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Misinformation Exposure Beyond Traditional Feeds: Evidence from WhatsApp Deactivation Experiments in the Global South

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Georgetown University

CSMaP Meeting - Sept 23, 2023

Presentation Today

- ⊕ Misinformation Exposure Beyond Traditional Feeds: Evidence from a WhatsApp Deactivation Experiment in Brazil (With Rajeshwari Majumdar, Jonathan Nagler, and Joshua A. Tucker)
- ⊕ Reducing WhatsApp Usage to Mitigate Misinformation Exposure During Elections: Evidence from a Multi-Country Experiment (With Rajeshwari Majumdar, Shelley Liu, Carolina Torreblanca, and Joshua A. Tucker)
- ⊕ WhatsApp Links Explorer: Data Donation Pipeline for WhatsApp Data (With Jonathan Nagler, and any others interested in collecting WhatsApp data)

Motivation

Social Media, Misinformation and Politics

- **From Liberation to Turmoil:** In the last 10 years, the general public and academic debate on the effects of social media in society has been dominated by the issue of misinformation (Tucker et. al., 2018)
- **A decade after:** gap between public discourse and scientific research on this issue (Budak et. al., 2024)
 - People aren't actually exposed to a lot of misinformation – but exposure is heavily concentrated (Grinberg et. al. 2019, Guess et. al. 2019)
 - Nulls effects from in-the-field studies for exposure to misinformation on attitudes (Eady et al. 2023, and Meta papers)
 - Mixed evidence from many deactivation studies on Facebook (Asimovic et. al. 2022, Alcott et. al. 2020, Arcenaux and Ladd 2023)

Social Media, Misinformation and Politics

④ Majority of scholarly work comes from W.E.I.R.D countries:

- Over 80% of existing studies on interventions to correct misinformation focus on Global North countries (Blair et. al. 2023, Badrinathan and Chauchard, 2023a)
- Spreading, production and exposure to misinformation differs greatly across the world
- In the Global South:
 - Informal networks for information sharing matter more ~ easier to mix true and false information
 - The real-world effects of misinformation exposure may be more pronounced in these countries, fewer fact-checking agencies, for example,
 - Social media messaging apps are more prevalent vs feed-based platforms

Disinformation Spreads on WhatsApp Ahead of Brazilian Election

 Give this article  



Zimbabwe election disinformation spreads on WhatsApp



Tendai DUBE

Thu, August 3, 2023 at 2:41 AM EDT · 4 min read



WhatsApp — India's leading university

Entire revolutions can be plotted and unravelled in a WhatsApp bubble

July 07, 2018 06:18 pm | Updated 06:18 pm IST

 SANDIP ROY



COMMENTS



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Identify the causal effects of **WhatsApp usage** on **exposure to online rumors** and its downstream effects on **belief accuracy** and **political attitudes**

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Deactivation Studies

American Economic Review 2020, 110(3): 629–676
<https://doi.org/10.1257/aer.20190658>

The Welfare Effects of Social Media[†]

By HUNT ALLCOTT, LUCA BRAGHIERI, SARAH EICHMEYER,
AND MATTHEW GENTZKOW*

The rise of social media has provoked both optimism about potential societal benefits and concern about harms such as addiction, depression, and political polarization. In a randomized experiment, we find that deactivating Facebook for the four weeks before the 2018 US midterm election (i) reduced online activity, while increasing offline activities such as watching TV alone and socializing with family and friends; (ii) reduced both factual news knowledge and political polarization; (iii) increased subjective well-being; and (iv) caused a large persistent reduction in post-experiment Facebook use. Deactivation reduced post-experiment valuations of Facebook, suggesting that traditional metrics may overstate consumer surplus. (JEL D12, D72, D90, I31, L82, L86, Z13)

Social media have had profound impacts on the modern world. Facebook, which remains by far the largest social media company, has 2.3 billion monthly active users worldwide (Facebook 2018). As of 2016, the average user was spending 50 minutes per day on Facebook and its sister platforms Instagram and Messenger (Facebook 2016). There may be no technology since television that has so dramatically reshaped the way people get information and spend their time.

Speculation about social media's welfare impact has followed a familiar trajectory, with early optimism about potential benefits giving way to widespread concern about possible harms. At a basic level, social media dramatically reduce the cost of connecting, communicating, and sharing information with others. Given that interpersonal connections are among the most important drivers of happiness and

Facebook Deactivation in the US (Alcott et al., 2020)

Testing the effects of Facebook usage in an ethnically polarized setting

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Edited by Christopher Andrew Ball, Duke University, Durham, NC, and accepted by Editorial Board Member Mark Granovetter May 10, 2021 (received for review November 3, 2020)

Despite the belief that social media is altering intergroup dynamics—bringing people closer or further alienating them from one another—the impact of social media on interethnic attitudes has yet to be rigorously evaluated, especially within areas with tensions between ethnic groups. We conducted a 4-week randomized controlled trial in Bosnia and Herzegovina (BH), exploring the effects of exposure to social media during 1 wk around genocide remembrance in July 2019 on a set of interethnic attitudes of Facebook users. We find evidence that, compared to previous research, which suggests that users who deactivate their Facebook profiles report lower regard for ethnic outgroups than those who remained active. Moreover, we present additional evidence suggesting that this effect is likely conditional on the level of ethnic heterogeneity of one's residence. We also provide the first analysis of improvements in subjective well-being and knowledge of news. Here, we find that Facebook deactivation leads to suggestive improvements in subjective well-being and a decrease in knowledge of current events, replicating results from recent research in the United States in a very different context, thus increasing our confidence in the generalizability of these effects.

spaces can help or hinder the goal of transforming relations from antagonistic to constructive, social media should be considered and studied as one of the forces influencing the direction of countries' postcolonial ethnicities. Partisanship and membership in ethnic groups are potential markers of one's identity. Given that partisanship is acquired by choice, however, it is a more informative measure of one's worldview than group membership based on more immutable characteristics such as ethnicity or race (10). As such, some properties of partisanship, such as the extent to which one is responsible to others for their partisanship than for their inborn group affiliations (11). The differences between partisan and other social identities have recently been discussed as a potential explanation of why intergroup contact, which tends to be associated with positive redefinition (12–14), may be less effective at mitigating outgroup hostility in the context of partisanship (15). This, however, remains an open question requiring studies that go beyond partisan affiliation, in particular addressing attitudes toward ethnic outgroups and especially in an online context.



POLITICAL SCIENCES

Facebook Deactivation in Bosnia and Herzegovina (Asimovic et. al, 2022)

Multimedia Deactivation Experiment in Brazil, 2022

⊕ **Problem:** Fully deactivating WhatsApp is neither possible nor ideal

⊕ **Our Design:** Cut the primary channels through which users are exposed to misinformation and polarizing content: videos, images and audios (Machado et al., 2019; Resende et al., 2019; Garimella and Tyson, 2018; Garimella and Eckles, 2020; Batista Pereira et al., 2023).

