Political Lie Detection

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Abstract

Can citizens tell when politicians lie to them? Do they have the ability to accurately judge the veracity of what politicians say, discerning true from false statements? Does the truth matter? I elicit truth perceptions in a novel statement rating task, asking respondents to judge the veracity of real statements from politicians, and I experimentally investigate how the availability of source cues affect these perceptions. Comparing perceptions to the evaluations of an independent, fact-checking organization, I find robust evidence that perceptions track the truth. While partisan cues increase gaps in perceptions, responsiveness to the truth persists rather than diminishes. Political lie detection is possible through the aggregation of individual perceptions. (Word count: 7,636)

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Politicians are not known for their fidelity to the truth. They exaggerate their qualifications for office and the benefits of their preferred policies. They use facts selectively and out of context to promote partisan agendas and to denigrate the opposition. When accused of wrongdoing, they construct carefully worded denials. Sometimes, they flat out lie. Bill Clinton "did not have sexual relations with that woman." Richard Nixon categorically denied any knowledge of the Watergate burglary. Donald Trump and his surrogates just make things up, often contradicting their own previous statements. If lying is widely expected, then honesty is all the more celebrated as a virtue because it is rare. Indeed, in American political culture, great presidents are believed to be fundamentally honest. Abraham Lincoln is "Honest Abe." A young George Washington supposedly admitted to chopping down his father's cherry tree, resolutely declaring "I cannot tell a lie."[1] While citizens may prize honesty and abhor deception, are they capable of assessing the veracity of what politicians say? To what extent can citizens distinguish between statements that are true and those that are false? Do perceptions of truthfulness depend on the underlying truth of the statements themselves or on cues such as the speaker's partisanship?

The capacity to detect deception is a critical social skill. Evolutionary psychologists argue that social cooperation is made possible, in large part, by cognitive mechanisms that allow humans to rapidly detect cheaters and violations of social norms (Cosmides 1989, Cosmides and Tooby 1992). Evidence from economics experiments suggests that observers can predict trustworthiness from promises made in high-stakes prisoners' dilemmas (Belot, Bhaskar and Van De Ven 2012) and that subjects who play strategic communication games understand that speakers exaggerate, thereby allowing listeners to decode the underlying truth (Minozzi and Woon 2013, 2016). Detecting deception is especially salient in the context of criminal justice, but psychology research suggests that accuracy rates in detection are barely over chance and that catching lies depends more on the fact that some people are poor liars rather than differences in individual lie detection ability (Bond and DePaulo 2008,

[1]While this story is widely known and often repeated, ironically, it was a myth propagated by one of Washington's first biographers, Mason Locke Weems, intended to increase book sales (Lengel 2010).

Vrij 2008). A range of social science research therefore suggests that people have some capacity for assessing the veracity of messages, though it also suggests that success may be limited.

Lie detection is important in politics, too, particularly in an era when concerns about "fake news" and misinformation dominate news headlines and political discourse, drawing significant attention from scholars and the public alike (Lazer et al. 2018, Vosoughi, Roy and Aral 2018). If citizens are capable of detecting political lies, then they have tools that enable them to guard against manipulation and persuasion by elites. Competently judging the veracity of a candidate's statements also provides a basis for assessing honesty, supplying the means with which to select candidates with favorable valence characteristics (McCurley and Mondak 1995, Stone and Simas 2010) and establishing trust between representatives and their constituents (Fenno 1978). If citizens can adequately detect false claims and punish politicians at the polls accordingly, then penalties for lying potentially limit mendacity in the public sphere (Lupia and McCubbins 1998) and contribute to democracy's epistemic properties (Landemore 2013). On the other hand, the inability to detect political lies can be detrimental to democratic practice. If exaggeration and fabrication go unchecked, then the benefits of deliberation and the free exchange of ideas are severely diminished, and the legitimacy of representative institutions is imperiled by the lack of trust between the public and politicians. Political lie detection is therefore an important component of democratic competence.

Despite its significance, previous research has not directly investigated citizens' capacity for lie detection in the political sphere. A substantial body of related work, however, presents a discouraging portrait of citizens who are generally *incompetent* in carrying out their democratic responsibilities (Achen and Bartels 2016). It is well established that many citizens are not only overwhelmingly ignorant (Delli Carpini and Keeter 1996), but also misinformed about basic political facts and policies (Kuklinski et al. 2000). They also hold beliefs lacking consistency and constraint (Converse 1964, Zaller 1992) and attitudes at odds with

those they would hold if they were less ignorant (Bartels 1996, Gilens 2001). Although political heuristics might provide cognitive shortcuts for citizens to use to overcome deficiencies in knowledge (Lau and Redlawsk 2001, Lupia 1994, Popkin 1991), over-reliance on heuristics also tends to generate systematic biases and decision errors (Dancey and Sheagley 2013, Kahneman, Slovic and Tversky 1982, Kahneman 2011).

