



GEORGETOWN UNIVERSITY

Partisan Motivated Reasoning Trumps Even Illusory Truth

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Motivation

- Scholarly evidence that social media facilitates the spread of misinformation and polarizing content (Vosoughi et. al., 2018; Del Vicario et al., 2016; Aruguete, Calvo and Ventura, 2021; Eady et al., 2023).
- Often see claims that conflate prevalence/virality features of misinformation on social media with real-world impact (altay2023misinformation, wagner2019reception)
- **But:**
 - Exposure to misinformation is concentrated among small set of (heavily engaged) users (Grinberg et al., 2019, Budak et. al., 2024)
 - Still a small part of informational environment for most users (Allen et. al., 2020, Guess et. al., 2021)
 - Mixed evidence for causal effects of exposure beliefs and attitudes (Eady et al., 2023, Allen et. al. 2024, Ventura et. al. 2024)

Illusory Truth vs Directional Goals: Two distinct frameworks

⊕ **Cognitive Psychology - Illusory Truth Effects:** humans believe in information they have been exposed to before.

- **Pennycook, Cannon and Rand, 2018** on the effects of prior exposure to misinformation:
 - "a single exposure increases subsequent perceptions of accuracy, both within the same session and after a week".
 - This effect is not moderated by partisan motivations

⊕ **Political Science - Partisan Motivated Reasoning :** Directional goals dominate belief formation.

- Partisan motivated reasoning dominate information consumption (Stroud, 2011) and belief formation (Flynn, Nyhan and Reifler, 2017, Peterson and Iyengar, 2021)

Our Contribution:

To which degree prior exposure to false news online trump partisan-motivated beliefs for political misinformation?

- **Model:** Situate both frameworks in a common model of Bayesian belief formation AND
- **Experiments:** Measure the effect of both frameworks on belief for political misinformation through a set of survey experiments.

Bayesian Model for Belief Formation

Prior: $\pi(\mu) \sim \mathcal{N}(\hat{\mu}_{i,0}, \hat{\sigma}_{i,0}^2)$

Signal: $x \sim \mathcal{N}(\mu_x, \hat{\sigma}_{i,x}^2)$

$$\pi_i(\mu|x) \sim \mathcal{N}\left(\hat{\mu}_{i,0} + (\mu_x - \hat{\mu}_{i,0}) \left(\frac{\hat{\sigma}_{i,0}^2}{\hat{\sigma}_{i,0}^2 + \hat{\sigma}_{i,x}^2}\right), \frac{\hat{\sigma}_{i,0}^2 \hat{\sigma}_{i,x}^2}{\hat{\sigma}_{i,0}^2 + \hat{\sigma}_{i,x}^2}\right)$$

- critical parameters are $\hat{\sigma}_{i,0}$ which measures the (inverse) credibility of the signal
 - PMR:** Source alignment \oplus credibility of the signal
 - ITE:** Familiarity (or prior exposure) \oplus credibility of the signal

Design

- **Data:** Online survey fielded Qualtrics, with a nationally representative sample of Americans.
- **Design:** Modeled after previous work examining "illusory truth effects" (Pennycook, Cannon and Rand, 2018; Lyons, 2023)
 - **Familiarization stage:** show **X** headlines with questions about participants' familiarization
 - **Distraction stage:** distract participants with survey questions
 - **Accuracy Stage:** show **X + Y** headlines with questions about accuracy beliefs
- **Measuring PMR:** In previous work, partisan leaning is manipulated only with content of the headlines (Pennycook, Cannon and Rand, 2018). We manipulate both the content and source (MSNBC, Democracy Now, Fox, Breitbart)

