Psychological and neural representations of political attitudes, opinions, and facts

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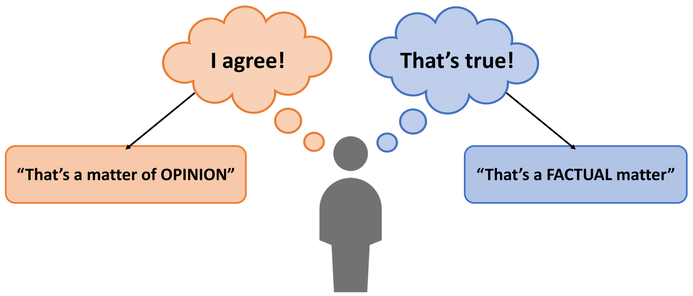
Introduction

- Much of what we learn about the world, we learn from others' ***attitudes***[1].
- Attitudes are useful for encoding ***valenced beliefs.*** ⇒ **Opinions**
  - *"No civilian needs to own an assault weapon."*
- But not all ***beliefs*** are necessarily ***valenced***. ⇒ **Factual claims**
  - *"Assault weapons can be used for self-defense."*
- Still, when we encounter social and political information in the world, it often takes the form of beliefs embedded into attitudes.
  - We get **opinions** and **facts** in one fell swoop.
- How do we make ***epistemic judgments*** like **"fact"** and **"opinion"** when we encounter such propositions?

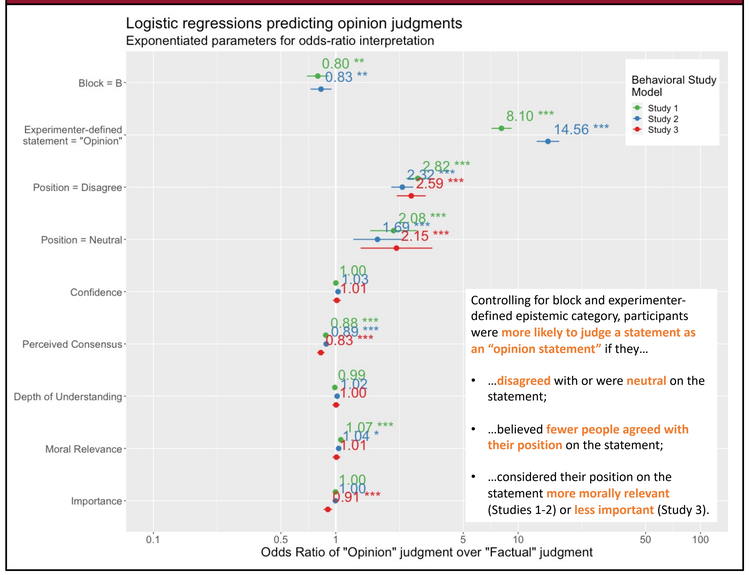
"No civilian needs to own an assault weapon."



These reactions feel similar but imply different things!

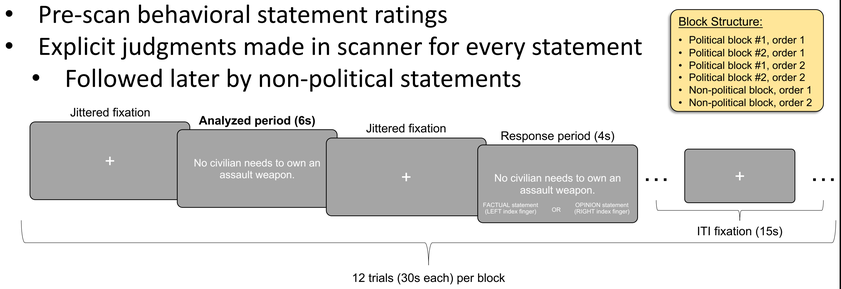
- Evidence suggests we struggle to make these judgments about statements in political and news media[2].
- But is this a phenomenon of ***epistemology***, or of ***attitudes***?
- How might ***epistemic judgments*** be related to ***features*** of ***social and political attitudes***?

