“Still Feeling Lucky?” Features of Sarcasm in the Context of Failed Predictions

Alexander A. Johnson & Roger J. Kreuz • Department of Psychology • The University of Memphis

Sarcasm-Eliciting Scenarios

Provide Completions to 16 Scenarios (8 Intended to Elicit Sarcasm)

Example

Bill and Ann had decided to go bowling. "I'm feeling pretty lucky tonight," said Bill. A few minutes later, they began their game, and Bill threw several gutter balls in a row. As Bill returned to his seat, Ann called over to him:

Sample Subject Responses

- you're REAL lucky tonight
- Still feeling lucky? Pretty lucky, eh, Bill?
- You're a Rockstar!

Method & Analysis

Method

The corpus for this analysis was drawn from responses to the scenarios described above. Importantly, subjects were told to respond to the prompts as they normally would (i.e., no instructions to be sarcastic), as it is unclear how explicit instructions may influence the signaling of sarcasm. In total, 187 sarcastic responses were identified and a prompt-matched set of 187 literal responses was selected. That is, for each scenario, there is an equal number of literal and sarcastic responses. Features were hand-coded by two raters with 93.24% agreement. Disagreements were resolved through discussion.

Using the balanced corpus with these features (right), we fit a logistic regression model, using PROC LOGISTIC in SAS 9.4, with a binary sarcastic/literal dependent variable. The model was significant and had good predictive power: Nagelkerke $R^2 = .417$, Cox and Snell $R^2 = .313$, Tjur $R^2 = .324$.

Logistic Regression Analysis of Sarcasm (n = 187) and Literal (n = 187) Responses Using SAS PROC LOGISTIC (Version 9.4)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>β</th>
<th>SE β</th>
<th>Wald's $\chi^2$</th>
<th>p</th>
<th>Estimate</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echo</td>
<td>1.96</td>
<td>0.34</td>
<td>33.72</td>
<td>&lt; .0001</td>
<td>7.12</td>
<td>3.73, 14.08</td>
</tr>
<tr>
<td>Label (Jocular)</td>
<td>1.67</td>
<td>0.55</td>
<td>9.06</td>
<td>&lt; .01</td>
<td>5.31</td>
<td>1.87, 16.86</td>
</tr>
<tr>
<td>Label (Name)</td>
<td>1.47</td>
<td>0.43</td>
<td>11.80</td>
<td>&lt; .01</td>
<td>4.36</td>
<td>1.92, 10.40</td>
</tr>
<tr>
<td>Adjective/Adverb</td>
<td>1.29</td>
<td>0.46</td>
<td>7.85</td>
<td>0.01</td>
<td>3.65</td>
<td>1.50, 9.30</td>
</tr>
<tr>
<td>Hyperbole</td>
<td>1.11</td>
<td>0.54</td>
<td>4.16</td>
<td>0.04</td>
<td>3.04</td>
<td>1.05, 9.01</td>
</tr>
<tr>
<td>Source*</td>
<td>0.89</td>
<td>0.35</td>
<td>6.25</td>
<td>0.01</td>
<td>2.43</td>
<td>1.22, 4.90</td>
</tr>
<tr>
<td>Rhetorical</td>
<td>0.72</td>
<td>0.35</td>
<td>4.32</td>
<td>0.04</td>
<td>2.06</td>
<td>1.05, 4.14</td>
</tr>
<tr>
<td>Direct</td>
<td>0.34</td>
<td>0.33</td>
<td>1.07</td>
<td>0.30</td>
<td>1.40</td>
<td>0.74, 2.67</td>
</tr>
<tr>
<td>Interjection</td>
<td>0.30</td>
<td>0.36</td>
<td>0.69</td>
<td>0.40</td>
<td>1.36</td>
<td>0.66, 2.79</td>
</tr>
<tr>
<td>Speaker Genderª</td>
<td>0.27</td>
<td>0.30</td>
<td>0.85</td>
<td>0.36</td>
<td>1.31</td>
<td>0.74, 2.36</td>
</tr>
<tr>
<td>Consequence</td>
<td>0.14</td>
<td>0.29</td>
<td>0.22</td>
<td>0.64</td>
<td>1.15</td>
<td>0.64, 2.08</td>
</tr>
<tr>
<td>Escalamation</td>
<td>0.09</td>
<td>0.35</td>
<td>0.06</td>
<td>0.80</td>
<td>1.09</td>
<td>0.55, 2.20</td>
</tr>
<tr>
<td>Frozen Expression</td>
<td>0.05</td>
<td>0.41</td>
<td>0.02</td>
<td>0.90</td>
<td>1.05</td>
<td>0.48, 2.35</td>
</tr>
<tr>
<td>Word Count*</td>
<td>-0.22</td>
<td>0.04</td>
<td>31.28</td>
<td>&lt; .0001</td>
<td>0.80</td>
<td>0.74, 0.86</td>
</tr>
</tbody>
</table>

Test

Overall model evaluation

Likelihood ratio test $140.42$, 14, $\chi^2$, < .0001

Score test $115.69$, 14, $\chi^2$, < .0001

Wald test $84.84$, 14, $\chi^2$, < .0001

Note: Reference for all variables is feature absent (0) unless otherwise noted. Cox and Snell $R^2 = .313$, Nagelkerke $R^2 = .417$, C-statistic = .827

* Reference category: Filler. † Reference category: Female. ‡ Note: Fewer words increases likelihood

Conclusions

Results demonstrate that a number of typographic, contextual, and linguistic features can be used to classify sarcastic responses. However, while many features may contribute to classification, no single feature is indicative of sarcasm in isolation. Our findings also suggest that context (e.g., failed predictions) can contribute to classification.

Machine learning classification of sarcasm may be improved by including broader conceptualizations of response features (e.g., echoes) in addition to traditional features (e.g., emoticons, bigrams).

References


References

Alexander A. Johnson & Roger J. Kreuz • Department of Psychology • The University of Memphis

Echos: For our analysis, presence of explicit echo of interlocutor's statement (e.g., "Still feeling lucky?")

Label (Jocular & Name): Use of a jocular name (e.g., ace) or explicit use of the interlocutor's name.

Adjective/Adverb: Use of intensifying adjectives or adverbs (e.g., amazing, really)

Hyperbole: Use of hyperbole (i.e., exaggerated statements not meant to be taken literally)

Source: Response to one of the failed prediction prompts (e.g., above) or literal prompts.

Rhetorical: Use of rhetorical questions (e.g., "Pretty lucky, eh, Bill?")

Direct: Was the statement direct (e.g., "you're a real genius") or indirect (e.g., "that went well")?

Interjection: Use of an interjection (e.g., "Wow!")

Speaker Gender: Gender of the speaker

Consequence: Did situation affect speaker (e.g., car breaking down vs. interlocutor failing exam?)

Exclamation: Use of an exclamation point

Frozen Expression: Use of frozen expressions

Word Count: Number of words (fewer words = increased probability)

Predictions

- Echoes (i.e., references to some antecedent event or statement) will be strong predictors
- Extreme positive adjectives and adverbs should also be common in sarcastic responses
- Specific linguistic features (e.g., punctuation, interjections) may also indicate sarcasm
- Features of the individuals providing the response, as well as those of the recipient (e.g., gender) might also influence sarcasm

Contact: Alexander Johnson (johson38@memphis.edu)