Partisan Disbelief in Polarized Societies: Evidence from South Korea and the U.S.

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- This paper: **Disbeliefs in out-group knowledge** and **Bias in Information Processing**

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4. Correcting disbelief reduces affective polarization, albeit inconclusive

Today's Plan

Study 1. Baseline Evidence of Disbelief

- Hypotheses and Survey Design
- Existence of Disbelief on Out-group's Knowledge

Study 2. Correcting Disbelief

- Hypotheses and Survey Design
- H1: Treatment Effects on Disbelief
- H2: Existence of In-group Bias in Information Processing
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- H4: Treatment Effects on Correcting Disbelief on Polarization

Conclusion

Backgroud/Accroym/Abbreviation

- RP: Right-wing parties
  - US: Republican Party–curent majority + president
  - SK: People's Power Party (PPP)
- LP: Left-wing parties
  - US: Democratic Party
  - SK: Democratic Party of Korea (DPK)–curent majority + president
- NP: Non-partisans
- Drop others in SK: 273/300 in National Assembly = PPP or DPK

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Hypotheses: Disbelief in out-group knowledge

- Target-based Disbelief
  - RP supporters believe that RP supporters are more knowledgeable
  - LP supporters believe that LP supporters are more knowledgeable
  - Non-partisans believe tht RP and LP supporters are equally knowledgeble

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- Perceiver-based Disbelief
  - RP supporters are seen as more knowledgeable by RP than LP
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  - NP supporters are seen as equally knowledgeable by LP and RP

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  - RP supporters are seen as more knowledgeable by RP than LP
  - LP supporters are seen as more knowledgeable by LP than RP
  - NP supporters are seen as equally knowledgeable by LP and RP
- Today: focus on Target-based Disbelief (both are almost identical)

Study 1: Survey Structure (N=1,500)

- Ask to evaluate (T or F) 8 factual questions:
- Examples
  - "New Zealand is located in the Middle East."
  - "The country's GDP growth rate in the previous year was lower than 7%."
- Ask to give confidence level
- Then, for each question, ask to estimate the accuracy rates for three groups
  - $p^t_{i,j}$: individual i's estimate on group t's accuracy rate on task j
  - $t \in \{RP, DP, NP\}, j = 1, ..., 8$

Q26 Please judge whether the sentence is true or false: **New Zealand is located in the Middle East.**

- True (1)
- False (2)

Q27 We would like you to estimate how confident you are in the accuracy of your answer to the true-or-false question. For example, if you believe there is a 50% chance that your answer is correct, please choose 50. If you are completely confident that your answer is correct, please choose 100.

	0	10	20	30	40	50	60	70	80	90	100
Accuracy of your answer ()											

Q28 Next, we would like you to estimate **the percentage of people in each of the following groups who correctly judge whether the statement is true or false**. For example, if everyone in group X makes the correct judgement, the percentage of group X would be 100%.

	0	10	20	30	40	50	60	70	80	90	100
Republican Party supporters ()											
Democratic Party supporters ()											

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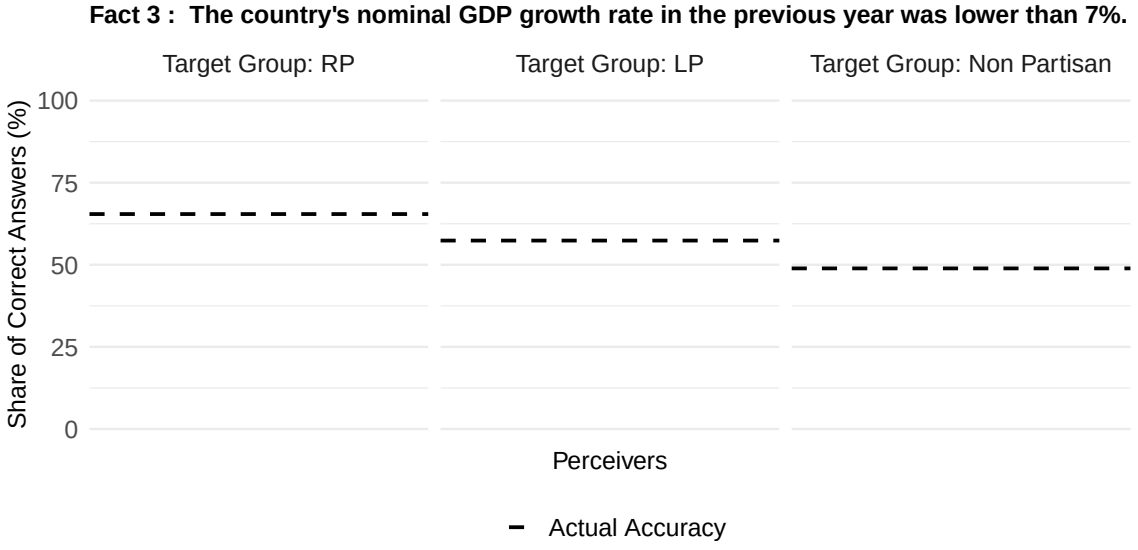
US Fact 3: GDP growth rate is less than 7%



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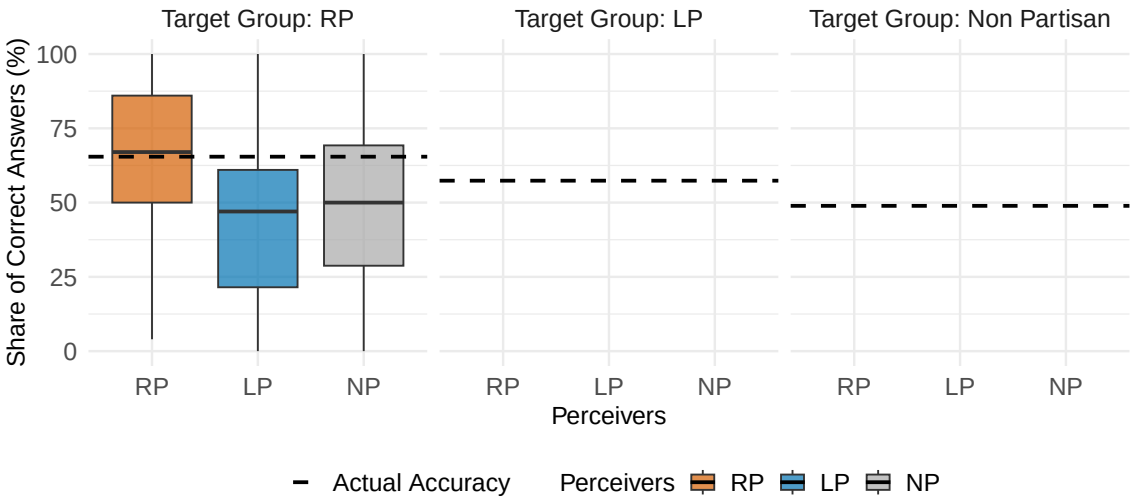

