

Online Supplemental Materials

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Appendix A – Secondary Data Analysis

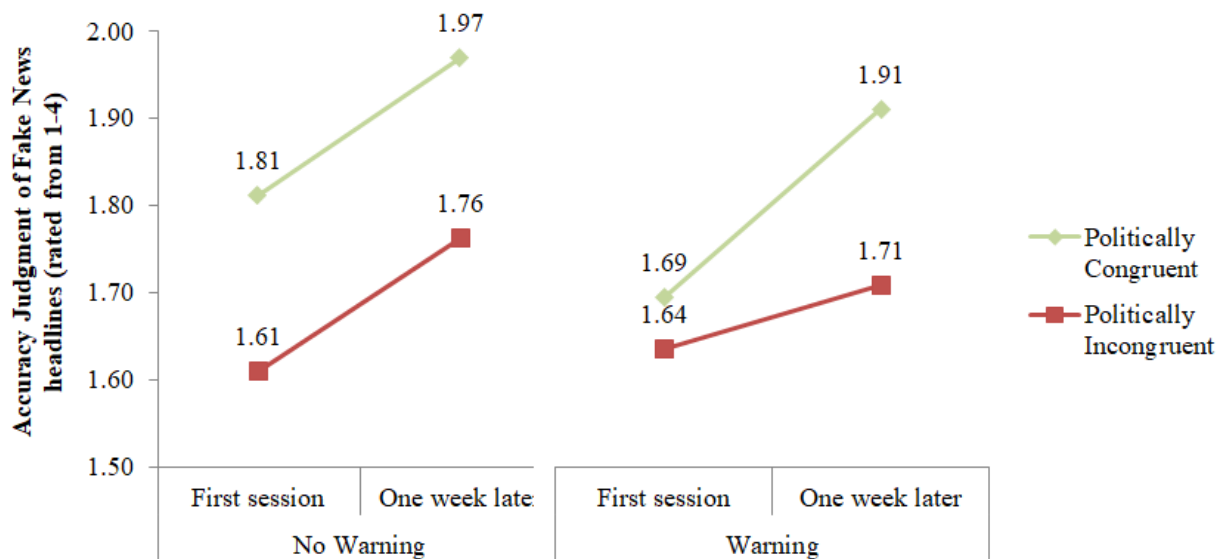
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The authors undertook a secondary analysis of data provided by Pennycook, Cannon, and Rand (2018) to look at the interaction of warning presences, ideological congruency, and time on belief in false news items presented more than once. Based on prior research, we hypothesized that the presence of a warning tag would reduce the effect of ideological congruency at the initial timepoint, but that the effect would return at a later time. In other words, when participants are told a story is false and then are immediately asked to rate its accuracy, most will rate the story as false regardless of whether it is politically congruent if the warning is generally effective right away. Over time however, as the effect of the warning wears off (which they found), people would especially raise their belief in the congruent story because it would have seemed more plausible and positive to believe before the warning, while the belief in the incongruent stories would remain low. Thus, we expected to see a significant three-way interaction between warning type, timepoint, and ideological congruency. More specifically, we expected that at Time 1 the warning would reduce the effect of political congruency (showing less or no difference in ratings between politically congruent and incongruent information), while there would be no such interaction at Time 2 (with a significant effect of congruency regardless of original warning type). This is because of a greater motivation to believe the news before the correction came, thus a stronger initial encoding that would show a stronger sleeper effect. We conducted a secondary data analysis of their paper to look for this interaction to help guide the development of this study.

Secondary Data Analysis

36 We used Pennycook et al.'s data posted to <https://osf.io/txf46/> and corresponded with the
 37 first author to ensure we were using the proper variables. We collapsed the data across their other
 38 manipulations of whether items were presented in a testing phase or not and used the average
 39 accuracy rating of news items (separated by congruent or incongruent for each person) that were
 40 presented at both Time 1 and Time 2 (i.e., ignoring items presented in only one of those
 41 surveys). We conducted a 2 x 2 x 2 mixed ANOVA testing for the interaction between warning
 42 type (between-subjects; present or not present), political congruency (within-subjects; congruent
 43 or incongruent), and time point (within-subjects; Time 1 or Time 2) on the rating of the accuracy
 44 of fake news items. Results by warning condition are in Figure A.1 below.

45



46

47 *Figure A.1.* Warning label on fake news only reduces belief in politically congruent fake news
 48 and only at initial timepoint.

49

50 The results are in the expected direction, but did not reach statistical significance for the
 51 three-way interaction, $F(1,503) = 1.734$, $p = .189$, likely due to the small effect of the warning at
 52 all which requires more power to detect. For example, at Time 1, there was the hypothesized

53 two-way interaction when looking at the full sample ($F[1,839] = 5.316, p = .021$) in that
54 politically congruent items were only rated as more accurate than incongruent items when there
55 was not a warning. But when restricting it to the smaller sample of those who returned for the
56 second survey, the same interaction was no longer statistically significant ($F[1,504] = 3.444, p =$
57 $.064$) despite virtually identical mean values.

