**SI for Overconfidence in news judgements is associated with false news susceptibility**

# Appendix A: Methods supplement

## Study methodology

In the main text and appendices, we draw on data from three studies conducted among a representative sample of the U.S. population by the survey company YouGov, which recruits a large panel of opt-in respondents and then uses a weighting and matching algorithm to construct a final sample that mirrors the demographic composition of the U.S. population. Our participants closely resemble the U.S. population in both demographics and political attitudes and affiliations.

In the text, we identify these studies by the month in which they were conducted. All descriptive statistics below are unweighted.

Our October/November 2018 data come from a two-wave panel study fielded October 19–26 (wave 1; N = 3,378) and October 30–November 6, 2018 (wave 2; N = 2,948). Respondents are 57% female, 80% white, median age 55, 37% hold a four-year college degree or higher, 49% identify as Democrats (including leaners), 34% identify as Republicans (including leaners), and 41% approve of Donald Trump's job performance.

Our November/December 2018 data come from a two-wave panel study fielded November 20–December 27, 2018 (wave 1; N = 4,907) and December 14, 2018–January 3, 2019 (wave 2; N = 4,283). Respondents are 55% female, 68% white, median age 50, 32% hold a four-year college degree or higher, 46% identify as Democrats (including leaners), 36% identify as Republicans (including leaners), and 43% approve of Donald Trump's job performance.

### Web exposure data

We measured pre-treatment online information exposure by aggregating each respondent's web visits for the seven calendar days before the one in which they completed the Wave 1 survey. The lists we used to code each type of media are below:

- Mainstream news visit: One of AOL, ABC News, CBSNews.com, CNN.com, FiveThirtyEight, FoxNews.com, Huffington Post, MSN.com, NBCNews.com, NYTimes.com, Politico, RealClearPolitics, Talking Points Memo, The Weekly Standard, WashingtonPost.com, WSJ.com, or Wikipedia

- False news visit: Any visit to one of the 673 domains identified in Allcott, Gentzkow, and Yu (2019) as a false news producer as of September 2018 excluding those with print versions (including but not limited to *Express*, the British tabloid) and also domains that were previously classified by Bakshy, Messing, and Adamic (2015) as a source of hard news. In addition, we exclude sites that predominantly feature user-generated content (e.g., online bulletin boards) and political interest groups.

We computed a binary measure of exposure to the types of content above as well as a count of the total webpages visited from each category during the period. Duplicate visits to webpages were not counted if they were successive (i.e., a page that was reloaded after first opening it). URLs were cleaned of referrer information and other parameters before de-duplication. (For more detail, see the processing steps described in (Guess, Nyhan, and Reifler 2020).

## News headline stimuli

### October/November 2018 and November/December 2018

Respondents evaluated 12 total articles: 4 mainstream news articles that were congenial to Democrats (2 from low-prominence sources and 2 from high-prominence sources), 4 mainstream news articles that were congenial to Republicans (2 from low-prominence sources and 2 from high-prominence sources), 2 pro-Democrat false news articles, and 2 pro-Republican false news articles.

#### Pro-Democrat false news

VP Mike Pence Busted Stealing Campaign Funds To Pay His Mortgage Like A Thief `http://bipartisanreport.com/2018/09/03/vp-mike-pence-busted-stealing-campaign-funds-to-pay-his-mortgage-like-a-thief/`

Vice President Pence now being investigated for campaign fraud his ties to Russia and Manafort `dctribune.org/2018/08/23/vice-president-pence-now-being-investigated-for-campaign-fraud-his-ties-to-russia-and-manafort/`

#### Pro-Republican false news

Special Agent David Raynor was due to testify against Hillary Clinton when he died `http://www.neonnettle.com/features/1398-fbi-agent-who-exposed-hillary-clinton-s-cover-up-found-dead`

Lisa Page Squeals: DNC Server Was Not Hacked By Russia `https://yournewswire.com/lisa-page-squeals-dnc-server-not-hacked-russia/`

#### Mainstream news that is congenial to Democrats (low-prominence source)

A Series Of Suspicious Money Transfers Followed The Trump Tower Meeting `https://www.buzzfeednews.com/article/anthonycormier/trump-tower-meeting-suspicious-`

transactions-agalarov

A Border Patrol Agent Has Been Called a 'Serial Killer' by Police After Murdering 4 Women https://www.teenvogue.com/story/border-patrol-agent-arrested-murder-4-women-serial-killer

**Mainstream news that is congenial to Democrats (high-prominence source)**

Detention of Migrant Children Has Skyrocketed to Highest Levels Ever https://www.nytimes.com/2018/09/12/us/migrant-children-detention.html

'And now it's the tallest': Trump, in otherwise sombre 9/11 interview, couldn't help touting one of his buildings https://www.washingtonpost.com/gdpr-consent/?destination=\%2fnews\%2fmorning-mix\%2fwp\%2f2018\%2f09\%2f11\%2fand-now-its-the-tallest-trump-in-otherwise-somber-9-11-interview-couldnt-help-touting-one-of-his-buildings\%2f\%3f

**Mainstream news that is congenial to Republicans (low-prominence source)**

Google Workers Discussed Tweaking Search Function to Counter Travel Ban http://uk.businessinsider.com/google-employees-search-protest-travel-ban-2018-9

Feds said alleged Russian spy Maria Butina used sex for influence. Now, they're walking that back. https://news.vice.com/en_us/article/wjyqe4/feds-said-alleged-russian-spy-maria-butina-used-sex-for-influence-now-theyre-walking-that-back

**Mainstream news that is congenial to Republicans (high-prominence source)**

Small business optimism surges to highest level ever, topping previous record under Reagan https://www.cnbc.com/2018/09/11/small-business-optimism-surges-to-highest-ever.html

Economy adds more jobs than expected in August, and wage growth hits post-recession high https://www.cnbc.com/2018/09/07/us-nonfarm-payrolls-aug-2018.html

Figure A1: Oct./Nov. and Nov./Dec. news headline stimuli: Democrat-congenial headlines

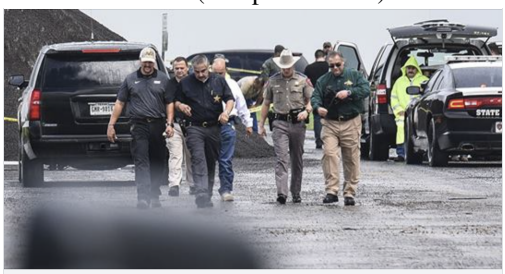
False news


False news


Mainstream news (low-prominence)


Mainstream news (high-prominence)


Mainstream news (low-prominence)




Mainstream news (high-prominence)

Figure A2: Oct./Nov. and Nov./Dec. news headline stimuli: Republican-congenial headlines

False news

NEONNETTLE.COM

**FBI Agent, Who Exposed Hillary Clinton's Cover-up, Found Dead**

FBI Special Agent David Raynor murdered with his own gun - An FBI Special Agent, who was anticipated to expose the extent of Clinton and...

False news

YOURNEWSWIRE.COM | BY SEAN ADL-TABATABAI

**Lisa Page Squeals: DNC Server Was Not Hacked By Russia**

Lisa Page, former FBI lawyer under James Comey and Andrew McCabe, has become the latest rat to...

Mainstream news (low-prominence)

UK.BUSINESSINSIDER.COM

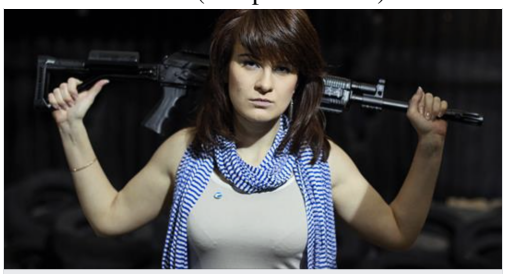
**Google employees considered manipulating search results to help protest Trump's travel ban**

Mainstream news (high-prominence)

CNBC.COM

**Small business optimism surges to highest level ever, topping previous record under Reagan**

Mainstream news (low-prominence)



NEWS.VICE.COM

**Feds said alleged Russian spy Maria Butina used sex for influence. Now, they're walking that back.**

Mainstream news (high-prominence)

CNBC.COM

**Economy adds more jobs than expected in August, and wage growth hits post-recession high**

## Survey question wording

### Age

In what year were you born?