Research on political information processing does little to dispel this negative assessment of citizen competence. Studies of the dynamics of false beliefs and rumors show that correcting misinformation and its consequences can be quite difficult. For example, Nyhan and Reifler (2010) attempt to correct misinformation about the Iraq War and find that doing so does not eliminate misperceptions and can even have a backfire effect.[2] Berinsky (2015) shows that dispelling rumors about Obamacare "death panels" is possible if the corrections come from unlikely sources, but that merely repeating a rumor strengthens it. Using scenarios with hypothetical candidates, Thorson (2016) demonstrates that the attitudinal consequences of misinformation persist even when the information itself is successfully corrected. The prevalence and persistence of false beliefs suggests that much of the mass public is unable to distinguish fact from fiction. There is, however, a silver lining: false beliefs are typically held by a small, but intense, minority. It is therefore encouraging that most people do indeed recognize rumors as false. However, these studies tend to focus on the difficulties of correcting false beliefs, and we do not know whether perceptions or the degree to which citizens engage in motivated reasoning (e.g., Taber and Lodge 2006) will vary with the underlying truth.[3]

A related area of research, no less discouraging, examines how factual beliefs might correspond to partisanship. Partisans give different answers to survey questions about a

[2]Recent evidence suggests that the backfire effect may be limited. Studying a wide variety of issues, Wood and Porter (2016) find that the backfire effect is specific to the issue of Iraq and weapons of mass destruction. Nyhan et al. (2017) study corrections of misleading claims made by Donald Trump during the 2016 election and find that while corrections are effective in reducing misperceptions, even among Trump's supporters, attitudes toward Trump himself were unaffected.

[3]One exception is Swire et al. (2017), whose experiments compare information processing of perceptions of accurate versus inaccurate claims made by Donald Trump.

variety of politically-relevant facts (Jerit and Barabas 2012). Surprisingly, this includes facts about objective conditions such as inflation and unemployment (Ansolabehere, Meredith and Snowberg 2013, Bartels 2002). These findings suggest that partisanship powerfully shapes political perceptions and knowledge, wherein Democrats and Republicans perceive different political "realities" (or at least selectively attend to different sources and pieces of information).[4] If partisans can't agree on basic facts, then it seems even less likely that they could agree on what constitutes the truth. This line of research suggests that the public's capacity for political lie detection may be limited and, moreover, may likely be undermined by the strength of political competition and partisan identity.

This study contributes to our understanding of citizen competence and political knowledge by assessing the extent to which citizens can discriminate between truth and lies and the extent to which partisanship affects this capacity. But studying political lie detection faces an important methodological problem: How does a researcher, let alone a citizen or survey respondent, know when a politician is lying or telling the truth? Indeed, what counts as the truth is contested, especially in politics. Without delving into deep philosophical or epistemological problems regarding the nature of truth, I approximate the ground truth by relying on evaluations made by a fact-checking organization (PolitiFact) of real statements made by real politicians.[5] Although it is, of course, impossible to eliminate the need for human judgment entirely, this approach has several strengths that minimize subjectivity: the statements are extensively researched, their truthfulness is assessed by a third-party, and each evaluation is supported by a publicly-stated rationale.

With a reliable external measure of the underlying truth in hand, I investigate the quality of truth perceptions. In contrast to the public's poor performance in many areas related to political knowledge and democratic competence, my findings provide some basis

[4]However, Bullock et al. (2015) and Prior, Sood and Khanna (2015) suggest that such findings reflect partisan cheerleading.

[5]My reliance on PolitiFact to identify the ground truth is similar to Vosoughi, Roy and Aral (2018), who rely on PolitiFact and other fact-checking sites to identify what counts as fake news. Other studies using PolitiFact data include Bucciol and Zarri (2013) and Nyhan and Reifler (2014).

for optimism. First, I find that the public has the capacity for lie detection. Aggregate truth perceptions vary with PolitiFact's truthfulness ratings: the most truthful statements are perceived to be true while the least truthful are perceived to be false. Importantly, political lie detection is possible when perceptions of statements are compared to one another rather than judged on the basis of any single claim. Second, while partisanship matters, it does surprisingly little to undermine the public's comparative lie detection ability. My experimental analysis demonstrates that the overall responsiveness of perceptions to the truth is robust, despite predictable biases and corresponding increases in polarization caused by reliance on partisan cues.

