



2aSC35. Lexical stress without postlexical head-marking: Evidence from Tagalog

Victoria Anderson, Dept of Linguistics and LAE Labs, University of Hawai'i at Manoa

vanderso@hawaii.edu

Introduction & Background

•Jun (2005) compares prosodic prominence in 21 languages

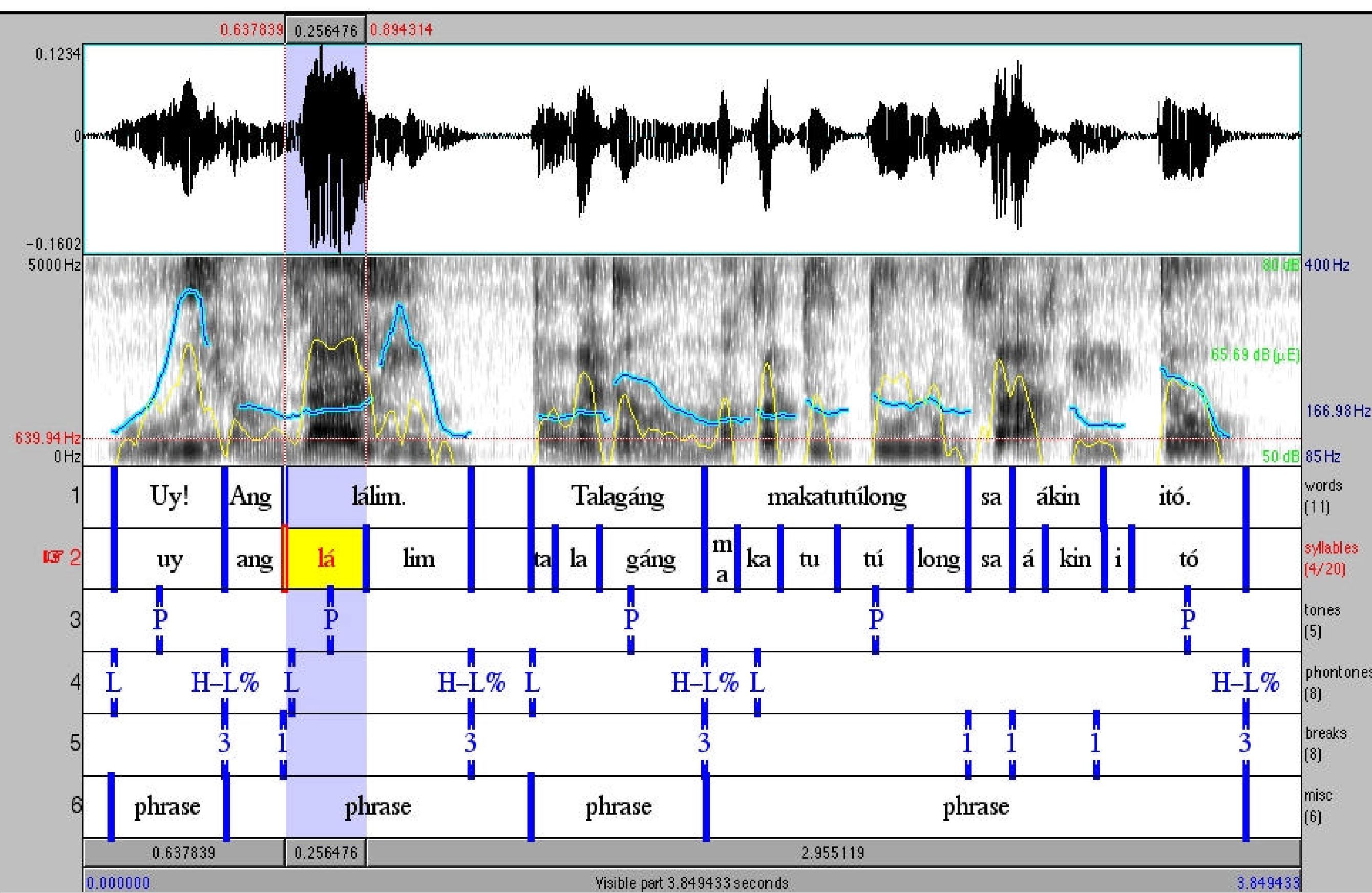
- Families represented: Australian, Basque, Bengali, Chinese, Persian, Germanic, Greek, Japanese, Kinande, Korean, Muskogean, Romance, Semitic, Slavic
- Among families not represented: Austronesian (the world's largest, numerically and geographically)
- Jun finds an implicational relationship between prominence types at lexical and post-lexical levels
 - Lexical prominence types include: tone, stress, pitch accent
 - Post-lexical prominence types include: head-marking, edge-marking
- 14 of 21 languages in the sample mark lexical prominence with stress
- All 14 use post-lexical head-marking
- 4 additionally mark a phrase's edge(s)
- No stress language employs postlexical edge-marking alone

•Jun's generalization: Stress lgs. indicate phrasal prominence by placing post-lexical pitch accent on the phrase's headword.

