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Research Paper

Playing *Gali Fakta* “Inoculates” Indonesian Participants Against False Information

Panel 2

Technological Challenges and Innovations in
Combating Disinformation

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Abstract

Prebunking games have shown promising results in Western and English-speaking samples, but there lacks significant research in testing such interventions on Southeast Asian countries. We created Gali Fakta, which is a new media literacy game developed specifically for an Indonesian audience. We find that participants who played Gali Fakta rated false headlines with significantly higher accuracy and reported a significant reduction in sharing intent of false headlines. Participants who played Gali Fakta did not increase their skepticism or decrease their sharing intent of real headlines. Gali Fakta shows promise as a scalable media literacy intervention for Indonesia.

Keywords: *prebunking, media literacy, Indonesia, WhatsApp, misinformation*

Background and Implications

Media Literacy, Prebunking, and Indonesia

Indonesia is the 4th largest country in the world, and its citizens are rapidly increasing their digital access. Indonesia currently has an estimated 77% of its population online and digital access is expected to rise to 90% by 2025 (DataReportal 2023; Nurhayati-Wolff 2023). While younger Indonesians are more likely to be online, research has shown that Indonesian students still struggle to discern false news from real news (Syam & Nurrahmi, 2020). Misinformation was frequently observed during the 2019 Indonesian General Election and was especially prevalent on social media (Theisen et al., 2021). In addition to political misinformation, health, and financial misinformation also spread across the Indonesian information ecosystem (McRae et al., 2022; Nasir & Nurmansyah, 2020; Mujani & Kuipers, 2020). Misinformation and disinformation are particularly effective on Indonesians who have low levels of media literacy (Jalli & Idris, 2019).

Prebunking games built off “Inoculation Theory” have demonstrated success in helping people discern truth from fiction, as well as decreasing their intent to share misinformation (Basol, Roozenbeek, & Van der Linden, 2020). Inoculation Theory consists of building resistance to misinformation by being exposed to smaller amounts of false or misleading information in a controlled environment (Compton et al., 2021). While these prebunking games show promise due to their scalability, they are not without limitations. For example, some researchers have found that prebunking games can increase skepticism for both real and false information (Modirrousta-Galian & Higham, 2022). Furthermore, individuals may share false information even if they have higher media literacy skills because of social or political motivations (Sirlin et al., 2021). Finally, many prebunking games and media literacy interventions have focused on Western-English-speaking audiences.

WhatsApp is extremely popular in Indonesia and misinformation can flourish on the platform because messages can easily be forwarded to different groups of people and there is no fact-checking infrastructure. (Yustitia & Asharianto, 2020; Neyazi et al., 2022; Banaji et al., 2019; de Freitas Melo et al., 2020). Political groups used WhatsApp to promote political memes that contained misleading or false information during the 2019 Indonesian Election as well (Baulch et al., 2022). We wanted to develop a game that matched the information environments of those who play it in hopes of increasing prebunking success. Furthermore, Indonesia and its neighboring country Malaysia have litigated serious consequences for spreading false information (Balakrishnan, Ng, & Rahim, 2021; Nugraha & Bhwana, 2022). Therefore, we wanted to avoid any negative connotation that could occur from learning about misinformation by playing a prebunking game that forces the participant to take on the role of a professional misinformation spreader. *Gali Fakta* instead focuses on protecting friends and family from hoaxes and we evaluated if playing *Gali Fakta* could help an Indonesian sample improve their ability to spot misinformation, likelihood to share false information, and self-reported media literacy habits.

