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Listener Trade-Offs between Acoustics and Semantics in Noisy Speech

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Abstract

Understanding speech demands integration of various kinds of information over time. Previous research has shown that listeners can use both semantic and acoustic cues to understand spoken words (Bushong, 2024) and that listeners can dynamically reweight different acoustic cues relative to each other (Kapatsinski, 2024); but it is unclear if listeners are able to readjust the relative contributions of semantic and acoustic cues depending on the current context (e.g. adverse listening conditions). The current study manipulates the acoustics of a target word, a semantic cue (sentential context), and the location of the semantic cue relative to the target word. Additionally, we manipulate the level of noise in the utterance and the location of that noise (full utterance vs. target word). Noise reduces listeners' ability to use acoustic cues for spoken word recognition and as local noise increases, semantic context is up-weighted. However, as global noise increases, semantic context is also down-weighted.