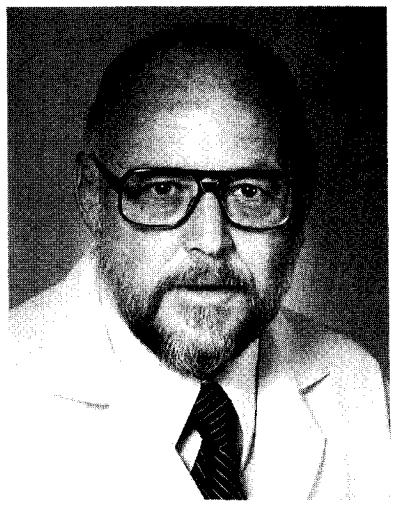

Editorial

Insert Earphones

All audiologists, but especially those engaged in the fitting of hearing aids, will be particularly interested in the paper by Hawkins, Cooper, and Thompson entitled, "Comparisons among SPLs in Real Ears, 2 cm^3 and 6 cm^3 Couplers." As the techniques and algorithms for fitting by real-ear measurement and gain rules become more prevalent, we have been made more acutely aware of the problems created by the fact that (1) the threshold and supra-threshold audiometric measures used to calculate optimal gain are typically obtained by means of earphones calibrated in a 6 cm^3 coupler, (2) the performance data of hearing aids are based on 2 cm^3 coupler measurements, and (3) the actual response of the aid on the user is based on probe-microphone measurements inside the ear canal. Thus, translating the patient's audiogram into numbers appropriate for real-ear gain measurement has often entailed a leap of faith in the accuracy of existing transfer function data.

Hawkins and his colleagues have addressed the weakness of the available data in this area by a straightforward design carried out in 30 adult subjects. With an audiometer set at 70 dB HL they coupled a standard audiometric earphone, mounted in an MX 41/AR cushion, to an NBS 9-A coupler and measured the SPL. Then they coupled an insert earphone to an HA-1 coupler and re-measured the SPL. Finally, they used a probe microphone system to measure the SPL in the actual ear canal, first for stimulation by the conventional earphone, then for stimulation by the insert earphone. This provided the raw data for the direct calculation of correction factors to go from one type of measurement system to another. These correction factors allow the clinician to move easily between audiometric data, gathered with conventional earphones, and real-ear gain measures based on SPL in the ear canal.

We are indebted to Hawkins, Cooper, and Thompson, not only for providing these clinically useful data, but for re-emphasizing the problems that clinicians face because of the variety of transducer/coupler combinations used in audiometry and in hearing aid response measures. It seems clear that the more widespread use of insert-type earphones in conventional audiometry would yield substantial dividends. In addition to the many advantages relating to patient comfort, avoidance of ear-canal collapse, better stability at low frequencies, etc., the use of insert-type earphones would go a long way toward simplifying the conversion from audiometric to hearing-aid performance data and from HL to SPL in the ear canal. It was encouraging to note, at the recent convention in New Orleans, that more and more audiometer manufacturers are making provision for the easy conversion from conventional earphones to the insert-type or tubephones. This is a welcome trend.

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