58 Looking at the values in each condition (see Figure A.1) suggests that the modest effect
59 of the warning Pennycook et al. found at their first session was mostly due to lowering the
60 accuracy rating of the politically *congruent* fake news item. In other words, people were already
61 more skeptical of the politically incongruent fake news and the warning didn't reduce that any
62 further, while the warnings did make people more skeptical about the politically congruent fake
63 news. While this was the case directly after the warnings were presented (although not
64 statistically significant), within just one week, there was no difference between those who had
65 and had not received a warning.

66 Though the evidence requires additional confirmation due to lack of statistical
67 significance, the pattern supports the hypothesis that the motivation to believe the congruent fake
68 news might make it especially susceptible to the sleeper effect, in that the content of the
69 information would be more believed from the start and the false tag less strong (relative to the
70 incongruent information).

71

72

Appendix B – All Study Materials

73 Instructions:

74 This study will take place in two sessions about two weeks apart. In this first session, you will
 75 be reading a series of news headlines and answering questions about what you think of each one.
 76 You will also be asked some questions about yourself, such as demographics, political
 77 affiliations, and perceptions of news sources. The second survey will arrive in about two weeks
 78 from now.

79
 80 We expect this to take approximately 10 minutes, with some variation. Please only complete this
 81 survey if you are over 18 years of age, in the United States, and willing and able to complete
 82 both HITs. At the end of the survey, you'll be given a randomized code that you will submit on
 83 Mturk to receive the payment.

84

85 Are you a U.S. Citizen?

- 86 Yes
 87 No

88

89 What is your age in years?

90 _____

91

92 Are you willing to commit to taking a follow-up survey in two weeks?

- 93 Yes, I agree to take the follow-up survey.
 94 No, I would like to take just this survey.

95

96 First we have some general questions about you.

97

98 What is your gender?

99

- 100 Male
 101 Female
 102 _____

103

104 What is your racial or ethnic identify? Check all that apply.

- 105 White
 106 Black or African American
 107 American Indian or Alaska Native
 108 Asian or Asian American
 109 Native Hawaiian or Pacific Islander
 110 Middle Eastern or North African
 111 Hispanic or Latino/Latina
 112 Other: _____

113

114

115 How interested are you in following political news?

- 116 Not interested at all

- 117 o Slightly interested
 118 o Moderately interested
 119 o Very interested
 120 o Extremely interested

121
 122 Generally speaking, how you rate your ideological orientation, from extremely liberal (1) to
 123 extremely conservative (7)?

- 124 o 1 - Extremely liberal
 125 o 2 - Liberal
 126 o 3 - Somewhat liberal
 127 o 4 - Moderate/Middle of the road
 128 o 5 - Somewhat conservative
 129 o 6 - Conservative
 130 o 7 - Extremely conservative

131
 132 Generally speaking, do you usually think of yourself as a Republican, a Democrat, an
 133 Independent, or something else?

- 134 o Democrat
 135 o Republican
 136 o Independent
 137 o Other (please specify): _____
 138 o No preference

139
 140
 141 [If Republican] Would you call yourself a strong Republican or a not very strong Republican?

- 142 o Strong
 143 o Not very strong

144
 145 [If Democrat] Would you call yourself a strong Democrat or a not very strong Democrat?

- 146 o Strong
 147 o Not very strong

148
 149 [If Neither] Out of the following two, would you say you lean more towards the Democratic
 150 party or the Republican party?

- 151 o Lean Democratic
 152 o Lean Republican
 153 o Don't lean towards either

154
 155 **Trust in groups**

156
 157 We would like to know your feelings towards the following people and groups on a scale from 0
 158 to 100. A score of 0 indicates a very cold/unfavorable view of the person or group, while a score
 159 of 100 would indicate a very warm/favorable view.

160	Cold/Unfavorable					Warm/Favorable					
161											
162	0	10	20	30	40	50	60	70	80	90	100

- 163
 164 Democrat voters
 165 Republican voters
 166 President Donald Trump
 167 The Democratic National Committee (DNC)
 168 The Republican National Committee (RNC)
 169
 170 Some people vote on national elections and some do not. Thinking about the next national
 171 election in 2020, how likely are you to vote in it?
 172 Extremely unlikely
 173 Somewhat unlikely
 174 Neither likely nor unlikely
 175 Somewhat likely
 176 Extremely likely
 177
 178 How much do you trust information that you receive from the following sources?
 179
- | | Never | Sometimes | About half the time | Most of the time | Always |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 180 Traditional news outlets | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 181 Social media | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 182 Online-only news sources | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 183 Government information | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 184 Friends and family | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
- 185
 186
 187 Please rate how much you agree with this statement: "Big events like wars, recessions, and the
 188 outcomes of elections are controlled by small groups of people who are working in secret against
 189 the rest of us."
 190 Strongly disagree
 191 Somewhat disagree
 192 Neither agree nor disagree
 193 Somewhat agree
 194 Strongly agree
 195
 196 **News Headline Ratings**
 197 On the following pages, you'll be shown a series of 12 news headlines like you might see online
 198 about events from 2018. It's possible you will have seen some or all of these before, and
 199 possible you won't have seen any – it is fine either way.
 200
 201 For each news story, you'll be asked to rate how it affected you.
 202
 203 There will be space at the end of the survey for comments, where you can explain any of your
 204 answers if you wish or state if anything was unclear.
 205
 206 Please read the following headline and then answer the questions about it.
 207
 208 [Insert headline; see end for all used]

