



Children's combined electric and acoustic stimulation (EAS): A study of the benefits of bilateral vs. unilateral acoustic hearing.

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Abstract

In adults, electric and acoustic stimulation (EAS) with intact hearing in the implanted ear improves speech comprehension, spatial hearing, and overall quality of life. However, there is a scarcity of research on the effects of EAS in children. The aims of this study was to evaluate the degree of EAS-related speech understanding benefit in children with retained acoustic hearing, as well as what role acoustic interaural time difference (ITD) sensitivity may have in that benefit. Six children with acoustic hearing loss and twenty children with normal hearing (NH) were chosen to take part in the study. An eight-loudspeaker array was used to test voice recognition, with speech coming from one loudspeaker at 0 degrees and restaurant noise coming from the other loudspeakers (45–315 degrees). The ITD thresholds for a 250-Hz stimulus presented acoustically via insert earphones were measured.

Keywords: EAS, Sino nasal disorder, Hearing.

Introduction

Only one EAS listener showed a substantial benefit from bilateral acoustic hearing when compared to single-ear acoustic hearing. In the range of 302 to 1000+ ms, ITD thresholds were poor, and they were significantly worse than ITD thresholds for the NH group.

These findings suggest that children with acoustic hearing preservation may not benefit from EAS for speech recognition in semi-diffuse noise at first; however, because none of the children showed a decline in performance with bilateral acoustic stimulation, EAS fittings are recommended to provide binaural acoustic access, allowing EAS adaptation to binaural cues over time. The onset of EAS benefit, binaural cue sensitivity, and the

impact of EAS experience in children and adults should all be investigated further in the future.

Hearing loss is widespread, and its prevalence rises dramatically with age. The majority of people's 'age-related' hearing loss is sensor neural (caused by the loss of cochlear hair cells) and bilateral, affecting both ears equally. Hearing aids are the most common treatment for mild, moderate, and severe hearing loss. People with bilateral hearing loss may be provided one hearing aid or two hearing aids, one for each ear. The relative benefits of these diverse techniques to patients with hearing loss are unknown.

Only four studies were found in this study that compared the usage of one hearing aid against two. The investigations were tiny, and the participants were of various ages. There was also a lot of variance in the types of deafness they had and the degree of deafness they had. The sorts of hearing aids assessed are now considered "old technology" in high-income nations, with only one study looking at "contemporary" digital aids. However, we are unsure whether or not this is relevant. The differences between other 'old' and 'modern' varieties of hearing aids were not examined in this study. We were unable to merge the data from the four trials. Overall, this fact, together with the evidence's poor quality, leads us to believe that we don't know whether patients prefer one or two aids. Similarly, we don't know whether one or two aids improve a patient's quality of life.

Only one of the most significant outcomes, patient preference, was recorded in all of the investigations. Between trials, the number of patients who preferred two hearing aids over one varied: 54 percent (51 out of 94), 39 percent (22 out of 56), 55 percent (16 out of 29), and 77 percent (23 out of 30). We didn't integrate the data from these four researches since it would have been unethical.