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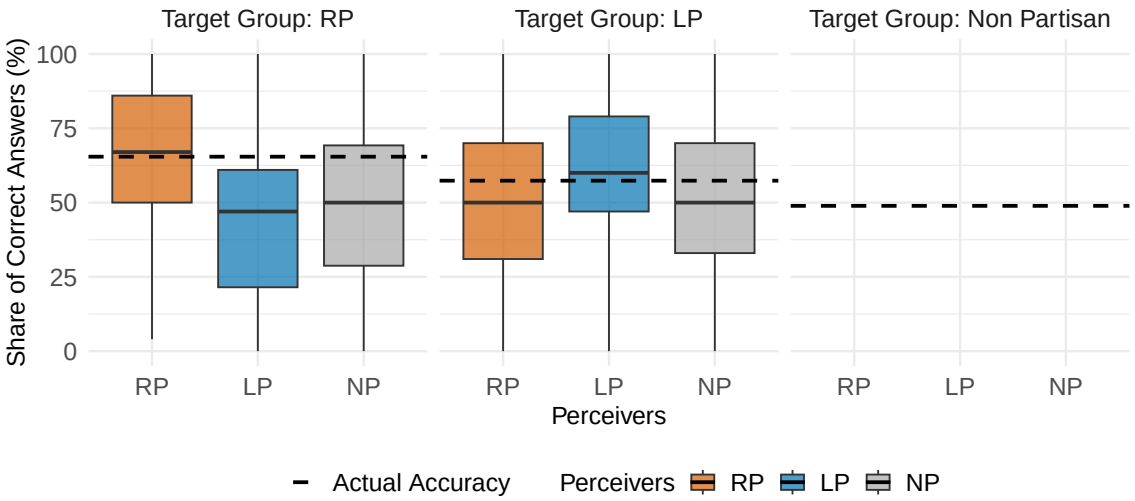

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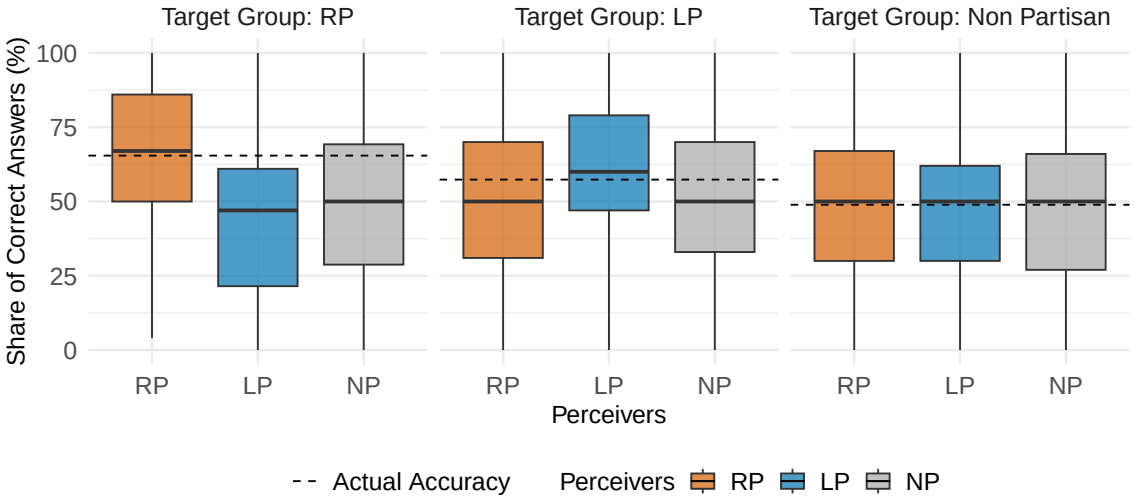
Fact 3 : The country's nominal GDP growth rate in the previous year was lower than 7%.



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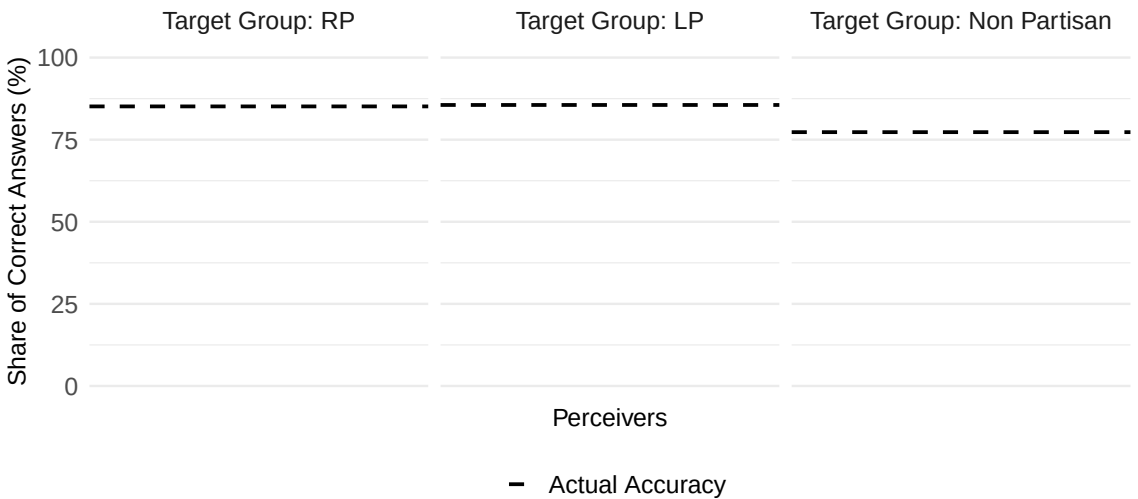

