Globalization In Cochlear Implants: How Bilingualism Impacts Outcomes

A. Mellish, Au.D.\textsuperscript{1}, H. Rose\textsuperscript{1}, D. Carvalho\textsuperscript{1,2}, J. Purdy\textsuperscript{1}

\textsuperscript{1}Rady Children's Hospital San Diego, Audiology And Speech Pathology, San Diego, CA USA ; \textsuperscript{2}University Of California - San Diego, Otolaryngology/Surgical, La Jolla, CA USA

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Introduction: Families of profoundly deaf children are presented with numerous decisions concerning the care of their children, including decisions about hearing aids, cochlear implantation, and educational setting. Historically, learning a second language has been thought to possibly hinder mastery of the primary language, especially in those with impaired hearing. As a result, families of children living in bilingual environments have been faced with questions whether second language learning should be encouraged or discouraged to improve overall language ability.

Methods: In this study, we evaluated the oral language capabilities of children who received a cochlear implant prior to the age of 2.5 years. Using a prospective cohort design, we compared the language skills of patients growing up in a monolingual language environment to those of patients growing up in a bilingual environment, specifically focusing on speakers of English and Spanish. The skills of both languages were assessed for those patients in a bilingual environment. The hypothesis to be tested was whether patients living in bilingual environments differed in either their Spanish or English language skills as compared to those in monolingual English or monolingual Spanish environments. Language abilities were assessed by standardized language testing. Speech perception measures were also used including single word and sentence tests. To further evaluate what variables may contribute to language proficiency, we provided a questionnaire regarding patients’ demographics and educational information

Results: We found three factors showed a significant difference between the groups. These included family demographics and speech perception testing, specifically Common Phrases, between the English only, Spanish only, and bilingual recipients, and expressive communication between the bilingual group and the English only group. There was no significant difference in this area between the bilingual group and the Spanish only group, likely related to small sample size.

Conclusions: The implications of our findings are that oral language capabilities can be impacted by more factors than just exposure to single versus multiple languages, some of which cannot be controlled. While our sample size might have affected our ability to adequately predict total impact, monolingual English CI recipients demonstrated higher expressive communication abilities than their bilingual counterparts. Additionally, the insights gained from this study may help cochlear implant teams to determine where to invest their resources and what types of services may yield more positive outcomes.
The Benefits of Home Language Use in Bilingual Children with Hearing Loss
F. Bunta, Ph.D.¹, W. M. Douglas¹, H. Dickson¹, A. Cantu³, R. Gifford², J. Wickesberg,Au.D.³

¹University Of Houston, Communication Sciences And Disorders, Houston, TX USA ; ²Vanderbilt University Medical Center, Hearing And Speech Sciences, Nashville, TN USA ; ³Center For Hearing And Speech, Houston, TX USA

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Introduction: There is a critical need to better understand speech and language development in bilingual children who use cochlear implants (CIs) and hearing aids (HAs). The paucity of knowledge in this area poses a significant barrier to providing maximal communicative outcomes to a growing number of children who have a hearing loss and are learning multiple languages. In fact, the number of bilingual individuals receiving CIs and HAs is rapidly increasing, and Hispanic children display a higher prevalence of hearing loss than the general population of the United States (Keamy, Eavy, & Mehra, 2009). In order to better serve bilingual children with CIs and HAs, appropriate and effective therapy approaches need to be designed and tested, based on research findings. The purpose of the present study is to investigate the effects of supporting both the home language (Spanish) and English on language outcomes in bilingual children who use CIs and HAs as compared to their peers who are bilingual and have hearing loss but receive English-only support.

Methods: The language skills of 20 bilingual Spanish-English children with hearing loss were examined. There were two groups of bilingual children with hearing loss who use CIs and HAs. One group received support in English and in the home language (Spanish) and the second group received support in English only. The independent variable was the treatment approach (support in both languages versus support in English only), and dependent measures included scores from the English version of the Preschool Language Scales, 4th edition (PLS-4). The participants in the two groups were matched on a range of demographic and socio-economic variables as closely as possible to control for potential group differences not attributable to treatment.

Results: Our findings indicate that bilingual children with hearing loss who received support in both their home language (Spanish) and English outperformed their peers who received English-only support (Auditory Comprehension: t (18) = 2.251 at p = 0.037; Expressive Communication: t (18) = 3.394 at p = 0.003). Bilingual children with hearing loss who received English-only support also needed an extended time period to perform at the same level as their peers who received support in both languages, indicated by differences in language age (t (18) = 2.881 at p = 0.010).

Conclusion: Supporting both the home language and English in bilingual children who have hearing loss and use CIs and HAs can yield advantages relative to providing English-only language support if the language used at home is other than English. Encouraging home language use may help rather than hinder development for the school-based language of children with hearing loss who use CIs and HAs.

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