

ACOUSTICS2008/2272**Are acoustic and articulatory changes of speech produced in noise only related to the increase in vocal intensity ?**

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Speech acoustics and articulation are modified in speech produced in noisy environments. Is this simply a result of the increase in vocal intensity or may these modifications be some communicative strategies to increase audiovisual intelligibility? We recorded a first acoustic database with ten speakers and a second acoustic and articulatory database with three speakers, for quiet and for two kinds of background noise. We first verified previous observations about speech modifications in noise and observed that some are not strongly correlated to the increase in vocal intensity and cannot be entirely explained by previous models of vocal effort. We also made additional observations. Pitch does not only rise in noise but also extends its dynamic. For female speakers, pitch not only rises but also fits spectrum "holes" of cocktail-party noise. Speech modifications are not only global over the whole utterance but also specific to some of its units. Articulatory modifications consist not only of an amplification of lip movements, but also correspond to an enhancement of the potentially visible contrast between vowels. Lastly, some articulatory changes may be compensation for formant modifications induced by the increase in vocal intensity, rather than a consequence of it.