., Tetreault, K., & Ferraro, V. (2001). Bilingual signed and spoken language acquisition from birth: Implications for the mechanisms underlying early bilingual language acquisition. *Journal of Child Language, 28*, 453-496.

  This longitudinal study describes the linguistic developments of six hearing children. Three of the hearing children are learning spoken French and English simultaneously while three of the hearing children are learning French sign language (LSQ) and spoken French simultaneously from their parents. All of the parents are fluent language users. Results showed that for all of the hearing children, they could acquire two languages at the same time, becoming bilingual at developmentally appropriate rates, and that the developmental processes for both languages matched the developmental pattern of learning one language. That is, with fluent language models the children were able to become bilingual.

- Petitto, L. A., & Kovelman, I. (2003). The bilingual paradox: How signing-speaking bilingual children help us resolve bilingual issues and teach us about the brain's mechanisms underlying all language acquisition. *Learning Languages, 8*, 5-18.

  This article discusses a multi-year study of five hearing children (ranging in ages birth to seven), two hearing children learning spoken French and spoken English, and three hearing children learning French sign language and spoken French. Despite being raised in a bilingual environment, the children were able to achieve linguistic milestones on time. The study supports the finding that the brain can acquire multiple languages at the same time and that the child will select their primary language based on the language used in their sociolinguistic groups, and environmental factors have a large role in shaping language development.

- Spencer, P. E. (2004). Language at 12 and 18 months: Characteristics and accessibility of linguistic models. In K. P. Meadow-Orlans, P. E. Spencer, & L. S. Koester (Eds.), *The world of deaf infants* (pp. 147-167). New York: Oxford University Press.

  This chapter examines language acquisition in various groups of children in relation to the language models their mothers provided at the ages of 12 months and 19 months. The article discussed factors positively impacting visual language outcomes such as access to complete and fluent language models. The study examined language development of four separate groups including deaf and hearing children of hearing mothers and deaf and hearing children of deaf mothers. The chapter discusses that evidence supports deaf children of hearing families that provided exposure to visual language supports, can effectively learn how to use visual language for learning.

- Spencer, P. E., & Harris, M. (2006). Patterns and effects of language input to deaf infants and toddlers from deaf and hearing mothers. In B. Schick, M. Marschark, & P. Spencer (Eds.), *Advances in the sign language development of deaf children* (pp. 71-101). New York: Oxford University Press.

  This chapter provides a research review documenting the characteristics of input necessary to facilitate development of signed/visual-gestural language. It discusses the importance of looking at how deaf mothers adapt their signing to benefit young deaf children and the benefits of hearing mothers applying similar strategies. Beneficial strategies noted include: matching a child's attention focus with the mother's language input, and providing stability and clarity of form in language input.

- Visual Language and Visual Learning Science of Learning Center. (2011, January). *Advantages of early visual language* (Research Brief No. 2). Washington, DC: Sharon Baker. Available from: http://vl2.gallaudet.edu/research/research-briefs/english/advantages-early-visual-language/

  This article discusses the importance of teaching language and/or providing early intervention services to a deaf or hard of hearing child during the "critical period" of language acquisition. Early language acquisition further aids the child's ability for reading comprehension, and spoken language development. A strong language system within the home and maternal sign skills are a positive predictor of a child's language development later in life.

- Visual Language and Visual Learning Science of Learning Center. (2012, June). *The Implications of Bimodal Bilingual Approaches for Children with Cochlear Implants* (Research Brief No. 6). Washington, DC: Julie Mitchiner, Debra Berlin Nussbaum, and Susanne Scott. Available from: http://vl2.gallaudet.edu/research/research-briefs/english/children-cochlear-implants/

  This article suggests that children who learn a visual language in addition to having a cochlear implant may have advantages across linguistics, communication, cognition, academics, literacy, and psychosocial development. The article provides previous research citations showing that early competence in a visual language can facilitate a child's spoken language development later. It additionally suggests that interactions with the deaf community and role models can prove to be beneficial to the child's social emotional development.

- Wilbur, R. (2000). The use of ASL to support the development of English and literacy. *Journal of Deaf Studies and Deaf Education, 5*, 81-104.

  This article provides research to support the concept that learning ASL as a primary language will help, not hinder, a deaf or hard of hearing child develop English literacy. The primary benefit for these processes is that ASL provides a standard bilingual environment where teachers and students can use one language to help the development of the other. The article also compares and contrasts ASL with English.

- Yoshinaga-Itano, C. (2006). Early identification, communication modality, and the development of speech and spoken language skills: Patterns and considerations. In P. Spencer & M. Marschark (Eds.), *Advances in the spoken language development of deaf and hard-of-hearing children* (pp. 298-327). New York: Oxford University Press.

  The article reviews a study of children with hearing loss from the Colorado Home Intervention Program, and reviewed the correlation between speech production and level of early hearing loss (1994-2004). Children fitted with conventional hearing aids (with hearing loss in the middle to severe range), and who had early intervention, tended to develop intelligible speech by kindergarten. Children with less than eight consonants by 36 months, showed low probabilities of developing intelligible speech by six years old, regardless of degree of hearing loss. Children in auditory stimulation programs were found to have the same outcomes as those with conventional amplification who may not have been in those programs. Three different case studies are provided suggesting that having a visual language foundation facilitated later spoken language development.

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