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KEYWORDS: Language Interactions, Early Identification, Hearing Aid Use

WHAT WAS STUDIED, HOW WAS IT STUDIED AND RESULTS:

- **WHAT:** The Epilogue article summarizes the main conclusions from a set of eight research articles focused on the children enrolled in this study, called Outcomes of Children with Hearing Loss (OCHL). The OCHL study measured a range of developmental outcomes (language, speech, hearing, hearing aid, family). The study was developed in response to the need for research on a new generation of children who are hard of hearing who experience early identification and early service delivery. The children were studied over time to determine if early service provision was successful in preventing communicative delays. The OCHL group was especially interested in identifying factors that influenced children's outcomes, and to determine which children needed more than usual supports. The OCHL project is a collaborative effort of researchers at the University of Iowa, Boys Town National Research Hospital, and the University of North Carolina-Chapel Hill.
- **HOW:** Children were recruited from the home states and surroundings regions of the three research teams, and they ultimately came from 17 states. Children and their families participated in an initial baseline visit, followed by two visits a year for children under age 2 years and one visit a year for children older than 2 years. Visits continued for up to 4 years, or until children reached 9 years of age. A comprehensive and age-appropriate set of spoken language measures, parent-report instruments, and teacher surveys was administered at each visit.
- **RESULTS:**
 - Although many children were achieving language skills similar to hearing peers, some children were 'at risk' for language delays, and children with moderately-severe hearing levels were at most risk compared to peers with mild or moderate hearing levels.
 - Best outcomes were related to three important factors: 1) well-fit hearing aids that provided good audibility for speech, 2) consistent use of hearing aids, and 3) high quality language interactions in the home.
 - The researchers determined that about half of the children were wearing hearing aids that were not fit as well as they could be. Fortunately, that is a correctable problem, and it matters because the researchers found that better audibility was linked to better rates of language growth. Children with better 'boost' from their hearing aids learned language faster and were more likely to achieve age-appropriate spoken language skills.
 - Early fitting of hearing aids supported strong language learning over time. However, children who were identified late showed promising growth once they were provided hearing aids and services.
 - Some children do not wear their hearing aids consistently. Ten or more hours a day of hearing aid use promoted the best language learning.
 - Parents who regularly involve their children in conversations have children with stronger language abilities.
 - Some aspects of language, like word endings in grammar (he walks, she walk**ed**) can be especially challenging for children who are hard of hearing to learn.

- Test scores do not always identify the needs of children who are hard of hearing. They can perform within the average range on a test, but still have gaps or needs that should be addressed.

HOW THIS INFORMATION MAY BE USEFUL TO YOU AND YOUR CHILD: There are several positive take home messages from the study. Early identification and service delivery set children and families up for success. Your regular visits to the audiologist contribute to your child's language learning, especially when those visits ensure the best possible audibility for your child. Optimally fit hearing aids also need to be worn regularly. Ask your audiologist about your child's aided audibility levels and data logging measures that track how often the aids are worn. If your hard-of-hearing child has difficulty wearing hearing aids consistently, ask for help from your audiologist, intervention providers, and other parents. Work to build rich conversations with your child; describe and chat more than you direct their actions. Know that your child may need more practice to develop some aspects of spoken English that come easily to hearing peers (like the /s/ on gets). These elements can be learned with support.

WHO WAS STUDIED:

- **Number of children:** 317 (173 male, 144 female) children who are hard of hearing; 117 (54 male, 63 female) hearing children.
- **Age of children:** Ranged from 5 months to 7 years of age when enrolled in the study and were followed longitudinally for up to 4 years.
- **Hearing information:** All children had bilateral, mild-through-moderately-severe hearing levels; better ear pure tone average for the group was 48.73 dB HL (SD = 13.48). Most of the children (76%) referred from newborn hearing screening; all but 7 wore hearing aids.

WHAT STILL REMAINS TO BE ANSWERED:

- Children in the OCHL study (both hearing and hard of hearing) came from homes that had more advantages than a typical U.S. population. That means we do not know if the findings apply to children who live in less advantaged homes.
- There is a need to further study the outcomes of hard of hearing children who come from homes where English is not the native language.
- There is a need for additional research to examine the outcomes of children who are hard of hearing and have multiple disabilities.

WHERE CAN I FIND MORE INFORMATION:

www.ochlstudy.org (including printable infographics about the study).

<http://ochlstudy.org/family-resources.html> (for a downloadable family handout)