Theoretical Framework

Define the truthfulness of a statement to be the degree to which it is consistent with verifiable facts and evidence. While truth is typically conceived of as binary (as in logic), it is meaningful to think of truthfulness on a continuum. At the extremes, a statement is true if it accurately reflects all of the relevant facts and false if it flatly contradicts them. In between these ends, truthfulness can vary for different reasons. For example, any given statement might involve a mix of claims, and the truthfulness of the statement would be the overall proportion of claims that are true. The richness of natural language also provides speakers with the means to exaggerate and to equivocate (e.g., in self-serving ways) without directly contradicting the evidence. Statements low on truthfulness are those for which a speaker stretches or exaggerates their claims, takes facts out of context, or states misleading policy implications.

Consider a simple framework for expressing the relationship between the truthfulness of a statement T and perceptions of the truth P in terms of the linear equation $P = \alpha + \beta T$. The slope β represents the *responsiveness* of perceptions to the underlying truth, while the intercept α represents the degree of *truth bias*.

There are at least two substantive reasons we might expect a null relationship between perceptions and the truth (a horizontal slope). For one, citizens may be insufficiently knowledgeable and are simply too uninformed and ignorant about policy to be able to accurately judge the veracity of politicians' statements. Another, more sophisticated rationale draws from strategic models of politics and communication. If citizens recognize their ignorance as well as the fact that politicians have incentives to mislead them, then models of cheap talk imply that when the divergence between citizens' and politicians' preferences is sufficiently great, citizens should engage in rational skepticism and discount what politicians say (Crawford and Sobel 1982, Minozzi 2011). If so, then all statements might be viewed as either false ($\alpha < 0$) or ambiguous ($\alpha = 0$), and there would otherwise be no relationship between T and P ($\beta = 0$).

Although citizens as a whole may be generally uninformed, if enough citizens have accurate, independent information about politics and public affairs, groups of citizens in the aggregate may be able to recognize the truth. Epistemic theories of democracy, for example, emphasize the beneficial properties of aggregation (Landemore 2013). Suppose that different citizens have access to different bits of knowledge, many of which may be extremely noisy, but that these pieces of information are unbiased signals of the truth. On average, then, the noise will cancel out and through the process of statistical aggregation (Galton 1907), we would observe a positive relationship between truthfulness and truth perceptions.

Hypothesis 1 (**Tracking**). *Perceptions will be responsive and track the truth:* $\beta > 0$.

Less informed citizens, those without sufficient knowledge to judge the veracity of political statements directly, can instead draw inferences based on other kinds of readily accessible information, such as the identity or partisanship of the speaker. In many informational settings, cue-taking can provide a heuristic that serves as a "rational shortcut" to accurate judgments and decision making (Boudreau 2009, Gigerenzer 2007, Lau and Redlawsk 2001, Lupia 1994, Popkin 1991). An obvious cue is partisanship (Downs 1957),

and there is extensive research that demonstrates reliance on partisan cues (Arceneaux 2008, Lodge and Hamill 1986, Rahn 1993). Knowing that a statement was made by a politician of the same party (shared partisanship) generally implies preference congruence, which generates increased trust and confidence in a speaker's credibility. Conversely, knowing that the statement came from a politician from the opposite party (cross partisanship) generates the inference that the speaker and, by implication the speaker's statements, are untrustworthy.

The strength of partisan effects may come in moderate and strong forms. If citizens' reliance on partisan cues is moderate, then we would expect to see overall shifts in partisans' truth judgments. This would be the case if informed citizens ignored partisan cues and relied on their own knowledge while uninformed citizens relied on partisan cues. When partisan cues are available, co-partisans are therefore more likely to perceive statements to be true and cross-partisans are more likely to perceive statements to be false. Let α_k denote different intercepts for partisan groups $k \in \{S, I, X\}$, where $k = S$ denotes a co-partisan (shared partisanship), $k = I$ denotes an independent (non-partisan), and $k = X$ denotes a cross-partisan. Moderate partisan cue-taking implies shifts in the intercepts, with a natural corollary of this expectation that greater reliance on partisan cues will generate greater polarization in truth perceptions between respondents of different parties.

Hypothesis 2 (**Cheerleading**). *If citizens' reliance on speaker cues is moderate, truth perceptions will vary with the partisan alignment between the statement's speaker and respondent in the form of intercept shifts, with positive shifts for co-partisans and negative shifts for cross-partisans:* $\alpha_X < \alpha_I < \alpha_S$.

