

## **Communication Mode and Expressive Language Outcomes in Children with Hearing Loss: A Critical Review**

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**Abstract:** This critical review investigates the relationship between communication mode and expressive language outcomes. For the critical review, studies evaluated included four retrospective longitudinal cohort studies and one pre-test, post-test mixed design study. The results were mixed with some studies finding significant effects, some studies finding non-significant trends and some studies failing to find evidence of any effect whatsoever. Many studies addressed the effect of communication mode as a secondary or tertiary goal, or treated communication mode as a control variable, which served to further limit the validity of the results. Nonetheless, whenever an effect for communication mode was found, children who use auditory-verbal and oral communication are consistently found to perform better than children who use total communication with respect to measures of expressive language.

Concerns about language development serve as a primary motivator for fitting deaf or hard-of-hearing (DHH) children with cochlear implants. Although there is definitive evidence that cochlear implants improve DHH children's spoken language skills and that they can allow children to achieve age-appropriate language skills, outcomes have been found to vary greatly across individuals (Forli et al., 2011). Uncertainty surrounding the expected language development outcomes of DHH children with cochlear implants detrimentally complicates parents' decision-making process and makes it difficult for habilitation specialists to provide clear recommendations.

Several research studies have been conducted to attempt to find the factors responsible for explaining this variation. Factors that have been investigated include, but are certainly not limited to, age of diagnosis and implantation, pre-operative residual hearing, communication mode and parent involvement. While there is a general consensus about the benefit of early identification and implantation, recommendations are much less clear when it comes to the choice of communication mode that is most beneficial with respect to optimizing language development.

Many communication mode options exist for DHH children with cochlear implants which can be understood and compared to one another by considering them in the context of an auditory-visual spectrum.

Auditory

The focus of this critical analysis is to investigate (1) whether communication mode is a predictive factor of expressive language outcomes in DHH children fitted with cochlear implants; (2) whether auditory-based communication or total communication approaches are associated with better expressive language outcomes.

Search Strategy:

Several computerized databases were searched (PubMed, Web of Science, Scopus, PSYCHINFO and ASHA Publications) to retrieve relevant journal articles using the following search terms:

(cochlear implant\*) AND (communication mode) AND (expressive language) AND (total communication) AND [(auditory-verbal) OR (auditory-oral) OR (oral communication) OR (oral approach)]

Selection Criteria

Studies selected for inclusion in this critical review were required to (1) include communication mode as a predictor or between-subjects variable; (2) include a comparison between an auditory-based communication approach and a communication mode that incorporates signs; and (3) explicitly assess expressive





sample size of this study, which the authors noted made it not possible to account for missing data points in their statistical analysis. Other limitations include that the

Voorst, T., Tomblin, J., Ji, H., Kirk, K., McMurray, B., Hanson, M., & Gantz, B. (2014). Longitudinal Speech Perception and Language Performance in Pediatric Cochlear Implant Users: The Effect of Age at Implantation. *Journal of the American Academy of Audiology*, 27(2), 148–160.

Forli, F., Arslan, E., Bellelli, S., Burdo, S., Mancini, P., Martini, A., Miccoli, M., Quaranta, N., & Berrettini, S. (2011). Systematic review of the literature on the clinical effectiveness of the cochlear implant procedure in paediatric patients. *International Journal of Audiology*, 50(11), 811–820.

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