Gali Fakta

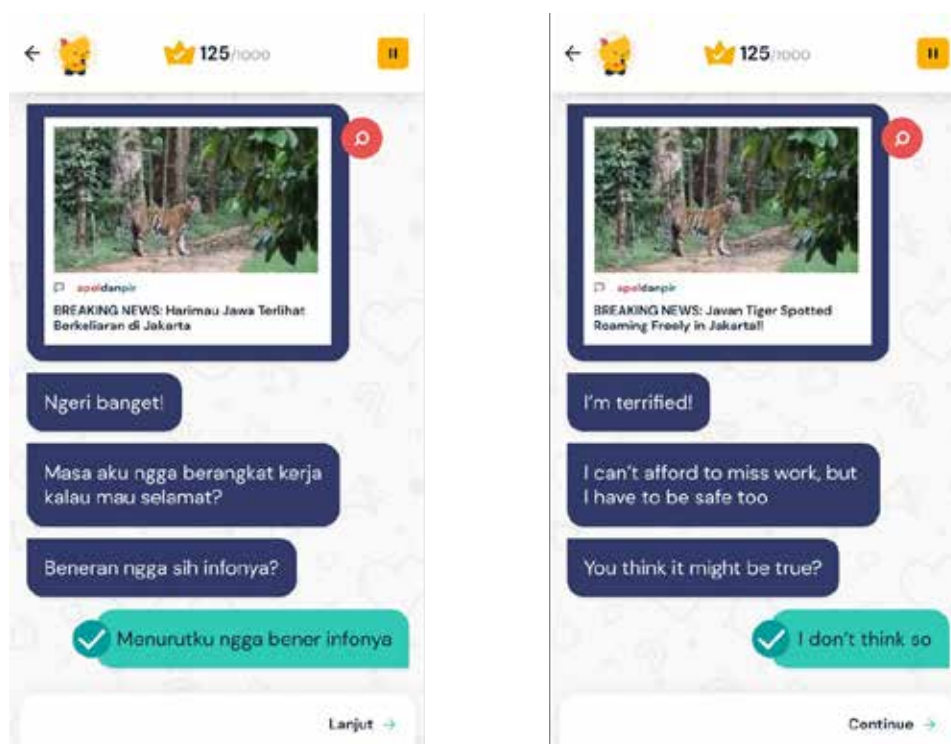


Figure 1. Screenshot from *Gali Fakta* game in Bahasa Indonesian and English.

Gali Fakta is a WhatsApp-inspired media literacy game that was developed for an Indonesian audience. *Gali Fakta* means “dig up the facts” and was created by a collaboration between technology experts at Moonshot and researchers at The University of Notre Dame (see Figure 1).⁴ The media literacy lessons were inspired by the Learn 2 Discern Program from IREX.⁵ *Gali Fakta* only takes about 5 minutes to play and looks like a group chat with family and friends on a messaging app. While playing *Gali Fakta*, participants are told that they need to help protect their friends and family against hoaxes during the game. Participants have the option to choose from three different content areas (health, news, or investing) that will result in people messaging them and sharing various types of misinformation. Each content area will teach how to protect themselves and others against four types of misinformation: fake social media accounts, confirmation bias, untrustworthy social media sources, and algorithmic-generated recommendations filter bubbles.

When the participant sees their friend or family member share misinformation from one of the above categories, they are prompted with two choices to respond to the characters in the game. For example, one character messages the participant about how their favorite musical artist is asking for money on their social media account. The participant then has the option to respond whether they believe the social media post is real or not. In this example, the social media post was false and was made clear by the lack of a verification symbol. The lesson is about learning how to spot a fake social media account. If the participant answers incorrectly, they receive a prompt explaining why another answer was correct. During the game, the participant receives messages from fictitious family members that allow for ten different responses and opportunities

⁴ <https://moonshotteam.com>

⁵ <https://www.irex.org/resource/learn-discern-media-literacy-trainers-manual>

to learn about misinformation techniques. The game script was reviewed and revised by Indonesian subject matter experts before it went online. After playing *Gali Fakta*, participants should be more mindful of their social media habits and more reflective when encountering false information. We had three main research questions:

- **RQ1:** Does playing *Gali Fakta* improve participant accuracy when evaluating false news headlines?
- **RQ2:** Does playing *Gali Fakta* decrease the intent to share false news headlines?
- **RQ3:** Does playing *Gali Fakta* increase self-reported media literacy?

Methods

Participants in this study were recruited via Bilendi & Respondi's survey platform. We collected data from 1,006 Indonesian participants in total (spread across 495 in the *Gali Fakta* condition and 511 in the control condition). We dropped 191 participants from our final analyses who did not answer our question about political ideology since we wanted to make sure we could control for politics. The average age was 38.53 (SD=11.43) and the sample was 52.89% male and 81.51% were located in urban areas. On a scale of 1-5 with 1 being not religious at all and 5 being very religious, the average religiosity score was 3.80 (SD=0.81). On a scale of 1-5 with 1 being very liberal and 5 being very conservative, the average level of conservatism was 3.37 (SD=1.01). We assessed education by asking if participants completed primary school, secondary school, or had tertiary education and found that 74.85% of our sample completed tertiary school and 99.7% of our sample completed secondary school. Finally, the average annual income was 133,401,566.79 Indonesian Rupiah (SD= 544,834,772.12).

