

ACOUSTICS2008/698
**The interaction of glimpsing, pitch and vocal tract length in the
recognition of concurrent syllables**

Martin Vestergaard, Nicolas Fyson and Roy Patterson
Centre for the Neural Basis of Hearing, Department of Physiology, Development and Neuroscience,
University of Cambridge, Downing Site, CB23EG Cambridge, UK

In multi-speaker environments, human listeners use the temporal misalignment of competing speech signals to improve recognition - an effect referred to as 'glimpsing'. When the temporal envelopes of concurrent syllables pairs are carefully matched to preclude glimpsing, listeners were observed to use vocal tract length (VTL) and glottal pulse rate (GPR) cues to improve recognition. This paper reports an investigation of the interaction between glimpsing and these vocal cues. Syllables were synthesized with a vocoder to simulate speakers with widely different combinations of GPR and VTL. Recognition of one syllable in the presence of a concurrent syllable was measured as the vocal cues and the temporal alignment of the syllables were varied. The effect of glimpsing was most pronounced when the vocal cue differences between the target and distracter syllables were small. Furthermore, there was a strong effect of consonant type (stops, fricatives or sonorants) and an asymmetry between consonant-vowel (CV) and vowel-consonant (VC) syllables. The lowest recognition rate was observed, not at perfect temporal alignment but rather at a distracter lag of -50 ms for CVs and 100 ms for VCs. The results are analyzed with confusion matrices. Research supported by the UK MRC [G0500221, G9900369].