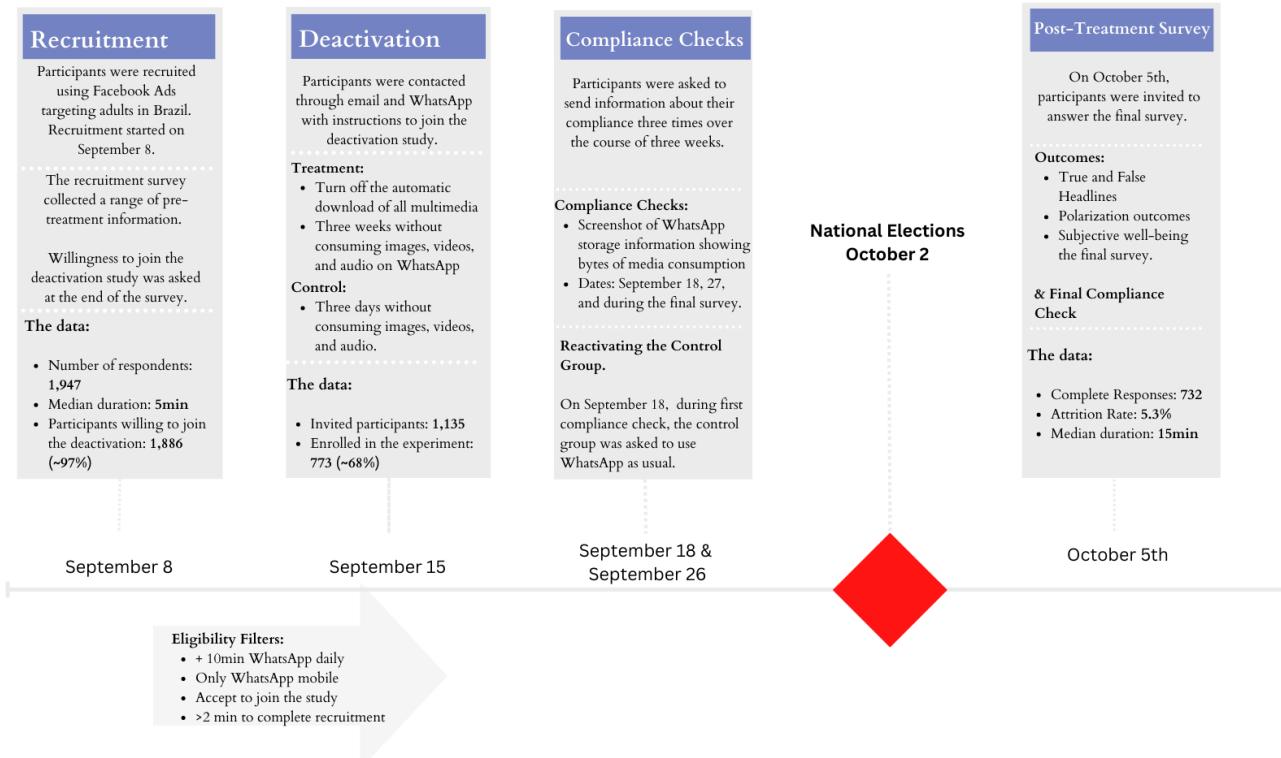
⊕ **Experiment:** Offer respondents a monetary incentive to

- Disable their automatic download of media on WhatsApp.
- Do not purposefully click and watch any media on WhatsApp.

⊕ **Treatment Period:** Three weeks:

- **Start:** Three weeks before general election in Brazil.
- **End:** three days after the voting day.

Overview of the Experiment



Recruitment

Method: Facebook Ads targeting adults Brazil

Started Recruitment: September 8th

Number of respondents: 1,947

Screening variables:

- Willingness to join: 1,8861 participants
- More 5min WhatsApp daily
- Only WhatsApp mobile
- More than 2 min to complete recruitment + other quality controls

Treatment Assignment

Start: September 15.

Treatment:

- Turn off the automatic download.
- Three **weeks** without consuming any multimedia.

Control: Three **days** without consuming any multimedia.

Invited: 1,135 respondents

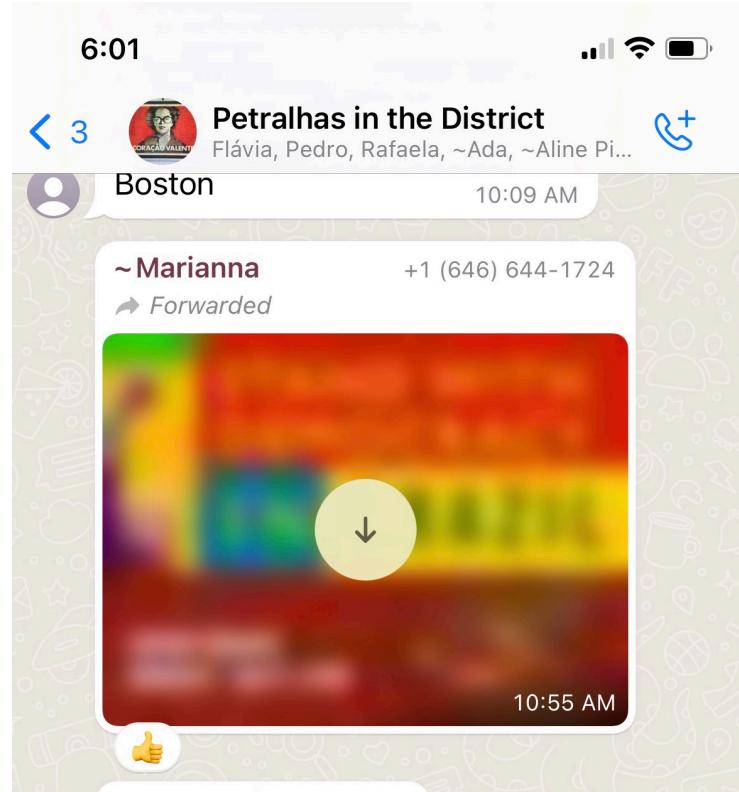
Enrolled: 773 respondents

Deactivation



Treatment Media Intervention & Compliance

Intervention: Adding Friction



Compliance: Monitoring Behavior

Network Usage	
MESSAGES	
Sent	2,522
Received	8,797
Bytes Sent	12.5 MB
Bytes Received	15.6 MB
CHAT MEDIA	
Bytes Sent	56 MB
Bytes Received	273.6 MB
STATUS MEDIA	
Bytes Sent	Zero KB
Bytes Received	7.5 MB
WHATSAPP CALLS	
Outgoing	32
Incoming	19
Status Calls Camera Chats Settings	

Compliance

Compliance Tasks:

- Screenshots of WhatsApp storage information
- Every week + final survey
- After the first compliance check, the control group was re-activated

Outcomes

Self-Reported Exposure and Accuracy Judgment

- False Rumors published on fact-checking webpages during the month of the experiment
 - + True News stories headlines from mainstream media.