Experiments

Table 2: Experimental Design

Randomization	Study 1: Familiarization Stage	Study1: Accuracy Stage	Study 2: Accuracy Stage
Control Group	Eight Headlines (H_c)	Sixteen Headlines ($H_{set1} + H_{set2}$)	Twenty-Four Headlines ($H_{set1} + H_{set2} + H_{set3}$)
Treatment 1: Prior Exposure	Eight Headlines (H_{set1})	Sixteen Headlines ($H_{set1} + H_{set2}$)	Twenty-Four Headlines ($H_{set1} + H_{set2} + H_{set3}$)
Treatment 2: Warning Labels	Eight Headlines ($H_{\hat{set1}}$)	Sixteen Headlines ($H_{set1} + H_{set2}$)	Twenty-Four Headlines ($H_{set1} + H_{set2} + H_{set3}$)

Note: Every H represents a set of eight headlines, equally balanced in their political leaning and split between true and false stories. H_c represents eight headlines seen only by the control group. H_{set1} , H_{set2} , H_{set3} each represent a set of eight different headlines, summing up to twenty-four headlines seen by all participants in Study 2. $H_{\hat{set1}}$ are the same eight headlines as in H_{set1} , but the hat sign indicates these headlines were shown with added warning labels for participants assigned to Treatment 2.

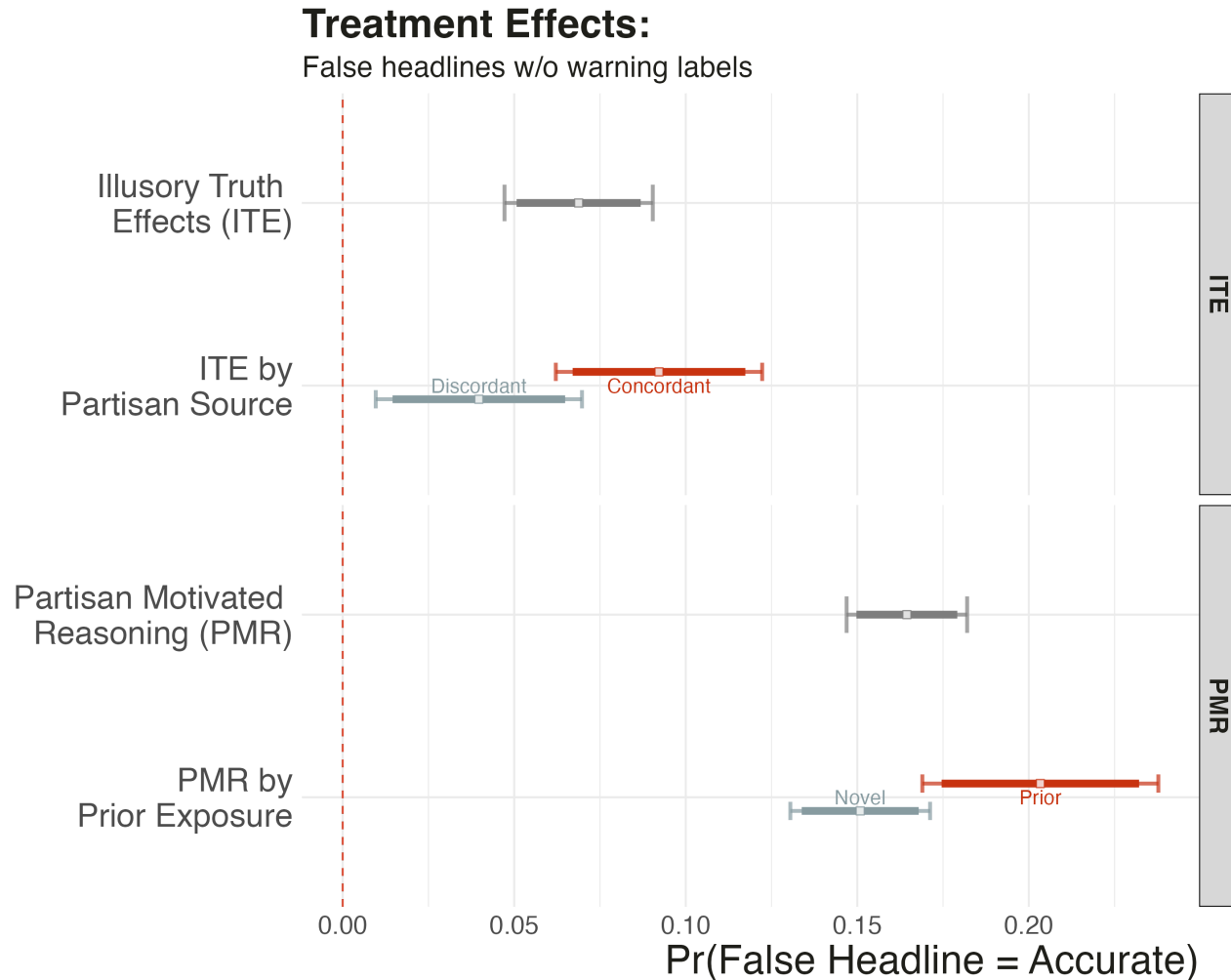
Marginal Means ITE vs PMR for False Headlines