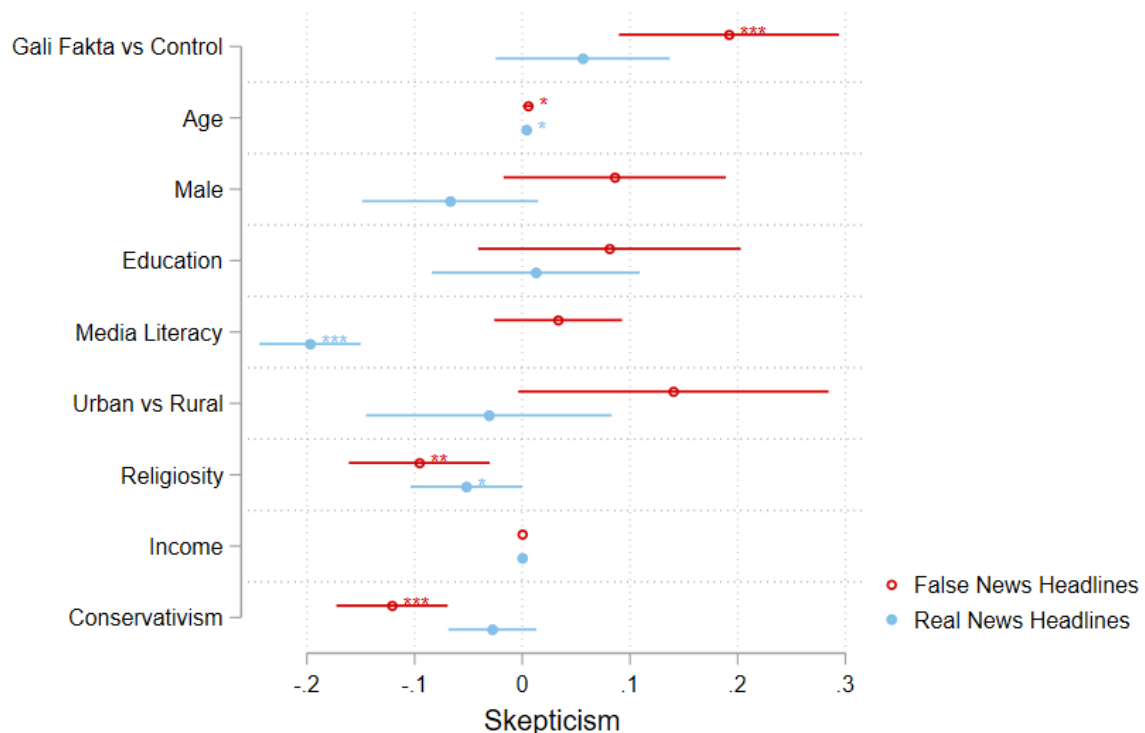
Procedure

Participants were randomly assigned to play either *Gali Fakta* or Tetris. Tetris is a publicly available game that requires about the same time and cognitive effort as *Gali Fakta* and has been shown to be an effective control condition for other prebunking games such as Harmony Square (Roozenbeek & van der Linden, 2020). After playing either game, participants then evaluated seven real (i.e. headlines that covered a true event or scientific consensus) and seven false headlines (i.e. headlines that covered a fake event or did not have any scientific support). These headlines covered climate change, COVID-19, and nonpolitical topics such as how paying for gasoline with odd nominals can save money (see Appendix A). Participants reported how accurate they thought each headline was as well as how likely they were to share it on a 1-5 Likert scale.

Participants also completed an 11-item media literacy scale from Austin and colleagues (2021) that was counterbalanced with the headlines questions. The scale assessed media literacy regarding news sources (e.g. "I think about who created the news I am seeing") and news content (e.g. I look for more information before I believe something I see in the news). Finally, participants answered demographic questions about age, gender, education, geographic location, religiosity, income, and political ideology.