Polarization

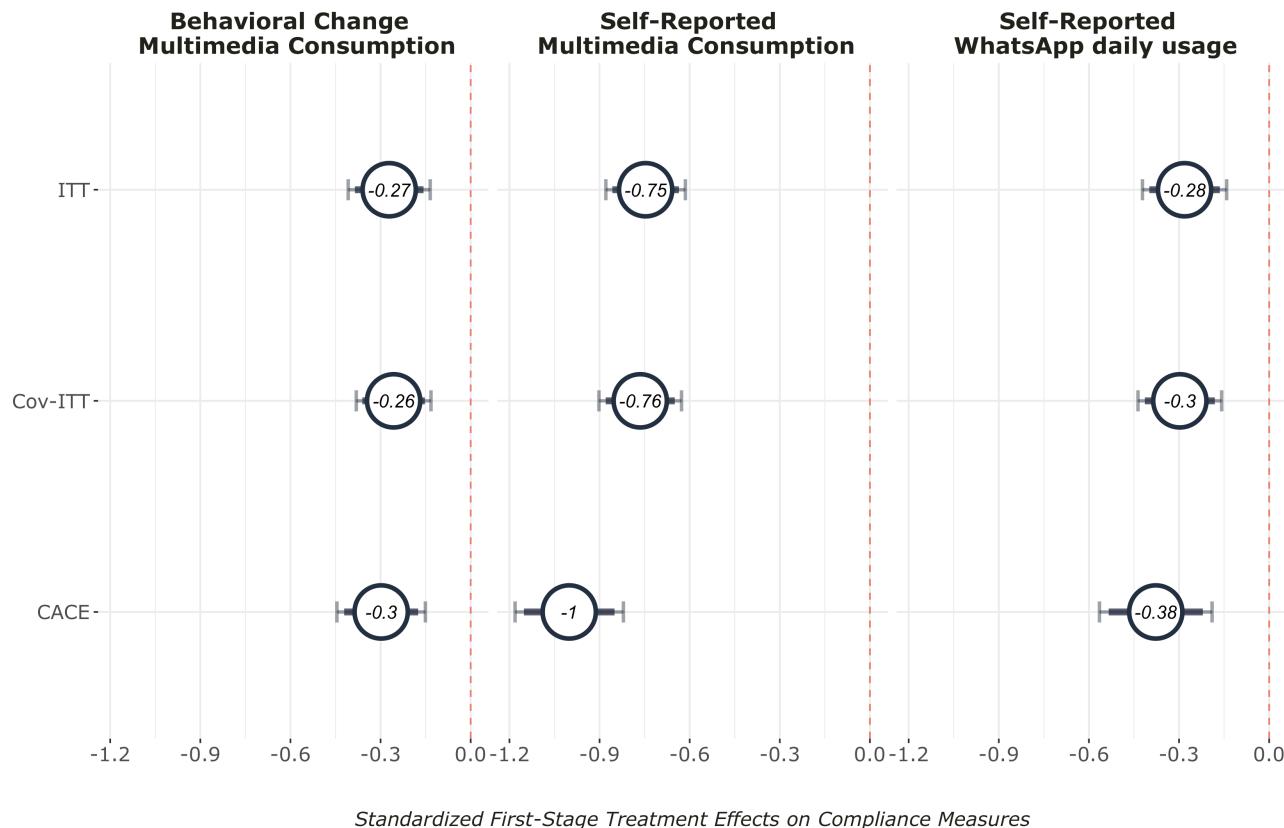
- Affective polarization (Feeling Thermometer).
- Social Polarization (Willingness to engage with outgroup voter).
- Issue Polarization (Abortion, gun control, etc..).
- Perceptions about ideological polarization ("Where do I observe the two main candidates?").

Subjective Well-being

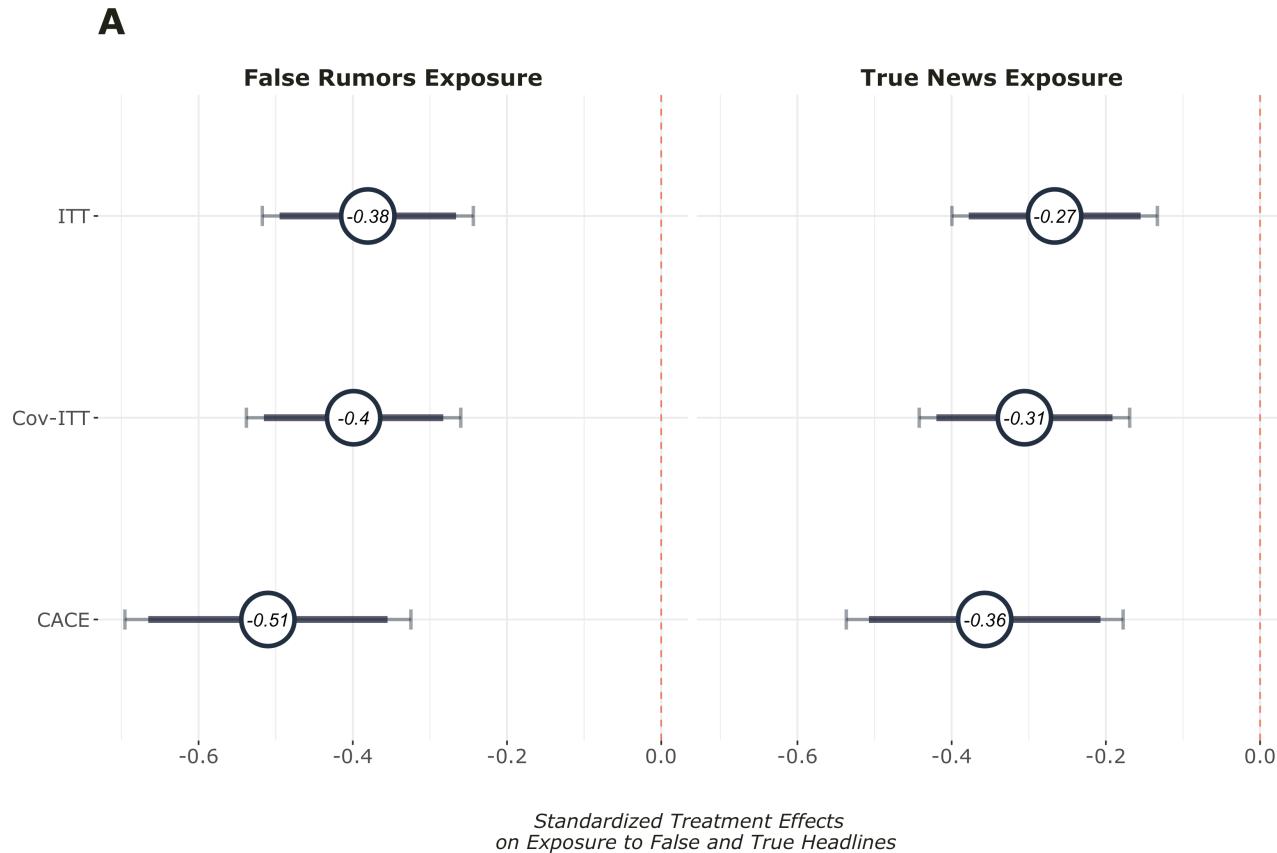
- How did you feel for the past three weeks? (Happy, Anxious, etc...).

