

ACOUSTICS2008/1526 Multiple looks in spectrotemporal integration

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The multiple looks hypothesis was originally developed as an explanation for temporal integration and resolution. Our preliminary work supports its extension to spectral integration as well spectrotemporal integration. The current study was designed to measure detection of tonal signals that vary in both spectral and temporal dimensions. Preliminary work began by measuring thresholds in quiet. Elementary signals consisted of 10 ms tone bursts centered on one of eight frequencies spaced 1 ERB apart. Complexes were constructed by adding two to eight individual tone bursts along the temporal or spectral dimension, or both. The signals varied along both dimensions in several ways to focus on the relative salience of each dimension for detection. In quiet, the spectrotemporal integration conditions showed threshold improvement to be limited by spectral integration. Surprisingly, even trial-by-trial randomization of frequencies did not negatively influence detection. For this study, the same tone complexes from the preliminary work were used to measure thresholds in a wide band energetic masker. As expected, threshold improvement was most dependent on increasing the number of tones, with less effect from other variables. Subtle differences between quiet and masked integration performance will be discussed.

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