Table 3: PMR versus ITE: Marginal Means among false headlines

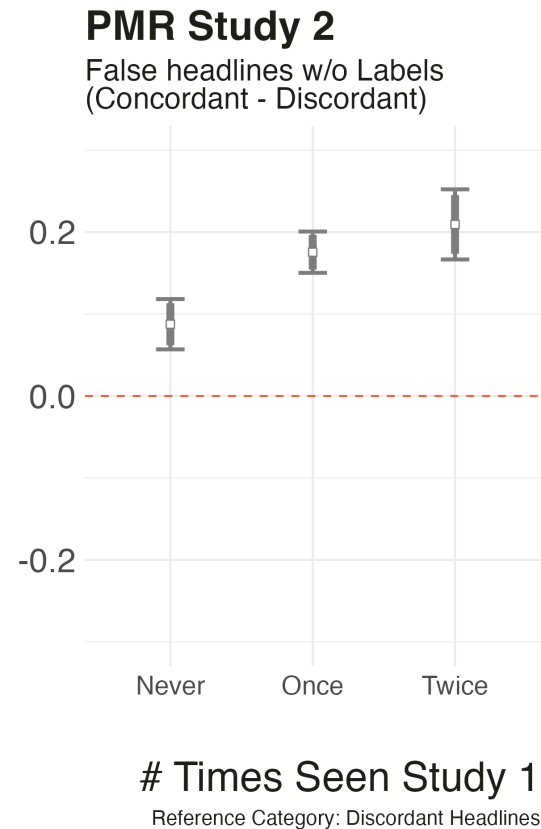
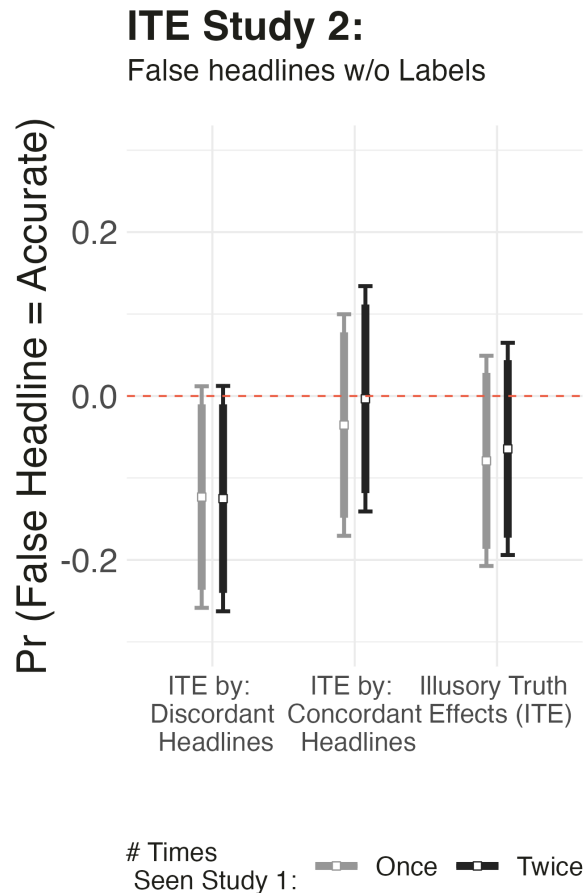
	Concordant	Discordant	β_{PMR}
Prior exposure	0.559	0.356	0.203***
No prior exposure	0.461	0.312	0.149***
β_{ITE}	0.098***	0.044**	0.055**

Notes: Each cell contains the marginal means calculated from the probability of respondents' assessing a false headline as accurate, modeled as in equation 3.