Results

Finding 1. Playing *Gali Fakta* significantly increased participants' skepticism for false headlines, but not for real headlines

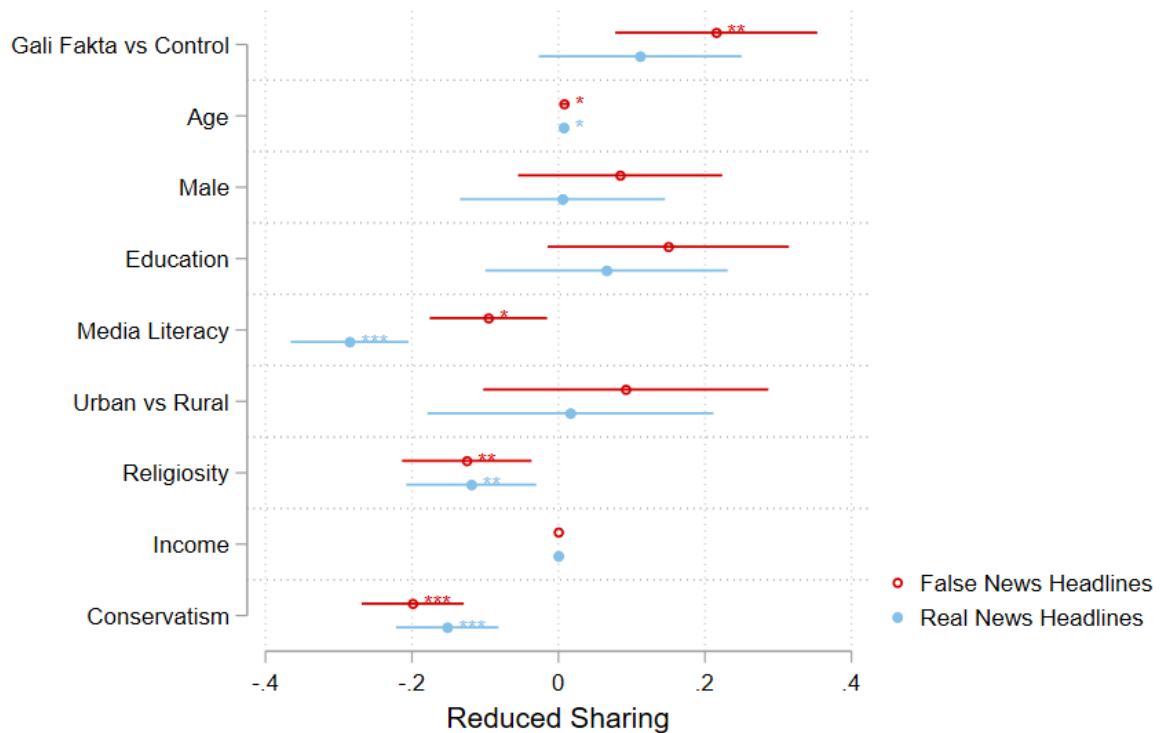


Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Figure 2: Coefficient plot revealing significantly increased their skepticism for false headlines, but not for real headlines

We conducted a series of OLS regressions to determine if playing *Gali Fakta* predicted rating false news headlines as more inaccurate. Those in the *Gali Fakta* condition did significantly rate false news headlines as more inaccurate compared to the control condition ($b = .191(.05)$, $p < .001$) while controlling for age, gender, education, media literacy, urban vs rural, religiosity, income, and political ideology. When evaluating the accuracy ratings of real headlines, playing *Gali Fakta* did not significantly increase inaccuracy ratings ($b = .056(.04)$, $p = .173$). Thus, playing *Gali Fakta* did make participants more discerning of false headlines, but this skepticism did not transfer over to real headlines (full regression tables in Appendix B).

Finding 2. Playing *Gali Fakta* condition significantly reduced participants' intent to share false headlines, but not real headlines



Note: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Figure 3: Coefficient plot revealing how participants in the *Gali Fakta* condition significantly reduced their intent to share false headlines, but not real headlines

Next, we conducted a series of OLS regressions to evaluate whether playing *Gali Fakta* predicted a decreased intent to share false headlines. Playing *Gali Fakta* did significantly predict a reduced intent to share false headlines ($b = .215(.07)$, $p = .002$) while controlling age, gender, education, media literacy, urban vs rural, religiosity, income, and political ideology. Playing *Gali Fakta* did not significantly decrease the sharing intent of real headlines ($b = .111(.07)$, $p = .114$). Again, we see that our media literacy game promotes skepticism and caution for misinformation, but not true information.