Results

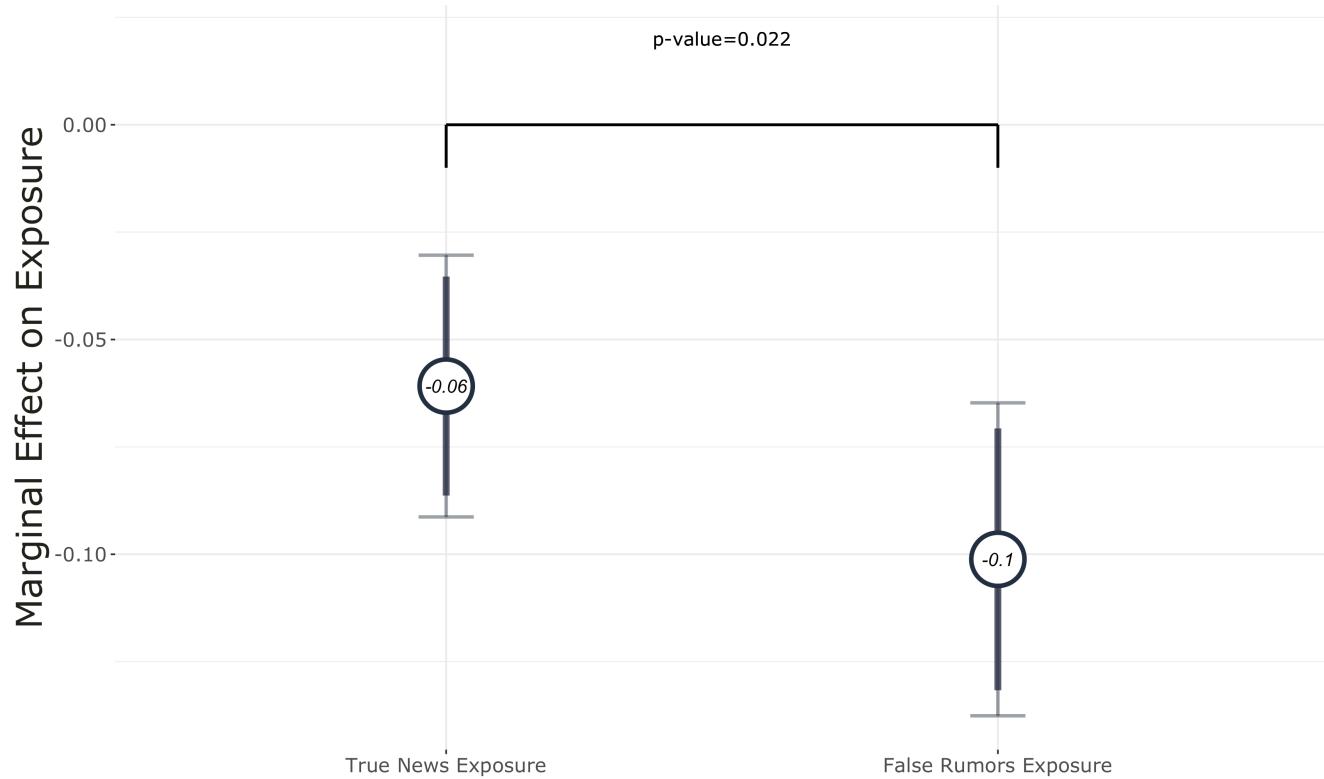
First-Stage Results



Effects on Exposure to Misinformation Rumors (H1)

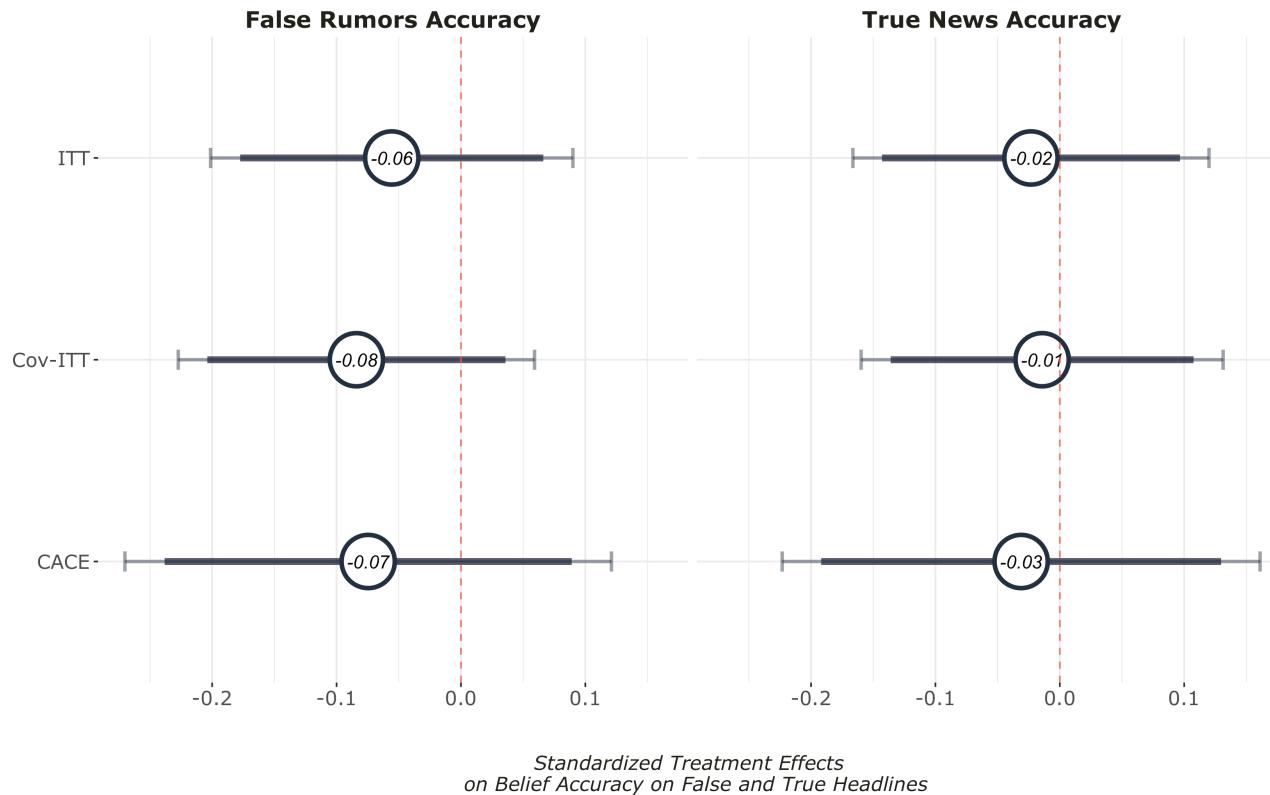


Reduction in exposure is large for false news (H1)

