

Ph.D. Program in Speech-Language- Hearing Sciences

Spring 2021 Colloquium

Wednesday, February 17, 2021

2:45pm-4:00 p.m., [via ZOOM](#)

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Insights into binaural hearing from acoustic simulations of hearing impairment

Binaural unmasking, a key feature of hearing with two ears, is one of several strategies the normal auditory brain uses to understand speech in a noisy environment. It refers to the improved intelligibility of masked speech by further adding masking noise in a way that facilitates perceived spatial separation of target and masker. Traditionally viewed as involving timing (or phase) relationships in lower brain-stem circuits, a question is whether binaural unmasking can still be achieved if the additional masking is distorted. This question is particularly relevant for cochlear implant users with single-sided deafness (SSD-CI). Adding the CI restores some aspects of binaural hearing to these listeners, although binaural unmasking remains limited. The present talk will focus on exploring these limitations using acoustic simulations of SSD-CI with normal hearing listeners. Some degree of binaural unmasking is attainable in normal hearing listeners when the additional masking is distorted in ways that mimic hearing with a CI, but only within a limited range of acoustic distortion. Although limited, this range exceeds what would be expected if the binaural unmasking were facilitated by lower brain-stem circuits, suggesting a more central contribution to the unmasking effect.

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