Hyperarticulation as a Signal of Stance

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Study Overview

• Analyzes a political talk show for evidence that speakers use hyperarticulation (exaggerated pronunciation) to signal their stances

• Proposes that this use of hyperarticulation overrides the discourse convention of reducing the pronunciation of given information
New vs. Given

• Cooperative Principle (Grice 1967):
  – speakers are expected to give true, concise, and relevant information

• Given-New Contract (Clark & Haviland 1977:4):
  – “the speaker … agrees to convey information he thinks the listener already knows as given information and to convey information he thinks the listener doesn’t yet know as new information.”
New

• First introduced into discourse or reintroduced after extended interruption

• *Hyperarticulated*:  
  • Exaggerated pronunciation, less coarticulation  
  • Slower rate, longer durations, heavier stress  
  • Expanded vowel space, pitch range  
  – Increase comprehension, avoid confusion  
  – Signal something new
Given

• Already “on the counter” (Prince 1981), activated in speakers’ discourse models

• Reduced articulation (hypoarticulation):
  – No extra effort needed to avoid confusion
    • Faster rate, shorter durations
    • Contracted vowel space, pitch range

• Novelty: dimension of new vs. given
  • Label items for analysis as new or given info
Hyperarticulation

• Other uses:
  • Emphasis, contrast
  • Focus, topic marking
  • Clarification, error correction, avoiding confusion
  • Affective, emotional expression

• Possible use:
  – Signal speaker stance
Stance / Evaluation

– Attitudinal stance: subjective attitudes, judgments, evaluations
– Evaluation: “the expression of the [speaker’s]… attitude or stance towards, viewpoint on, or feelings about the entities or propositions that he or she is talking about” (Hunston & Thompson 2000:5).

• Evaluation: dimension of stance-expression
  • Identify presence or absence of stance
Hypotheses

• H1: There is an effect for Novelty
  – New information will be hyperarticulated
• H2: There is an effect for Evaluation
  – Stance-expressing tokens will be hyperarticulated compared to neutral tokens
• H3: There is a Novelty-Evaluation interaction
  – Evaluation will have a greater effect overall
  – Individual variation also expected
Data Set

– Episode of *Tucker* randomly selected from corpus of political talk shows
– All 6 segments of conversation analyzed
– 5 male speakers from various dialect regions
– *Concepts* identified for analysis:
  • Content word/phrase with three or more repetitions (*tokens*) said by same speaker in one conversational segment
  • Plus references to the concept (e.g. pronouns, synonyms, truncations)
## Example Concept

**Concept:** “the war in Iraq”

**Tokens analyzed: repetitions of “war”**

<table>
<thead>
<tr>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>“the war in Iraq”</td>
</tr>
<tr>
<td>“the war in Iraq”</td>
</tr>
<tr>
<td>“the war”</td>
</tr>
<tr>
<td>“a war”</td>
</tr>
<tr>
<td>“this”</td>
</tr>
<tr>
<td>“this critical issue of Iraq”</td>
</tr>
<tr>
<td>“the war”</td>
</tr>
<tr>
<td>“it”</td>
</tr>
</tbody>
</table>
Content Analysis

• One point for each act regarding the concept that signals a stance
• Divide total points by number of tokens
• Code concepts with scores $\geq 2.00$ as “stance,” those below as “control”
  – Cutoff determined by frequency distribution of all concepts from the episode
    • Distribution was nearly normal with mean at 1.92
Speaker Acts

a. Speaker works to keep concept in play
   - Introduces, returns to topic, repeats when interrupted, changes topic: “Let’s talk about this”
   - Asks to be heard: “Look / Listen, Let me say this”

b. Expresses overt opinion about concept
   - “I think / believe, The way I see it, It’s clear to me”

c. Uses loaded descriptions, modifiers of concept
   - “Obviously, ridiculous, important, impressive”
   - “It turned my stomach”
d. Establishes credibility to support opinion
   – Cites experts: “Polls show, Most Americans agree, If you look at the study, That’s a fact, We all know”
   – Presents self as expert / authority: “I was there”

e. Attempts to persuade, gives recommendations
   – “Think of it this way, You have to agree”
   – “Hopefully; What they should do is”

f. Agrees / disagrees with another speaker
   – “I agree / disagree, Not at all, Absolutely, Right”
Marking Novelty

- **New:**
  - First introduction to the discourse
  - Reintroduction after 5+ turns over 60+ seconds

- **Given:**
  - all other tokens

- Combination of labels for each token:
  - stance or control + new or given
## Data Set