•Does this hold for Tagalog (Austronesian, Central Philippine)?

- Lexical prominence type: stress

láyás 'leave'	bálot 'package'	búkás 'tomorrow'	gáling 'from'
layás 'carefree'	balót 'fertilized egg'	bukás 'open'	galíng 'power'
- Post-lexical prominence type: Pilot data suggest absence of head-marking.
 - Low pitch appears on the first syllable in a phrase, while high pitch appears on the last, suggesting postlexical edge-marking.

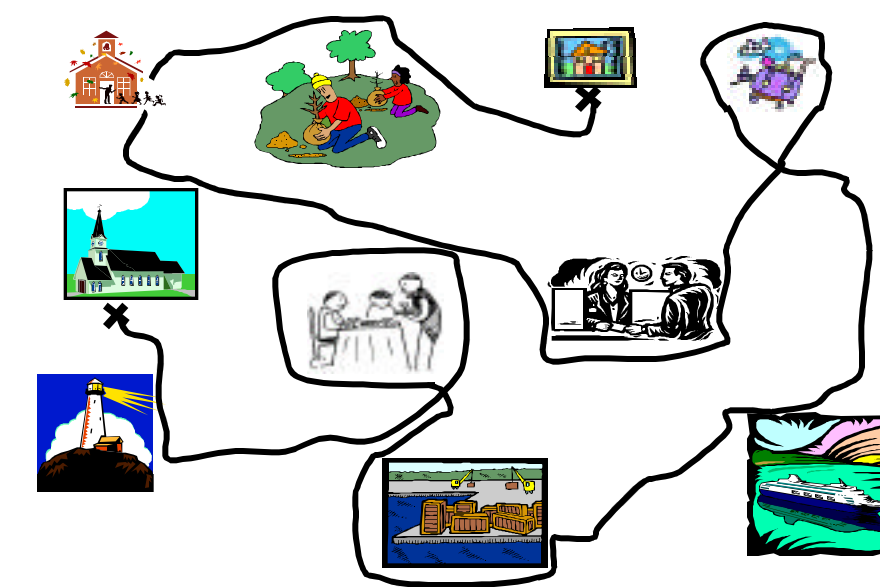


Morphemes: Wow! ANG deep. Really-LINKER CAUS-help for me this.
Gloss: 'Wow! How deep. This will really help me.'

Speech Materials

•UH Tagalog corpus

- 6 female, 6 male native speakers of Manila Tagalog, age range 16-75.
- 5 speech tasks ranging from careful speech to casual speech:
 - Conversation: Loaded question
 - Map task
 - Story reading: 'Ibon at Tanged' (illustrated with a map)
 - Story retelling from memory: 'Ibon at Tanged'. Pictures: Mayer, M. (1974).
 - Phonetically-controlled sentences largely composed of voiced segments. E.g.:
Maganda ang nanay niya. 'Her/his mom is pretty.'
Declaratives, wh-questions, y/n questions, etc.



•Data subset for current study: spkr F1 (age 56)

- Phonetically controlled declaratives
- Declaratives from story retelling
- 420 syllables in approximately 70 prosodic phrases



Labeling & Measurements

•Praat 4.5:

- Waveform, spectrogram, pitch track and intensity track displayed for each utterance
- Utterance annotated for:
 - word boundaries
 - syllable boundaries
 - lexical stress
 - phrasal prominence (as judged by native speaker)
 - for each syllable, its position in the phrase
i.e.: final (position 'zero'), penult (position 'one'), antepenult (position 'two'), etc.

