Can we detect the need-for-closure bias on social media?

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'Need-for-closure'?

(Webster & Kruglanski, 1994)

- Cognitive bias similar to, but distinct from, confirmation bias.

- We are more likely to accept incoming information...

  ...if it answers a question we already entertained.

Research question

When a user encounters a certain piece of information...

henceforth: "the pivot"

...are they more likely to repeat it, if it answers a question to which they were exposed earlier?

Data

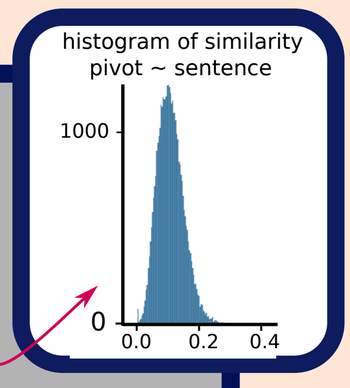
- Via Reddit API:
  - r/progressive, r/conservative, r/conspiracy, ...
  - Obtain users from most recent posts.
  - Get those users' posts (with their parent/replies).

Currently 580K — Currently 2M

- Sentencize all posts/parents/replies. Terminology:
  - **Pivot**: a sentence to which the user responded.
  - **Question**: a question to which the user responded.
  - **Sentence**: any sentence posted by the user

- Heuristically reduced to 'promising' sentences

Currently: 20K pivots, 4K questions, 25K sentences



Challenges

- API rates/limits.
- Sparsity: virtually all posts are unrelated.
- Language style distinct from standard NLI/SQUAD.
- Context: false positives due to missing context.
- No data on users' 'likes'.

Regression model

- Variables for each sentence & pivot:
  - **after-pivot**: whether the sentence came after the pivot.
  - **pivot-semblance**: degree to which sentence resembles the pivot. (paraphrase-MiniLM-L6-v2 embedding cosine)
  - **QA-score**: degree to which pivot answers a question.

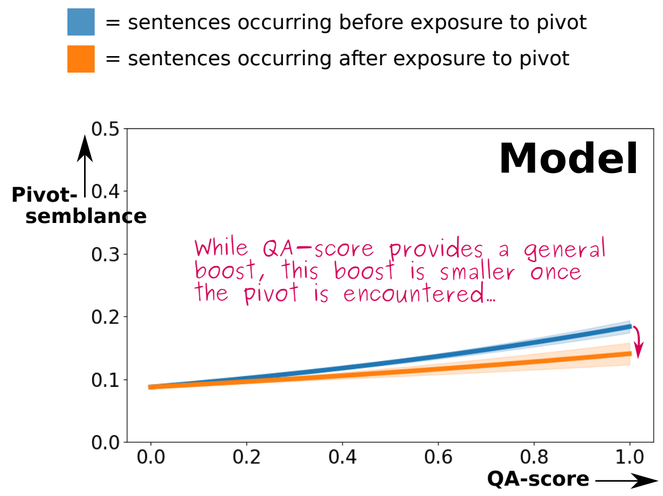
(heuristics + ALBERT) — (Alternative: Flan-T5-large, but it struggled…)

- Poisson regression (pymc):

pivot-semblance ~ QA-score × after-pivot

(+ random effects per user & per pivot)

So... No?



	mean	sd	hdi_3%	hdi_97%
intercept	-2.44	0.01	-2.45	-2.42
fixed_effect	0.74	0.05	0.64	0.84
pivot_effect	-0.28	0.13	-0.52	-0.02

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