<table>
<thead>
<tr>
<th>Type</th>
<th>Concepts</th>
<th>Tokens</th>
<th>Vowels</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Given</td>
<td>New</td>
<td>Total</td>
<td>Given</td>
<td>New</td>
</tr>
<tr>
<td>Control</td>
<td>33</td>
<td>82</td>
<td>27</td>
<td>109</td>
<td>94</td>
<td>31</td>
</tr>
<tr>
<td>Stance</td>
<td>32</td>
<td>73</td>
<td>36</td>
<td>109</td>
<td>75</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>155</td>
<td>63</td>
<td>218</td>
<td>169</td>
<td>68</td>
</tr>
</tbody>
</table>
Data Set

• Good balance
  – Even distribution by vowel height, tenseness, token length, lexical frequency (factors known to affect hyperarticulation measures)

  – BUT: Frequency of token types varies by speaker
Measures

• Lengthening
  – Speech Rate of tokens (syllables/sec)
  – Duration of stressed vowels in tokens (ms)

• Pitch
  – Normalized pitch difference: amount a pitch deviates from speaker’s mean pitch (z-score)
    • Pitch of each stressed vowel
    • Speaker mean pitch (z-score normalized mean of stressed vowel pitches)
    • Mean pitch differences for each token type
Measures: Vowel Space

• Vowel space (F1 x F2)
  – Euclidean distance between combinations of new/given and stance/control
    • Only analyzed vowel qualities with all four type combinations by same speaker (62 vowels total)
    • F1, F2 at midpoint (Hz) averaged within token type, within vowel quality, within speaker
    • Euclidean distances between token type means
Vowel Space Conceptual Diagram

- **Nodes**: mean F1xF2 of vowel quality with type combo (new/given + stance/control)
- **Lines**: Euclidean distances, representing effect of one dimension (Novelty/Evaluation) on tokens of one level of the other
Results: Lengthening

- Significant main effects (three-way ANOVAs)
  - Speech Rate (syllables/sec, p < 0.01):
    - Evaluation: *Stance* slower than *Control*
    - Novelty: *New* slower than *Given*
    - Speaker
    - Evaluation/Speaker interaction
  - Stressed Vowel Duration (ms, p < 0.01)
    - Evaluation: *Stance* slower than *Control*
    - Speaker
    - Evaluation/Speaker interaction
• Novelty-Evaluation interaction: non-significant trend in the expected direction
Results: Pitch

• No significant group effects
• Wide individual variation
  – Different strategies?

(a) Tucker
(b) Pat
(c) Ron
(d) Eli
(e) Eugene

Evaluation code
Results: Vowel Space

• Expected pattern
  • Evaluation has greater effect than Novelty overall
  • Evaluation affects new more than given tokens
  • Novelty affects stance more than control tokens

• T-tests: only Nov(ctrl) and Eval(new) significantly different

<table>
<thead>
<tr>
<th>Effect on each token type</th>
<th>Distances between combined codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov(ctrl) NC-GC</td>
<td>92</td>
</tr>
<tr>
<td>Nov(stan) NS-GS</td>
<td>119</td>
</tr>
<tr>
<td>Eval(giv) GS-GC</td>
<td>172</td>
</tr>
<tr>
<td>Eval(new) NS-NC</td>
<td>207</td>
</tr>
</tbody>
</table>
Vowel Space Conceptual Diagram

- Nodes: mean F1xF2 of vowel quality with type combo (new/given + stance/control)
- Lines: Euclidean distances, representing effect of one dimension (Novelty/Evaluation) on tokens of one level of the other
Conclusions

• Support for all three hypotheses:
  – H1: There is an effect for Novelty
    • Speech Rate: New information hyperarticulated
  – H2: There is an effect for Evaluation
    • Rate & Duration: Stance-expressing tokens hyperarticulated compared to neutral tokens
  – H3: There is a Novelty-Evaluation interaction
    • Speech Rate (& Vowel Space): Evaluation has greater effect than Novelty overall
    • Individual variation strong for Pitch differences
However...

- Linear Mixed Effects (Speaker as random effect)
  - Speech Rate (syllables/sec, $p < 0.01$):
    - Evaluation
    - Novelty
  - Stressed Vowel Duration (ms, $p < 0.01$)
    - Evaluation
Future Work

• Larger corpus (ATAROS)
  – Stance-dense interactions
  – Increasing levels of engagement
  – Control dialect region (PNW)
  – Control dyad makeup (gender, age, familiarity)

• Improved phonetic measures
  – More sophisticated vowel space, pitch measures
  – Phrase-level analysis

• Finer stance distinctions
Acknowledgements

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References (Hyperarticulation)

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References (Novelty, Stance)