- 209
 210 How interesting is the story in the above headline?
 211 o Not at all interesting
 212 o Slightly interesting
 213 o Moderately interesting
 214 o Very interesting
 215 o Extremely interesting

- 216
 217 How much truth do you think there is to this story?
 218 o Completely false
 219 o Mostly false
 220 o About half true
 221 o Mostly true
 222 o Completely true

223
 224 [Repeated for all headlines]

225
 226 Thank you! That is all the questions we have for you today. Please keep in mind that we
 227 presented headlines that were both true and false - all headlines that were not true were noted as
 228 such.

229
 230 Remember that you will be getting a follow-up survey through Mturk in about two weeks that
 231 you agreed to participate in. You will be paid for your time in both surveys.

232
 233 If you have any general comments to share or answers you want to explain, you may write them
 234 here if you wish.

235
 236 _____

237 **Headlines used in Part 1**

238
 239 True Democrat-Friendly news

240



241 Mitch McConnell, Senate Majority Leader, insists he
 242 has "no particular role" in ending standoff, is absent
 from talks with GOP and President Trump



President Trump's 2017 inaugural committee is said
 to be under criminal investigation by federal
 authorities due to financial fraud around donations



Review of 2018 shows U.S. stock markets had the worst year since recession in 2008; experts link to President Trump's trade disputes with China



Turnover in President Trump's Cabinet appointments during early years is at record high relative to last 100 years of presidencies

243
244
245
246

True Republican-Friendly News



Current and former Planned Parenthood employees allege that the organization routinely mistreats and discriminates against pregnant workers



Elizabeth Warren received bipartisan criticism for releasing DNA test to support her claims of Native American ancestry

247
248



2018 showed large gains in jobs added to economy, rise in average worker wages, and reduced unemployment according to Job Market Report



Online group fighting to outlaw alcohol found to be Democratic activist campaign designed to reduce support for Republican candidate Roy Moore

249
250
251
252

True Non-Partisan News



The Weather Channel is being sued over accusations that it is illegally collecting and selling user's personal location data

253
254



Over 20,000 drug convictions in Massachusetts were overturned en masse after "rogue" forensic chemist was found to have fraudulently tainted them



Bill Cosby appeals sexual assault conviction and sentence, citing trial errors by judge; is denied bail while awaiting appeal

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False News Headlines

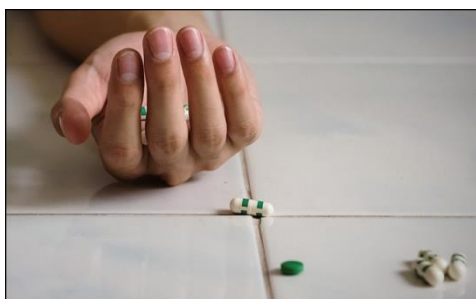
Democrat-Friendly Fake News



RNC Chair Ronna McDaniel called President Trump "f***ing idiot" in a closed meeting and suggested it may be better if Democrats win the next election

261
262
263

Republican-Friendly Fake News



Suicide rate for U.S. adults has more than doubled in recent years, which researchers have linked at least partially to significant rise in opioid addiction



Discussing voter fraud allegations in private meeting, Tom Perez, DNC Chair, suggested that electing Democrats "more important" than the letter of the law

264
265
266

Non-Partisan Fake News



Leaked company documents show top E-cigarette company Juul—which insisted it didn't market to teens—sought teens for focus groups and as models

267
268
269
270
271
272
273

Time 2 Follow-Up Materials

Thank you for coming back to take the follow-up survey! It is similar in length and content to the first survey. We expect it to take about 10 minutes.

- 274 How much do you feel that you have followed the news in the past two weeks since last survey?
- 275 o Not at all
 - 276 o A little
 - 277 o A moderate amount
 - 278 o A lot
 - 279 o A great deal

- 280
- 281 How much do you feel that you have used social media in the past two weeks since last survey?
- 282 o Not at all
 - 283 o A little
 - 284 o A moderate amount
 - 285 o A lot
 - 286 o A great deal

287

288 On the next pages, you will be asked to again rate 16 headlines as if they were news stories you came across online. Some of them are the same as from the last survey, while others are new.

289 You may have seen some of these in the news before now; it is fine whether or not you have.

290 Please just give your best judgment of each one without looking up other information online.

291

292

293

294 Please read the following headline and then answer the questions about it.

295

296 [Insert headline]

297

298 How interesting is the story in the above headline?

299 Not at all interesting

300 Slightly interesting

301 Moderately interesting

302 Very interesting

303 Extremely interesting

304

305 How much truth do you think there is to this story?

306 Completely false

307 Mostly false

308 About half true

309 Mostly true

310 Completely true

311

312 Do you remember seeing this headline in the Part 1 survey of this study two weeks ago?

313 No

314 Unsure

315 Yes

316

317 Have you seen or heard anything about this story outside of this survey? (e.g. heard about it from a friend, saw it on the news, read about it on social media, etc.)

