CSE 291/DSC 291
Information Manipulation: Trustworthiness of Information in Cyberspace

Molly Roberts & Stefan Savage, Winter 2023

Belief in Misinformation
Reminders

- **Forming research groups (due today!)**
  - We would like you to form tentative research groups (3-4) people by today.
  - We'll ask for an initial (i.e., one page) description of research project direction on the 31st.
  - Please reach out specifically if you are interested in 1) using the newsletter dataset from fake websites 2) conducting a survey.
Newsletter data
Newsletter data

- We subscribed to newsletters from 462 fake news websites and 483 mainstream news websites, each with 4 unique email address in Spring 2022
- Haven’t explored the data yet!
- If you’re interested in getting involved in analyzing it as part of your group project, let me know.
Some pretty scary headlines about belief in misinformation
How can you tell when someone believes misinformation?

What does it mean to believe misinformation?
This is the survey upon which this article was based

Identifying Misinformation

Respondents were asked: “To the best of your knowledge, please indicate whether you believe each of the statements below are true or false.”

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>Don't Know</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>The majority of protests that occurred this summer were violent</td>
<td>47%</td>
<td>16%</td>
<td>38%</td>
</tr>
<tr>
<td>COVID-19 was created in a lab in China</td>
<td>40%</td>
<td>29%</td>
<td>32%</td>
</tr>
<tr>
<td>A group of Satan-worshiping elites who run a child sex ring are trying to control our politics and media</td>
<td>17%</td>
<td>37%</td>
<td>47%</td>
</tr>
<tr>
<td>Humans do not play a significant role in climate change</td>
<td>17%</td>
<td>14%</td>
<td>69%</td>
</tr>
<tr>
<td>Several mass shootings in recent years were staged hoaxes</td>
<td>12%</td>
<td>27%</td>
<td>61%</td>
</tr>
</tbody>
</table>
“The value of not knowing”
Jianing Li and Michael Wagner

- Belief matters, but certainty about that belief does too
- Three types of individuals
  - Uniformed
  - Ambiguous
  - Misinformed
The Differential Informedness Model

Figure 1 The Differential Informedness Model.
Political knowledge

- Downs (1957): gathering information is costly, not always rational for voters
- Converse (1962): American public generally doesn’t know that much
- Zaller (1992): public is generally uninformed
  - Respond to questions about facts with what is “on top of their head”
- Popkin (1991): public relies on information shortcuts or cues
- Kunda (1990): public is driven both by:
  - accuracy of a statement
  - direction of a statement
Li and Wagner: Hypotheses

- H1: “Ordinary citizens are more likely to be uninformed or ambiguous rather than misinformed”
- H2: “Attaching a partisan source to a factual statement will decrease the number of (a) uninformed and (b) ambiguous answers and (c) increase the number of certain answers”
- H3: “Attaching a partisan source to a factual statement will make individuals more likely to evaluate the truthfulness of the statement in a partisan-congruent way”
- H4: “Misinformed individuals will be less likely to successfully update their beliefs than uninformed individuals”
Method: Online survey experiments

- Study 1: Conducted on Qualtrics
- 50 statements taken from fact checking websites
- What was the “treatment”?
- What was the outcome?
Overall: Public more likely to be uninformed

- “Don’t know” answer rate: 40.31%
- Misinformed answer rate: 26.85%
- Informed answer rate: 19.94%
- Ambiguous: 8.33% participants selected the ambiguous, incorrect answer and 4.56% selected the ambiguous, correct answer
## Results of the survey experiment

### Table 1 OLS Regression Models on the Number of "Don't Know" Answers, Ambiguous Answers, Certain Answers, Answers that Indicate "True," and Answers that Indicate "False" (Study 1)

<table>
<thead>
<tr>
<th>Model</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of &quot;don't know&quot; answers</td>
</tr>
<tr>
<td>Trump condition (Yes = 1, No = 0)</td>
<td>1.35 (1.45)</td>
</tr>
<tr>
<td>Trump voter (Yes = 1, No = 0)</td>
<td>1.88 (1.51)</td>
</tr>
<tr>
<td>Politically interested (Yes = 1, No = 0)</td>
<td>-1.05 (1.41)</td>
</tr>
<tr>
<td>Trump condition × Trump voter</td>
<td>-5.02* (2.21)</td>
</tr>
<tr>
<td>Trump condition × politically interested</td>
<td>-3.04 (1.95)</td>
</tr>
<tr>
<td>Trump voter × politically interested</td>
<td>-4.42* (2.04)</td>
</tr>
<tr>
<td>Trump condition × Trump voter × politically interested</td>
<td>6.85* (2.93)</td>
</tr>
<tr>
<td>Gender (Male = 1, Female = 0)</td>
<td>-0.08 (0.78)</td>
</tr>
<tr>
<td>Race (Non-White = 1, White = 0)</td>
<td>-0.26 (1.09)</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.40 (0.24)</td>
</tr>
<tr>
<td>Education</td>
<td>0.03 (0.26)</td>
</tr>
<tr>
<td>Income</td>
<td>-0.61* (0.26)</td>
</tr>
<tr>
<td>Constant</td>
<td>11.19*** (1.72)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.10</td>
</tr>
<tr>
<td>$F$-statistic</td>
<td>3.47***</td>
</tr>
</tbody>
</table>

**Note:** Data represent unstandardized B (standard error).

* $p < .05$.

** $p < .01$.

*** $p < .001$.

See Appendix S5 for alternative models.
Results of the survey experiment
Study 2

- Largely a replication of Study 1
- Two different cues: Chuck Schumer vs. Mitch McConnell
- Give factual information, look at updating
- How is updating different between uninformed and misinformed?
Do Republicans really believe Trump won the 2020 election?
Lane Cuthbert and Alexander Theodoridis

- Monkey Cage blog
- What is the factual claim they are studying?
- Among what population?
- What is the data here?
  - YouGov poll, voting age population
  - 21% of Republicans said Joe Biden’s election was legitimate
Could this be true? Lots of problems with surveys

- “Expressive responding” or “partisan cheerleading”
  - Expressing feelings rather than belief
  - Bullock et al (2013): pay respondents for getting the answer right, the gap between partisans decreases

- “Social desirability bias,” “preference falsification”
  - Expressing what you think the interviewer wants to hear
  - Online vs. in person/phone surveys
  - Environments without free speech
List experiments

YouGov

How many of the following do you believe? Don’t tell us which ones. Just how many.

- The country would be better off if more voters were better informed.
- Barack Obama was a good president.
- Congress is good at getting things done.
- Joe Biden’s victory in the 2020 presidential election was legitimate.
- Donald Trump was a good president.

The survey experiment question in the December UMass Poll.
Other problems with surveys

- Inattentive survey respondents
- Unrepresentative samples
- "Acquiescence bias"
Acquiescence bias
Some final thoughts

- Belief difficult to define
  - Uninformed vs. misinformed vs. ambiguous
  - Feelings vs. true belief

- May rely more on heuristics and informational shortcuts than true belief
  - Partisan cues matter

- Belief difficult to measure
  - Expressive responding, partisan cheerleading, social desirability bias, inattentiveness, etc.

- But we can get some signal out of surveys