

Masking of tones by harmonic complexes in the budgerigar (*Melopsittacus undulatus*) (A)

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Birds frequently show psychoacoustic abilities remarkably similar to those of humans in spite of considerable differences in auditory structure and function. Harmonic complexes constructed in positive and negative Schröder phase are differentially effective as maskers in humans, even though they have essentially identical temporal envelopes and long-term spectra [V. Summers and M. R. Leek, *Hear. Res.* **118**, 139–150 (1998)]. Because these masking differences are believed to be closely tied to cochlear mechanisms in mammals, investigations of Schroeder-phase masking in birds might reveal the contributions of particular auditory structures to complex sound processing in both species. To this end, three budgerigars were trained by operant conditioning and tested using the method of constant stimuli to detect pure tones masked by Schroeder waveforms. In parallel testing, two human listeners showed more masking by the negative than by the positive Schroeder waveforms. However, none of the birds showed greater masking by the negative than the positive waves, and in some cases the positive waveform was the more effective masker. These results may reflect structural differences underlying the traveling wave in these two species, as well as a difference in active processing in avian versus mammalian cochleas. [Work supported by NIH DC00198.]