

The influence of replacement earmoulds on the real-ear-to-coupler-difference measured in children

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ABSTRACT

The purpose of the study was to discover the magnitude of the difference in decibels (dB) produced by changing a child's earmould, in order to determine if this has a clinically significant effect on the hearing aid's ability to achieve its prescribed gain. The real-ear to coupler difference (RECD) was the measure selected to establish the magnitude of this effect, as using the insert earphone method of measurement includes the earmould effect. The study was designed to utilise the routine clinical procedure of a hearing aid review in the Audiology Department of the local hospital. Nineteen children between the ages of 7 and 15 years were included in the study. Two new earmould impressions were taken for each child using the child's usual earmould type. RECD data were measured for each earmould using an Audioscan® RM500 hearing aid test box.

Bland and Altman's 'Limits of Agreement' analysis was employed to calculate and graphically represent each child's between-earmould differences. The value of 5dB was selected as the acceptable limit of agreement. Represented in this way, eight children (~ 42% of the sample group) showed greater than 5dB between-earmould differences at at least one frequency. Three of these children (~16% of the sample group) showed unacceptable agreement at at least two frequencies. A further three children showed borderline acceptable agreement at one frequency. Thus 11 of the project children (~58%) would have required revision of their hearing aid settings to achieve ± 5 dB of their prescribed target gain. These results suggest that it would be good practice to revise a child's individual hearing aid settings following the replacement of the child's earmould.