



## F0-based segregation in a three-talker sequential listening task

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**PACS:** 43.66.MK; 43.66.LJ; 43.71.GV; 43.71.AN

### ABSTRACT

Darwin *et al* (2006) have shown that listeners can effectively utilize differences in fundamental frequency between a target and masker phrase to improve performance in a two-talker segregation task. Very little is known about an F0-based segregation strategy with more than two talkers, especially when the talkers are heard sequentially rather than simultaneously. In the current experiment, intelligibility was measured for a five-word target phrase, when each target word was interleaved with two masker words. The relative pitch difference of the target and masker words was varied from 0 to 12 semitones in 2-semitone steps. Two listening conditions were tested: 1) Target Mid: The maskers were presented one each at the lowest and highest pitch and the target pitch was systematically varied between the two masker pitches; and 2) Masker Mid: The target and one masker were presented at the lowest and highest pitch and the pitch of the second masker was systematically varied between the two. Overall, intelligibility was always worst in cases when the target had the same pitch as one of the maskers. When the target pitch was in between the two maskers (Target Mid condition), an inverted U-shaped function was obtained; performance was best when the target pitch was exactly midway between the two masker pitches and decreased systematically as it moved towards the high-pitch or the low-pitch masker. In the Masker Mid condition, performance depended on the pitch of the target; for a high-pitch target, a large gain in intelligibility was obtained by placing one masking voice at a 2-semitone separation from the target with no additional benefits obtained by moving the masker farther away in pitch. In contrast, when the target was the low-pitch voice, intelligibility continued to improve as the pitch of one masker was moved closer to the high-pitch masker voice; indeed, best performance was obtained when both maskers had the same pitch and were maximally separated from the target. These results suggest that F0-based segregation strategies depend not only on the relative F0 differences but also on the absolute pitch of the voices to be segregated.