

Center for Cognitive Science

University at Buffalo, State University of New York

Wednesday, February 12, 2003

280 Park Hall
North Campus
2:00 pm – 4:00 pm

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“Neuroplastic Adaptations of the Human Auditory System”

We have been studying how neuromagnetic (MEG) and electrical (EEG) fields evoked by tonal stimuli are modified in musicians and by laboratory training at acoustic discrimination in nonmusician subjects. Laboratory studies employ 40-Hz amplitude modulated pure tones of different carrier frequencies which allow us to distinguish activations of the auditory core areas (AI) from those of the belt and parabelt regions (AII). We find that evoked auditory fields localizing to AI (the P2 and right-sided N1c) are enlarged by laboratory training in nonmusicians, and that these same components are enhanced in skilled musicians in accordance with their musical training histories. The findings are compatible with neuroplastic accounts of functional brain attributes associated with musical skill.

However, laboratory training does not enhance the amplitude of the 40-Hz auditory steady-state response (localizing to AI) in adult nonmusicians although this response is enlarged in musicians (Schneider et al. NN 2002) and its temporal properties are modulated by acoustic training in nonmusician adults. We are investigating implications for the network behavior that underlies remodeling of the brain by experience. We are also extending the research to children enrolled in Suzuki music programmes and to imaging studies of auditory cortical function in tinnitus.

**Refreshments will be available.
Open to the public.**