

Genesis of rhythm: The power of distal structures to shape prosodic forms

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Prominence- and boundary-related prosodic phenomena are often studied in isolation, as opposed to as part of a rhythmic context. Accumulating evidence from multiple labs, however, suggests that rhythmic context is a powerful factor shaping perception of both prominences and phrasal boundaries, thereby dramatically influencing a listener's understanding of prosodic structure. This talk highlights research investigating the role of rhythm in distal context speech occurring early in utterances on listeners' perception of subsequent prosodic structures. A fruitful paradigm for investigating the role of distal rhythm in prosodic perception has been to manipulate pitch and/or timing properties of context speech that occurs early in an utterance in order to create different pairings of phonetic properties (pitch or timing) with strong-weak or weak-strong metrical units. The influence of different pairings of phonetic properties with metrical units in distal context is then examined by resynthesizing prosodic properties of initial portions of utterances which contain later-occurring lexical ambiguities (e.g., *cry sister nip* vs. *crisis turnip*, *pan* vs. *panda*, *gir(affe)* vs. *ju(ry)*, etc.). Critically, the acoustic properties of downstream lexically ambiguous material are held constant, while manipulating the phonetic properties of the upstream, distal metrical units. Dependent variables typically relate to different lexical organizations of ambiguous speech material, which reflect different prosodic structures for that ambiguous speech. Converging results across studies using a variety of behavioral and neurocognitive paradigms show that distal rhythm can dramatically reorganize a listener's interpretation of the prosodic hierarchy of prominences and phrasal boundaries for subsequent speech material, even when acoustic properties of that later-occurring speech are held acoustically constant. Interestingly, distal rhythmic structure may be implemented through pitch changes alone or through timing changes alone, indicating the phonetic robustness of these distal influences on perception. However, distal rhythmic structures implemented through combinations of pitch and timing cues which point to the same rhythmic organization appear to most significantly influence prosodic perception. The results suggest that distal rhythm is a powerful, phonetically robust factor shaping perception of prominences and phrasal boundaries, as well as a listener's on-line understanding of the words spoken.