Individual differences and attentional effects on cue weighting for prosody perception

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Through the temporal pattern of F0, intensity, local tempo and other acoustic properties, prosody conveys rich linguistic information. In some languages, prosody encodes discrete lexical contrasts (e.g., tone in Chinese languages), but in many other instances, prosodically encoded meaning is tied to the situational context, marking distinctions that are less clearly categorical (e.g., illocutionary force; referential accessibility). Given the multiplicity of acoustic prosodic cues, and the potential role of contextual factors on listener's perception of prosody, we ask whether listeners agree in their perception of the prosodic features of an utterance, and further, if listeners are similar in the influence that individual cues have on their rating of prosodic features. This investigation is fueled by the broader goal of understanding if and how variability in the perception of prosody impacts the cultural transmission of language, and the role of prosody in linguistic communication.

The present study examines individual differences in the perception of prosody in conversational English, as viewed through the lens of prosodic annotation. Prosodic ratings from 32 untrained annotators performing Rapid Prosody Transcription were analyzed with Generalized Additive Mixed Models. Results show that perceived prominences and boundaries are moderately predicted from combined acoustic cues (F0, intensity, duration) and contextual cues (word frequency, POS), but also reveal individual differences among listeners in cue selection and weighting. GAMM findings point to an implicational hierarchy in the selection of cues, where cues with the strongest effect on prosodic rating are selected by the greatest number of listeners, and also a clustering of listeners based on cue selection. Differences in cue weighting are also observed depending on task instructions that focus listeners' attention on the acoustic vs. meaning dimensions of the heard utterance. These findings are discussed in terms of attention and processing strategies used in the perception of prosody.