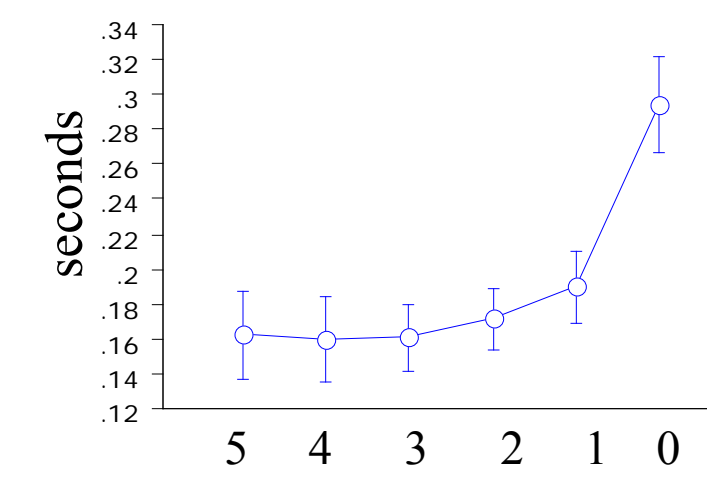
•For each syllable, duration, pitch range, and rms amplitude were measured.

Results: position in phrase

•A syllable's position in a phrase strongly determines its duration, pitch range, and mean intensity.

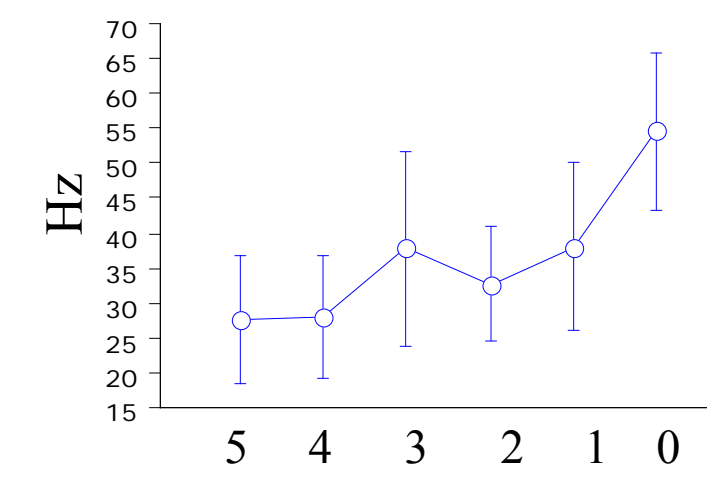
•Duration:

- 1-way ANOVA*, effect of syllable position on duration: $F(5, 353)=41.548, p<.0001$.
- Posthoc analysis**:
phrase-final syllables (position 'zero') are significantly longer in duration than syllables in positions 1, 2, 3, 4 and 5 away from end of phrase
Syllables in positions 1, 2, 3, 4, 5 do not differ significantly in their durations



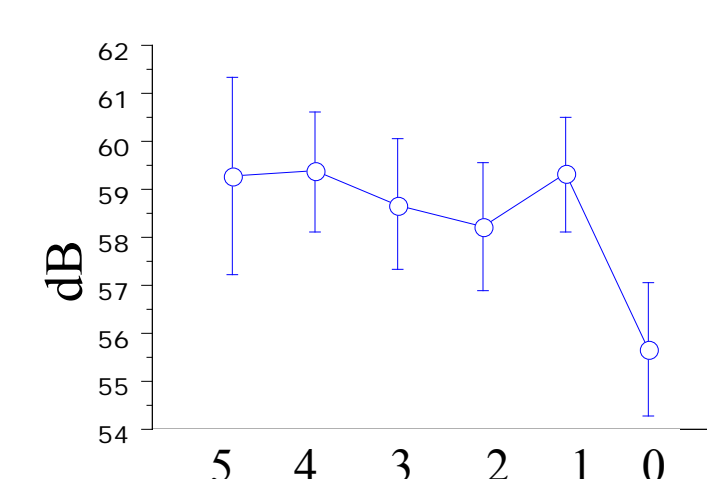
•Pitch range:

- 1-way ANOVA, effect of syllable position on pitch range: $F(5, 349)=6.057, p<.0001$.
- Posthoc analysis: phrase-final syllable has significantly wider pitch range than syllables in positions 5, 4, 2



•Mean intensity:

- 1-way ANOVA, effect of syllable position on mean intensity: $F(5, 353)=8.371, p<.0001$.
- Posthoc analysis: syllables in positions 5, 4, 3 and 1 have greater intensity than phrase-final syllables