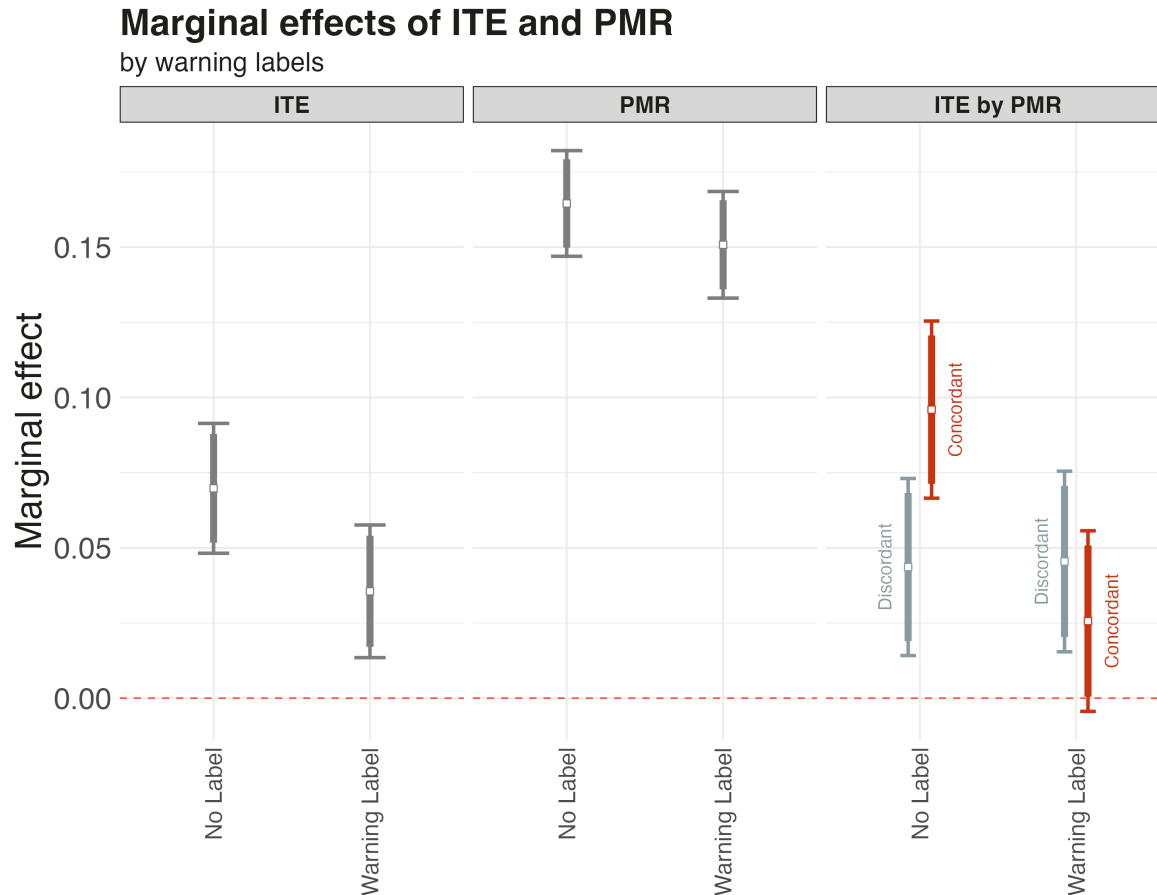
Marginal Effects ITE vs PMR for False Headlines