### Gender

What is your gender?
-Male
-Female

### Racial background

What racial or ethnic group best describes you?
-White
-Black or African-American
-Hispanic or Latino
-Asian or Asian-American
-Native American
-Middle Eastern
-Mixed Race
-Other (open)

### Education

What is the highest level of education you have completed?
-Did not graduate from high school
-High school graduate
-Some college, but no degree (yet)
-2-year college degree
-4-year college degree
-Postgraduate

### Political views

When it comes to politics, would you describe yourself as liberal, conservative, or neither liberal nor conservative?
-Very liberal
-Somewhat liberal
-Slightly liberal

-Moderate; middle of the road
-Slightly conservative
-Somewhat conservative
-Very conservative

Generally speaking, do you think of yourself as a...?
-Democrat
-Republican
-Independent
-Other
-Not sure

[Follow-up]
If Democrat:
-Strong Democrat
-Not very strong Democrat
If Republican:
-Strong Republican
-Not very strong Republican
If Independent/Other/Not sure:
-The Democratic Party
-The Republican Party
-Neither
-Not sure

Do you approve or disapprove of the way Donald Trump is handling his job as President?
-Strongly approve
-Somewhat approve
-Somewhat disapprove
-Strongly disapprove

**Political interest**

Some people seem to follow what's going on in government and public affairs most of the time, whether there's an election going on or not. Others aren't that interested. Would you say you follow what's going on in government and public affairs ...
-Most of the time (5)
-Some of the time (4)
-Only now and then (3)
-Hardly at all (2)
-Don't know (1)

**Media trust and Facebook use**

In general, how much trust and confidence do you have in the mass media – such as newspapers, TV and radio – when it comes to reporting the news fully, accurately and fairly?
-None at all (1)
-Not very much (2)
-A fair amount (3)
-A great deal (4)

In general, how much trust and confidence do you have in the information you see on Facebook when it comes to reporting the news fully, accurately, and fairly?
-None at all (1)
-Not very much (2)
-A fair amount (3)
-A great deal (4)

How frequently do you use Facebook?
-Almost constantly
-Several times a day
-About once a day
-A few times a week
-About once a week
-A few times a month
-Once a month
-Less often than once a month
-Never

How frequently do you click on political news stories in your Facebook News Feed?
-Almost constantly
-Several times a day
-About once a day
-A few times a week
-About once a week
-A few times a month
-Once a month
-Less often than once a month
-Never

How frequently do you share political news stories on Facebook?
-Almost constantly
-Several times a day
-About once a day
-A few times a week
-About once a week
-A few times a month

-Once a month
-Less often than once a month
-Never

**Feeling thermometers**

We would like to get your feelings toward some of our political leaders and institutions who are in the news these days using something we call the feeling thermometer. Ratings between 50 degrees and 100 degrees mean that you feel favorable and warm toward the person. Ratings between 0 degrees and 50 degrees mean that you don't feel favorable toward the person or institution and that you don't care too much for that person or institution. You would rate them at the 50 degree mark if you don't feel particularly warm or cold toward them. If we come to a person or institution whose name you don't recognize, you don't need to rate them.
-The news media

**News headline evaluations**

To the best of your knowledge, how accurate is the claim in the above headline?
-Not at all accurate (1)
-Not very accurate (2)
-Somewhat accurate (3)
-Very accurate (4)

How likely would you be to "like" or "share" this article in your Facebook News Feed?
-Not at all likely (1)
-Not very likely (2)
-Somewhat likely (3)
-Very likely (4)

**Evaluations of self and others' ability**

[Rotated]

How confident are you in your own ability to recognize news that is made up?
-Very confident (4)
-Somewhat confident (3)
-Not very confident (2)
-Not at all confident? (1)

How confident are you in Americans' ability to recognize news that is made up?
-Very confident (4)
-Somewhat confident (3)

-Not very confident (2)
-Not at all confident? (1)

**Evaluations of self and others' ability (percentile)**

[Rotated]

How do you think you compare to other Americans in your general ability to recognize news that is made up? Please respond using the scale below, where 1 means you're at the very bottom (worse than 99% of people) and 100 means you're at the very top (better than 99% of people).

How do you think you compare to other Americans in how well you performed in this study at recognizing news that is made up? Please respond using the scale below, where 1 means you're at the very bottom (worse than 99% of people) and 100 means you're at the very top (better than 99% of people).

## Topical misperception question batteries

**October/November 2018 Waves 1 and 2**

1. The audience at a public rally laughed when Trump mocked gaps in Ford's testimony. (true)
2. Ford's allegations were refuted by the people she says were present during the assault. (false)
3. Ford's high school classmates recall hearing the story about the alleged assault at the time. (false)
4. Kavanaugh was questioned by police after a bar fight in college. (true)

# Appendix B: Descriptive tables and figures

Table B1: Perceived news accuracy, engagement, and misperception descriptive statistics

| | Oct./Nov. | | Nov./Dec. | |
|---|---|---|---|---|
| | M | SD | M | SD |
| Mainstream news accuracy | 2.68 | .50 | 2.63 | .52 |
| False news accuracy | 1.90 | .59 | 2.00 | .62 |
| News accuracy difference score | .78 | .65 | .62 | .66 |
| Mainstream engagement | 1.62 | .67 | 1.66 | .69 |
| False engagement | 1.37 | .57 | 1.45 | .63 |
| Engagement difference score | .26 | .43 | .20 | .42 |
| Misperception true statement accuracy | 3.13 | .77 | | |
| Misperception false statement accuracy | 2.55 | .67 | | |
| Misperception difference score | .58 | .87 | | |

Table B2: Balance statistics for Pulse tracking opt-in (Oct./Nov.)

| Variable | Pulse | No Pulse | Difference | N |
|---|---|---|---|---|
| Female | 0.555 | 0.586 | 0.031 | 3,332 |
| | (0.497) | (0.493) | (0.018) | |
| Nonwhite | 0.221 | 0.262 | 0.041** | 3,332 |
| | (0.415) | (0.440) | (0.015) | |
| Age 18–29 | 0.085 | 0.118 | 0.033*** | 3,332 |
| | (0.280) | (0.323) | (0.011) | |
| Age 30–44 | 0.201 | 0.271 | 0.070*** | 3,332 |
| | (0.401) | (0.444) | (0.015) | |
| Age 45–59 | 0.285 | 0.279 | -0.007 | 3,332 |
| | (0.452) | (0.448) | (0.016) | |
| Age 60+ | 0.429 | 0.333 | -0.096*** | 3,332 |
| | (0.495) | (0.471) | (0.017) | |
| College | 0.371 | 0.371 | 0.001 | 3,332 |
| | (0.483) | (0.483) | (0.017) | |
| Political interest | 3.806 | 3.698 | -0.108** | 3,329 |
| | (1.122) | (1.178) | (0.041) | |
| Political knowledge | 3.311 | 3.125 | -0.185*** | 3,363 |
| | (1.526) | (1.529) | (0.054) | |
| Republican | 0.332 | 0.355 | 0.022 | 3,363 |
| | (0.471) | (0.479) | (0.017) | |
| Democrat | 0.497 | 0.471 | -0.026 | 3,363 |
| | (0.500) | (0.499) | (0.018) | |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Data are from Wave 1. Cell entries are means with robust standard errors in parentheses.