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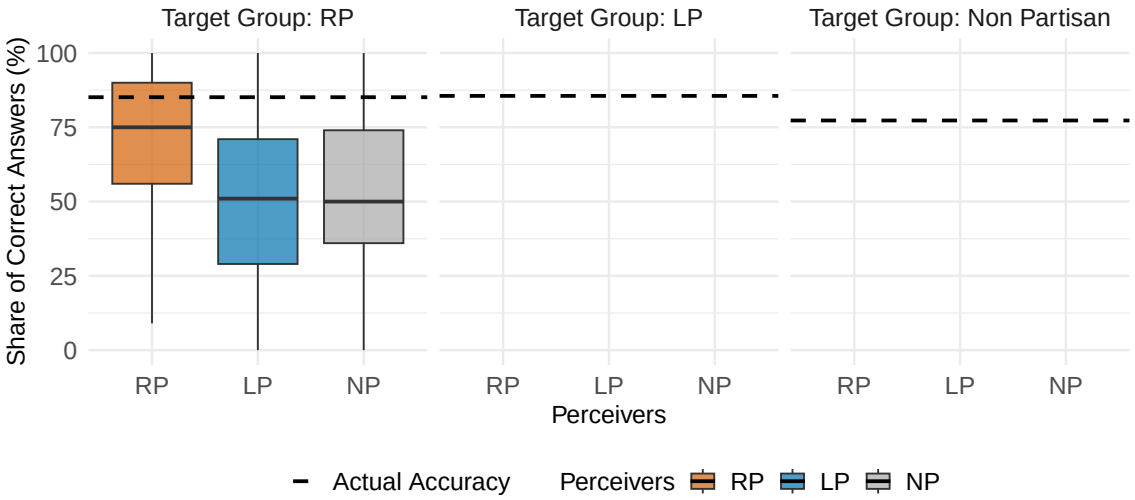

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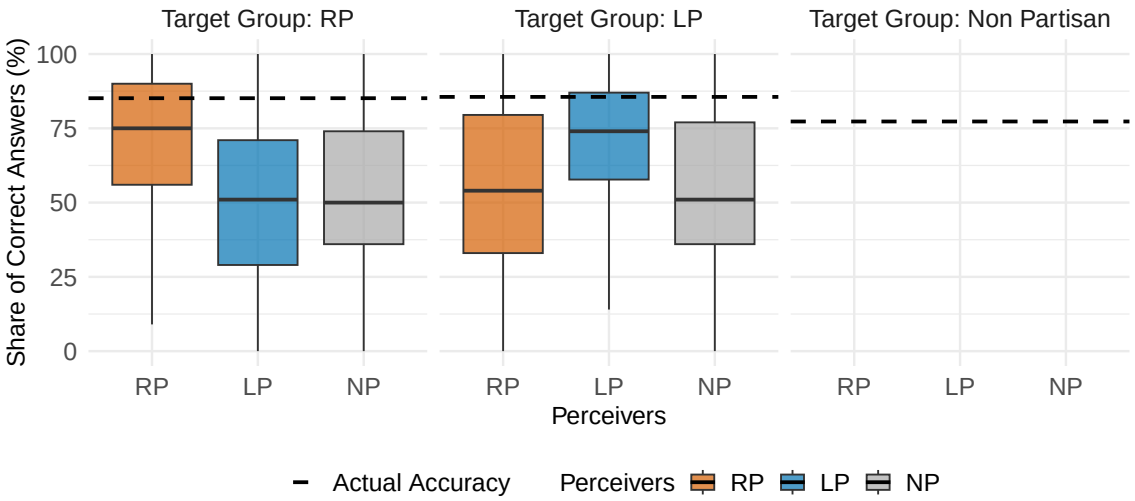

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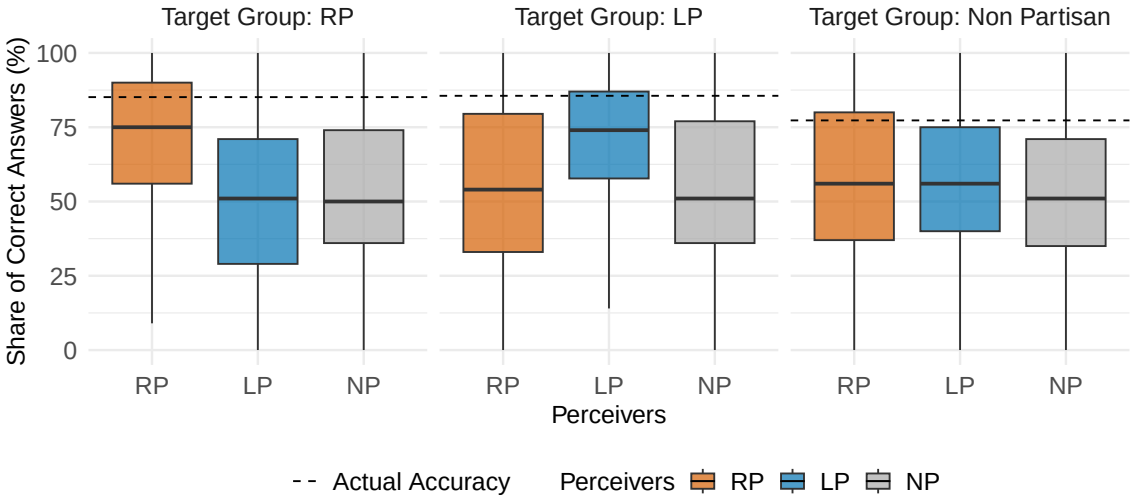

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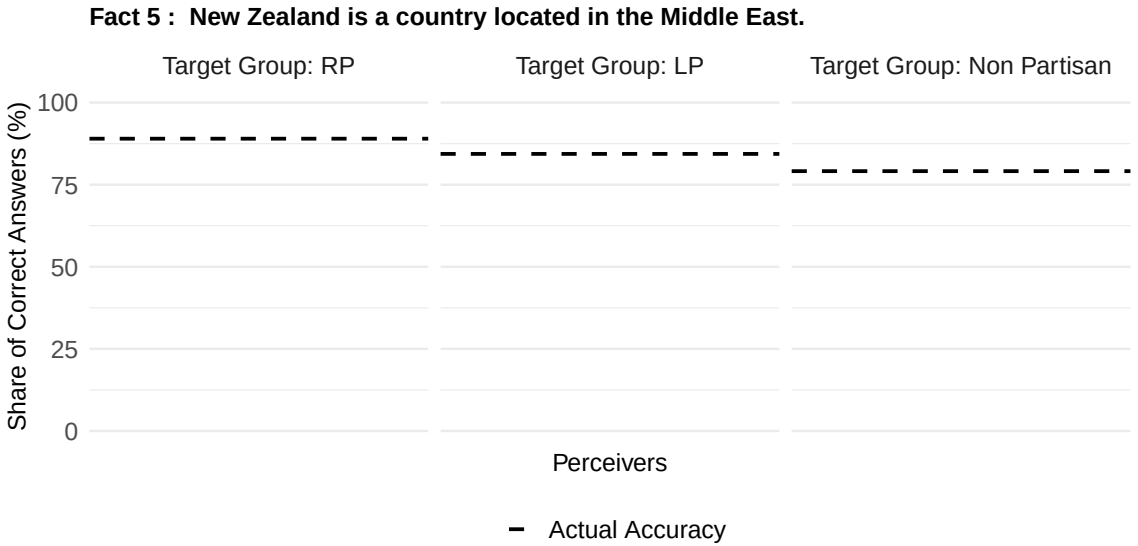