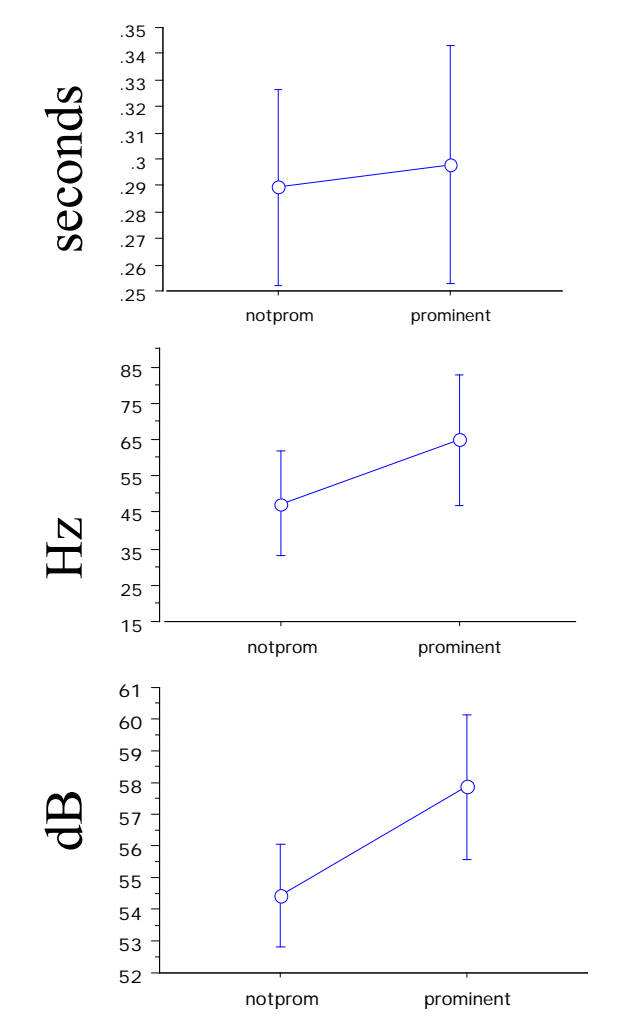


*Factorial analysis of variance, significance level: $p \leq .01$
**(Scheffe's F at 99% confidence interval)

Results: prominence vs. non-prominence

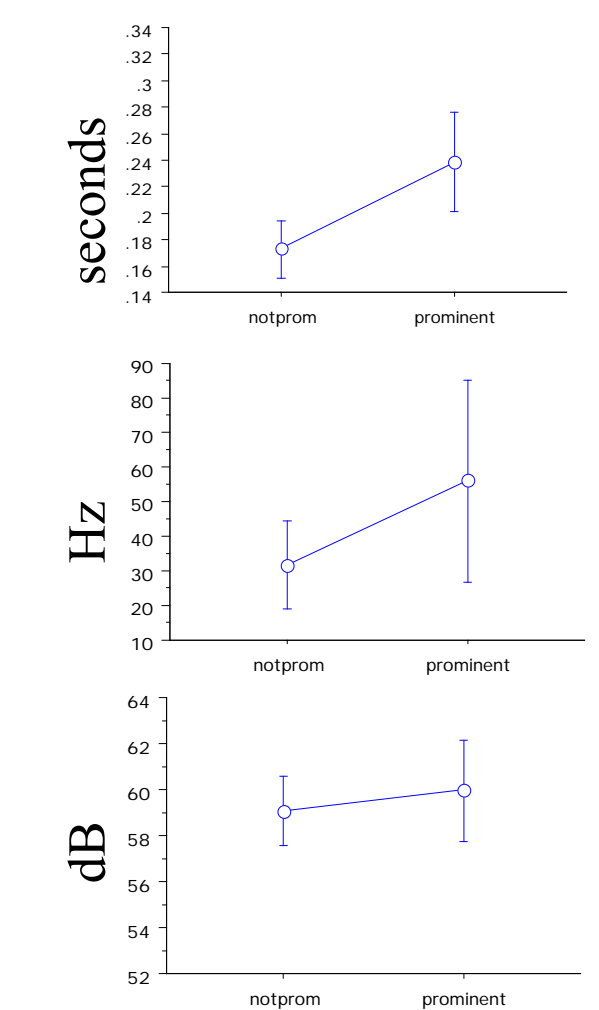
•For phrase-final syllables:

- Duration: **No significant difference**
 - 1-way ANOVA, effect of prominence on duration: $F(1, 77)=0.154, p=.6955$.
- Pitch range: **Only marginal difference**
 - 1-way ANOVA, effect of prominence on pitch range: $F(1, 77)=4.109, p=.0461$
- Mean intensity: **significant difference**
 - 1-way ANOVA, effect of prominence on intensity: $F(1, 77)=11.372, p=.0012$