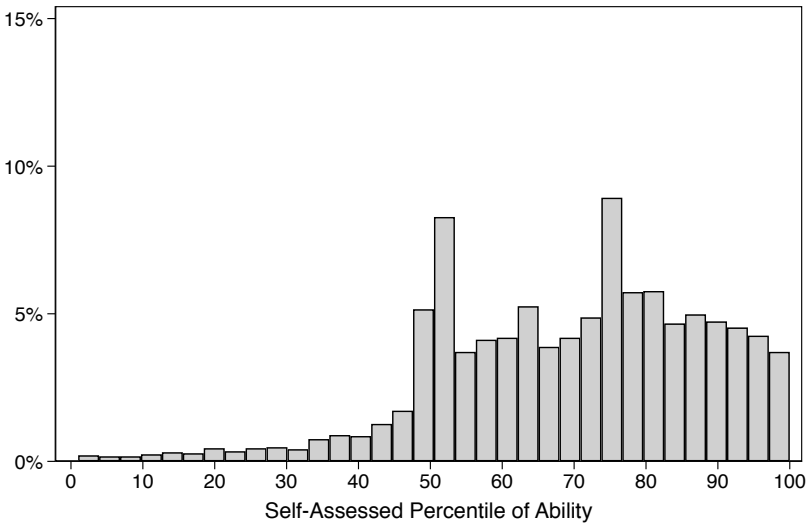
Table B3: Balance statistics for Pulse tracking opt-in (Nov./Dec.)

| Variable | Pulse | No Pulse | Difference | N |
|---|---|---|---|---|
| Female | 0.563 | 0.541 | -0.022 | 4,907 |
| | (0.496) | (0.498) | (0.017) | |
| Nonwhite | 0.207 | 0.347 | 0.140*** | 4,907 |
| | (0.405) | (0.476) | (0.015) | |
| Age 18–29 | 0.079 | 0.196 | 0.118*** | 4,907 |
| | (0.269) | (0.397) | (0.010) | |
| Age 30–44 | 0.168 | 0.282 | 0.114*** | 4,907 |
| | (0.374) | (0.450) | (0.014) | |
| Age 45–59 | 0.338 | 0.227 | -0.110*** | 4,907 |
| | (0.473) | (0.419) | (0.016) | |
| Age 60+ | 0.415 | 0.295 | -0.121*** | 4,907 |
| | (0.493) | (0.456) | (0.017) | |
| College | 0.428 | 0.289 | -0.139*** | 4,907 |
| | (0.495) | (0.453) | (0.017) | |
| Political interest | 3.775 | 3.568 | -0.207*** | 4,899 |
| | (1.132) | (1.175) | (0.039) | |
| Political knowledge | 3.423 | 2.948 | -0.475*** | 4,907 |
| | (1.492) | (1.595) | (0.052) | |
| Republican | 0.355 | 0.356 | 0.002 | 4,907 |
| | (0.479) | (0.479) | (0.017) | |
| Democrat | 0.503 | 0.451 | -0.052*** | 4,907 |
| | (0.500) | (0.498) | (0.017) | |

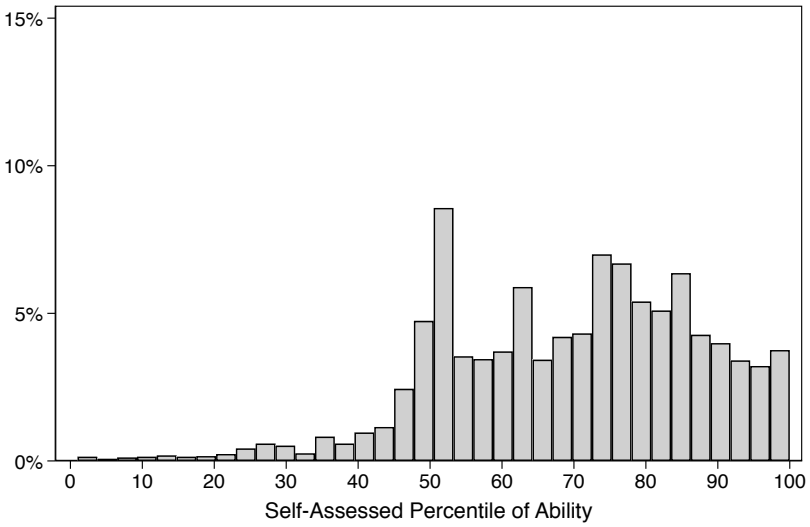
* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Data are from Wave 1. Cell entries are means with robust standard errors in parentheses.

Figure B1: Distribution of self-assessed relative ability at news discernment

(a) Oct./Nov. 2018



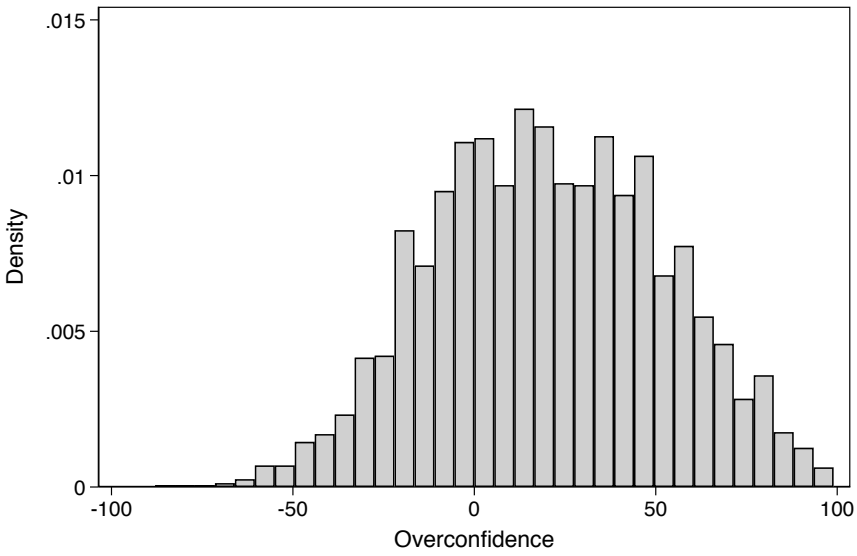

(b) Nov./Dec. 2018



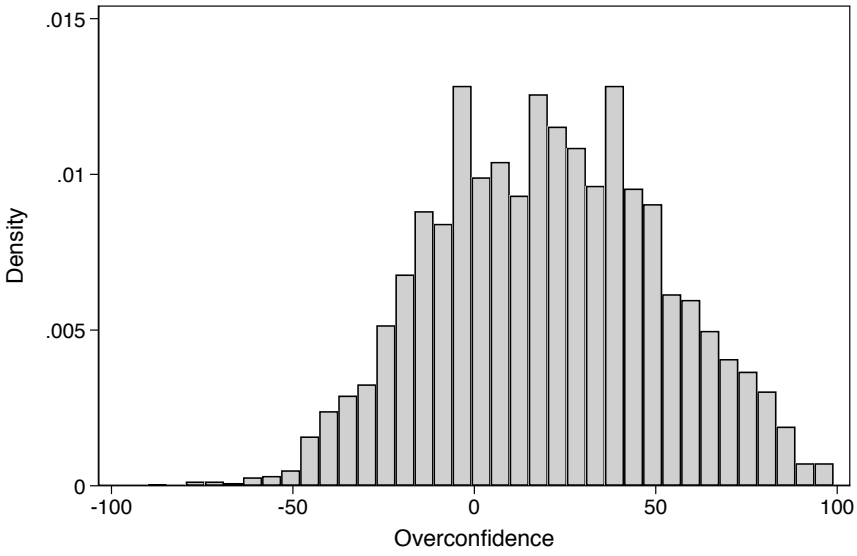

Notes: Oct./Nov. N = 2,911, Nov./Dec. N = 4,259.