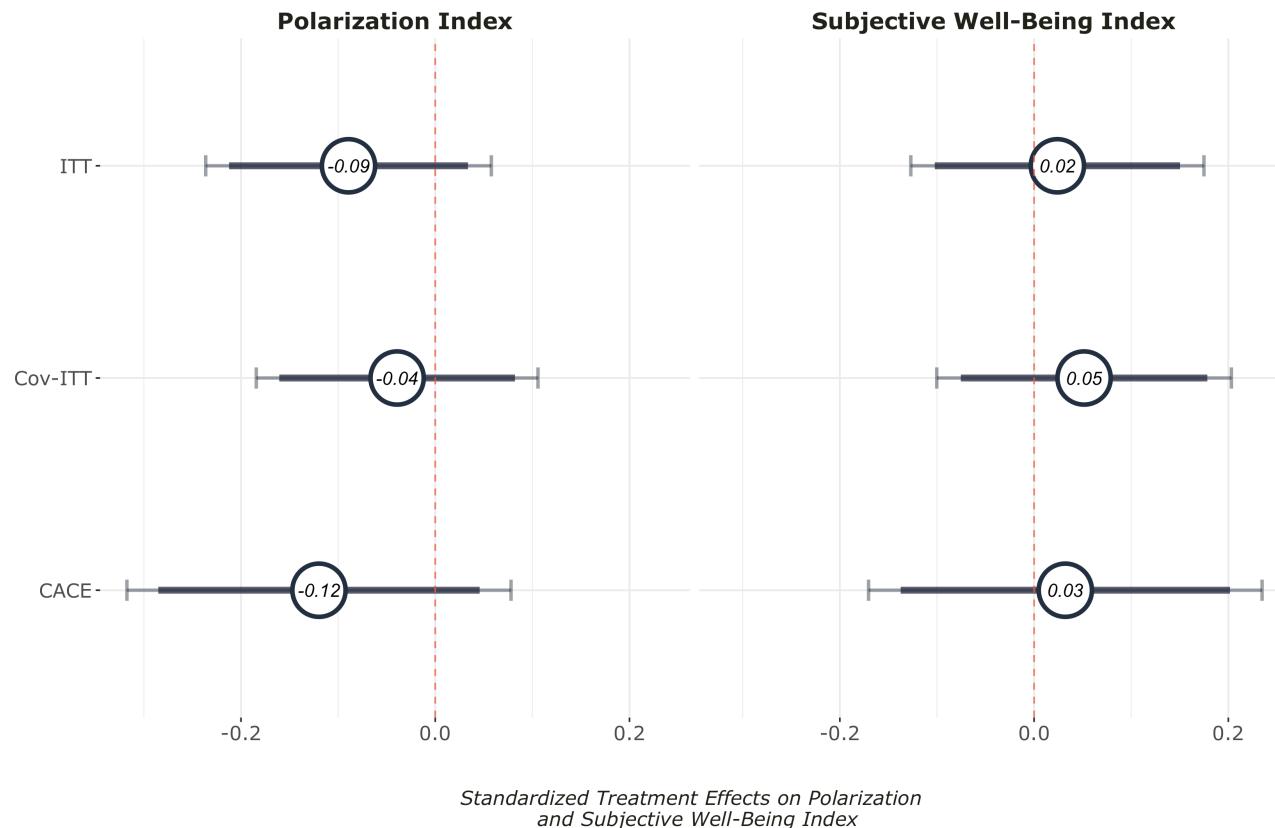


Effects on Belief Accuracy (H2)

B

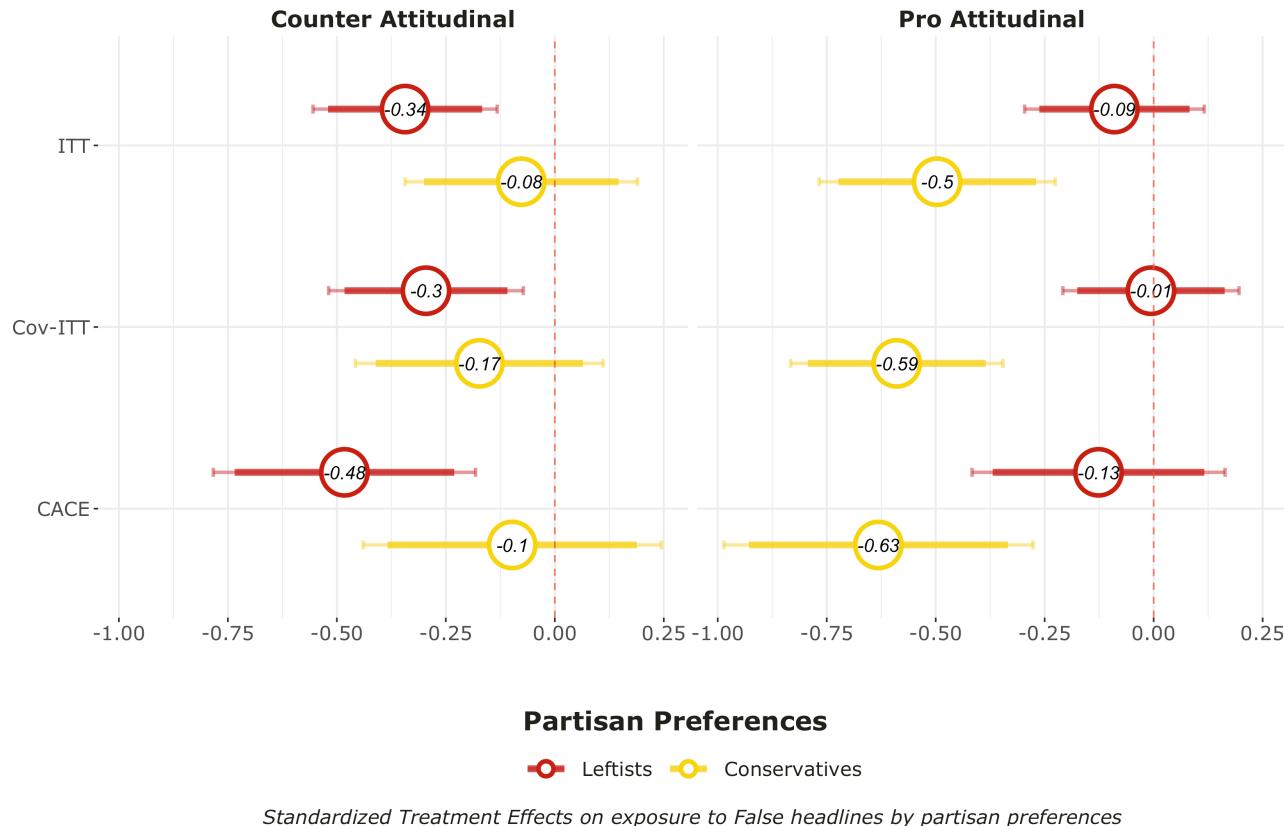


Effects on Polarization & Subjective Well-Being (H3 & H4)