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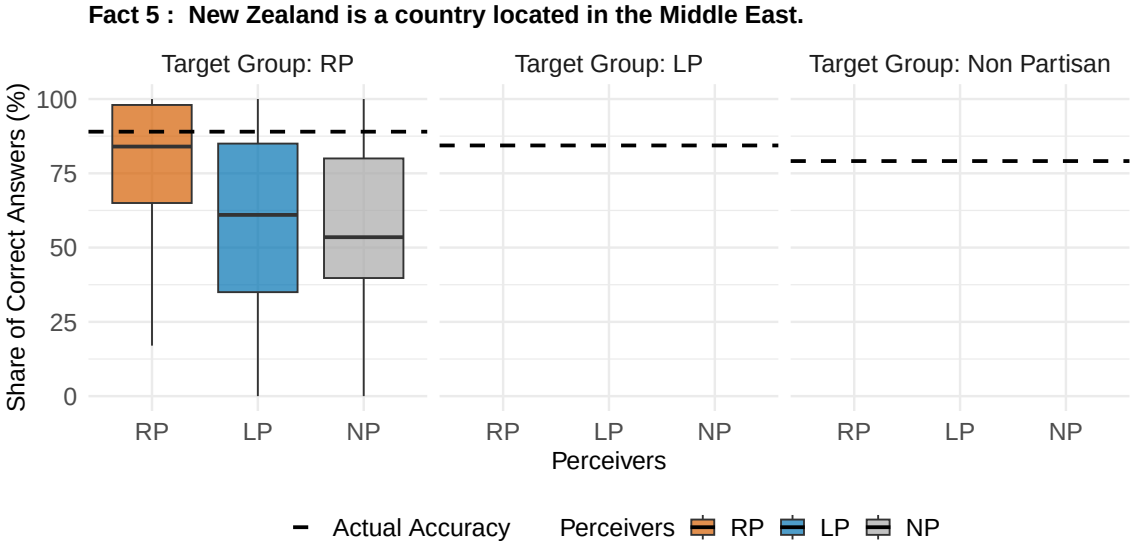

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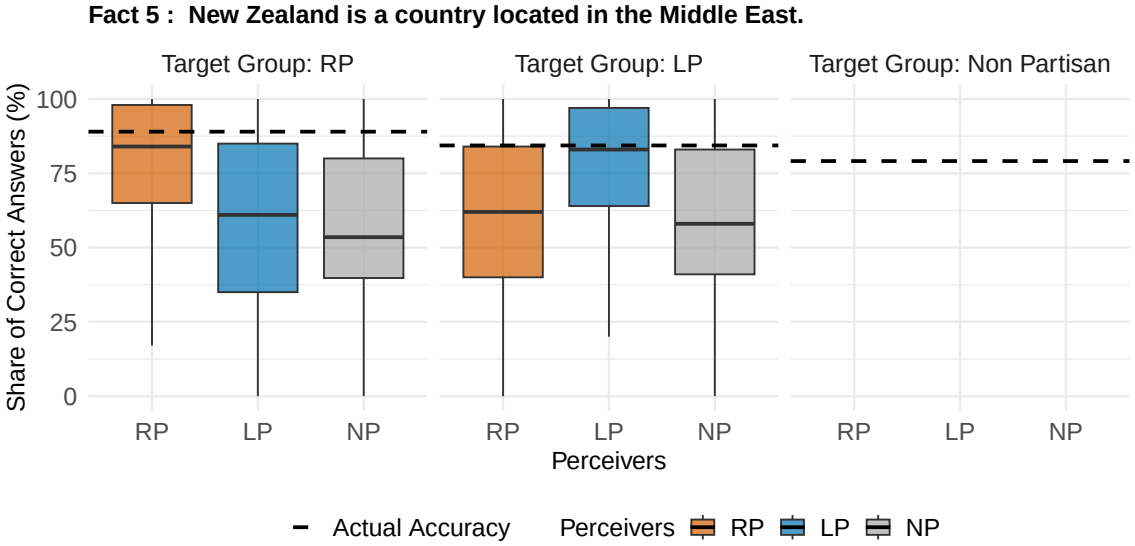

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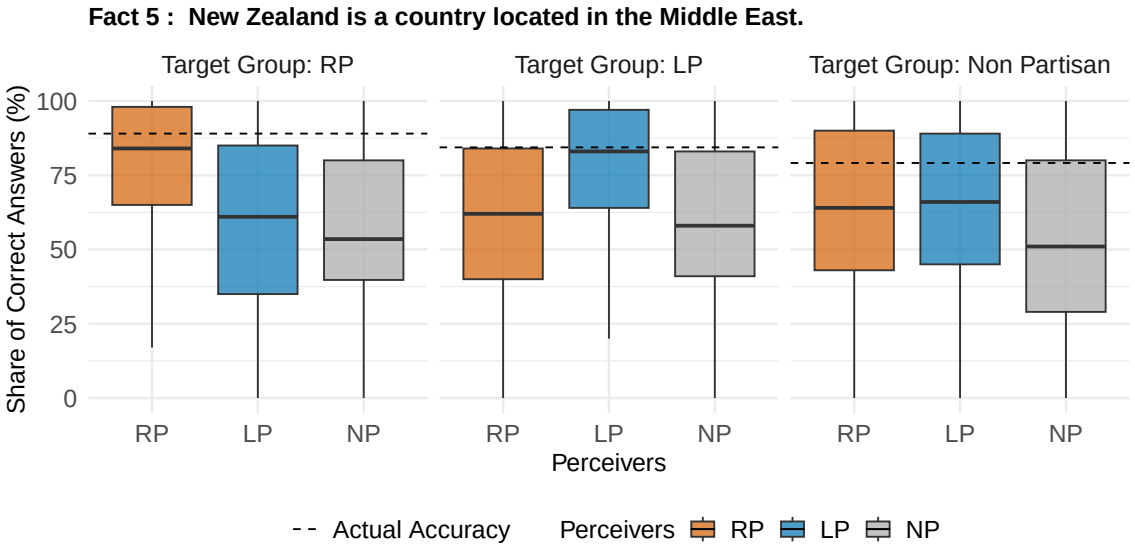