Finding 3: Playing *Gali Fakta* does not impact self-reported media literacy

In addition to rating headlines and sharing intention, we also investigated whether playing *Gali Fakta* would increase self-reported media literacy. We did not find that playing *Gali Fakta* significantly increased participants' self-reported media literacy ($b = -0.03(.06)$, $p = .622$). This null result may be because self-report media literacy scales do not always capture media literacy skills (Jones-Jang, Mortensen, & Liu, 2021) or it may be that *Gali Fakta* does not make people reflect on the types of questions asked in that particular media literacy scale. A future study could ask more specific questions regarding how confident they feel about correcting misinformation shared by others online (which was closer to what they did in *Gali Fakta*).

Conclusion

We developed a new media literacy game called *Gali Fakta* that was specifically designed for an Indonesian audience. We found that those who played *Gali Fakta* were more skeptical of false headlines and reported a reduced likelihood to share them. Importantly, participants who played *Gali Fakta* were not more skeptical of real headlines and were not less likely to share them. We believe *Gali Fakta* shows promise as a scalable online media literacy intervention for Indonesia.

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Appendix A

False Headlines

Bahasa Indonesian Translation in Bold

The 2022 World Cup's ball using advanced technologies, made in Madiun

Bola piala dunia 2022 pakai teknologi canggih, buatan madiun
(<http://www.kabarsurabaya.org/2022/11/bola-piala-dunia-2022-pakai-teknologi.html>)

The Covid-19 Omicron XBB subvariants are five times more poisonous and deadlier than delta variant

Covid-19 subvarian omicron xbb 5 kali lebih beracun dan mematikan daripada varian delta

(https://www.kominfo.go.id/content/detail/45432/disinformasi-covid-19-subvarian-omicron-xbb-5-kali-lebih-beracun-dan-mematikan-daripada-varian-delta/0/laporan_isu_hoaks)

Covid vaccination creates new Covid-19 variants

Vaksinasi Covid Menciptakan Varian Baru Covid-19

(https://www.kominfo.go.id/content/detail/34964/hoaks-vaksinasi-covid-19-menciptakan-varian-baru-covid-19/0/laporan_isu_hoaks)

Viral, Tips for Buying Gasoline with Odd Nominals that You Don't Get Cheated by Gas Station Officers

Viral, Unggahan Tips Isi BBM dengan Nominal Ganjil agar Tak Dicurangi Petugas SPBU (<https://www.kompas.com/tren/read/2022/09/07/193000365/viral-unggahan-tips-isi-bbm-dengan-nominal-ganjil-agar-tak-dicurangi-ini?page=all>)

New Covid-19 variants are only dangerous to vaccinated people

Covid-19 Varian Baru hanya Bahaya untuk yang Divaksin

(<https://covid19.go.id/id/artikel/2022/11/09/salah-varian-baru-covid-hanya-berbahaya-untuk-yang-divaksin>)

Efforts to tackle climate change will increase poverty

inspired from:

Perubahan iklim perparah tingkat kemiskinan di seluruh dunia

(<https://www.aa.com.tr/id/dunia/perubahan-iklim-perparah-tingkat-kemiskinan-di-seluruh-dunia/2127305>) (opposite headline used in our study)

Renewable energy is not as reliable as fossil fuels.

inspired from:

Riset: energi terbarukan solusi terbaik atasi fluktuasi harga energi

(<https://www.antaraneews.com/berita/2942493/riset-energi-terbarukan-solusi-terbaik-atasi-fluktuasi-harga-energi>) (opposite headline used in our study)

True Headlines

Claimed by Kemlu (Indonesian Foreign Affairs Ministry), the world cup's balls are not made in Indonesia.

Diklaim kemlu, bola piala dunia ternyata bukan dari Indonesia (<https://finance.detik.com/berita-ekonomi-bisnis/d-6435316/diklaim-kemlu-bola-piala-dunia-ternyata-bukan-dari-indonesia/amp?espv=1>)

It is not true that Covid-19 XBB Subvariants are five times more poisonous and deadlier.

Tidak Benar Covid-19 Subvarian XBB 5 Kali Lebih Beracun dan Mematikan daripada Varian Delta (<https://www.liputan6.com/cek-fakta/read/5115383/cek-fakta-tidak-benar-covid-19-subvarian-xbb-5-kali-lebih-beracun-dan-mematikan-daripada-varian-delta>)

It is not true that Covid-19 vaccines cause mutation of Covid-19 variants

Tidak Benar Vaksin Covid-19 Sebabkan Mutasi Varian Covid-19 (<https://www.liputan6.com/cek-fakta/read/4895934/cek-fakta-tidak-benar-vaksin-covid-19-sebabkan-mutasi-varian-covid-19>)

Pertamina: There is no need to buy gasoline with odd nominals; All gas stations' pumps have been calibrated.