Figure B2: Distribution of overconfidence

(a) Oct./Nov. 2018



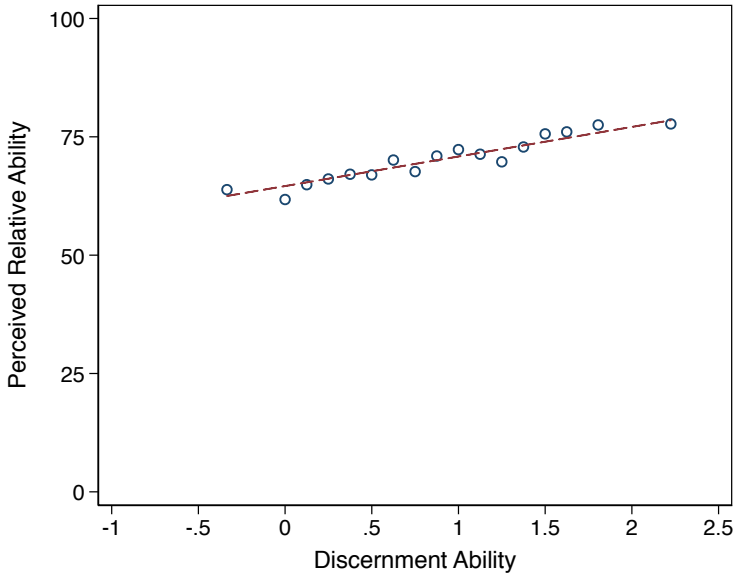

(b) Nov./Dec. 2018



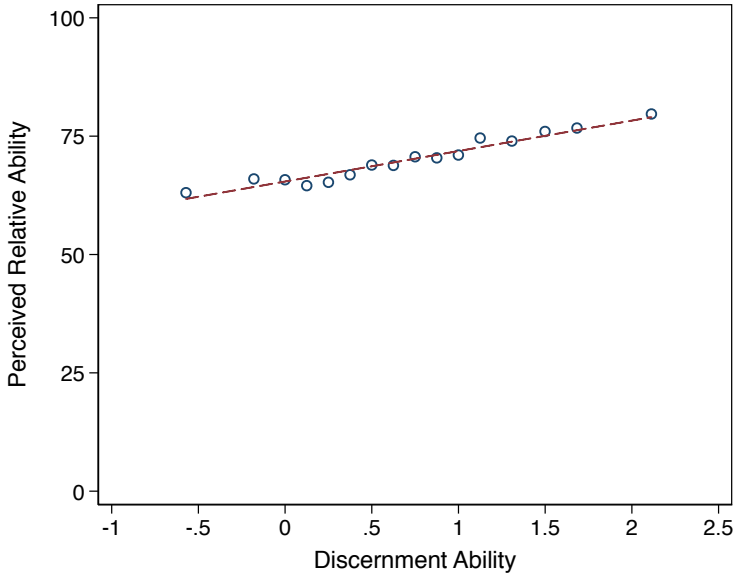

Notes: The overconfidence measure subtracts the respondent's actual percentile in distinguishing between legitimate and false news headlines from their self-rated percentile. Oct./Nov. N = 2,888. Nov./Dec. N = 4,212.

Figure B3: Perceived ability across discernment

(a) Oct./Nov. 2018



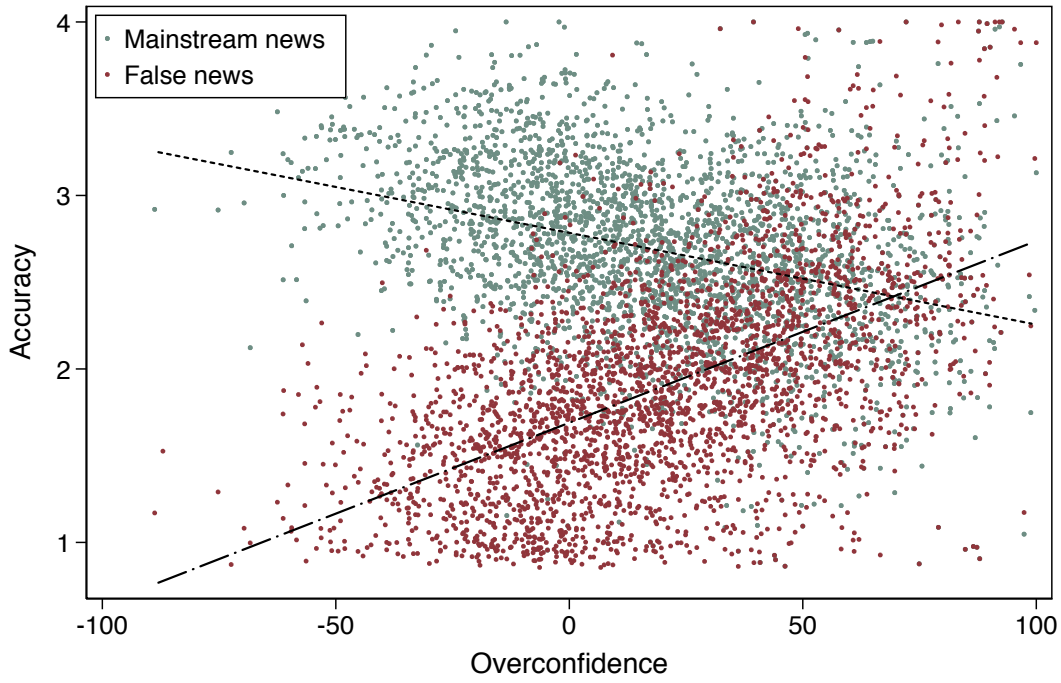

(b) Nov./Dec. 2018



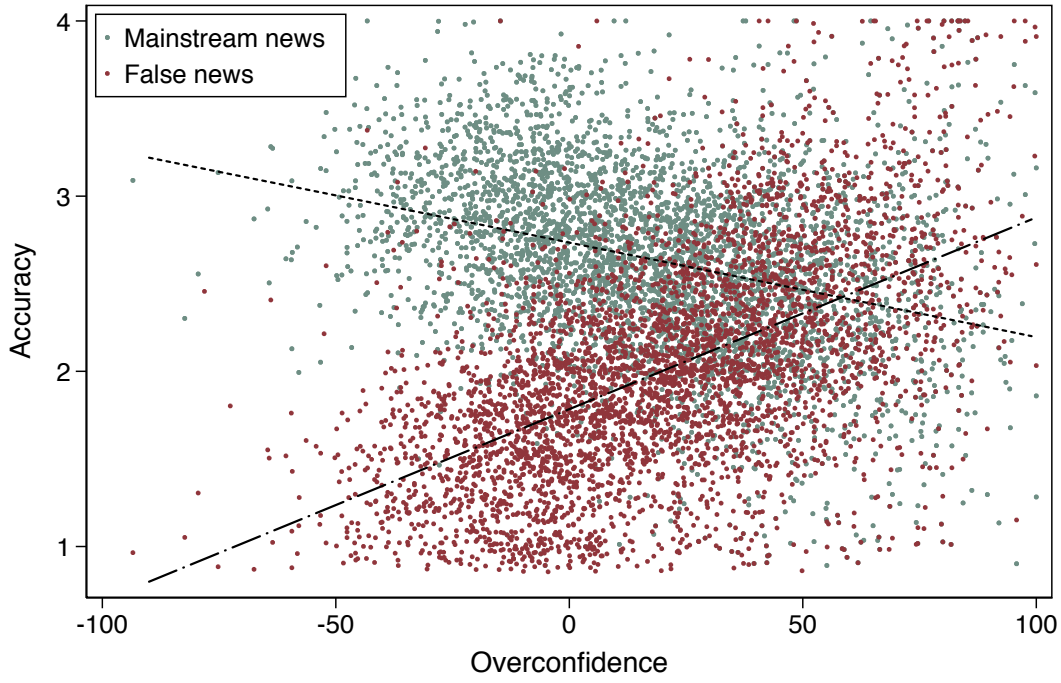

Notes: Discernment ability is computed as (mean mainstream news accuracy - mean false news accuracy). These values are shown as means across 20 equally sized bins for visual clarity. Points are binned averages according to discernment ability; lines show predicted values from a linear regression. Oct./Nov. N = 2,888. Nov./Dec. N = 4,212.