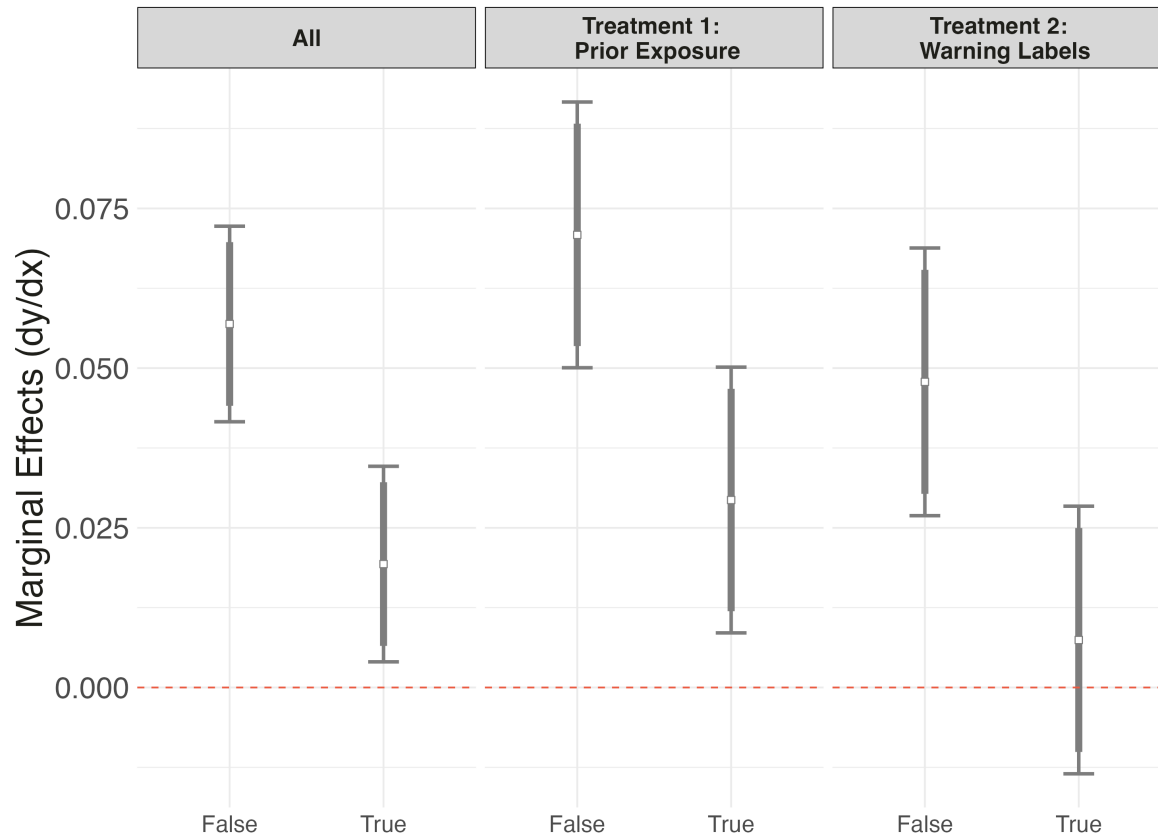
Effects of ITE vs PMR over Time for False Headlines



Effects of ITE vs PMR over Time for False Headlines with Warning Labels



Effects of ITE vs PMR over Time for TRUE Headlines



Discussion

- Partisan motivated reasoning dominates illusory truth in the political realm
 - PMR has effect order of magnitude larger than PMR
 - PMR moderates ITE with prior exposure being larger among concordant sources
 - ITE decays after a single day of exposure
- Notes of optimism: Warning labels do reduce both processes (ITE and PMR)
- Next steps:
 - New experiment adding non-partisan headlines as baseline
 - Proper measure for familiarity (separate prior knowledge to the effects of familiarization)
 - New experiment with fabricated (but partisan) headlines