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Across-ear grouping of speech bands in quiet and in the presence of interference

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Speech was filtered into 16 frequency bands. Three bands were randomly selected on each trial as the LOW (two low-frequency bands) and HIGH (one high-frequency band) target components. LOW and HIGH were either presented to the same (SAME) or opposite (SPLIT) ears. Four randomly selected, non-overlapping frequency bands from a different utterance were time reversed, and summed. When present, this masker was either played to the same ear as LOW and HIGH (SAME-MASK), same ear as LOW with HIGH opposite (SPLIT-MASKLOW), or same ear as HIGH with LOW opposite (SPLIT-MASKHIGH). Intelligibility was best in the SAME and SPLIT conditions and much better than with either LOW or HIGH presented alone. Thus, in quiet, listeners can perceptually integrate information across target components with little spectro-temporal correlation, even when spatial cues promote segregation of these components. Performance in the SAME-MASK condition was generally better than either SPLIT-MASKLOW or SPLIT-MASKHIGH conditions (although worse than in SAME and SPLIT conditions). Furthermore, performance in the two SPLIT-MASK conditions was comparable to performance with LOW or HIGH alone. Thus, when spatial cues oppose grouping of the target and there is a competing off-frequency interference, listeners have difficulty integrating information across target components.