Summary

In their study “Phonological Awareness and Print Knowledge of Preschool Children With Cochlear Implants”, Ambrose, Fey, and Eisenberg (2012) wanted to explore the literacy skills of preschool-aged children with cochlear implants. They examined the phonological awareness and print knowledge development of deaf preschoolers who used a cochlear implant. They also wanted to know if and how these literacy skills are related to oral language, speech production, and speech perception. Ambrose, Fey, and Eisenberg (2012) hypothesized that in comparison to normal-hearing (NH) peers, the cochlear implant (CI) children would have delayed phonological awareness but would perform comparably on the print knowledge test. They also hypothesized that the factors of oral language, speech production, and speech perception would account for considerable variation in phonological awareness. The authors were unsure how oral language, speech production, and speech perception would relate to print knowledge.

The study compared the phonological awareness and print knowledge skills of 24 preschool-aged children (36 to 60 months) with bilateral deafness who had used a CI for at least 18 months, to 23 typically developing, normal-hearing children of the same age. The CI children were judged to be typically developing (with the exception of delays related to their hearing loss) by a developmental psychologist prior to receiving their implant.

To evaluate phonological awareness and print knowledge, the Test of Preschool Early Literacy (TOPEL) was used. The Phonological Awareness subtest consisted of elision items and blending items. The subtest for Print Knowledge consisted of print concept items, letter-name items, and sound-letter correspondence items. To assess language comprehension and expression, the Auditory Comprehension subscale and the Expressive Communication subscale of the Preschool Language Scale – Fourth Edition (PLS-4) were used respectively. The Peabody Picture Vocabulary Test – Fourth Edition (PPVT-4) was used to examine receptive vocabulary, while the Goldman Fristoe Test of Articulation – Second Edition (GFTA-2) was used to evaluate the children’s speech production abilities. The Play Assessment of Speech Pattern Contrasts (PLAYSPAC) was used to measure the children’s speech perception.

The results showed that the NH group significantly outperformed the CI group on the TOPEL Phonological Awareness measure, but there was no significant difference between the groups on the Print Knowledge measure, which confirmed the first research hypothesis. The scores for the CI group on the oral language, speech production, and speech perception tasks were moderately correlated with phonological awareness which means that children with CIs that are behind their NH peers in speech production, speech perception, and language abilities, are also likely to fall behind in phonological awareness development. Print knowledge was found to be significantly correlated with receptive vocabulary, expressive language, speech production, and speech perception, but not language comprehension. These results however, did not account for significant variation in children’s print knowledge skills. This means that although speech
and language abilities are related to print knowledge, “children can achieve age-appropriate performance on at least some print knowledge tasks” (Ambrose, Fey, & Eisenberg, 2012, p. 818), even if they have some speech and language delays.

The researchers concluded that children with CIs are capable of developing age-appropriate early literacy skills, but that they are likely to have phonological awareness delays compared to their NH peers. Interventions moving forward should focus on instruction in phonological awareness and print knowledge skills, and facilitation of speech and language development.

Critique

“Phonological Awareness and Print Knowledge of Preschool Children With Cochlear Implants” is an understandable and well-organized article. The researchers described how the current study built and improved on previous research. Clear examples were used to illustrate and explain concepts and testing methods used in the study. For example, to explain elision test items in the Phonological Awareness subtest of the TOPEL, the authors provided sample questions that had been posed to the children such as “Point to team without /m/” and “Say playground without the ground” (Ambrose, Fey, & Eisenberg, 2012, p. 815).

The sample size for the CI and NH groups could be considered small; however, as Ambrose, Fey, and Eisenberg (2012) point out, the study’s key findings were “compatible with those found in other studies of similar issues” (p. 819). In addition to increasing the sample size, future research would benefit from a more detailed participant profile. The researchers explain that a nonverbal IQ score and a child’s early literacy experience are factors that can impact variability of test scores among children. These influences, however, were not taken into account for the current study.

Despite the fact that the use of non-standardized tests can make interpretation of results less robust, the PLAYSPAC was used to assess speech perception. Although the use of this test was acceptable because it does not heavily rely on speech production or language abilities, unlike alternative speech perception assessments used for the preschool age group, the analysis of the results demonstrated floor and ceiling effects. Choosing a standardized test would not solve the problem, but the “use of multiple measures of speech perception [would be] warranted in future studies” (Ambrose, Fey, & Eisenberg, 2012, p. 819).

This study makes a valuable contribution to the field of communication and language disorders. Not only does it build on previous research by investigating a new age group, it also provides clinical and educational suggestions for how early interventions can be applied to this influential age group. By recognizing and identifying children at the preschool level with cochlear implants at risk for delayed speech and language development, and therefore phonological awareness, interventions can be put in place to support and facilitate their development. However, in order to strengthen the clinical and educational implications of this study, follow-up research needs to be conducted that addresses the issues acknowledged by the researchers.
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