Figure B4: Overconfidence across performance on mainstream and false news headlines

(a) Oct./Nov. 2018




(b) Nov./Dec. 2018




Notes: Jittered data. The overconfidence measure subtracts the respondent's actual percentile in distinguishing between legitimate and false news headlines from their self-rated percentile. Oct./Nov. N = 2,888. Nov./Dec. N = 4,212.

Figure B5: Example news headline


The image is an example of a pro-Democratic false headline. The full set of news headlines shown to respondents is provided in Appendix A.

# Appendix C: Media attitudes and overconfidence

There is reason to suspect that the overconfident are more likely to rely on their own competency for news discernment and have less trust in and a lower opinion of legitimate sources while having a higher level of trust in news seen on social media feeds. In this Appendix, we therefore examine how attitudes toward the media relate to overconfidence in news discernment.

The survey included three measures of attitudes towards the media we use below. First, we asked "In general, how much trust and confidence do you have in the mass media – such as newspapers, TV and radio – when it comes to reporting the news fully, accurately and fairly?"with response options ranging from "none at all" (1) to "a great deal" (4). Second, we asked "In general, how much trust and confidence do you have in the information you see on Facebook when it comes to reporting the news fully, accurately, and fairly?" with the same response options. Finally, we included a standard feeling thermometer for affect towards "the news media." We refer to these measures below as *mass media trust*, *FB information trust*, and *media affect*, respectively. in the following models, we first use each to independently predict our measure of overconfidence and then include all three in an omnibus model. All models include our standard set of covariates and are estimated with survey weights.

We find that mass media trust and media affect are both negatively associated with overconfidence. In other words, those who trust the mainstream media more are less overconfident in their abilities to discern false news. On the other hand, those who place greater trust in information seen on Facebook are *more* overconfident.

Table C1: Media trust and overconfidence in false news detection ability (single item models)

| | Oct./Nov. 2018 | | | Nov./Dec. 2018 | | |
|---|---|---|---|---|---|---|
| Mass media trust | -0.0277* | | | 0.0076 | | |
| | (0.0110) | | | (0.0072) | | |
| FB information trust | | 0.0709*** | | | 0.0589*** | |
| | | (0.0113) | | | (0.0073) | |
| Media affect (FT) | | | -0.0010*** | | | 0.0001 |
| | | | (0.0003) | | | (0.0002) |
| Constant | 0.4275*** | 0.2452*** | 0.4072*** | 0.3191*** | 0.2228*** | 0.3517*** |
| | (0.0430) | (0.0430) | (0.0378) | (0.0315) | (0.0309) | (0.0308) |
| Control variables | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| $R^2$ | 0.09 | 0.11 | 0.09 | 0.10 | 0.12 | 0.10 |
| N | 2908 | 2908 | 2860 | 4250 | 4248 | 4089 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. The overconfidence measure subtracts the respondent's actual percentile in distinguishing between legitimate and false news headlines from their self-rated percentile, and is re-scaled to range from -1 to 1. Controls: Democrat, Republican, college education, gender, nonwhite racial background, and age.

Table C2: Media trust and overconfidence in false news detection ability

| | Oct./Nov. 2018 | Nov./Dec. 2018 |
|---|---|---|
| Mass media trust | -0.0478*** | -0.0214* |
| | (0.0141) | (0.0099) |
| FB information trust | 0.0993*** | 0.0681*** |
| | (0.0115) | (0.0078) |
| Media affect (FT) | -0.0008* | -0.0001 |
| | (0.0004) | (0.0003) |
| Constant | 0.3150*** | 0.2691*** |
| | (0.0453) | (0.0362) |
| Control variables | ✓ | ✓ |
| $R^2$ | 0.14 | 0.12 |
| N | 2860 | 4085 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. The overconfidence measure subtracts the respondent's actual percentile in distinguishing between legitimate and false news headlines from their self-rated percentile, and is re-scaled to range from -1 to 1. Controls: Democrat, Republican, college education, gender, nonwhite racial background, and age.

# Appendix D: Additional analyses of topical misperceptions

In the Oct./Nov. survey, we included a short battery of questions asking respondents about their beliefs in specific claims related to the confirmation hearings for Justice Brett Kavanaugh, which occurred shortly before the survey was fielded. This battery was included in both waves of the Oct./Nov. survey. We focus in the main text only on the wave 2 results as the first wave preceded our collection of the overconfidence measure, but this appendix shows that our results replicate fully when using the wave 1 topical misperception battery.

Table D1: Overconfidence and misperceptions (Oct./Nov. wave 1 battery)

| | False | Diff. score |
|---|---|---|
| Overconfidence | 0.0679 | -0.3285*** |
| | (0.0948) | (0.0668) |
| Congeniality | 0.8821*** | |
| | (0.0439) | |
| Overconfidence × congeniality | -0.0180 | |
| | (0.1297) | |
| Constant | 1.7817*** | -0.2034 |
| | (0.1026) | (0.1081) |
| Control variables | ✓ | ✓ |
| Statement fixed effects | ✓ | |
| $R^2$ | 0.16 | 0.15 |
| N (statement) | 4882 | |
| N (respondent) | 2445 | 2903 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. Respondents rated the accuracy of four statements regarding the Kavanaugh appointment. The overconfidence measure subtracts the respondent's actual percentile from their self-rated percentile, and is re-scaled to range from -1 to 1. Controls: Democrat, Republican, college education, gender, nonwhite racial background, and age.

# Appendix E: Preregistration

In this appendix, we present a "populated pre-analysis plan" (Duflo et al. 2020) that details the location of our pre-registered results in the manuscript as well as departures from the plan. Our full pre-analysis plans were filed in the EGAP/OSF registry, where all data and analysis script will be shared. Note that the numbering in the below section reflects that of the original document, not the main text.

## Preregistered hypotheses and research questions

### Third-person perception difference in the ability to recognize fake news

*H1. Respondents will, on average, be more confident in their "own ability to recognize news that is made up" than they are in "Americans' ability to recognize news that is made up." They will also rate themselves on average above the* $50^{\text{th}}$ *percentile in the ability to distinguish real from fake news.*

- The first test described in H1 is reported in a separate manuscript. The second test is described in the text (Results, paragraph 2). As it is a fairly basic descriptive finding, we did not enumerate H1 in our hypothesis section in the main text for expositional reasons, though it is supported and we report the outcome accordingly.

### Descriptive analysis: Dunning-Kruger effect

*RQ1: To what extent will low performers (those who are least accurate in identifying real and fake news) overrate their ability to distinguish real from fake news? (i.e., express equal or greater confidence in their own ability to distinguish real from fake news compared to other Americans)*

- See Figure 1.

### Experimental effects

*H2. Respondents exposed to a fake news digital literacy intervention will report a larger gap between their confidence in their "own ability" and "Americans' ability" to detect fake news (TPPFN) compared to those not exposed to an intervention.*

- Reported in a separate manuscript.

*RQ2: Will exposure to a news tips intervention increase overconfidence in people's ability to distinguish real from fake news?*

- Reported in a separate manuscript.

**Political/cognitive/demographic correlates**

*RQ3. Are fake news exposure and partisan selective exposure associated with overconfidence in one's ability to distinguish real from fake news and/or TPPFN?*

- Results for distinguishing between legitimate and false news are reported in Table 1. This model departs from the pre-registered model by moving overconfidence from the outcome variable to the independent variable. The pre-registered model is reported in Table E1. In either model specification, overconfidence is associated with false news exposure. The result for TPPFN is reported in a separate manuscript.