318 No

319 Unsure

320 Yes

321

322

323 [Repeat for all headlines]

324

325 [If relevant] You reported seeing this story outside of the survey: "RNC Chair Ronna McDaniel called President Trump "f***ing idiot" in a closed meeting and suggested it may be better if Democrats win the next election."

326

327

328

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330

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332

333

334

335

336

337

Can you briefly share more about where you heard it and what you felt about it?

[If relevant] You reported seeing this story outside of the survey: "Discussing voter fraud allegations in private meeting, Tom Perez, DNC Chair, suggested that electing Democrats "more important" than the letter of the law."

Can you briefly share more about where you heard it and what you felt about it?

338
 339 [If relevant] You reported seeing this headline outside of the survey: "Leaked company
 340 documents show top E-cigarette company Juul—which insisted it didn't market to teens—sought
 341 teens for focus groups and as models."

342
 343 Can you briefly share more about where you heard it and what you felt about it?
 344

345

346 **Self-Awareness Questions**

347 In the first study, you received a warning attached to some articles saying that were false. How
 348 effective do you think a warning like the one you saw would be in getting you to distrust a
 349 headline on social media?

- 350 Not effective at all
- 351 Slightly effective
- 352 Moderately effective
- 353 Very effective
- 354 Extremely effective
- 355 N/A - I don't remember the warning I received

356

357 In general, how accurately do you think you are able to recall whether a particular piece of news
 358 you heard is true or false?

- 359 Not accurately at all
- 360 Slightly accurately
- 361 Moderately accurately
- 362 Very accurately
- 363 Extremely accurately

364

365 When you see a headline online, how often do you seek additional information to confirm
 366 whether it is true or false?

- 367 Never
- 368 Rarely
- 369 Sometimes
- 370 Often
- 371 Almost always

372

373 If you come across a news story, are you more likely to seek out additional information about it
 374 if it supports your political views (e.g. something positive about your party or negative about an
 375 opposing politician) or if it goes against your political views (e.g. something negative about a
 376 politician of your party or positive about an opposing party)?

- 377 More likely to seek additional information about a news story that supports my views
- 378 Equally likely to seek information about a story whether or not it supports my political
 379 views
- 380 More likely to seek additional information about a news story that goes against my views

381

382

383 **True or False Judgments**

384 Some of the headlines presented in these two surveys were false and had associated warnings
 385 explaining as such, while those without a warning were created as a composite from multiple real
 386 headlines from mainstream sources.

387
 388 Out of the headlines you saw over these past two surveys, we would like you to decide whether
 389 you think it's more like that it is mostly a true store or if it is mostly a false story. Please do not
 390 do any outside searches, just use your own intuition and your memory of these stories from this
 391 survey or other things you've seen. We recognize some stories can have a mix of truth and false;
 392 please judge whether on the whole you think the claim in general is true or false.

393
 394 Do you believe the claim in this headline is overall true (or mostly true) or overall false (or
 395 mostly false)?

396 True False

397

398 [Insert all headlines used in studies, without pictures]

399

400 **Debrief**

401 This study was seeking to compare the effectiveness and perceptions of different types of
 402 warning labels for false news stories. The three headlines you received a warning about in Part 1
 403 were all entirely made up by the researchers for this study. Whether or not you remembered
 404 which were the false stories, this will help us better understand what types of warnings are more
 405 effective.

406

407 As a reminder, the below headlines all had a warning labeling them as false in part 1, and were
 408 entirely made up by the researchers for the purpose of this study:

409

410 RNC Chair Ronna McDaniel called President Trump “f***ing idiot” in a closed meeting and
 411 suggested it may be better if Democrats win the next election

412

413 Discussing voter fraud allegations in private meeting, Tom Perez, DNC Chair, suggested that
 414 electing Democrats “more important” than the letter of the law

415

416 Leaked company documents show top E-cigarette company Juul—which insisted it didn't market
 417 to teens—sought teens for focus groups and as models

418

419 Additionally, this headline in Part 2 was taken from a satire site and is not true:

420

421 A couple in California named their newborn child “😊😊😊”, the first U.S. child to have emojis
 422 on their official birth certificate

423

424 All the rest of the headlines were from credible mainstream news sources, though we cannot
 425 completely verify their veracity.

426

427 Please click below to acknowledge that you read the above information and recognize those four
 428 stories were false.