Pertamina: Tak Perlu Isi BBM dengan Nominal Ganjil, Semua Alat Ukur di SPBU sudah Diuji (<https://money.kompas.com/read/2022/09/10/105000426/pertamina--tak-perlu-isi-bbm-dengan-nominal-ganjil-semua-alat-ukur-di-spbu>)

News regarding new covid-19 variants is only dangerous to vaccinated people is fake.

Info Covid Varian Baru Hanya Bahaya untuk yang Divaksin Dipastikan HOAX (<https://www.detik.com/jateng/jogja/d-6397860/info-covid-varian-baru-hanya-bahaya-untuk-yang-divaksin-dipastikan-hoax>)

Climate change is exacerbating poverty rates around the world

Perubahan iklim perparah tingkat kemiskinan di seluruh dunia (<https://www.aa.com.tr/id/dunia/perubahan-iklim-perparah-tingkat-kemiskinan-di-seluruh-dunia/2127305>)

Research: renewable energy is the best solution for energy price fluctuations

Riset: energi terbarukan solusi terbaik atasi fluktuasi harga energi (<https://www.antaraneews.com/berita/2942493/riset-energi-terbarukan-solusi-terbaik-atasi-fluktuasi-harga-energi>)

Media Literacy Scale from Austin et al 2021

- I think about how someone creates news that I see.
- I think about who created the news I am seeing.
- I think about what the creator of the news message wants me to think.

- I think about what the creator of the news I am seeing is trying to accomplish.
- I compare news information from different media sources.
- I check to see if the original source of information I see in the news is clearly stated.
- I compare new information I see in the news with other information I have seen before I accept it as believable.
- I look for more information before I believe something I see in the news.
- It is important to think twice about what news messages say.
- I often consider whether a message in the news is accurate.
- I check on whether information I see in the news is up to date

Appendix B

Regression Tables of Gali Fakta's Impact on Skepticism and Sharing Intent

		Lower Accuracy of False Headlines	Lower Accuracy of True Headlines	Reduced Sharing of False Headlines	Reduced Sharing of False Headlines
Gali Fakta vs Control	0.192*** (0.0520)	0.0561 (0.0412)	0.215*** (0.0702)	0.112 (0.0705)	
Age	0.00539** (0.00231)	0.00381** (0.00183)	0.00778** (0.00312)	0.00725** (0.00313)	
Male	0.0858 (0.0526)	-0.0670 (0.0416)	0.0842 (0.0710)	0.00561 (0.0713)	
Education	0.0809 (0.0621)	0.0126 (0.0492)	0.150* (0.0839)	0.0657 (0.0842)	
Media Literacy	0.0332 (0.0302)	-0.197*** (0.0239)	-0.0957** (0.0408)	-0.285*** (0.0410)	
Urban vs Rural	0.140* (0.0734)	-0.0311 (0.0581)	0.0919 (0.0991)	0.0163 (0.0995)	
Religiosity	-0.0956*** (0.0333)	-0.0520** (0.0264)	-0.125*** (0.0450)	-0.119*** (0.0452)	
Income	-6.13e-11 (8.67e-11)	-0 (6.86e-11)	-1.93e-10* (1.17e-10)	-1.44e-10 (1.17e-10)	

Conservatism	-0.121*** (0.0263)	-0.0278 (0.0208)	-0.199*** (0.0355)	-0.152*** (0.0357)
Constant	2.928*** (0.306)	3.908*** (0.242)	3.839*** (0.413)	4.949*** (0.414)
Observations	801	801	801	801
R-squared	0.080	0.107	0.094	0.111

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Regression table of Gali Fakta's impact on media literacy

	Media Literacy
Gali Fakta vs Control	-0.0302 (0.0611)
Age	-0.000490 (0.00271)
Male	0.0504 (0.0618)
Education	0.214*** (0.0726)
Urban vs Rural	0.247***

	(0.0858)
Religiosity	0.180***
	(0.0387)
Income	3.14e-10***
	(1.01e-10)
Conservatism	-0.0337
	(0.0309)
Constant	3.881***
	(0.332)
Observations	801
R-squared	0.073

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1