

Editorial

Directional Microphones— They Work



Digital technology has spawned a host of features designed to enhance the usefulness of hearing aids, but there is often less than uniform agreement concerning the efficacy of many of these features. Although directional microphones have been available for a number of years, there is substantial renewed interest brought about by improvements in this technology due to digitization. A number of recently published studies have demonstrated substantial benefits from directional microphones in test booth measures of speech recognition in noise. Clinical experience with directional microphones, however, suggests that this technology does not provide comparable benefit in daily life to every hearing-impaired patient in every noisy listening situation. Why does this seem to be the case? Two different articles in this issue of JAAA speak to the question. In the paper, "Predicting directional hearing aid benefit for individual listeners", authors Todd Ricketts and Gus Mueller, of Vanderbilt University, analyzed findings from 3 studies in a search for audiometric correlates of benefit from the use of directional aids. Results were largely negative. Although there was measurable benefit from directional aids on the HINT, neither audiometric slope, nor degree of high-frequency loss, nor omnidirectional speech intelligibility score was related to this directional benefit.

In the paper, "A comparison of benefits provided by different hearing aid technologies", authors Brian Walden, Rauna Surr, and Mary

Cord, of the Army Audiology & Speech Center at Walter Reed Army Medical Center, along with Brent Edwards and Laurel Olson, of the GN ReSound Corporation, compared the BZ5 digital aid, with omnidirectionality and with dual microphone directionality, on various performance measures. They observed substantial advantages for the directional over the omnidirectional arrangement on the CST test in noise under specific testing conditions in the test booth. However, users generally did not report concomitant advantage in everyday listening.

These findings suggest two conclusions. First, directional microphones can, indeed, provide an improvement in speech understanding in difficult listening conditions. Second, the listening environment seems to play a larger role in determining benefit from directional microphones than do the specifics of the patient's hearing impairment. Although we have a general understanding of the acoustic characteristics of listening environments that should favor directional microphone technology, we do not know the exact characteristics of everyday listening situations in which directionality will be helpful to the user. A profitable approach might be a search for the characteristics of real-life acoustic environments that the hearing aid user can exploit to maximize the undoubted advantage that is available from directional microphone technology.

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