429 Yes, I read the above information and recognize those headlines are not true.

430
431 Thank you! That is the end of this study. If you have any comments to share about your feelings
432 on the warnings you received, or factors that make you seek out additional information about
433 news, or anything else you'd want to share about fake news online, please let us know here:
434

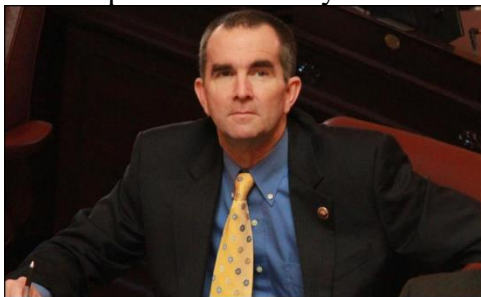
435
436 **News Headlines Added to Part 2**

437
438 **True Democrat-Friendly**



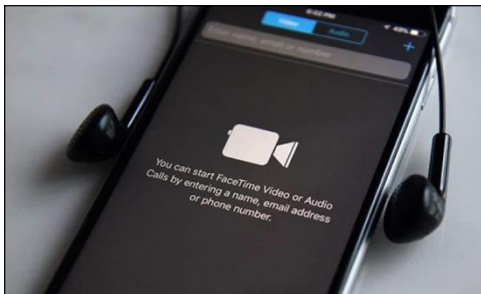
439 A White House ethics oversight group found that
440 Ivanka Trump used her personal email account
441 to conduct official government business

442
443 **True Republican-Friendly**



442 Ralph Northam, Democratic Governor of
443 Virginia, has rejected calls to resign over
444 blackface photo in his college yearbook

445
446 **True Non-Partisan**



445 Bug with Apple's FaceTime software allowed
446 users to eavesdrop on the microphones of other
447 users without their knowledge or permission

448 False Non-Partisan

STATE OF CALIFORNIA
CERTIFICATION OF VITAL RECORDS
CITY OF BERKELEY
HEALTH AND HUMAN SERVICES

PLACE OF BIRTH California State Board of Health OTHER BY VITAL RECORDS
County of ALAMEDA STANDARD CERTIFICATE OF BIRTH Long Distance: No. 480
City of BERKELEY ALTA BATES REGISTERED Date of issue: 09/22/2016
* FULL NAME OF CHILD: 👶🧒🧑 Reiner
* SEX: Male Female * BIRTH DATE: 09/22/2016 * BIRTH TIME: 08:00
* FATHER: Ralph Cleaver Baker * MOTHER: Jenelle Day Shure
* RACE: White * ETHNICITY: Other

A couple in California named their newborn child "👶🧒🧑", the first U.S. child to have emojis on their official birth certificate

449

450

451

452

453 **Appendix C – Pilot Study to select items**

454 To help decide on options for the political false news items for the study, a survey was
455 posted to reddit.com/r/SampleSize, a forum where people post survey requests for anonymous
456 respondents. To maintain privacy, no demographics were collected other than political party,
457 where they could identify or lean towards either Democrat or Republican, or state that they did
458 not lean towards either. There were 100 respondents in all: 71 Democrats, 13 Republicans, and
459 16 non-leaning independents¹. Figure C.1 below shows the items and how they were rated by
460 each group.

461 Participants were given a list of 16 headlines, some that Democrats would find appealing
462 and some that Republicans would find appealing², and they were told upfront that all were
463 completely false. For each, they were asked to rate on a 5-point scale how believable each story
464 would be if they didn't know it was false. The top one of each was chosen for the study based on
465 high overall believability and small differences between parties; even though all of the headlines
466 were more believable to the side they were friendly towards, these two were less far apart than
467 others. Other discarded headlines, for example, may have been highly believable to one party but
468 not to another. This would have added to the difficulty in disentangling politically-motivated
469 biases from just expectation bias. The two political stories were also relatively well-matched in
470 content, involving a person in charge of the party's national organization making a private
471 comment that would be quite negative for them if made public, and also fitting with general
472 accusations from the other side that have been made in the real world. Unpublished data from a

¹ While this is relatively unbalanced, it was sufficient to see clear differences in the headlines between groups and select the ones that were the most *broadly* believable, meaning they were generally believable both to people who the news was friendly towards and those to whom it was not.

² Due to an error in initial categorization of items, there were 9 Pro-Republican headlines and 7 Pro-Democrat headlines tested, rather than 8 and 8. The items were intended to be loosely matched across parties (e.g., one about paid protestors against Trump, and one about paid rally attendees of Trump), and mistakenly had two negative items about Hillary Clinton in a row instead of another against Trump.

473 separate study (by researchers Debra Lindsay, Jacob Rode, and Peter Ditto) also found the
 474 chosen items had similar levels of plausibility and were seen as favorable to the intended group.

(Democrat-friendly items) How believable is this headline? (1-5)	Dems	Reps	Neither	Average (by group)
Ronna McDaniel, chair of the RNC, caught on tape in closed meeting calling Trump a "complete f***ing idiot" and suggesting it may be better if Democrats win	3.6	3.7	3.7	3.7
Some "supporters" at Donald Trump's campaign rallies admitted to being actors paid to increase crowd size	3.9	3.3	4.0	3.7
Fox News commentator makes jokes about assassinating Nancy Pelosi, receives no repercussions	3.8	2.8	3.6	3.4
Largest Pro-Trump SuperPAC shut down after leader was found to be Russian operative	3.7	2.6	3.2	3.2
High-ranking Army general releases statement that military has never been weaker than under President Trump	3.2	2.3	3.3	2.9
Trump declares that he will re-instate the draft and remove exemptions for minor medical conditions that he used to defer Vietnam draft	2.8	2.2	3.3	2.8
Hillary Clinton secretly donated all profits from her book sales to human rights charities	2.6	1.2	1.9	1.9