*H3. Political interest, knowledge, and performance in distinguishing real from fake news (i.e., lower perceived accuracy for fake news, higher perceived accuracy for real news) will be positively associated with TPPFN.*

- Reported in a separate manuscript.

*RQ4. How does TPPFN vary by party identification and political knowledge?*

- Reported in a separate manuscript.

*RQ5. How do TPPFN and overconfidence in one's ability to distinguish real from fake news vary by age?*

- Reported in a separate manuscript.

*H4. Negative feelings toward the media (mass media trust, Facebook trust, media feelings) will be positively associated with TPPFN (see Tsfati and Cohen 2013, p. 12).*

- Reported in a separate manuscript. See also Appendix C for this analysis using overconfidence rather than TPPFN.

## Exploratory analyses

*Research Question 3: (a) Is overconfidence positively related to holding misperceptions on specific topics? (b) Is this relationship stronger when the claim is politically congenial?*

- See Table 2.

*Research Question 4: (a) Is overconfidence positively related to self-reported willingness to like or share false content? (b) Is this relationship stronger when the claim is politically congenial?*

- See Table 3.

Table E1: Overconfidence and false news exposure (preregistered model)

| | Oct./Nov. Overconfidence | Nov./Dec. Overconfidence |
|---|---|---|
| False news exposure (binary) | 0.0928** | 0.0339 |
| | (0.0353) | (0.0374) |
| Decile 2 | -0.0514 | 0.0457 |
| | (0.0416) | (0.0452) |
| Decile 3 | 0.0101 | 0.0302 |
| | (0.0359) | (0.0467) |
| Decile 4 | 0.0289 | 0.0909* |
| | (0.0346) | (0.0455) |
| Decile 5 | 0.0759* | 0.0251 |
| | (0.0387) | (0.0422) |
| Decile 6 | 0.1079* | 0.0568 |
| | (0.0422) | (0.0445) |
| Decile 7 | 0.0071 | 0.0811 |
| | (0.0463) | (0.0447) |
| Decile 8 | 0.0659 | 0.0796 |
| | (0.0384) | (0.0471) |
| Decile 9 | 0.0650 | 0.0393 |
| | (0.0376) | (0.0413) |
| Decile 10 | 0.0149 | -0.0483 |
| | (0.0416) | (0.0400) |
| Constant | 0.3011*** | 0.3423*** |
| | (0.0592) | (0.0859) |
| Control variables | ✓ | ✓ |
| $R^2$ | 0.11 | 0.11 |
| N | 1780 | 767 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. The overconfidence measure subtracts the respondent's actual percentile in distinguishing between legitimate and false news headlines from their self-rated percentile, and is re-scaled to range from -1 to 1. False news exposure is coded as 1 if the respondent visited any such domain and 0 otherwise. Deciles measure the overall ideological slant of respondents' total information diet, which we divide into deciles from most liberal (decile 1) to most conservative (decile 10) using the method presented in Guess (Forthcoming). Controls: Democrat, Republican, college education, gender, nonwhite racial background, and age.

# Appendix F: Additional model specifications

## Logit models

Table F1: Overconfidence and news exposure (binary measures) logit models

| | Oct./Nov. | | Nov./Dec. | | Pooled | |
|---|---|---|---|---|---|---|
| | False | Mainstream | False | Mainstream | False | Mainstream |
| Overconfidence | 3.0512** | 0.8085 | 1.0061 | 0.9964 | 2.6670*** | 0.8257 |
| | (1.3051) | (0.1876) | (0.0052) | (0.0031) | (0.9023) | (0.1561) |
| Constant | 0.0016*** | 0.8186 | 0.0073*** | 0.4903 | 0.0029*** | 0.7461 |
| | (0.0020) | (0.3694) | (0.0083) | (0.2964) | (0.0026) | (0.2701) |
| Control variables | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| N | 1780 | 1780 | 767 | 767 | 2547 | 2547 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are odds ratios estimated using survey weights. The overconfidence measure subtracts the respondent's actual percentile from their self-rated percentile and is re-scaled to range from -1 to 1. False news exposure is coded as 1 if the respondent visited any such domain and 0 otherwise. Mainstream news exposure is coded as 1 if the respondent visited any such domain and 0 otherwise. All models include controls for Democrat, Republican, college education, gender, nonwhite racial background, age, and media diet slant.

## Perceived ability, actual ability, and overconfidence

Our primary explanatory variable is overconfidence, which we construct as:

$$\text{Overconfidence} = (\text{Perceived ability} - \text{Actual ability}).$$

We view this measurement strategy as appropriate for two reasons. First, this approach is consistent with how overconfidence has been measured in related studies of its behavioral effects (Ortoleva and Snowberg 2015; Sheffer and Loewen 2019; Kovacs, Lagarde, and Cairns 2020; Bregu 2020; Lambert, Bessière, and N'Goala 2012).

Second, and more importantly, our theory is explicitly about the *difference* between perceived and actual ability and not about the independent role of either component. Thus, the main regressions of interest are (broadly) structured as:

$$y_i = \gamma_0 + \gamma_1(\text{Perceived ability} - \text{Actual ability}) + \varepsilon_i, \tag{1}$$

where $y_i$ represents the outcome of interest and $\varepsilon_i$ is our error term. We use this specification because we have no theoretical expectations about the independent role of these predictors and instead want to test what will happen when they are mismatched.

An alternative approach would be to fit the following model specification instead:

$$y_i = \beta_0 + \beta_1 \text{Perceived}_i + \beta_2 \text{Actual}_i + \varepsilon_i, \tag{2}$$

In this case, $\beta_1$ and $\beta_2$ might measure the independent association between each concept and the outcome.

We do not adopt this strategy in the primary analysis because Model 2 does not match up to the theory as we specify it; Model 1 does. This distinction is discussed extensively in Parker and Stone (2014, 142–143):

> More generally, the appropriateness of [the Model 1] and [Model 2] approaches relies on the proposed mechanism for why the effect of misplaced confidence occurs. ... If one is interested in the effect of the difference between confidence and knowledge, one should use the [Model 1] approach. Our review of the literature suggests that most researchers are interested in confidence controlling for knowledge. The reason for this is that most of the mechanisms under investigation —- lack of consideration of additional information, risk taking, and so forth —- follow from one's confidence level rather than its deviation from knowledge. Because it is the person's confidence level, not their knowledge level, that is known to the decision maker, it is confidence that is driving their behavior, whether that is to take risks, seek out additional information, or some other action.
>
> Nonetheless, some mechanisms are hypothesized to result directly from the mismatch of confidence and knowledge. As discussed previously, one example of this type of mechanism can be seen in the work of McGraw et al. (2004), who explicitly were interested in changes in pleasure due to the mismatch between performance and expectations.

In our case, our theory is about the mismatch between actual and perceived ability (Dunning 2011). As a result, we believe Model 1 is most appropriate.

However, it is still worthwhile to dig deeper into the data to understand better whether one of the factors (perceived or actual ability) is driving our results. Most notably, finding that our results are driven by differences in actual ability would place important scope conditions on our findings and change the set of interventions one might undertake to address the problem. These additional analyses are therefore worthwhile even though they do not, in our judgment, speak directly to our core theoretical claims.

