

How consistently do speakers apply the Lombard speech clarification effect over time?

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We investigated the acoustic-phonetic differences between speakers' habitual speaking style and their speaking style in a condition where they were presented with loud noise and were also instructed to speak clearly (Lombard/clear style). Our research question was whether acoustic differences in articulation rate, pitch median, pitch range, and spectral tilt between habitual and Lombard speaking style would change over the course of a sentence list.

Seventy-eight participants read out 48 sentences (order randomised) in both their habitual style, and in Lombard style. Results from linear mixed-effects models indicate that trial main effects were present in three of the four acoustic measures (i.e., articulation rate, pitch median, and spectral tilt). Across all four acoustic measures, sentence trial interacted with speaking style. More specifically, acoustic differences between habitual and Lombard speech increased over trials, which was sometimes due to speakers becoming 'sloppy' in their habitual style over trials, e.g., faster articulation rate and smaller pitch range. However, speakers also enhanced some of their Lombard style modifications over Lombard trials, e.g., higher pitch median and flatter spectral tilt. Thus, despite the higher vocal effort, speakers in our study were able to not only maintain but even enhance their Lombard speech modifications over trials.