2pSC18

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Phonetic correlates of stance-taking

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Goal

Identify acoustic indicators of stance (utterance level)

Stance

Attitudes, opinions about topic of discussion [1-2]

ATAROS Corpus

34 dyadic conversations
- Matched/crossed gender
- Matched by age group
- ~1 hour each

5 collaborative tasks [3-5]
- Stance-dense
- Differing involvement

Tasks

Stance-Neutral

Map
Dyads discuss how arrangements of ~50 household items differ between two lists

Category
Dyads discuss how arrangements of ~50 county services differ between two lists

Increasing Involvement

Inventory
Dyads arrange household items to make a store inventory map

Survival
Dyads pick items useful for cold-weather survival

Budget
Dyads choose items to cut from an imaginary county budget

Updates & Access

For reports and corpus access :
depts.washington.edu/phonlab/projects.htm

Transcription

- Manual transcription in Praat [6] using ICSI guidelines [7]
- Forced-alignment: P2FA [8] marks word, phone edges

Annotation

Each "spurt" (utterance between 500ms+ silences) marked for stance strength [4-5]:

None: reading, backchannels, facts
Ex: "What's next?" / "Socks."

Weak: cursory agreement, suggest solution, solicit opinion, mild opinion/reasoning
Ex: "How about this?" / "Sounds good."

Moderate: stronger versions of above, disagreement, offer alternate solution, question other's opinion
Ex: "No, let's do this."

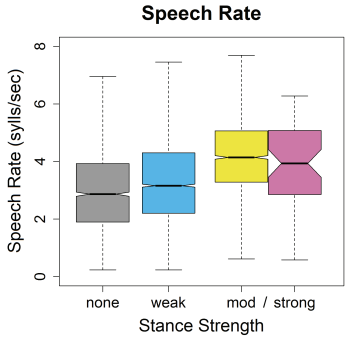
Strong: very strong versions of above
Ex: "Absolutely not!"

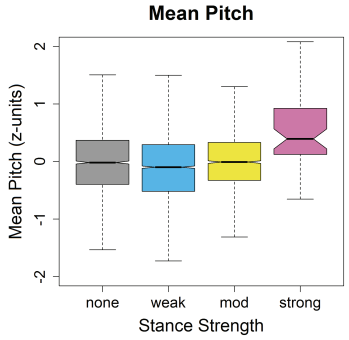
Analysis

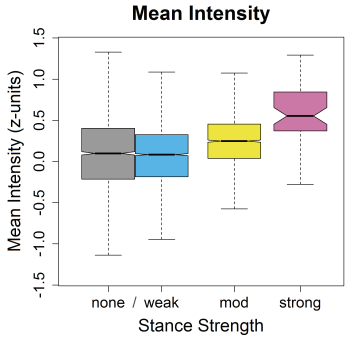
Sample
- 2 tasks (Inventory, Budget)
- 18 dyads
- ~8900 spurts

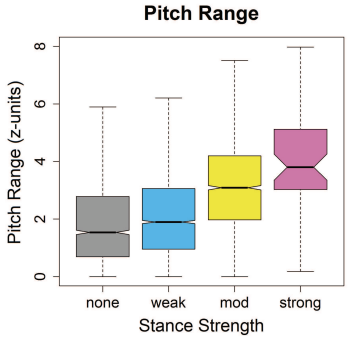
Measures (spurt-level)
- Speech rate
- Pitch mean, range
- Intensity mean, range
- Extracted via Praat script
- Pitch, intensity normalized via speaker-internal z-transform

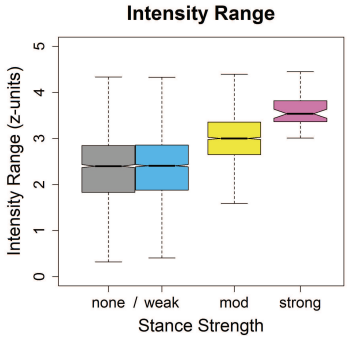
Stats (ANOVA, paired t-tests)
- Stance Strength has a significant effect on all measures
- For each measure/graph, all pairs of strength levels differ reliably except those shown as touching











Results

- As stance strength increases, so do speech rate, pitch and intensity means and ranges
- In other words, strong stances are said faster, louder, and with wider variation in pitch and intensity
- Phonetic correlates of stance can be found even at a coarse spurt level
- Boxes show 2 quartiles; notches 2 standard deviations around medians; whiskers ranges; outliers not shown

Future Work

- Content analysis, annotation of stance moves [9-10], e.g.:
  - Offer, solicit, accept, reject, support, soften a stance
  - Hesitate to accept a stance, offer alternatives
  - Agree, disagree, negotiate, encourage/discourage
- Fine-grained polarity analysis
- Word-level acoustic analysis
- Correlate stance with variation in pronunciation, e.g.:
  - Vowel space expansion, area of convex hull
  - Energy modulation spectra

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