We therefore replicate the results in the primary analysis but adopt two approaches found in the literature for estimating the independent relationship between perceived ability and our outcomes. First, we attempt to "residualize" perceived ability. Second, we disaggregate the two components and include them independently in a regression as in Model 2. These approaches are mathematically quite similar, but we include them both for the sake of completeness.[1]

**Residualizing perceived ability**

We begin by following the strategy outlined in Anderson et al. (2012), which uses a residualized measure of perceived ability. Specifically, we first fit the regression

$$\text{Perceived}_i = \text{Actual}_i + \delta_i \tag{3}$$

where $\delta_i$ is the residual error term. Assuming this model is correct, we can then use the estimated residual error $\hat{\delta}_i$ as a measure of perceived ability that is unrelated to actual ability. We then fit a model such as

$$y_i = \beta_0 + \beta_1 \hat{\delta}_i + \varepsilon_i, \tag{4}$$

where $\beta_1$ is intended to represents the independent relationship between (residualized) perceived ability and the outcome.[2]

With this residualization approach, we start with news exposure in Table F2. We find a positive correlation between residualized perceived ability and exposure but it is only statistically significant for the pooled model (Oct./Nov.: $\beta = 0.0670$, $p > .05$; Nov./Dec.: $\beta = 0.0204$, $p > .05$; Pooled: $\beta = 0.0615$, $p < .05$). This differs from the primary analysis only in that coefficient for the Oct./Nov. survey is not statistically significant, though as in the primary analysis, it is similar to the pooled coefficient.

Turning to topical misperceptions, Table F3 shows that there is a significant interaction between residualized perceived ability and congeniality ($\beta = 0.5940$, $p < .05$), indicating that overconfident individuals are more likely to believe in false statements that are consistent with their prior beliefs. This result is more favorable for our theory than the one reported than in the primary analysis. However, unlike the results in the primary analysis, residualized perceived ability is not significantly associated with decreased discernment between mainstream and false news.

Finally, Table F4 shows that residualized perceived ability is positively associated with liking or sharing false stories (Oct./Nov.: $\beta = 0.33$, $p < 0.01$; Nov./Dec.: $\beta = 0.47$, $p < .005$). These

[1] Indeed, the results would be identical if we used the full set of covariates from the disaggregated regression in our residualization process.

[2] We reiterate that if there are no additional covariates, this procedure results in exactly the same point estimates as the disaggregation approach we describe below.

Table F2: Overconfidence and news exposure (binary; residualized)

| | Oct./Nov. | | Nov./Dec. | | Pooled | |
|---|---|---|---|---|---|---|
| | False | Mainstream | False | Mainstream | False | Mainstream |
| Perceived ability (net of actual ability) | 0.0670 | -0.0457 | 0.0204 | 0.0090 | 0.0615* | -0.0155 |
| | (0.0368) | (0.0859) | (0.0462) | (0.1096) | (0.0300) | (0.0705) |
| Constant | -0.0520 | 0.4433*** | -0.0117 | 0.3503*** | -0.0445 | 0.4270*** |
| | (0.0364) | (0.1048) | (0.0492) | (0.1179) | (0.0303) | (0.0824) |
| Control variables | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| $R^2$ | 0.17 | 0.11 | 0.08 | 0.19 | 0.13 | 0.11 |
| N | 1780 | 1780 | 767 | 767 | 2547 | 2547 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients estimated using survey weights. False news exposure is coded as 1 if the respondent visited any such domain and 0 otherwise. Mainstream news exposure is coded as 1 if the respondent visited any such domain and 0 otherwise. All models include controls for Democrat, Republican, college education, gender, nonwhite racial background, age, and media diet slant.

Table F3: Overconfidence and topical misperceptions (residualized)

| | False | Difference score |
|---|---|---|
| Perceived ability (net of actual ability) | -0.1370 | -0.1952 |
| | (0.1780) | (0.1024) |
| Congeniality | 0.8400*** | |
| | (0.0402) | |
| Perceived ability (net) × congeniality | 0.5940* | |
| | (0.2407) | |
| Constant | 2.0202*** | -0.3958*** |
| | (0.1068) | (0.0973) |
| Control variables | ✓ | ✓ |
| Statement fixed effects | ✓ | |
| $R^2$ | 0.16 | 0.14 |
| N | 4872 | 2904 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. Respondents rated the accuracy of four statements regarding the Kavanaugh appointment on four-point scales. The first model's outcome variable is the perceived accuracy of false statements only. The second model's outcome variable is the difference in the perceived accuracy of mainstream versus false headlines. Controls: Democrat, Republican, college education, gender, nonwhite racial background, and age.

relationships are strongest for congenial stories (Oct./Nov.: $\beta = 0.41$, p<.005; Nov./Dec.: $\beta = 0.47$, $p < .005$). However, there is again no significant association with discernment between mainstream and false news in either wave (Oct./Nov.: $\beta = -0.0980$, $p > .05$; Nov./Dec.:$\beta = 0.0283$, $p > .05$).

Table F4: Overconfidence and engagement intention (residualized)

| | Oct./Nov. | | Nov./Dec. | |
|---|---|---|---|---|
| | False | Diff. score | False | Diff. score |
| Perceived ability (net of actual ability) | 0.3278** | -0.0980 | 0.4732*** | 0.0283 |
| | (0.1194) | (0.0711) | (0.0776) | (0.0470) |
| Congeniality | 0.2639*** | | 0.2867*** | |
| | (0.0206) | | (0.0138) | |
| Perceived ability (net) × congeniality | 0.4076*** | | 0.4718*** | |
| | (0.1415) | | (0.0938) | |
| Constant | 1.6256*** | -0.1318* | 1.5840*** | -0.0699 |
| | (0.0937) | (0.0569) | (0.0580) | (0.0379) |
| Control variables | ✓ | ✓ | ✓ | ✓ |
| Headline fixed effects | ✓ | | ✓ | |
| $R^2$ | 0.11 | 0.07 | 0.14 | 0.05 |
| N | 10262 | 2566 | 14868 | 3717 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. Outcome variables are based on self-reported intention to "like" or "share" each of the articles in the headline task on Facebook (four-point scales; 1 = not at all likely, 4 = very likely). These questions are asked only of respondents who report using Facebook. The first model's outcome variable is engagement intent for false headlines only. The second model's outcome variable is the difference in the mean engagement intent for mainstream and false headlines. Controls: Democrat, Republican, college education, gender, nonwhite racial background, and age.

**Disaggregating overconfidence**

Our second approach is to include perceived and actual ability as two separate terms as in Equation 2. Though our theory focuses on overconfidence, one might expect $\beta_1$ to be positive and $\beta_2$ to be negative.

To illustrate this idea (and to facilitate additional discussion below), we simulate data according to the following formulas, which assume a data-generating process in which overconfidence is linearly associated with some outcome measure per our theory:

$$\text{Perceived}_i \sim N(0,1) \tag{5}$$

$$\text{Actual}_i \sim N(0,1) \tag{6}$$

$$\varepsilon_i \sim N(0,6) \tag{7}$$

$$y_i = \gamma(\text{Perceived}_i - \text{Actual}_i) + \varepsilon_i \tag{8}$$

Setting $\gamma = 1$, we then fit the disaggregated regression in Equation 2, which yields the results shown in Table F5. These results, which show perceived ability is positively associated with the outcome and actual ability is negatively related to the outcome, suggest that the disaggregation approach will provide the correct conclusion.

However, it is important to emphasize two important limitations before presenting our disaggregated results. First, this strategy is more difficult to interpret because both coefficients relate to the theory of interest. Increased perceived ability (controlling for actual ability) is an indicator for overconfidence but so too is decreasing actual ability (controlling for perceived ability). Inter-

Table F5: Simulated disaggregated results with no measurement error

| | Coefficient (SE) |
|---|---|
| Perceived ability | 1.1062*** |
| | (0.1922) |
| Actual ability | -1.2214*** |
| | (0.1962) |
| Constant | 0.1797 |
| | ( 0.935 ) |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided).

preting either coefficient in isolation with respect to our theory is therefore difficult, especially in more complex models (i.e., those that include interaction terms). Parker and Stone (2014) provide a more extensive discussion of this point.

Second, the results above are based on the assumption of constant levels of measurement error between the perceived and actual ability variables. If measurement error varies between them, however, it may *appear* as if only one of the two variables is important despite the fact that both are equally weighted in the true data generating process.

