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**Exploring the psychophysical temporal effect in masking using a
model of the auditory periphery**

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Under some conditions, normal hearing individuals can detect a short duration signal in a simultaneous masker at a lower signal-to-masker ratio when there is preceding stimulation (either a precursor or an extension of the masker). This effect has been referred to as overshoot or the temporal effect. It has been hypothesized the neural adaptation may account for some but not all of the temporal effect. Recent psychophysical data suggest that cochlear gain may decrease over the course of the masker and improve detection. This could be mediated by the medial olivocochlear reflex (MOCR). In the present study, a model of peripheral auditory processing [Zilany and Bruce, *J. Acoust. Soc. Am.* 120, 1446-1466 (2006)] using a d'-type metric was used to assess the relative contributions of these processes. Although the model includes neural adaptation, initial results indicate that it does not predict a temporal effect. The potential role of the MOCR will be simulated by decreasing the gain of the cochlear amplifier, to see if this will produce a temporal effect in the model predictions. [Work supported by NIH].