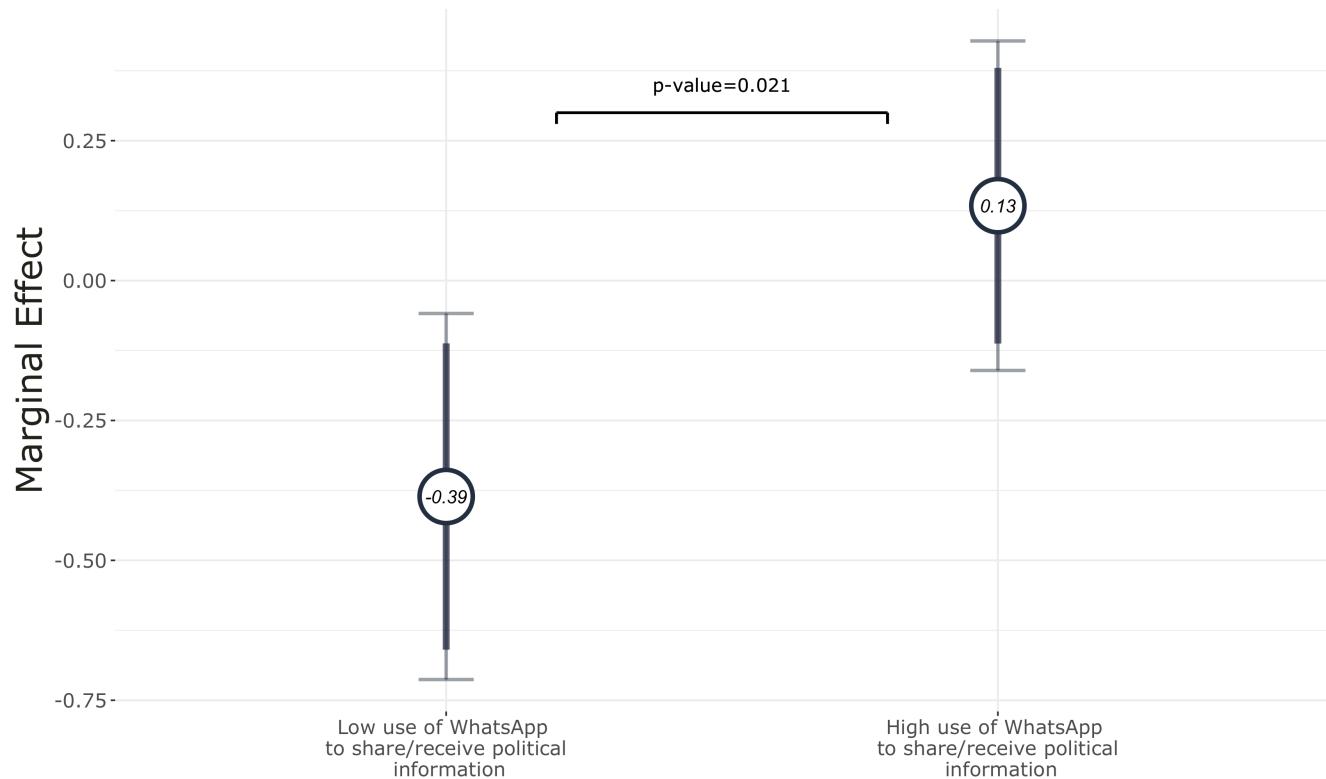


Additional Analyses (Non Pre-Registered)

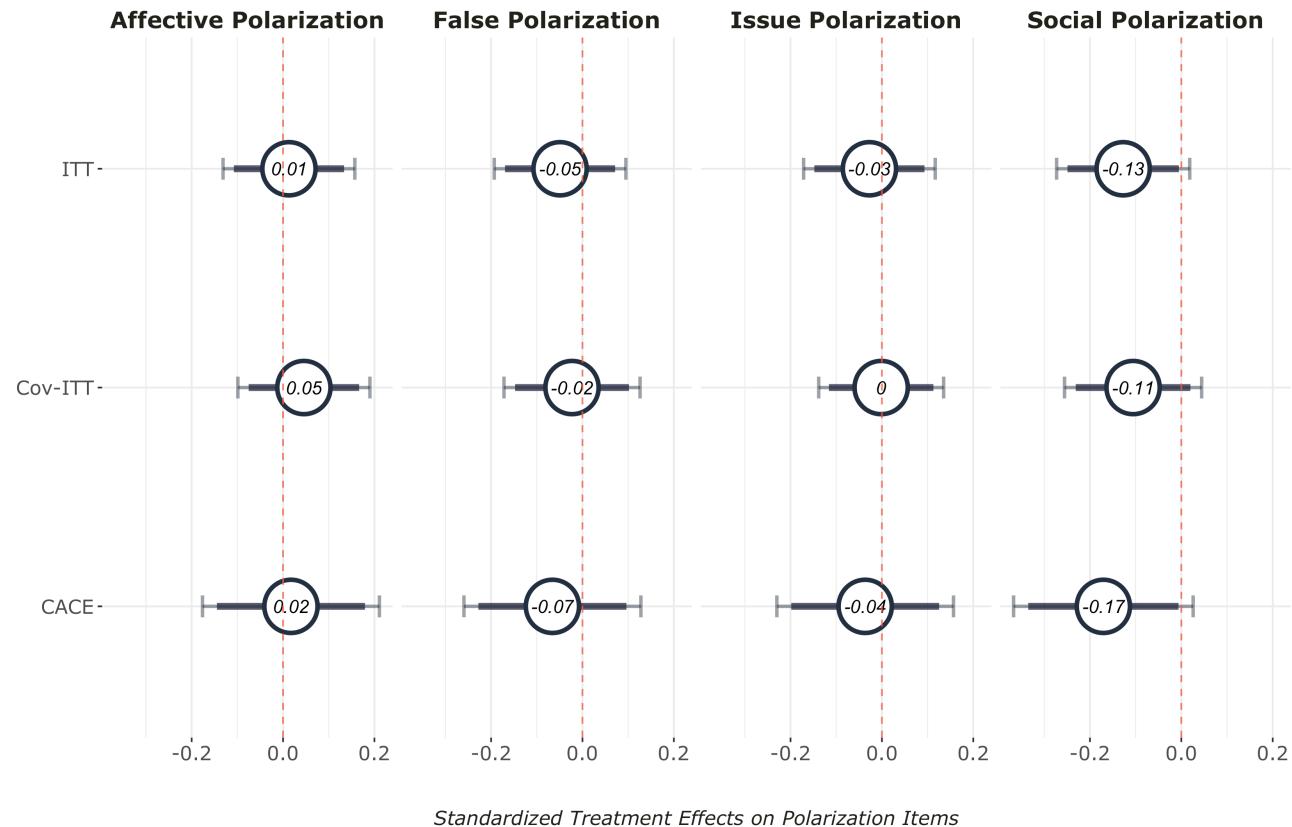
Exposure and Partisanship



Belief Accuracy Conditional on WhatsApp usage for Politics



Polarization Outcomes



Discussion

- ⊕ WhatsApp is an important vector through which voters receive misinformation in Brazil at a higher rate compared to true news.
- ⊕ The null results provide support for a minimalist view of the short-term causal effects of exposure to misinformation on WhatsApp on political attitudes.
- ⊕ Exposure to misinformation does not mechanically affect attitudes

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Extension: Multi-Country Deactivation Experiment

- **Problem:** Single country studies have limited power to speak of contextual effects (and in our case, limited statistical power)
- **Summary:** Multicountry extension across three major Global South countries; Brazil (In the field), India and South Africa
- **Stronger Treatment:** Replicate Multimedia Deactivation + Time Reduction
- **More statistical power:** ~ 2500 participants across the three countries.

Experimental Conditions

- **Types of partial deactivation**
 - Time: Limit daily WhatsApp usage to 10 minutes
 - Multimedia: Do not consume multimedia content received via WhatsApp
- **Treatment and control**
 - Treatment: Change settings and behavior for **4 week (one month)** leading up to elections in South Africa and India
 - Control: Change only behavior for **3 days** a month before election
- **2x2 design**