(Republican-friendly items) How believable is this headline? (1-5)	Dems	Reps	Neither	Average (by group)
Tom Perez, chair of the DNC, caught on tape saying that Democrats just need to win, regardless of what the voters want	3.5	4.2	3.9	3.9
CNN commentator makes jokes about assassinating President Trump, receives no repercussions	2.1	4.2	2.4	2.9
Some "protesters" at Donald Trump's campaign rallies admitted to being actors paid to increase protest size	3.0	4.0	3.6	3.5
High-ranking Army general releases statement that military has never been stronger than under President Trump	2.8	3.8	3.4	3.4
Uncovered Planned Parenthood records indicate that federal money was illegally used for abortion services	2.2	3.8	2.9	2.9
Health records show that DNC covered up Hillary Clinton's cancer diagnosis during campaign	2.7	3.3	3.0	3.0
Hillary Clinton SuperPAC folds even before she declares candidacy because of campaign finance violations	2.4	2.9	2.9	2.7
Hillary Clinton found to have been colluding with Saudi Arabia during her 2016 presidential campaign	2.3	2.8	2.9	2.6
Trump donates all profits from Mar-A-Lago gained during presidency to Veterans organization	1.5	2.5	1.7	1.9

475
 476 *Figure C.1.* Results by political leaning from headline selection pilot. The top item of each was
 477 chosen to use because they showed good overall believability (especially by the opposing party),
 478 had small difference between political parties, and were thematically well-matched with each
 479 other.

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Appendix D – Correlation Table for individual variables

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492

	Count False Items Believed	Ideology (higher is more conservative)	Interest in Politics	Count True Items Believed	Trust in Social Media	Trust in Online News	Social Media Usage	Conspiratorial Thinking
Count False Items Believed	--							
Ideology (higher is more conservative)	-0.01	--						
Interest in Politics	-0.01	-0.1	--					
Count True Items Believed	0.22***	-0.13	0.20***	--				
Trust in Social Media	-0.05	-0.05	0.04	-0.19**	--			
Trust in Online News	-0.08	-0.11	0.15	-0.10	0.40***	--		
Social Media Usage	0.03	-0.12	0.16	-0.01	0.31***	0.11	--	
Conspiratorial Thinking	0.19**	0.15	0.00	-0.03	0.16	-0.07	0.10	--

493

494 * significant at $p = .05$ 495 ** significant at $p = .01$ 496 *** significant at $p = .001$

497

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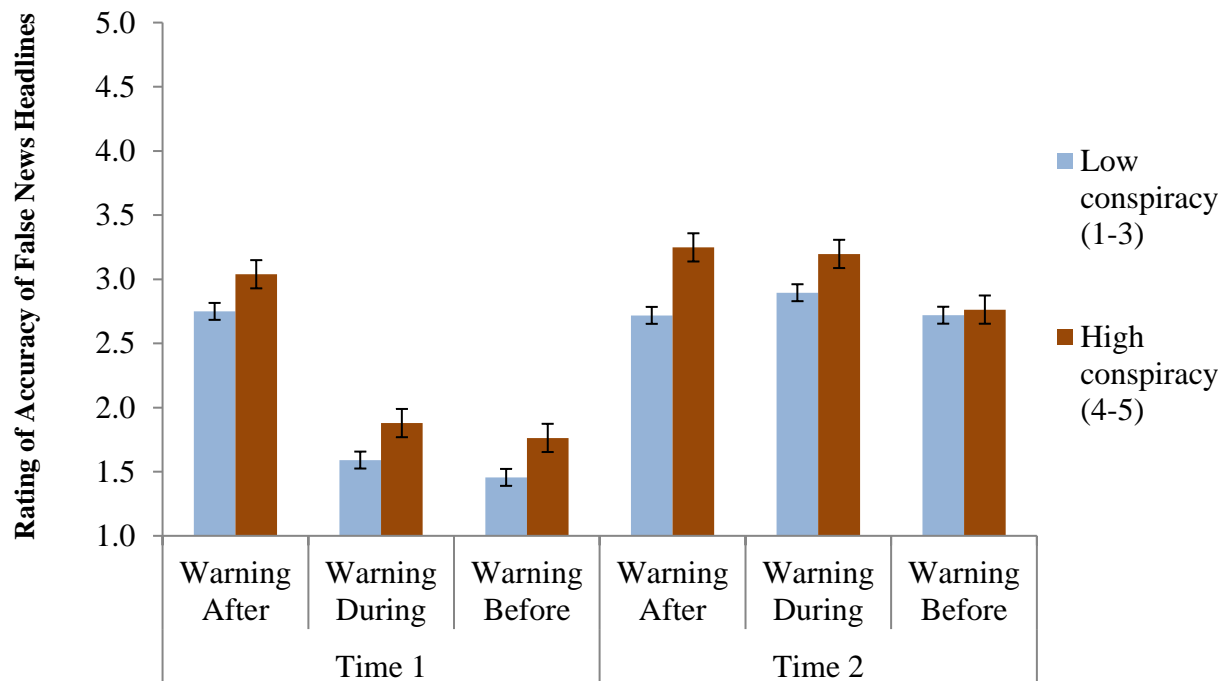
Appendix E – Other analysis not included in main paper

