

Examining Alternatives For Predicting The Real-Ear-To-Coupler Difference

Marlene Bagatto, Sandra Clark-Lewis, Kelli Watts, Judith Blumsack, Paula Folkeard and Susan Scollie

National Centre for Audiology, Western University, London, ON, Canada

Objectives: The current work aimed to: 1) further investigate head circumference as a predictor of the RECD in infants, children, and adults; and 2) evaluate the foam tip-to-earmold correction applied to a coupling mismatch.

Background: Real-ear-to-coupler difference (RECD) measurements are used to individualize hearing aid fittings (Bagatto et al, 2005; Saunders & Morgan, 2003). Following the coupler measure, a foam eartip or personal earmold are coupled the transducer and inserted into the patient's ear along with the probe tube. Coupling selection should be made in congruence with that used to obtain audiometric thresholds (Moodie et al, 2016). When the measurement is not possible, predictions based on age and coupling type have been provided (Bagatto et al, 2002), though have limitations. Some verification systems offer a correction factor when a mismatch between audiometric thresholds and RECD transducer coupling occurs (Glista, 2016; Moodie et al, 2016) and have not been validated. Furthermore, Blumsack and colleagues (2013) recently investigated alternative metrics for predicting RECDs in children. Results revealed head circumference to be a significant predictor in children aged 3 to 11 years.

Results: Results indicated that head circumference, age, and combined provide similar predictive accuracy for the RECD. Therefore, head circumference may be used as an alternative metric to age for predicting the RECD in circumstances where chronological age may not be suitable (e.g., prematurity). The foam tip-to-earmold correction may provide a suitable RECD prediction compared to using age-based predictions based on coupling alone.

Conclusions: These data offer alternative strategies for predicting the RECD when it cannot be measured.