In highly competitive partisan and hyper-partisan environments, however, reliance on such cues might amplify opinion polarization to the extent that any wisdom that the crowd may possess is diminished or destroyed. The effect of partisan cues will take a strong form if they displace or crowd-out reliance on personal knowledge, even if such knowledge would have otherwise been reliable. This can happen if partisan cues induce an automatic, affective

response that unconsciously overrides deliberative thought. In the language of dual-process theory from cognitive psychology, partisan cues may induce Type 1 processing (Evans and Stanovich 2013), and previous research suggests that such cues can indeed crowd out rational thought (Kahan et al. 2017). If this is also the case with truth perceptions, then we should expect to see not only overall shifts and differences in perceptions by partisanship, but also a weaker relationship between truth perceptions and the veracity of the underlying statements.

Strong reliance on partisan cues implies there should be differences not only in the intercepts but also in the slopes as a function of the availability of partisan cues (i.e., an interaction). Let β_k denote different partisan slopes, with k defined as before. The availability of partisan cues implies a slope that is closer to zero than when cues are unavailable, and if cues completely override knowledge, then the slopes should be indistinguishable from zero. If, however, partisanship does not entirely eliminate the wisdom of the crowd, we should still expect to see a positive slope (consistent with Hypothesis 1).

Hypothesis 3 (**Crowding Out**). *If citizens' reliance on speaker cues is extreme and cues crowd out knowledge, truth perceptions will vary with the partisan alignment between the statement's speaker and respondent in the form of both intercept shifts and slope differences such that the slope for partisans will be zero and there will be polarization between the intercepts between co-partisans and cross-partisans:* $\alpha_X < \alpha_I < \alpha_S$ *and* $\beta_S = \beta_X = 0$.

Data and Research Design

To investigate citizens' veracity judgments, I designed a statement rating task in which survey respondents rate the truthfulness of real statements made by politicians. Two features of the design are crucial for assessing political lie detection. First, the set of statements vary in their truthfulness, cover a range of issues, and were made by a variety of politicians from

both parties. Second, to test the effects of partisanship, I experimentally manipulate the availability of information about the speakers.

I collected data in four waves using two different types of samples. The first three waves are convenience samples recruited from Amazon's Mechanical Turk (Berinsky, Huber and Lenz 2012). Wave 1 ($N = 184$) was conducted between June 21-28, 2016, Wave 2 ($N = 221$) between March 21-April 2, 2017, and Wave 3 ($N = 799$) between October 19-24, 2017.[6] To enhance statistical power and external validity, the fourth wave uses a much larger, nationally diverse sample recruited by Research Now SSI (formerly Survey Sampling International). Wave 4 ($N = 2,352$) was fielded between January 10-21, 2018. Respondents in all waves completed a survey via the Qualtrics online platform.[7]

Every respondent rated a set of 20 statements. Respondents in Waves 1 and 2 rated the same set of 20 statements as either "True" or "False", allowing for uncertainty with an option of "I'm not sure." Respondents in Waves 3 and 4 rated a random subset of 20 statements from a larger pool of 50-52 possible statements on a seven-point scale, ranging from "Very Likely True" to "Very Likely False," with "I'm not sure" as the middle option.[8] To facilitate direct comparison between all waves in the analysis, I collapsed the 7-point scale elicited in Waves 3 and 4 to the 3-point scale used in Waves 1 and 2.[9] In all waves, the order of the statements was randomized for each respondent. In total, 70 distinct statements were rated across the four waves of the study.

The statements used in the task were made by 28 different current or former elected officeholders or candidates for public office and pertain to a wide variety of policy-relevant claims covering both domestic and foreign policy, including jobs, taxes, inequality, poverty, health care, energy, education, immigration, civil rights, terrorism, and war. For examples,

[6]Participants in Wave 1 were paid \$0.25 for completing a qualification survey and \$0.50 for completing the rating task. For Waves 2 and 3, the qualification survey was shorter and participants were paid \$0.10 for completion, while the rating task paid \$1.00 in Wave 2 and \$1.25 in Wave 3.

[7]See the Appendix for additional information about sample demographics for each wave.

[8]Wave 3 used a total of 50 statements, distinct from the statements used in Waves 1 and 2. Wave 4 used a total of 52 statements (the same 50 statements from Wave 3 plus two additional "Pants on Fire" statements from Waves 1 and 2).

[9]Using the 7 point scale for the dependent variable does not change the conclusions (see the Appendix).