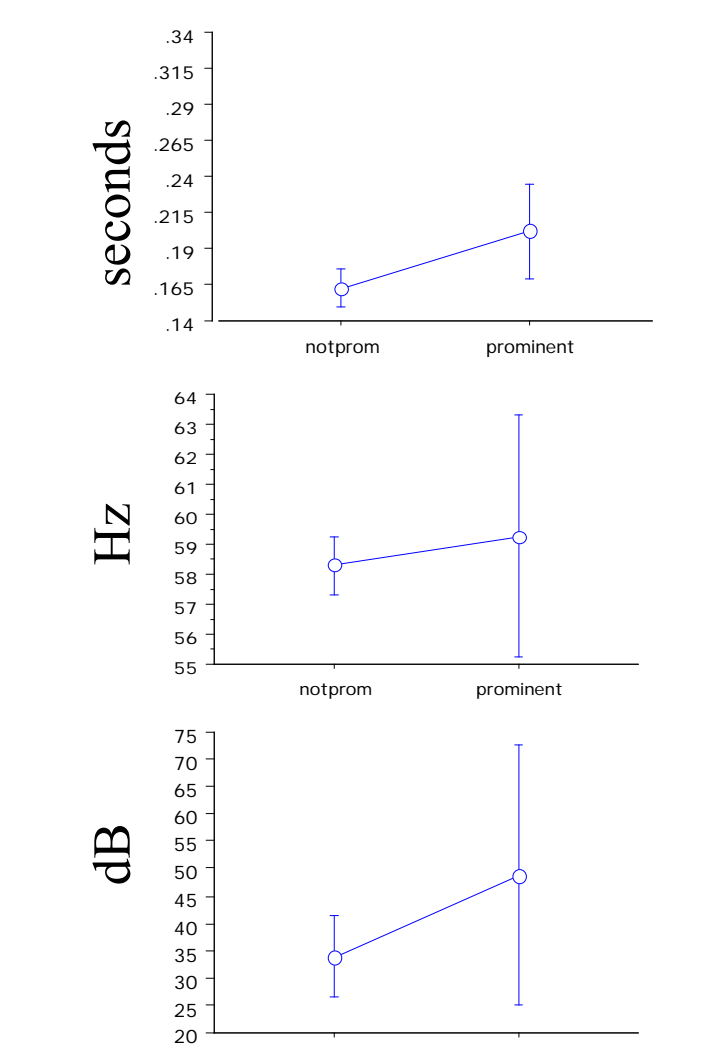
•For penultimate syllables:

- Duration: **Significant difference**
 - 1-way ANOVA, effect of prominence on duration: $F(1, 72)=17.131, p<.0001$
- Pitch range: **Only marginal difference**
 - 1-way ANOVA, effect of prominence on pitch range: $F(1, 71)=5.728, p=.0193$
- Mean intensity: **No significant difference**
 - 1-way ANOVA, effect of prominence on intensity: $F(1, 72)=0.716, p=.4003$



•For ante- and preantepenultimate syllables:

- Duration: **Significant difference**
 - 1-way ANOVA, effect of prominence on duration: $F(1, 130)=7061, p=.0089$
- Pitch range: **Only marginal difference**
 - 1-way ANOVA, effect of prominence on pitch range: $F(1, 127)=3.199, p=.0761$
- Mean intensity: **No significant difference**
 - 1-way ANOVA, effect of prominence on intensity: $F(1, 130)=0.740, p=.3913$



Discussion & Conclusion

•Robust prosodic effects of phrase-final position:

- Phrase-final lengthening
- Lower mean intensity
- Wider pitch range, suggesting presence of a phrasal tone associated with this position.

•Substantially weaker/more variable effects of 'prominence':

- For phrase-final syllables
 - Presence of 'phrasal prominence' does not reliably affect duration or pitch range.
 - Probable reason: phrase-final lengthening and phrasal tones on these syllables override prominence effects
 - Mean intensity is significantly increased by prominence
- For syllables in pre-final positions in the phrase:
 - Presence of 'phrasal prominence' significantly increases a syllable's duration, but does not reliably affect intensity or pitch range.

•Unlike 'typical' stress languages, Tagalog may not robustly mark phrasal heads.

•Further questions (currently under investigation):

- How do listeners/acquirers retrieve lexical stress from the signal?
- How active is lexical stress in Tagalog?
- What constitutes phrasal 'prominence'?
- Is this speaker representative of the behavior of other speakers, in other contexts?

Questions & Hypotheses

•Does Tagalog show typical acoustic hallmarks of post-lexical head-marking? If not, is it typologically novel?

•Null hypothesis: Like other lexical stress languages, Tagalog robustly employs all of the following to mark phrasal heads:

- increased duration
- increased amplitude
- increased pitch prominence (greater pitch range or deviation from mean)