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500

501 We tested some individual moderators of the warning effectiveness and change over time
502 that were not included in the main manuscript. These were done using a similar linear mixed
503 regression, with random effect for intercept for each participant, and a three-way interaction
504 between warning condition, time, and the moderator variable. Warning-Before was used as the
505 reference group for the warning condition to compare it to both Warning-After and Warning-
506 During, while time was a binary variable of 1 or 2. This found that gender, conservatism, and
507 interest in politics had no significant main interaction (all $ps > .05$), meaning they did not
508 moderate the effectiveness of the warning over time.

509 Conspiratorial thinking showed a significant three-way interaction for the Warning-After
510 group ($b = 0.188$, $SE = 0.084$, $p = .025$). Following up with a separate two-way interaction
511 between warning condition and conspiratorial thinking at each timepoint found that there was no
512 impact of conspiracy on warning effectiveness at time 1, but that at time 2, the higher people
513 were on the conspiracy item, the lower their fake news belief was in the warning-before
514 condition relative to the warning after condition (but not compared to warning during). Looking
515 at the figure below shows that the Warning-Before may have been somewhat more effective over
516 time for those highest on the conspiracy scale, as they did not show as much of an elevation as
517 other conditions relative to their lower conspiracy counterparts.



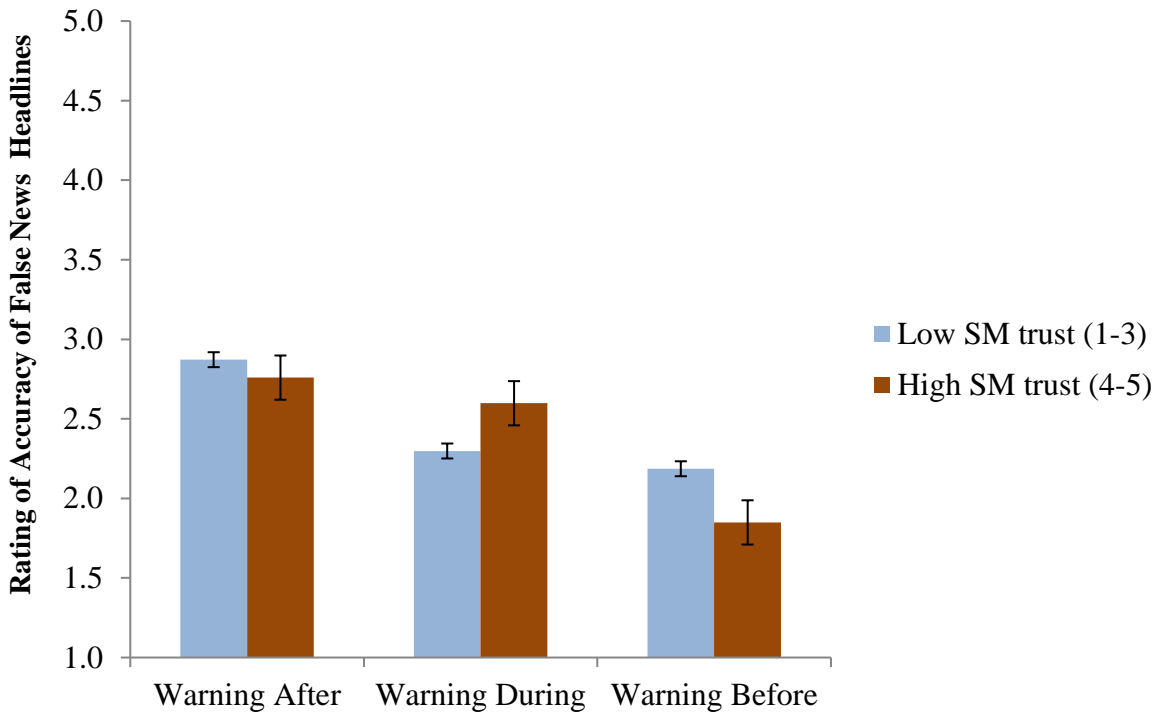
518

519 *Figure E1.* Rating of fake news headline accuracy by condition, time, and level of belief in
 520 global conspiracies on the single-item measure.

521

522

523 We also found an effect of trust in social media, such the more people reported trusting
 524 information found on social media, the larger the difference in accuracy in judgment between the
 525 Warning-Before condition and both the Warning-During condition ($b = 0.373$, $SE = 0.167$, $p =$
 526 $.020$) and Warning-After condition ($b = 0.386$, $SE = 0.180$, $p = .038$). The belief in the fake news
 527 accuracy from each condition by trust in social media are presented in the figure below, and
 528 show that those with the most trust in social media information in general may be most positively
 529 affected by the strong forewarning.