Statement	Speaker (Party)	PolitiFact Rating
"The top hedge fund managers are making more than all of America's kindergarten teachers combined."	Hillary Clinton (D)	True
"Forty-three million Americans are on food stamps."	Donald Trump (R)	True
"Fifty years ago, the average GM employee could pay for a year of a son or daughter's college tuition on just two weeks wages."	Martin O'Malley (D)	Mostly True
"The annual cost of free tax credits alone paid to illegal immigrants quadrupled to $4.2 billion in 2011."	Donald Trump (R)	Half True
"The vast majority of our international commitments take effect without congressional approval."	Joe Biden (D)	Half True
"We have the highest rate of childhood poverty of any major country on Earth."	Bernie Sanders (D)	Mostly False
"Hate speech is not protected by the first amendment."	Howard Dean (D)	False
Carbon dioxide is not "a primary contributor to the global warming that we see."	Scott Pruitt (R)	False
"Nobody suffered any lasting injuries from the CIA interrogation program."	Peter King (R)	Pants on Fire
Planned Parenthood is "the only health care that a significant number of women get. About 30 percent of women, that's their health care."	Harry Reid (D)	Pants on Fire

Table 1: Examples of statements

see Table 1; the Appendix contains the full list of statements, speakers, ratings, and URLs for the PolitiFact stories. None of the statements pertain to candidate biographies, ad hominem attacks, or claims that might otherwise provide explicit clues about the speaker (such as references to parties or other candidates).[10] The overall pool of 70 statements is balanced with respect to the partisanship of their sources (half from Democrats and half from Republicans) and is nearly balanced in terms of the truthfulness of the statements. With such a large number of statements covering many speakers and issues, there is substantial heterogeneity in statement content. The wide variation in statements is important because it minimizes the likelihood the results depend on the specific set of statements used, thereby enhancing external validity.

[10]The statements used for Wave 3 and 4 were rated independently by three undergraduate research assistants as being high in policy content and low in credit-claiming or blame. The assistants also rated each statement (reading them without attribution) on a 0-5 scale in terms of how much it sounded like it might have come from Donald Trump. Their codings are remarkably accurate, as 95% of statements that had an average score close to 5 were actually made by Trump and only 5% of statements with an average rating close to 0 were made by Trump. Wave 3 and 4 only include statements with an average Trump-speak score below 1.

All of the statements were obtained from PolitiFact, an independent, non-partisan fact-checking website.[11] PolitiFact rates each statement on their "Truth-O-Meter" rating scale, which has six categories: True, Mostly True, Half True, Mostly False, False, and Pants on Fire. The most accurate claims are rated "True" while wildly inaccurate and ridiculous claims are rated "Pants on Fire." Importantly, PolitiFact evaluates each statement's veracity after in-depth staff research and deliberation by an editorial team, with public disclosure of the facts and reasoning behind their judgment published on their website. PolitiFact's ratings therefore serve as an independent measure of the truth that minimizes researcher subjectivity.[12]

The primary experimental manipulation of interest varies whether information is provided about the statement's speaker. In the *Content Only* condition, which serves as the baseline, respondents read the content of the statement without attribution. In the *Attribution* condition, which can be thought of as the informational treatment, each statement was preceded by the speaker's partisan affiliation, current or former office (or office sought), and name.[13] In Wave 1, respondents were block randomized (by party) into either the Content Only or Attribution conditions; in Waves 2 and 3, they were block randomized into either the Content Only, Attribution, or Guess condition (described below); Wave 4 was not block randomized by partisanship.[14]

The use of real statements greatly enhances external and ecological validity, but also presents several challenges. Given that PolitiFact tends to select statements that are

[11] `http://www.politifact.com`

[12] If one suspects there may be a pro-Democratic bias in PolitiFact's ratings while respondents' perceptions are themselves unbiased, then we would observe an intercept shift such that respondents appear to view Democratic statements as *less* truthful than Republican statements. No such intercept shift is observed. (See the Appendix for a more detailed explanation and a test of ratings bias.)

[13] Note that in a sense, the Attribution condition is more natural, as it is closer to the way citizens encounter political statements in their everyday life and so could instead serve as the control, while the Content Only condition is more artificial and removing information could be thought of as the treatment. However, for the purposes of testing the effects of information, the Attribution condition is used as the treatment since it corresponds to adding information.

[14] Block randomization was possible for the MTurk waves because partisanship was asked on a separate survey prior to the statement rating task. It was not possible for the SSI sample, as the partisanship question was asked after the statement rating task (at the end of the survey).

newsworthy and likely to have received non-negligible media attention, it is possible that well-informed respondents had prior knowledge of the statements and therefore already knew who said them. If that is the case, then respondents' truth perceptions in the Content condition would already be colored by their partisan beliefs and attitudes. Such prior knowledge of statements and their speakers would reduce the informational contrast between the Content and Attribution conditions, thus biasing the design against finding source cue effects.