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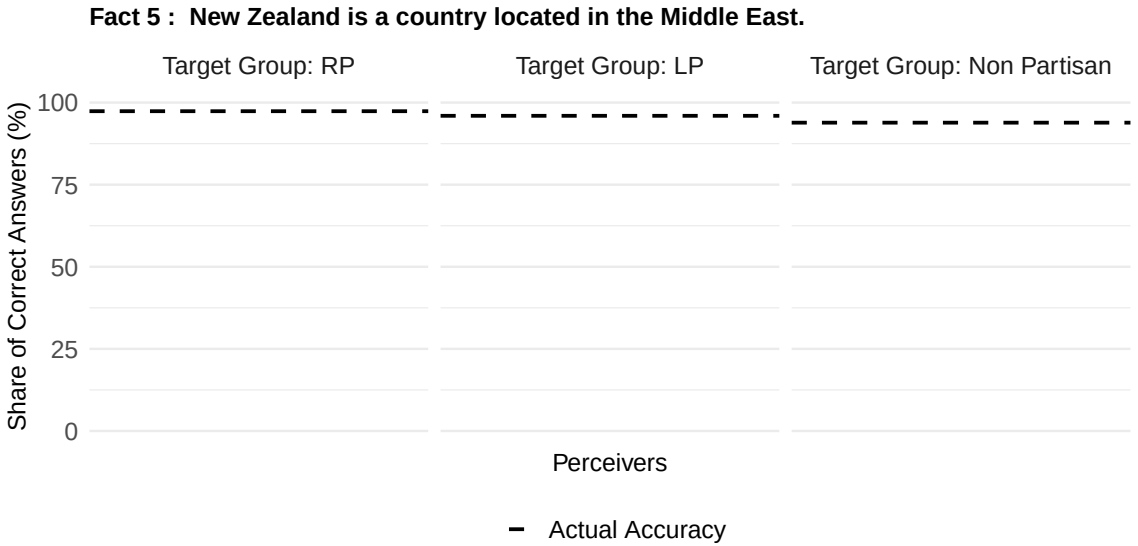

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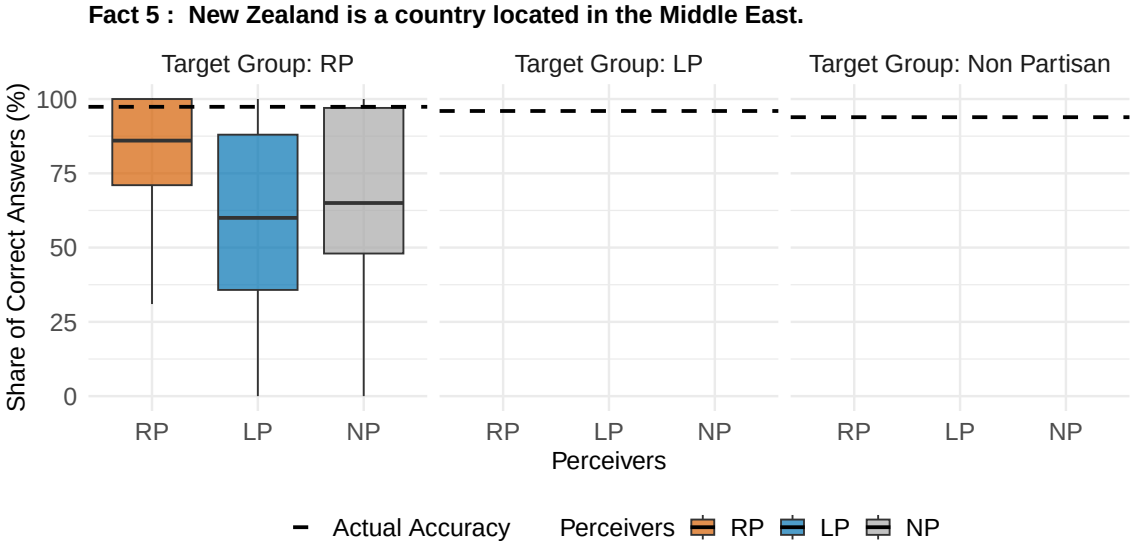

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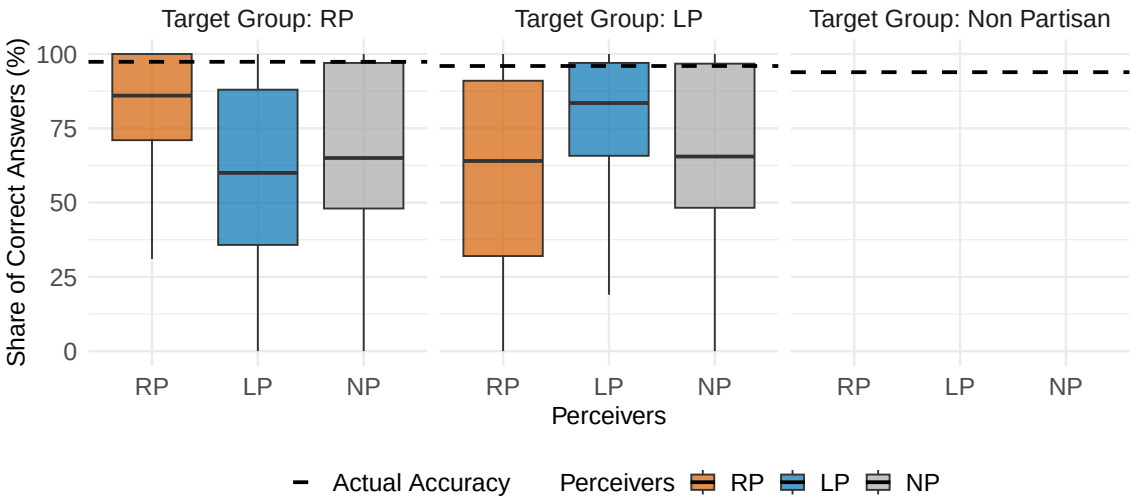
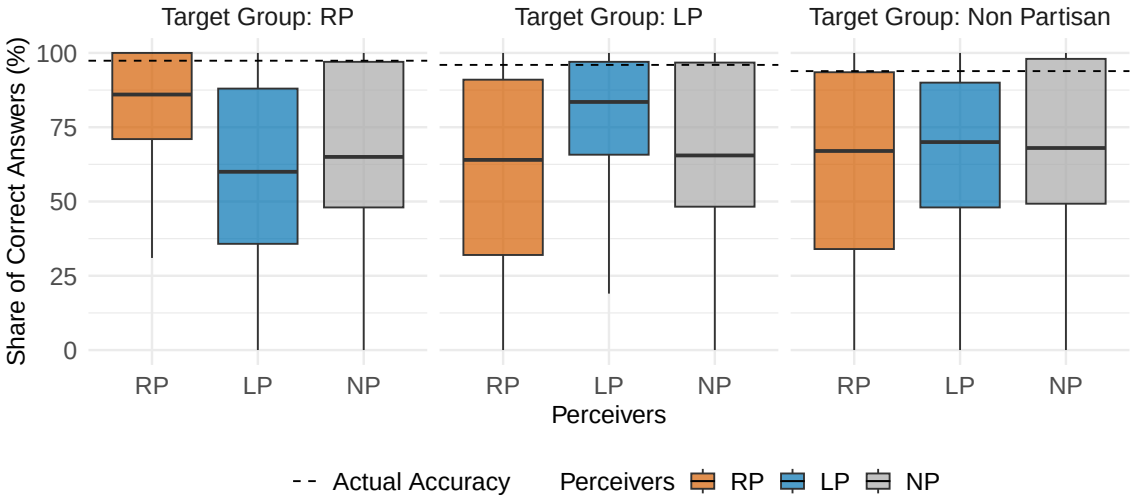