To illustrate this point, we conduct a version of the simulation described above in which but now add additional measurement error to the *observed* perceived ability variable included in the disaggregated regression.[3] We thus assume the *same* data generating process where *overconfidence* drives our results but now add differential measurement error for perceived ability. The results in Table F6 now show a null result for perceived ability and a significant negative association with actual ability. Researchers who failed to consider the possibility of differential measurement error might mistakenly infer that it is only actual ability that drives these results.[4]

Table F6: Simulated disaggregated results with unequal measurement error

| | Coefficient (SE) |
|---|---|
| Perceived ability | 0.13480 |
| | (0.07294) |
| Actual ability | -1.16559 *** |
| | (0.19881) |
| Constant | 0.15634 |
| | ( 0.19499 ) |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided).

This scenario seems empirically plausible. *A priori* we would not expect equal rates of mea-

[3] Specifically, we add normal noise with standard deviation 2.5.

[4] Likewise, we could reverse this simulation and produce results that indicate it is only perceived ability that is important.

surement error between these components. Specifically, actual ability is measured via a series of twelve objective evaluation tasks that are combined into an aggregate score By contrast, perceived ability is measured as the average of two self-assessment survey items. Standard psychometric theory would suggest higher rates of measurement error for the perceived ability indicator.

With these caveats, we turn to our disaggregated results below. First we re-examine H1, which predicts that overconfidence will be related to differential rates of exposure to false news websites. The disaggregated models are shown in Table F7. Consistent with the extrapolation from our theory described above, the perceived and actual ability coefficients are signed in opposite directions, but only the actual ability coefficients are significant for the Oct./Nov. ($\beta = -0.0633$, p<.05)and pooled samples ($\beta = -0.0589$, p<.05) These results suggest either that actual ability is more important than perceived ability or is measured with less error per our discussion above. As in the primary analysis, neither is significant for the Nov./Dec. sample.

Table F7: Overconfidence and news exposure (binary; disaggregated)

| | Oct./Nov. | | Nov./Dec. | | Pooled | |
|---|---|---|---|---|---|---|
| | False | Mainstream | False | Mainstream | False | Mainstream |
| Perceived ability | 0.0553 | -0.0365 | 0.0165 | 0.0249 | 0.0520 | -0.0053 |
| | (0.0368) | (0.0860) | (0.0467) | (0.1093) | (0.0300) | (0.0704) |
| Actual percentile | -0.0633* | 0.0487 | -0.0284 | 0.1039 | -0.0589** | 0.0562 |
| | (0.0275) | (0.0576) | (0.0337) | (0.0697) | (0.0221) | (0.0458) |
| Constant | -0.0784* | 0.4597*** | -0.0169 | 0.3135* | -0.0686* | 0.4212*** |
| | (0.0361) | (0.1068) | (0.0551) | (0.1310) | (0.0305) | (0.0857) |
| Control variables | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| $R^2$ | 0.17 | 0.11 | 0.08 | 0.20 | 0.13 | 0.12 |
| N | 1780 | 1780 | 767 | 767 | 2547 | 2547 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients estimated using survey weights. Actual percentile and self-rated percentile are re-scaled to range from -1 to 1. False news exposure is coded as 1 if the respondent visited any such domain and 0 otherwise. Mainstream news exposure is coded as 1 if the respondent visited any such domain and 0 otherwise. All models include controls for Democrat, Republican, college education, gender, nonwhite racial background, age, and media diet slant.

Next, we turn to the topical misperceptions results. In the primary analysis, we find no main effects or interactions with congeniality but do find a main effect for the *difference* outcome. When we disaggregate, we do find main effects for the actual ability measure in both analyses but no significant effect for perceived ability. Again, the signs of the significant coefficients for main effects are consistent with our theory, but suggest either that actual ability is more important or is measured with less error. The interaction terms, however, tell a complicated story. There is a positive significant interaction between perceived ability and congeniality ($\beta = 0.62$, $p < .01$), indicating that more overconfident individuals are more likely to believe false claims that are congenial to their prior beliefs. However, there is also a positive significant coefficient for the interaction with actual ability ($\beta = 0.26$, $p < .05$), which suggests that overconfidence (decreased actual ability controlling for perceived ability) increases belief in false stories only when they are not congenial.

Finally, we turn to the results for engagement intentions. For the headline-level analyses, the results again mirror the findings in the primary analysis with both the perceived ability and ac-

Table F8: Overconfidence and topical misperceptions (disaggregated)

| | False | Difference score |
|---|---|---|
| Perceived ability | -0.1632 | -0.0901 |
| | (0.1778) | (0.1002) |
| Actual ability | -0.2009* | 0.4923*** |
| | (0.0996) | (0.0720) |
| Congeniality | 0.2899 | |
| | (0.1615) | |
| Perceived ability × congeniality | 0.6197** | |
| | (0.2392) | |
| Actual ability × congeniality | 0.2622* | |
| | (0.1302) | |
| Constant | 2.2091*** | -0.3558*** |
| | (0.1421) | (0.0958) |
| Control variables | ✓ | ✓ |
| Statement fixed effects | ✓ | |
| $R^2$ | 0.16 | 0.16 |
| N | 4872 | 2904 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. Respondents rated the accuracy of four statements regarding the Kavanuagh appointment on 4-pt. scales. The first model's outcome variable is perceived accuracy of false statements only. The second model's outcome variable is the difference score (mean(true)-mean(false)). Actual percentile and self-rated percentile are re-scaled to range from -1 to 1. Controls are: Democrat, Republican, college education, gender, nonwhite racial background, and age.

tual ability coefficients being significant (but signed in opposite directions). The interactions with headline congeniality are also both significant and correctly signed.

For the difference score analysis, the results are more mixed. The actual ability coefficient is significant and positive for the Oct./Nov. sample ($\beta = 0.60$, $p < .005$) and the Nov./Dec. sample ($\beta = 0.61$, $p < .005$). However, the perceived ability coefficient is not significant for the Oct./Nov. sample ($\beta = 0.03$, SE=0.07, $p > .05$) and significant but incorrectly signed for the Nov./Dec. analysis ($\beta = 0.19$, SE=0.04, $p < .005$).

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Table F9: Overconfidence and engagement intention (disaggregated)

| | Oct./Nov. | | Nov./Dec. | |
|---|---|---|---|---|
| | False | Diff. score | False | Diff. score |
| Perceived ability | 0.1720 | 0.0304 | 0.2827*** | 0.1859*** |
| | (0.1127) | (0.0670) | (0.0742) | (0.0437) |
| Actual ability | -0.8064*** | 0.5978*** | -0.7606*** | 0.6119*** |
| | (0.0747) | (0.0432) | (0.0446) | (0.0324) |
| Congeniality | 0.0953 | | 0.0258 | |
| | (0.0936) | | (0.0624) | |
| Perceived ability × congeniality | 0.3522* | | 0.4779*** | |
| | (0.1381) | | (0.0919) | |
| Actual ability × congeniality | -0.1617* | | -0.1476** | |
| | (0.0749) | | (0.0527) | |
| Constant | 1.5157*** | -0.1580** | 1.4655*** | -0.2474*** |
| | (0.1080) | (0.0573) | (0.0621) | (0.0370) |
| Control variables | ✓ | ✓ | ✓ | ✓ |
| Headline fixed effects | ✓ | | ✓ | |
| $R^2$ | 0.17 | 0.19 | 0.19 | 0.20 |
| N | 10262 | 2566 | 14868 | 3717 |

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. Outcome variables are based on self-reported intention to "like" or "share" each of the articles in the headline task on Facebook (4-pt. scales; 1 = not at all likely, 4 = very likely). These questions are asked only of respondents who report using Facebook. The first model's outcome variable is engagement intent for false headlines only. The second model's outcome variable is the difference score (mean(mainstream)-mean(false)).Actual percentile and self-rated percentile are re-scaled to range from -1 to 1. Controls are: Democrat, Republican, college education, gender, nonwhite racial background, and age.


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