A second limitation of using real statements is that the exact nature of the content cannot be held constant. Indeed, it would be deceptive—and highly unrealistic—to attribute a statement by Hillary Clinton to Donald Trump and vice versa. As noted above, I address this in part by using a large number of statements from a variety of speakers on a variety of topics.[15] Nevertheless, unobservable differences in statement content may still confound the observed relationship between perceptions and the truth. Even if respondents can't correctly identify the speakers, it may be possible that sufficiently informed respondents can recognize the partisan content of each statement. In the examples in Table 1, Hillary Clinton's statement about inequality and Bernie Sanders's statement about poverty are likely to be perceived as Democratic since they emphasize concerns of Democratic politicians, while a statement concerning high taxes are likely to be perceived as coming from a Republican source.[16]

To address these concerns, I added an additional treatment to Waves 2 and 3 in which respondents first guessed the partisanship as well as the name of the statement's speaker before rating its truthfulness. Data from this *Guess* condition can be used to assess the extent of respondents' prior knowledge of the statements as well as the degree to which prior

[15]Another approach would be to identify pairs of matched statements with similar or nearly identical content. This approach is not feasible in practice. In selecting statements for Wave 3, I started with a set of 1,110 statements made between June 2016 and August 2017, and winnowed them to 108 usable statements that satisfied the selection criteria (policy content, no names, no ad hominem, not Trump-like, etc). From this usable set, research assistants searched for pairs statements with the same truth rating but from opposite parties on the same issue. We identified only 4 such pairs of statements in this way, all of which were either Mostly True or Half True, which does not provide enough variation on the underlying measure of truthfulness.

[16]Computational text analysis of congressional speech indeed finds distinct partisan patterns of issue emphasis (Gentzkow, Shapiro and Taddy 2016, Jensen et al. 2012, Monroe, Colaresi and Quinn 2008).

knowledge or partisan perceptions of speech may affect or mediate the relationship between truth and perceptions.

All respondents, regardless of condition, were asked to identify the statement's issue before rating its truthfulness. For each issue identification question, one of the response options was an obviously right answer and the other was an obviously wrong answer. For example, the two options for Hillary Clinton's statement about hedge fund managers were "inequality" and "health care." These issue questions serve two purposes. First, given that the correct issue is obvious, these questions provide a way to check if respondents are paying attention and to encourage them to take the survey seriously. Second, these questions are intended to encourage neutral information processing since respondents are forced to think about the issue before explicitly deciding to judge its truthfulness.[17]

I also took additional steps to ensure and assess the quality of the data in terms of the level of respondents' attention. For the MTurk samples (Waves 1-3), only respondents who successfully answered a "screener" question (Oppenheimer, Meyvis and Davidenko 2009) on a brief demographic survey were invited to complete the statement rating task.[18] For the SSI sample (Wave 4), I took a different approach and followed the recommendations of Berinsky, Margolis and Sances (2014) to include several attention checks at different points in the survey (both before and after the statement rating task) rather than excluding respondents who failed attention checks. From these attention checks, I created an index measuring the total number of attention checks passed by each respondent. To ensure the comparability of the MTurk and SSI data in terms of attentiveness, I restrict the main part of the analysis to highly attentive respondents in the SSI sample (those who passed three or more checks, $N = 1,244$). Later in the paper, I analyze the SSI data stratified by level of attention.

[17] Overall, the accuracy of issue identification was extremely high. Across all waves, statements, and respondents, issues were identified correctly 96.9% of the time ($N = 71,120$). At the individual level, 83.0% of all respondents ($N = 3,556$) correctly identified all 20 issues, while 2.1% of respondents misidentified at least half of the issues.

[18] See the Appendix for additional details regarding how this was implemented. I also used the information from the demographic survey to recruit a balanced distribution of partisans.

Statistical Model

To test my hypotheses, I estimate a multilevel mixed effects model with a set of partisan congruence variables interacted with a treatment variable and the ratings variable. In estimating the models, I restrict the sample to the Content Only and Attribution conditions, ignoring the Guess condition in this part of the analysis for the purposes of partitioning the data into treatment and control groups. I use this model specification in order to estimate responsiveness (slopes) and truth bias (intercepts) while allowing for these relationships to vary by treatment and partisan congruence.[19]

The dependent variable P_{ij} is respondent i's perception of the truthfulness of statement j, where P_{ij} takes integer values of -1 for false, 0 for uncertain, and 1 for true.[20] R_j corresponds to PolitiFact's Truth-O-Meter rating and takes on values from -1 for "Pants on Fire" to 1 for "True" (in increments of 0.4 since it is elicited on a 6-point scale). Let S_{ij} indicate whether respondent i shares the partisanship of the speaker for statement j (i.e., a co-partisan), and let X_{ij} indicate whether the respondent and speaker are from different parties (i.e., a cross-partisan). Party identification was measured using a standard branching format and these variables are coded using the responses to the initial question, with independents (including leaners) coded $S_{ij} = X_{ij} = 0$.[21] Let T_i indicate whether the respondent is assigned to the Attribution treatment.