SK Fact 5: New Zealand is in the Middle East?

Fact 5 : New Zealand is a country located in the Middle East.



More Systematic Approach for Average Disbelief

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$$p^t_{i,j} = \beta_1 \mathbb{1}_{t=g(i)} + \eta_i + \eta_j + \varepsilon^t_{i,j}$$

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  - Expect $\beta_2 = 0$

Average Disbelief is about 15-17 pt

Country	SK	SK	SK	US	US	US
Perceiver	RP	LP	NP	RP	LP	NP
	(1)	(2)	(3)	(4)	(5)	(6)
Target = RP						
Target = LP						
Observations	8232	14304	10992	13752	13512	8736

- Note: targets are RP or LP; by fixed perceiver groups, individual + task FEs

Average Disbelief is about 15-17 pt

Country Perceiver	SK RP (1)	SK LP (2)	SK NP (3)	US RP (4)	US LP (5)	US NP (6)
Target = RP	0.174 (0.012)					
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Target = LP		0.151 (0.007)				
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Target = RP	0.174 (0.012)		0.005 (0.007)	0.156 (0.009)		0.008 (0.009)
Target = LP		0.151 (0.007)			0.148 (0.009)	
Observations	8232	14304	10992	13752	13512	8736

- Note: targets are RP or LP; by fixed perceiver groups, individual + task FEs

Correltion with Affective Polarization

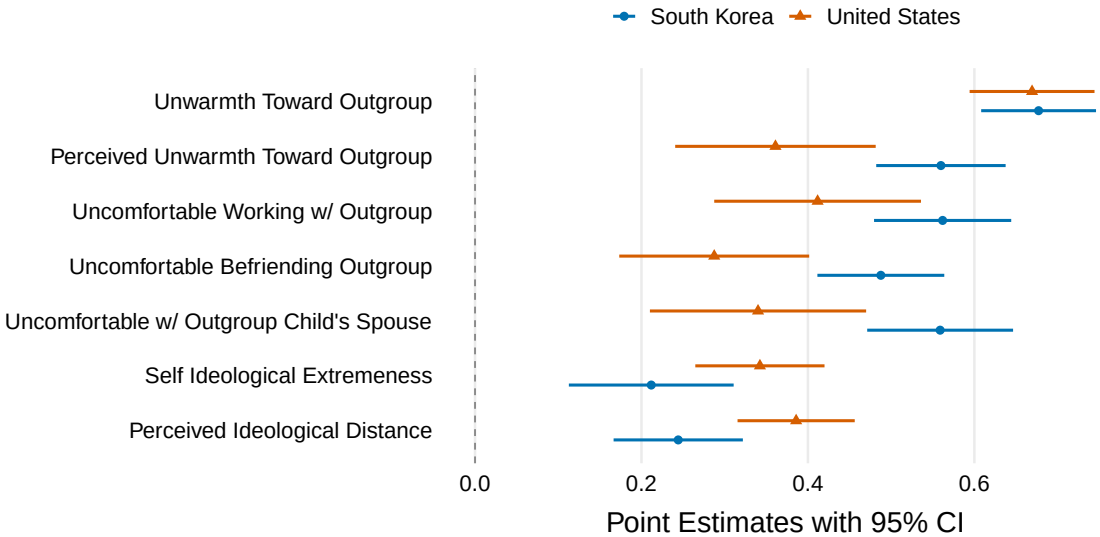
- Define “disbelief”: simple difference between estimates for in-group and out-group

$$\text{disbelief}_{i,j} \equiv p_{i,j}^{g(i)} - p_{i,j}^{g(i)'}$$

$$\text{disbelief}_i \equiv \frac{1}{8} \sum_{j=1}^{8} \text{disbelief}_{i,j}$$

- Regress different polarization measures on disbelief_i
  - Polarization measures are standardized to [0,1]

Disbelief Correlates w/ Ideological/Affective Polarization



Summary of Study 1

- In fact, both partisans are equally knowledgeable
- However, there are about 15 points of disbelief in out-group knowledge
- Non-partisans equally perceive knowledge of RP and LP
- Correlates with ideological and affective polarization

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- Document **in-group bias in Information Processing**
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- Document **in-group bias in Information Processing**
  - e.g., RP overweighs the opinion of RP over that of LP
- Run experiments if correcting **disbelief** reduces the **in-group bias**
  - Study 1 already shows RP and LP are, in fact, equally knowledgeable
  - Treatment = telling the fact above

Study 2: Survey Structure (N=4,200)

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Note: Only keep RP/LP w/ pre-treatment disbelief $>$ 5pt (2305 in SK, 2792 in US)

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For each question (suppose it is False),

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1. Pre-signal (same as Study 1)
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    - Estimate the accuracy rate of RP/LP

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2. Signal (randomized, in-group or out-group)–Truth-telling signal
   - ”According to previous surveys, the majority of RP says False”
   - ”According to previous surveys, the majority of DP says False”

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2. Signal (randomized, in-group or out-group)–Truth-telling signal
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   - ”According to previous surveys, the majority of DP says False”
3. Post-signal
   - Re-judge if it is True + give confidence (0-100)

