Better-ear glimpsing at low frequencies in normal-hearing and hearing-impaired listeners

Better-ear glimpsing is an auditory process that takes advantage of short-term interaural level differences (ILDs) to improve the understanding of speech in spatial fluctuating noise. Since ILDs are mainly present at high frequencies, where most hearing-impaired (HI) listeners have the strongest hearing loss, HI individuals cannot fully utilize ILDs for better-ear glimpsing, which may lead to poorer understanding of speech in noise. This problem may be alleviated by hearing aids that artificially generate ILDs at low frequencies where hearing is typically less impaired. The present study therefore investigated the spatial benefit in speech intelligibility that is provided by better-ear glimpsing with low-frequency extended ILDs in a symmetric two-distractor speech background. Speech reception thresholds were measured in a spatially co-located and separated condition as a function of frequency region in ten normal-hearing (NH) and ten mild-to-moderate sensorineural HI subjects. In both groups the extended ILDs provided a substantial spatial advantage on top of the advantage already provided by natural ILDs. Moreover, the spatial advantage was largely independent of frequency region, suggesting that both NH and HI subjects can utilize low-frequency ILDs for improving speech understanding in noise. Overall performance as well as spatial advantage was reduced in the HI group.


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