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### OFF FREQUENCY MASKING FUNCTION AT HIGH LEVELS: A CLINICAL STUDY ON NONLINEAR MASKING FUNCTION AT HIGH LEVELS BY CHANGING THE MIDDLE EAR STIFFNESS

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#### Abstract:

At the highest signal levels, the masking function for the off-frequency condition seems to become more linear. While some basilar membrane data show more linear growth at high levels, others do not. Aim of the present study is to assess function of masking at high levels regarding its clinical appearance. In this experiment we evaluated the hearing thresholds of three different signals (wide-band, low pass filtered, and high pass filtered noises) in presence of a high level low frequency masker (90 dB SPL, 220 Hz), and we decreased the transmission of both masker and signal by changing the middle ear stiffness in 42 normal subjects to determine whether or not their thresholds will change by the same amounts which leads to linear function or their thresholds will change by different amounts which will be related to nonlinear function of masking at high levels. Mean wide-band, low pass filtered, and high pass filtered noises hearing thresholds were better (lower) in +/- 300 daPa air pressure conditions than 0 daPa pressure, and these differences were statistically significant. In conclusion, as the level of the tone was effectively decreased by changing the impedance, frequency tuning improves and the noise was less suppressed by the tone, making it easier to detect. Therefore, at the highest signal levels, the masking function for the off-frequency condition seems to remain nonlinear.

#### Keywords:

Off-frequency masking . middle ear stiffness . air pressure

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