Study 2: Signals in Post-Treatment Questions

For each question (suppose it is False),

1. Pre-signal (same as Study 1)
   - Judge if it is True + give confidence (0-100)
   - Estimate the accuracy rate of RP/LP

2. Signal (randomized, in-group or out-group)–Truth-telling signal
   - ”According to previous surveys, the majority of RP says False”
   - ”According to previous surveys, the majority of DP says False”

3. Post-signal
   - Re-judge if it is True + give confidence (0-100)

What we want: See how/if they update their beliefs (judgement & confidence)

Hypotheses:

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- H1: Treatment decreases post-treatment disbelief

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- H2: Partisans have in-group bias in information processing

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Hypotheses:

- H1: Treatment decreases post-treatment disbelief
- H2: Partisans have in-group bias in information processing
- H3: Treatment decreases the in-group bias in information processing
- H4: Treatment decreases affective polarization

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Conclusion

H1: Treatment Reduces Disbelief by 20% - 40%

- Define averge out-group disbelief for post-treatment facts $\text{disbelief}_i^{\text{post}}$
- We run

$$\text{disbelief}_i^{\text{post}} = \alpha T_i + \varepsilon_i$$

	(1) SK	(2) US
Treatment		
Observations	2305	2792
Mean of outcome	0.232	0.195

H1: Treatment Reduces Disbelief by 20% - 40%

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$$\text{disbelief}_i^{\text{post}} = \alpha T_i + \varepsilon_i$$

	(1) SK	(2) US
Treatment	-0.050	-0.076
	(0.010)	(0.009)
Observations	2305	2792
Mean of outcome	0.232	0.195

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Conclusion

Measurement of In-group Bias in Information Processing

For individual i and task j, construct two types of dummy variables

1. Correct Judgement: $y^J_{i,j} \equiv \mathbb{1}\{ J^1_{i,j} - J^0_{i,j} > 0\}$;

Measurement of In-group Bias in Information Processing

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1. Correct Judgement: $y^J_{i,j} \equiv \mathbb{1}\{ J^1_{i,j} - J^0_{i,j} > 0\}$;
   - $J^0_{i,j}$: Correctness before signals ($J^0_{i,j} = 1$ if Correct and $= 0$ if Wrong)
   - $J^1_{i,j}$: Correctness after signals

Measurement of In-group Bias in Information Processing

For individual i and task j, construct two types of dummy variables

1. Correct Judgement: $y^J_{i,j} \equiv \mathbb{1}\{ J^1_{i,j} - J^0_{i,j} > 0\}$;

2. Confidence towards Correct Answer: $y^\mu_{i,j} \equiv \mathbb{1}\{\mu^1_{i,j} - \mu^0_{i,j} > 0\}$;
   - $\mu^0_{i,j}$: Confidence towards Correct answers before signals

$$\mu^0_{i,j} = \begin{cases} \frac{a^0_{i,j}}{100} & \text{if } J^0_{i,j} = 1 \\ 1 - \frac{a^0_{i,j}}{100} & \text{if } J^0_{i,j} = 0 \end{cases}$$

     where $a^0_{i,j} \in [0, 100]$ is confidence level for their answer
   - $\mu^1_{i,j}$: Confidence towards Correct answers after signals

H2: In-group Signals Shift Beliefs More Toward the Truth?

Specification: (i: indiv., j: task)

$$y_{i,j} = \beta \mathbb{1}\{\text{In-group Signal}\}_{i,j} + \eta_j + \varepsilon_{i,j}$$

- $y_{i,j}$: measure of Information Processing, $y^J_{i,j}$ or $y^{\mu}_{i,j}$
- $\mathbb{1}\{\text{In-group Signal}\}_{i,j}$: dummy if in-group signal
  - e.g.) If R, "The majority of R says this is True..." is an in-group signal
- Expect $\beta > 0$

H2: In-group Signals Shift Beliefs More Toward the Truth

$$y_{i,j} = \beta \mathbb{1}\{\text{In-group Signal}\}_{i,j} + \eta_j + \varepsilon_{i,j}$$

	(1) SK Dummy	(2) SK Continuous	(3) US Dummy	(4) US Continuous
In-Group Signal				
Observations	3417	3417	4221	4221
Mean of outcome	0.102	0.424	0.170	0.481

H2: In-group Signals Shift Beliefs More Toward the Truth

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	(1) SK Dummy	(2) SK Continuous	(3) US Dummy	(4) US Continuous
In-Group Signal	0.058			
	(0.010)			
Observations	3417	3417	4221	4221
Mean of outcome	0.102	0.424	0.170	0.481

H2: In-group Signals Shift Beliefs More Toward the Truth

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In-Group Signal	0.058	0.078		
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H2: In-group Signals Shift Beliefs More Toward the Truth

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	(1) SK Dummy	(2) SK Continuous	(3) US Dummy	(4) US Continuous
In-Group Signal	0.058	0.078	0.007	0.041
	(0.010)	(0.008)	(0.009)	(0.012)
Observations	3417	3417	4221	4221
Mean of outcome	0.102	0.424	0.170	0.481

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Conclusion

H3: Treatment of Correcting Disbelief

- Study 1: Accuracy rates are the same across partisans for factual questions

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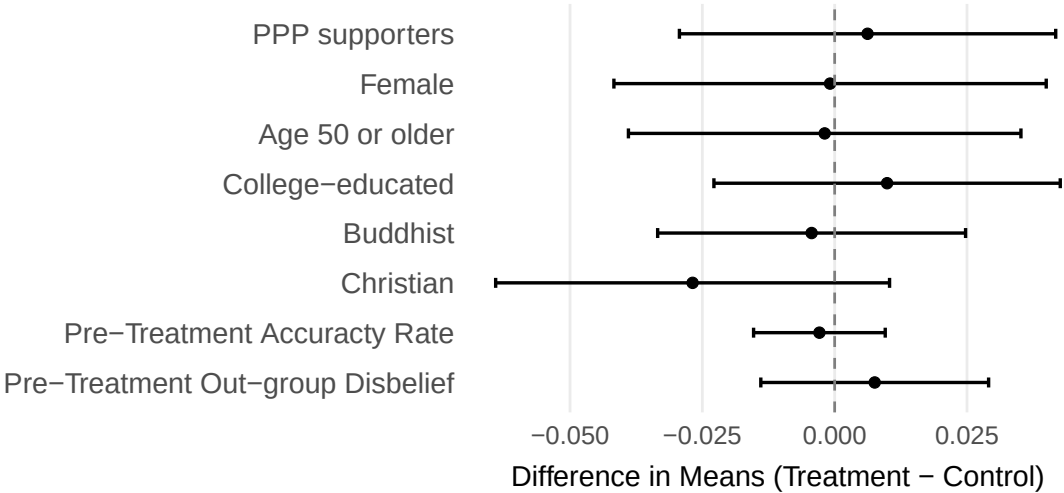
- Keep only those who have disbelief ($>$5pt) on Out-group Knowlege (64%)
- **Treatment (after pre-treatment task)**
  - e.g.) ”You think that R are more knowledgeable than D. This is wrong.”
- See if Treatment reduces in-group bias in Information Processing

