

Lexical access in the face of degraded speech: The effects of cognitive adaptation

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Abstract

Spoken language unfolds over time. Listeners cope with this by activating multiple lexical candidates which compete for recognition (McClelland & Elman, 1986). Competition dynamics change with degraded speech (Brouwer & Bradlow, 2016; McMurray, Farris-Trimble, & Rigler, 2017; McQueen & Huettig, 2012) but it is unclear whether this reflects the degraded input, or functional adaptation. In two visual world paradigm experiments, listeners heard different levels of degraded (noise-vocoded) speech. Experiment 1 manipulated degradation level in blocks or interleaved across trials. Interleaving led to processing delays beyond that of degradation alone. We also found switch-costs when degradation level differed between trials. This suggests differences in lexical dynamics are not solely due to degradation level. In experiment 2, a visual cue indicated the degradation level before each trial. This reduced the delay and switch costs, suggesting adaptation before the input. These experiments support a role for central processing in dealing with degraded speech.