Week 8 - Research Chat: Computational Linguistics for Social Meaning and Social Impact

Rob Voigt
Sorry for delay in responding to Midterms!
What I Do

Use computational linguistic techniques to analyze the linguistic mechanisms of social meaning and social conflict.

- Relatively language-internal
- Connections between language and the “real world”
Content warning:
Only a few examples, but analysis of race + gender biases, derogatory language about immigrants, mass shooting events
Policing
Procedural Justice

Idea that the justice system should strive for not only *equitable outcomes*, but also an *equitable process* (including interpersonal treatment)

Key Components:

- **fairness** in the processes
- **transparency** in actions
- Opportunities for **voice**
- **impartiality** in decision making
Police Respectfulness in BWC Footage

• Transcribed body camera footage of 1,000 traffic stops in Oakland, CA

• Collected human judgments of respectfulness on officer utterances

• Built a machine learning model of respect using features of linguistic politeness
Example

So let me see that registration stuff, bro.

Score

-1.03
Findings

• Controlling for officer race, age, gender, stop severity, stop outcome, etc

• Consistent racial disparity: Officer language to white drivers was more respectful than to black drivers
Quantifying Police Training Impact

- Used these findings to develop a training
- Found overall increase in officer respect
- Broad racial disparity remains; but interesting feature-level differences
Specific Features: Reassurance
(no big deal, don’t worry, it’s okay, that’s fine, etc.)

Significant increase for Black drivers!
(no change for O/W)
Specific Features: Formal Titles
(sir/ma’am/Mr./Ms. vs bro/dude/man, etc.)

Disparity increases in POST condition!
Reflects officer reactions to training!
Doubling down on prior strategies?

FormalVsInformalTitles

*Formal vs Informal Titles*

*Disparity increases in POST condition!*

*Reflects officer reactions to training!*

*Doubling down on prior strategies?*
Law and the Courts
Narrative Explanations in Online Court

Online dispute resolution for traffic tickets - Can it reduce courtroom biases?

But, preliminary results show writing actually hurts rather than helps!

So perhaps it’s accidentally equalizing force.

Probability of writing an explanation

<table>
<thead>
<tr>
<th>Median income in driver’s zip code</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10k</td>
<td>60%</td>
</tr>
<tr>
<td>$50k</td>
<td>70%</td>
</tr>
<tr>
<td>$90k</td>
<td>80%</td>
</tr>
</tbody>
</table>
Immigration
Immigrant Language Learning

Analyzed 1,000 immigrant oral histories from Ellis Island (people who arrived early 20th cent.)

Computational estimation of lexical and syntactic complexity; human ratings of accentedness

PD: I’ll tell you why. My father went away from the army.
AoA 2.79 4.26 4.35 3.97 2.72 4.11 5.07 4.44 3.98 7.15

MH: And, of course, at that time the Revolution was brewing.
AoA 4.57 4.55 7.34 4.04 5.53 5.16 3.98 10.00 9.06

Finding: refugees show higher levels of English attainment!
Changing Discourses on Immigration
(in Congressional speeches, 1880 to the present)

Decline in explicit dehumanization over time

... but a corresponding increase in discourses of legal exclusion

(particularly amongst Republicans)
Social Media
Polarization on Twitter in Reactions to Mass Shootings

What other events do you bring up as context?

Who is a terrorist?

No of tweets
- 1k
- 5k
- 10k

Shooter's race
- white
- person of color

Location
- school
- place of worship
- other

Democrat context

neutral

"terrorist"

Shooter's race: POC vs white

Log odds ratio

(Democrat < 0 < Republican)
Academia
Gender Disparities in (Econ) Letters of Recommendation

(with Natasha!)

Verbs that applicants were described as doing

<table>
<thead>
<tr>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>help 1.6</td>
<td>participate 1.6</td>
</tr>
<tr>
<td>work 1.5</td>
<td>solve 1.6</td>
</tr>
<tr>
<td>use 1.9</td>
<td>rank 1.7</td>
</tr>
<tr>
<td>discover 1.4</td>
<td>apply 1.4</td>
</tr>
<tr>
<td>propose 1.2</td>
<td>prove 1.2</td>
</tr>
<tr>
<td>major 1.1</td>
<td>publish 1.1</td>
</tr>
<tr>
<td>consider 0.9</td>
<td>examine 0.8</td>
</tr>
<tr>
<td>give 1.1</td>
<td>distinguish 1.3</td>
</tr>
<tr>
<td>stay 0.9</td>
<td>receive 1.0</td>
</tr>
<tr>
<td>finish 0.8</td>
<td></td>
</tr>
<tr>
<td>pursue 1.0</td>
<td></td>
</tr>
<tr>
<td>miss 0.9</td>
<td></td>
</tr>
<tr>
<td>gain 0.9</td>
<td></td>
</tr>
<tr>
<td>speak 1.1</td>
<td></td>
</tr>
<tr>
<td>succeed 1.2</td>
<td></td>
</tr>
<tr>
<td>lead 1.2</td>
<td></td>
</tr>
</tbody>
</table>

Nsubj: Nominal subjects
Social meaning and social impact?

Language is the medium of our social world:

linguists have unique skills

(some of which you’re learning in this class!)

to understand social problems

and contribute to social good!
Collaborators

Nick Camp, Vinodkumar Prabhakaran, Will Hamilton, Rebecca Hetey, Camilla Griffiths, David Jurgens, Hazel Rose Markus, MarYam Hamedani, Amedeo Tumolillo, Amrita Maitreyi, Dan Jurafsky, Jennifer Eberhardt, Ran Abramitzky, Leah Boustan, Peter Catron, Dylan Connor, Dallas Card, Julia Mendelsohn, Rob Podesva, Penny Eckert, Serina Chang, Qile Chen, Natasha Ahuja, Lori Beaman, Chris Becker, Dorottya Demszky, Nikhil Garg, James Zou, Matthew Gentzkow, Jesse Shapiro, JJ Prescott, Tali Rabinovich, and Orna Einy