H3: Balanced Test across Control and Treated



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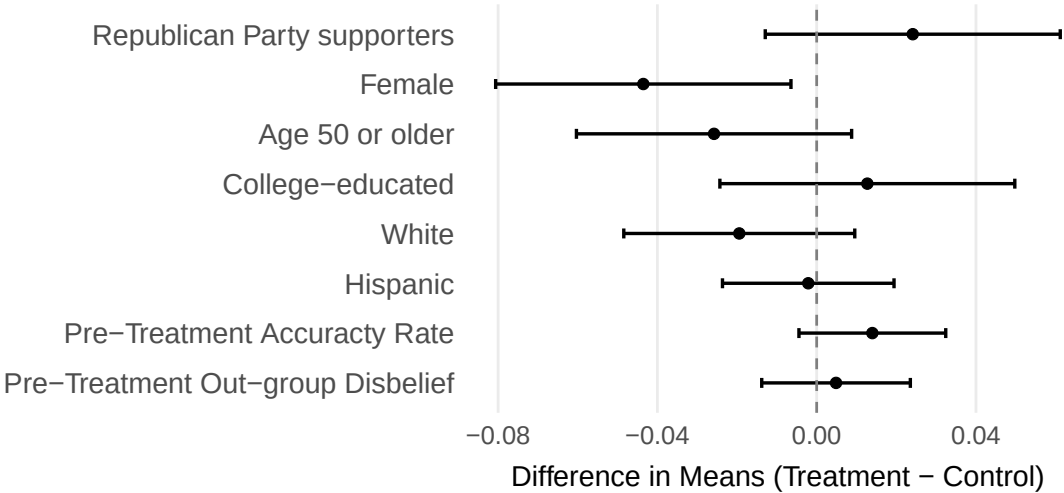

H3: Treatment, In-group Bias in Information Processing

Specification ($s_{i,j} = I$: In-group signal)

$$y_{i,j} = \beta_1 \mathbb{1}\{s_{i,j} = I\} + \beta_2 T_i + \beta_3 \left(\mathbb{1}\{s_{i,j} = I\} \times T_i\right) + \eta_j + \varepsilon_{i,j}$$

- Expect $\beta_3 < 0$ (given that $\beta_1 > 0$)

H3: Treatment, In-group Bias in Information Processing

$$y_{i,j} = \beta_1 \mathbb{1}\{s_{i,j} = I\} + \beta_2 T_i + \beta_3 \left(\mathbb{1}\{s_{i,j} = I\} \times T_i\right) + \eta_j + \varepsilon_{i,j}$$

	(1) SK Dummy	(2) SK Continuous	(3) US Dummy	(4) US Continuous
In-Group Signal				
Treatment				
In-Group Signal x Treatment				
Observations	6915	6915	8376	8376
Mean of outcome	0.103	0.421	0.165	0.484

H3: Treatment, In-group Bias in Information Processing

$$y_{i,j} = \beta_1 \mathbb{1}\{s_{i,j} = I\} + \beta_2 T_i + \beta_3 \left(\mathbb{1}\{s_{i,j} = I\} \times T_i\right) + \eta_j + \varepsilon_{i,j}$$

	(1) SK Dummy	(2) SK Continuous	(3) US Dummy	(4) US Continuous
In-Group Signal	0.058			
	(0.010)			
Treatment	0.016			
	(0.009)			
In-Group Signal x Treatment	-0.031			
	(0.002)			
Observations	6915	6915	8376	8376
Mean of outcome	0.103	0.421	0.165	0.484

H3: Treatment, In-group Bias in Information Processing

$$y_{i,j} = \beta_1 \mathbb{1}\{s_{i,j} = I\} + \beta_2 T_i + \beta_3 \left(\mathbb{1}\{s_{i,j} = I\} \times T_i\right) + \eta_j + \varepsilon_{i,j}$$

	(1) SK Dummy	(2) SK Continuous	(3) US Dummy	(4) US Continuous
In-Group Signal	0.058	0.078		
	(0.010)	(0.009)		
Treatment	0.016	0.023		
	(0.009)	(0.019)		
In-Group Signal x Treatment	-0.031	-0.060		
	(0.002)	(0.028)		
Observations	6915	6915	8376	8376
Mean of outcome	0.103	0.421	0.165	0.484

H3: Treatment, In-group Bias in Information Processing

$$y_{i,j} = \beta_1 \mathbb{1}\{s_{i,j} = I\} + \beta_2 T_i + \beta_3 \left(\mathbb{1}\{s_{i,j} = I\} \times T_i\right) + \eta_j + \varepsilon_{i,j}$$

	(1) SK Dummy	(2) SK Continuous	(3) US Dummy	(4) US Continuous
In-Group Signal	0.058	0.078	0.007	0.041
	(0.010)	(0.009)	(0.010)	(0.012)
Treatment	0.016	0.023	-0.018	0.023
	(0.009)	(0.019)	(0.008)	(0.019)
In-Group Signal x Treatment	-0.031	-0.060	0.018	-0.036
	(0.002)	(0.028)	(0.007)	(0.015)
Observations	6915	6915	8376	8376
Mean of outcome	0.103	0.421	0.165	0.484

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Conclusion

H4: Effects on Correcting Disbelief on Polarization

$$\text{pol}_i = \gamma T_i + \varepsilon_i$$

	(1) SK Unfav	(2) SK Uncomf	(3) US Unfav	(4) US Uncomf
Treatment	-0.025	-0.002	-0.081	-0.023
	(0.012)	(0.012)	(0.013)	(0.016)
Observations	2305	2305	2792	2792
Mean of outcome	0.528	0.433	0.493	0.271

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Conclusion

Conclusion

- **Widespread disbelief about out-group knowledge** for factual questions
- **In-group bias in Information Processing**
- Correcting the disbelief can reduce the in-group bias