

## **Sources and Mechanisms of DPOAE Generation: Implications for the Prediction of Auditory Sensitivity.**

### **Reviews and Tutorials**

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#### **Abstract:**

Otoacoustic emissions (OAEs) have become a commonly used clinical tool for assessing cochlear health status, in particular, the integrity of the cochlear amplifier or motor component of cochlear function. Predicting hearing thresholds from OAEs, however, remains a research challenge. Models and experimental data suggest that there are two mechanisms involved in the generation of OAEs. For distortion product, transient, and high-level stimulus frequency emissions, the interaction of multiple sources of emissions in the cochlea leads to amplitude variation in the composite ear canal signal. Multiple sources of emissions complicate simple correlations between audiometric test frequencies and otoacoustic emission frequencies. Current research offers new methods for estimating the individual components of OAE generation. Input-output functions and DP-grams of the nonlinear component of the 2 f<sub>2</sub>-f<sub>2</sub> DPOAE may ultimately show better correlations with hearing thresholds. This paper reviews models of OAE generation and methods for estimating the contribution of source components to the composite emission that is recorded in the ear canal. The clinical implications of multiple source components are discussed.

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