529

530 *Figure E2.* Rating of fake news headline accuracy by condition and self-reported trust in
 531 information found on social media.

532

533 Follow-up analyses showed that for while the difference between the Warning-Before
 534 and Warning-After condition was significant across all levels of trust in social media (all $ps <$
 535 $.001$), for those that were higher in trust in information on social media, the Warning-Before
 536 condition was also more effective than the Warning-During condition ($b = 0.749$, $SE = 0.165$, p
 537 $< .001$), a pattern not seeing in those that reported lower belief in social media ($b = 0.111$, $SE =$
 538 0.067 , $p = .098$). This could be that the warning was most effective in getting people who
 539 general trust information to be more skeptical than they otherwise would have, or their high
 540 belief may mean that they trusted the warning more, and being especially salient was helpful in
 541 getting through to them.

542 These subgroup analyses are exploratory and imperfect, as they relied on single item

543 measures and offered only a quick look at how they affected warning acceptance. They are not

544 meant as solid conclusions but offer interesting avenues for follow-up research more focused on
545 individual differences. In particular, if they serve to identify groups that are more amenable to
546 warnings, this could help identify the best types of interventions that are effective with broader
547 groups or the more relevant groups (i.e., finding the people that share the most and ensuring
548 warning tags are effective for that group).

549 When looking at participant's rating of Interestingness of the articles as a moderator of
550 the interaction between warning condition and time, we found a significant interaction between
551 interest and time ($b = 0.163$, $SE = 0.060$, $p = .006$), such that belief in the accuracy of false
552 articles increased more between Time 1 and Time 2 for articles rated as more interesting.

553 **Belief in Fake News Truth at End of Survey**

554 We also analyzed the item judgments made at the end of the survey, where participants
555 saw a list of all the news items they had seen and had to make a binary judgment on each one of
556 them as to whether the stories were more likely true or false. Table A1 below shows the percent
557 believing each item by group and condition.

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567 Table E1

568 *Final belief in fake news by experimental condition and political party*

569

	Percent believing Politically Neutral false news as true	Percent believing Democrat-friendly false news as true		Percent believing Republican-friendly false news as true	
<i>Experimental Condition</i>					
Warning-Before	63%	32% _a	}	27%	
Warning-During	62%	51% _a		***	29%
Warning-After	65%	43%			36%
<i>Political Party</i>					
Democrat	66%	47% _b	}	23% _{cd}	
Non-leaning Independent	57%	38%		***	44% _c
Republican	60%	33% _b			44% _d

570 *Note:* Overall categories in brackets showed significant group differences (***) indicates $p < .001$ in χ^2 tests), meaning
571 either the experimental condition (top 3 rows) or political party (bottom 3 rows) had a significant overall impact on
572 the rate of believing the false items. Within those groups, items with the same subscript letter were significantly
573 different from one another at $p < .05$

574

575 We looked at each item individually in a series of chi-square analyses in order to check
576 whether all items showed similar rates across conditions, or if it were possible that some items
577 showed differently impacts. We did find some differences in individual items. In particular, the
578 Democrat-friendly false news item did show an effect of warning condition ($\chi^2(2) = 9.660, p =$
579 $.008$), driven by those in the Warning-Before condition having a lower rate of belief in the news
580 than those in the Warning-During condition ($\chi^2(1) = 8.807, p = .003$; the other two post-hoc
581 comparisons did not show a significant difference). This pattern did not appear for the other two
582 items. Additionally, there was the expected congruency effect for belief in both political news
583 items, ($ps < .05$) in showing a difference in rate of belief based on political party that was not
584 present for the politically neutral item ($p = .340$). There were no significant interactions between

585 political party and warning condition for any item, meaning that partisanship was a predictor of
586 whether people believed the item or not, and none of the warnings significantly reduced its
587 impact.

588 **Order Effects: Exposure Impact and Self-Reflection**

589 In the Time 1 survey there was a section asking participants for their feelings towards
590 political groups, their likelihood to vote, and the trust they have in various news sources to test
591 whether any of these measures differed based on whether this section came at the beginning or
592 the end of the survey. We wanted to assess whether exposure to the news items (both true and
593 false, and mostly negative) would impact people's responses, for example by decreasing trust in
594 online news or increasing intention to vote. There were no significant differences by order
595 condition on any variable (all $ps > .05$, assessed by multiple ANOVAs).

596 In the Time 2 survey, after rating the headlines, we varied whether participants first
597 responded to a series of self-awareness questions about their own biases and memory (including
598 how accurate they thought their memory was, how often they seek more information about
599 online news stories, and how effective they thought their warning was), or first guessed which of
600 the 19 headlines were true and which were false (with the other section coming directly after).
601 There was no significant impact on the number of false items rated as true ($F(1, 414) = 1.262, p$
602 $= .262$) or the number of true items rated as true ($F(1, 413) < .001, p = .997$) depending on
603 whether participants had first judged their own memory and bias or not. This means that thinking
604 first about bias, memory, and fake news warnings did not make people more skeptical or
605 discriminating in the judgment of news accuracy.