Behavioral Studies: Results



fMRI Study: Methods

- N = 40 participants, preregistered on OSF
- Pre-scan behavioral statement ratings
- Explicit judgments made in scanner for every statement
  - Followed later by non-political statements



Multivariate analysis: "Factual" vs. "opinion" judgment SVM classification

1. Beta estimates for each statement computed using GLMs via nilearn[9]
2. Computed whole-brain representational dissimilarity matrices (RDMs)[10]
3. RDMs averaged within Schaefer 2018 parcels (200 parcel version)[11]
4. RDMs separated into political (24x24) and non-political (12x12) RDMs
5. Projected RDMs into 3D embeddings using multidimensional scaling
6. Ran support vector machine (SVM) classifier to predict judgments

fMRI Study: Preliminary Results

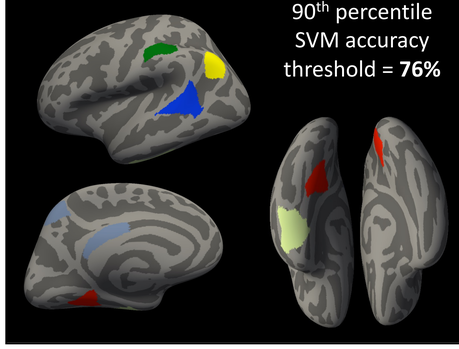
Behavioral results replicate

- **Agreement** and **perceived consensus** predict **"factual statement"** judgments

Epistemic judgment classification from neural representations of statements

- **Higher** judgment classification accuracy for **non-political** statements
- **Different areas** of peak judgment classification between non-political and political statements

Non-political statements



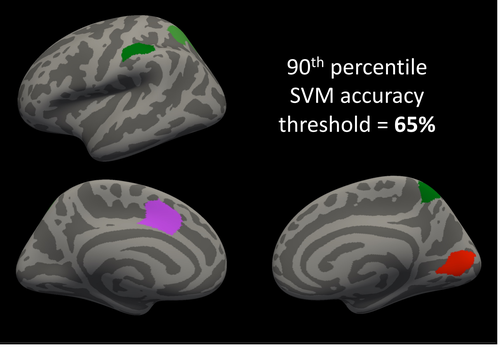
90th percentile SVM accuracy threshold = **76%**

Regions with peak judgment classification

Parcels from the 2018 Schaefer Parcellation, 200 Parcels, 17 Networks version. ROIs shown were in the 90th percentile for judgment classification accuracy within each statement type.

(Not shown: somatomotor regions where judgment classification is confounded with motor planning for button presses.)

Political statements



90th percentile SVM accuracy threshold = **65%**

Behavioral Studies: Methods

Three Behavioral Studies

- Online on Prolific

Study 1 (N = 508)

- 24 statements: 12 opinion and 12 factual (paired)

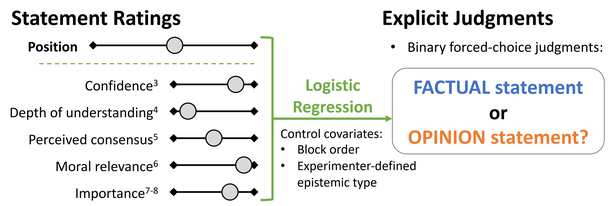
Study 2 (N = 494)

- Same as Study 1 except factual statements could only be "true"

Study 3 (N = 498)

- 12 statements, all opinion

1. Position ratings for each statement
   - ("strongly disagree" to "strongly agree")
2. Feature ratings for each position
3. Explicit judgments



Conclusions & Future Directions

- ***Epistemic judgments*** about political statements are predicted by ***attitude features***.
- ***Agreeing*** with a statement and ***believing many people agree with you*** predict ***"factual statement"*** judgments
  - ➢ *Can we manipulate this effect by providing consensus information?*
- ***Different brain regions*** predict these ***political statement*** judgments compared to ***non-political statement*** judgments
  - ➢ *Do the neural and psychological representations have similar geometries?*

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