The model specification is written as follows:

$$\begin{aligned} P_{ij} \quad = \quad & \alpha + \delta_S S_{ij} + \delta_X X_{ij} + (\beta + \tau_S S_{ij} + \tau_X X_{ij}) R_{ij} \\ & + (\gamma + \gamma_S S_{ij} + \gamma_X X_{ij}) T_i + (\lambda + \lambda_S S_{ij} + \lambda_X X_{ij}) T_i R_{ij} \\ & + \eta_j + \mu_i + \varepsilon_{ij} \end{aligned} \tag{1}$$

[19] This specification was included in the pre-analysis plan registered with EGAP.

[20] Recall that for purposes of comparability across waves, I collapse the 7-point scale in Waves 3 and 4 to this 3-point scale. Estimates using the original 7-point scale can be found in the Appendix. The choice of scale does not affect the substantive conclusions.

[21] Coding leaners as partisans does not alter the conclusions of the analysis (see the Appendix), but it does reduce the number of observations for independents and reduces statistical power for the estimates of the main effects.

The coefficients have simple interpretations in terms of responsiveness and truth bias, as well as the differences in them as a function of the treatment and partisan congruence. The baseline level of responsiveness is β for independents in the Content Only condition, and the baseline truth bias is α. The δ_k coefficients represent differences in truth bias between partisans $k \in \{S, X\}$ and independents in the control, while the τ_k coefficients represent partisan differences in responsiveness, also in the control. The effects of the Attribution treatment on truth bias are represented by γ for independents, with γ_k indicating the differences in this effect from independents for co-partisans and cross-partisans, respectively. The analogous effects of the treatment on responsiveness are represented by the λ and λ_k coefficients. To complete the model, the set of stochastic terms includes non-nested question-level random effects η_j, respondent-level random effects μ_i, and the observation-level error ε_{ij}.

Results

The central result of the paper is straightforward: Perceptions track the truth. The analysis supporting this conclusion proceeds as follows. First, I find initial support for the tracking hypothesis by aggregating perceptions in the Content Only condition, when explicit partisan cues are absent. Next, analyzing the experimental data with a more rigorous statistical approach provides strong evidence that this responsiveness is robust to partisanship, even though I find that partisanship also increases the polarization of perceptions. Using data from the Guess condition, I then find that perceptions of the partisan-slant of statement content is also associated with level shifts in perceptions, but otherwise does not affect responsiveness. Finally, I analyze the full SSI sample and find that responsiveness requires at least moderate levels of attentiveness.

Perceptions of Statement Content

Figure 1 plots the average truth perceptions for respondents in the Content Only condition by PolitiFact rating and study wave. These averages are equivalent to the net percentage of true perceptions (total percentage of true perceptions minus total percentage of false ratings). When disaggregated in this way, the pattern is striking: Perceptions of the truth generally increase with the underlying truthfulness of statements. This provides strong, initial support for the tracking hypothesis

At the extremes, when the statements themselves are least ambiguous (as rated by PolitiFact), perceptions tend to be the most accurate. In Waves 1 and 2, mean truth perceptions for statements PolitiFact rates as True are 0.62 and 0.68. That is, the proportion of true perceptions *exceeds* false perceptions in this category by over 60 percentage points. In Waves 3 and 4, differences are smaller but nevertheless sizable, with mean perceptions of 0.33 and 0.37 (over 30 percentage point differences). At the other end of the scale, the mean perceptions of Pants on Fire statements are -0.32 in Wave 1, -0.44 in Wave 2, -0.17 in Wave 3, and -0.21 in Wave 4. In addition, the mean values at the endpoints are all statistically distinguishable from 0 in the expected directions.