Treatment	Control
Time Treatment	Time Control
Media Treatment	Media Control

Treatment Time Intervention & Compliance

Intervention: Adding Friction

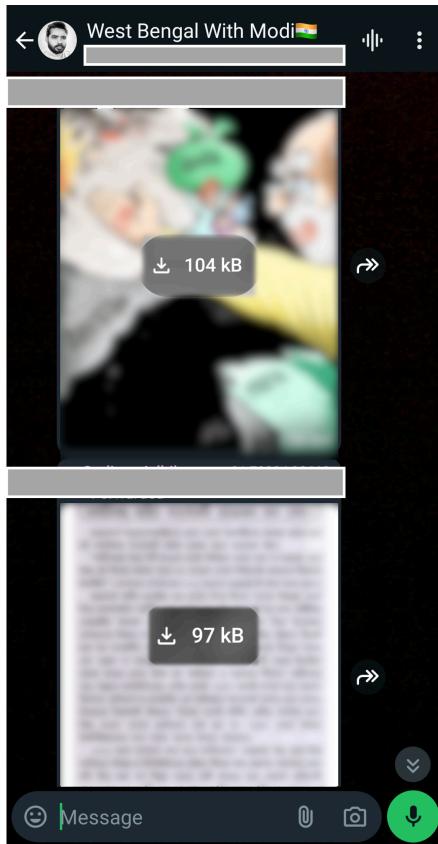


Compliance: Monitoring Behavior



Treatment Media Intervention & Compliance

Intervention: Adding Friction

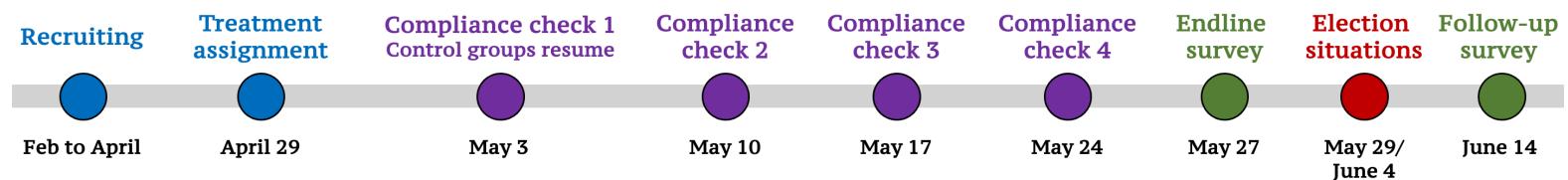


Compliance: Monitoring Behavior



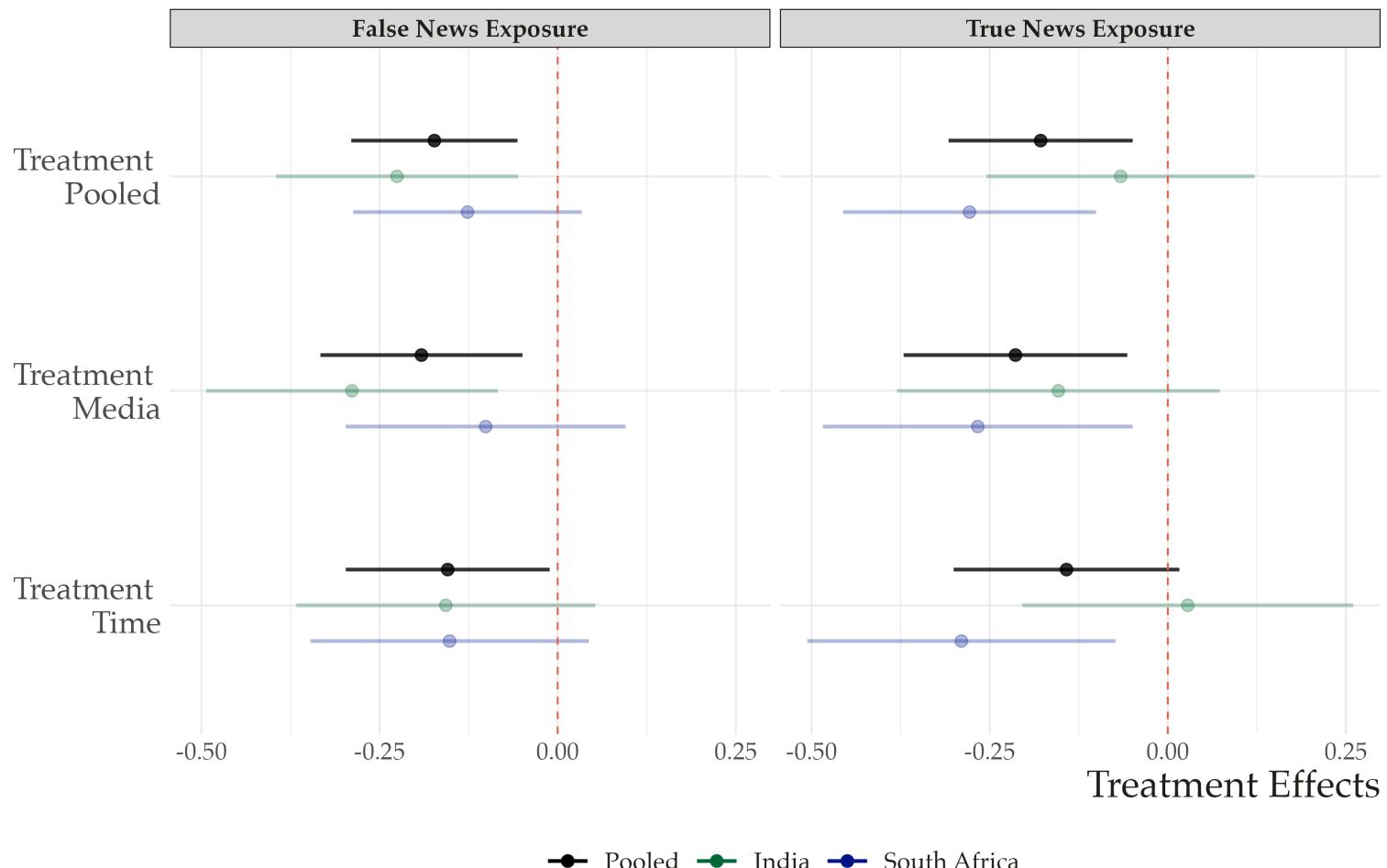
Implementation

- Used Meta Advertisements to recruit WhatsApp users in all the three countries
- All participants could earn a total of \$15 for completing surveys and uploading weekly screenshots
- Participants in treatment conditions who successfully reduced usage or multimedia consumption received an additional \$45
- Started with 1,498 respondents in SA and IN countries; 1,394 (93\%) completed the endline survey. Currently have 930 participants enrolled in Brazil.
- Timeline SA and IN:

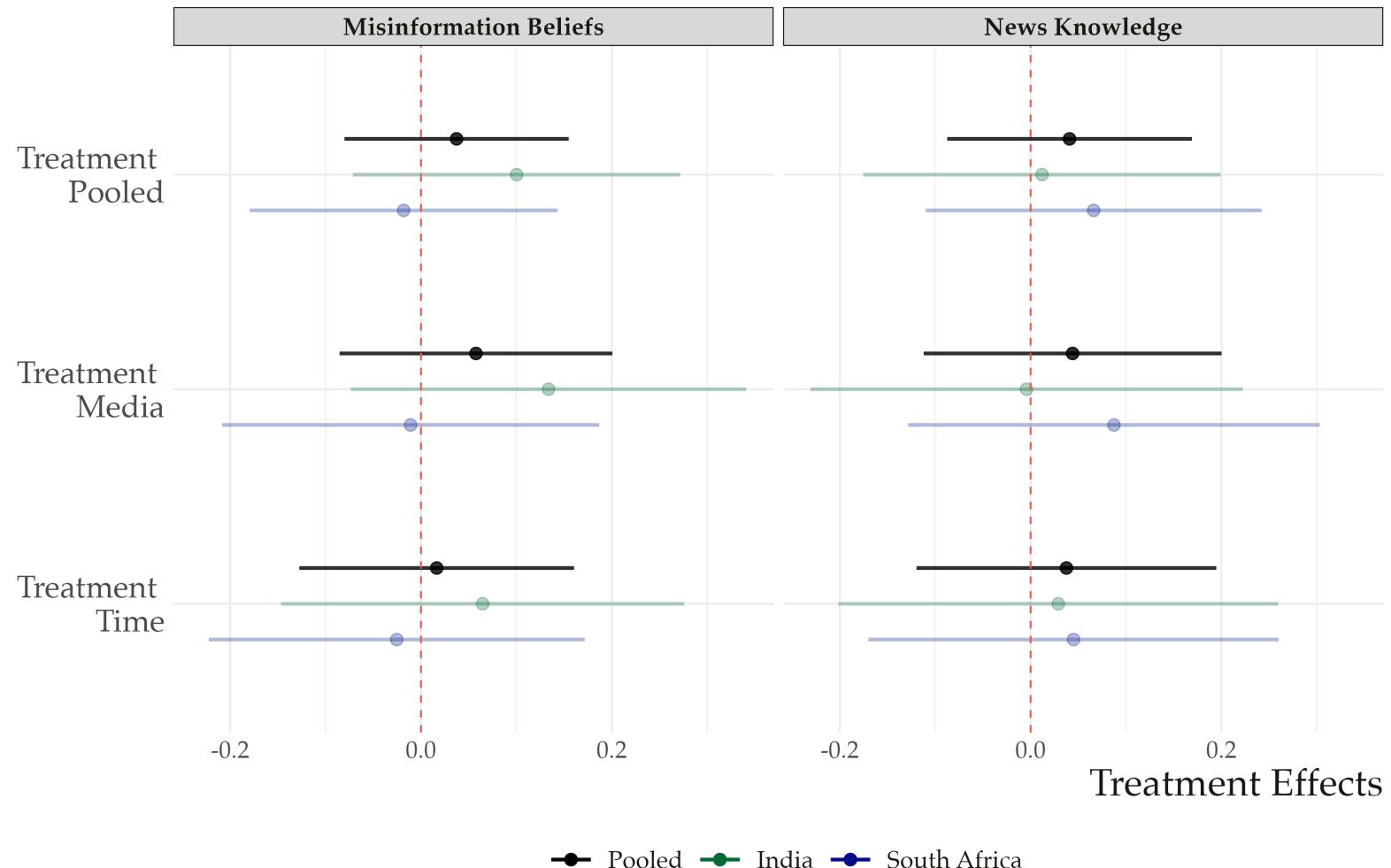


(Very) Preliminary Results

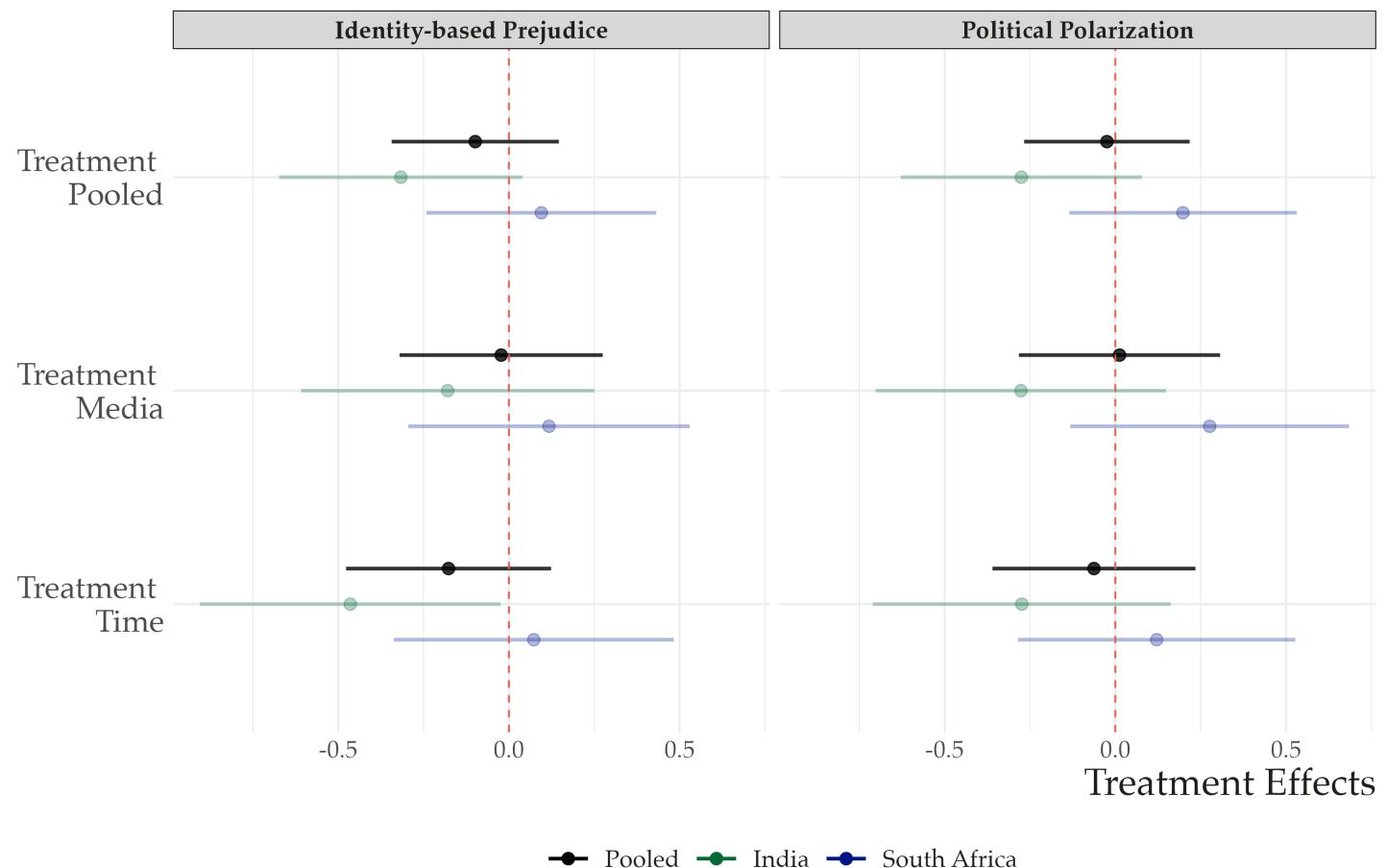
Limiting WhatsApp usage reduces exposure to misinformation & news



Reduction in exposure to misinformation & news has null effects on belief accuracy



Mostly nulls in polarization, except for identity-based prejudice in India



Next Steps

- Aggregate results from the Brazil new experiment.
- More HTEs and secondary outcomes to understand divergences in results across countries
- Analyze compliance data and estimate complier effects
- 2-week follow-up survey: effects of returning" to WhatsApp?

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WhatsApp Link Explore: A Data Donation Pipeline

- WhatsApp is end-to-end encrypted.
- But, users can easily export their data. This makes Data Donation the easiest (possible only way to collect WhatsApp Data)
- Develop a pipeline using WhatsApp Web; A WhatsApp API client that connects through the WhatsApp Web browser app

Data Donation Pipeline:

- Recruit participants via surveys
- Ask them to authenticate in the web app (no need to download anything; but need two devices)
- Participants can choose which groups to donate the data. Only allow groups >5 participants.
- Collect:
 - users' metadata,
 - groups' metadata,
 - messages from donated groups.
 - only collect messages that contains URLs, avoid collecting risky and private content (images, messages, videos.)

Examples of the Data Pipeline

Registration Form: WhatsApp Link Explorer

Scan the QR code below with WhatsApp to link your account:



Thank you for registering with us. We will verify your number.

Select group chats for donation

Show Survey Alert

Choose Groups to Donate From

- L28
- Kids
- India Trip 2024
- Senioritis 🧑
- _Jlh 🌱
- Localhost_Startup 🚀
- Localhost_RoastDoam 🍔
- Localhost_Lab 💡
- Localhost_Podcast 🎙

Donate Data

- Planned Data Collections: CSIP-Latinos in the US; online sample in Brazil.

Thank you