Introduction. Information structure (IS) has been argued to constrain prosodic realization, particularly in the nuclear position of a prosodic phrase. Conventional understanding directly relates IS to pitch accent type: new information corresponds to high/rising accents, and given information is deaccented [1-3]. The empirical research behind these claims has, however, been minimal. While the degree of newness correlates with gradient phonetic prominence [4-6], evidence for a phonological encoding of IS via pitch accent assignment supports a probabilistic relation at best [4-7]. The present study provides a thorough investigation of IS influence on nuclear prominence in American English. If IS is categorically encoded in phonology, we should observe a consistent, direct relation between IS and pitch accent type. If instead IS merely influences prominence in a relative manner, we expect a weaker positive correlation between degree of newness and relative phonological prominence (ToBI label), as well as phonetic prominence (intensity, duration).

Methods. Twenty sets of three-sentence mini-stories were created in which the IS of the final object noun phrase was discourse- given, accessible, new, or contrastive. In each story, the first and third sentences were held constant, while the second sentence modulated the IS of the target noun phrase. Syntactic and metrical structure of the third sentence was identical across stories. Each participant read aloud one IS condition per story in randomized order over four blocks (80 items). Odd blocks were to be read in a casual/neutral manner and even blocks in a lively manner to promote variety in pitch accent type. 32 native AmEng speakers completed the experiment.

For each critical word, we assigned a ToBI label (H*/L*/L+H*/L*+H/unaccented-UA) and measured the intensity and duration of the initial trochee. Because the nuclear position was utterance-final, we also marked modal and creaky voice intervals to explore IS-voice quality interactions. ToBI and voice quality patterns (modal-only, modal-to-creak, creak-only) were analyzed for 13 participants with multinomial logistic regressions. L* and unaccented productions were combined in analysis. Intensity and duration were analyzed for all participants with linear mixed-effects models.

Results. L*/UA dominated production in all conditions, but a significant decrease in L*/UA was observed for new and contrastive referents, and in the lively style (ps < 0.05). Relative to average, discourse-given referents were produced with significantly weaker intensity, accessible with greater intensity, and contrastive with greater intensity and longer duration; all intensity effects were stronger when lively, and new referents had longer duration when lively (ps < 0.05). These effects were notably small. Creak occurred in 90% of our data, but preliminary analyses revealed no significant IS-voice quality relations.

Discussion. IS significantly influences nuclear prominence at phonological and phonetic levels in AmEng in a probabilistic manner [see also 4], but nuclear prominence does not categorically distinguish types of IS. Moreover, nuclear prominence often coincides with utterance-final creak in AmEng, apparently neutralizing pitch accent contrasts in favor of marking finality. These findings indicate a need to revise our discussion of the IS-prominence relation in production and investigate how these probabilistic relations correspond to perceptual processing [8].

Figure 1. a) Count of pitch accent type by IS condition and affect. b) Intensity (dB) by IS condition and affect. c) Duration (ms) by IS condition and affect.

Example mini-story

Context 1: Our sister Jamie spent all day Saturday in the kitchen.
Context 2: Given - She knew it would take hours to make the marmalade. | Accessible - She especially enjoyed making homemade preserves. | New - She likes to make everything from scratch. | Contrastive - Our father loved the strawberry jam.

Target: Our nana loved the marmalade.