Consistent with the tracking hypothesis, respondents have greater difficulty identifying the truthfulness of statements that lie in the middle range of PolitiFact's rating scale. Such statements are typically more ambiguous because they result from skillful politicians' ability to artfully shade, exaggerate, and take facts out of context, all the while without crossing over the line into outright falsehood. The proportion of true and false ratings are statistically indistinguishable for False statements in Wave 1, for False, Mostly False, and Half True statements in Wave 2, and Mostly False statements in Wave 3. There is also some evidence for a degree of "truth bias" in the middle range. In Wave 1, Mostly False statements are somewhat more likely to be perceived as true than false, as is the case with False and Mostly False statements in Wave 4. Nevertheless, perceptions of statements that are False and Mostly False (but not Pants on Fire) are generally evenly divided. Although

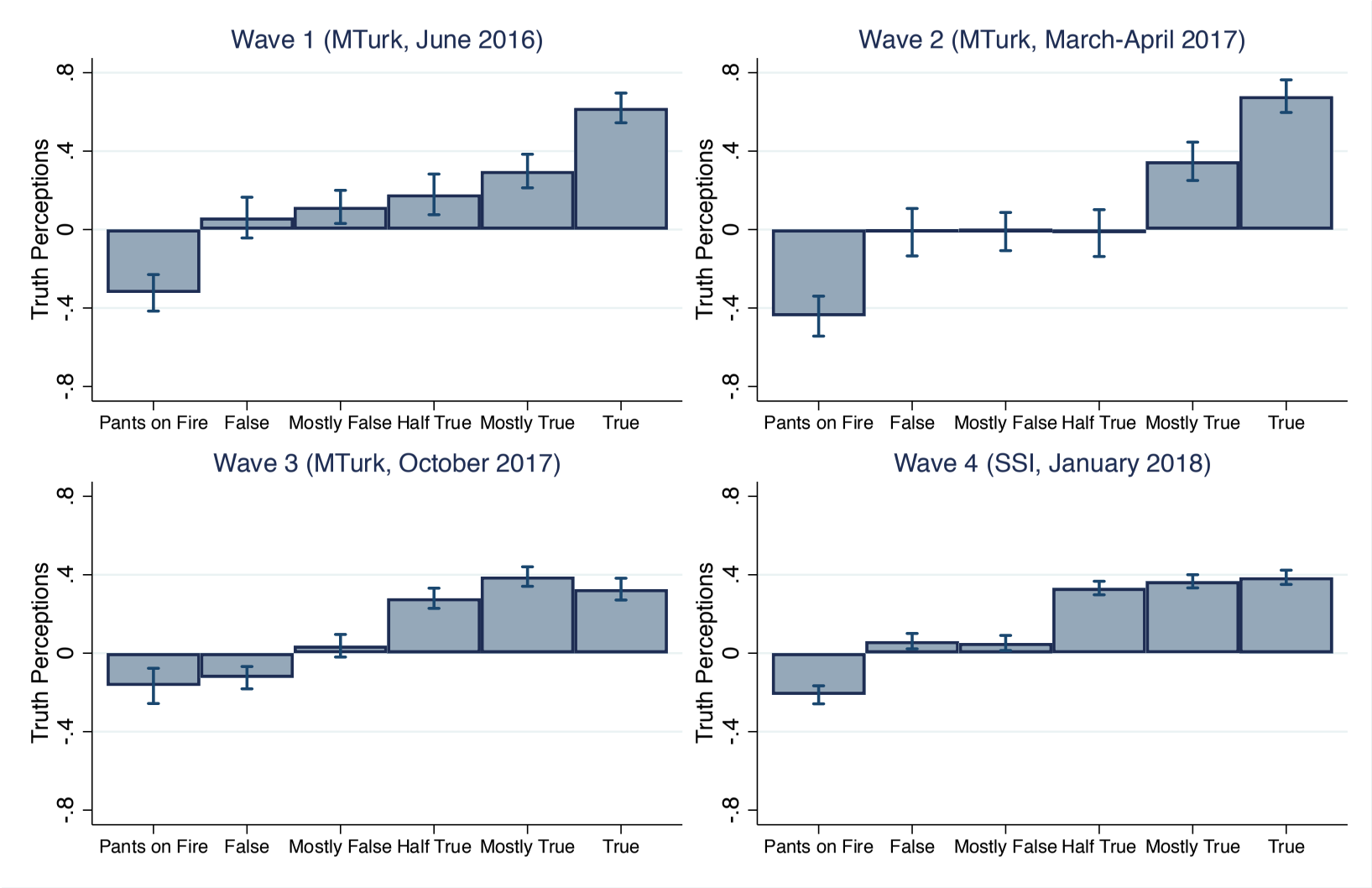

Figure 1: Perceptions track the truth in the Content condition

credulity seems to outweigh skepticism, there is nevertheless much more skepticism about false statements than truthful ones (those on the truthful half of PolitiFact's Truth-O-Meter scale). This suggests that the reliability of political lie detection is a *comparative* property: It manifests in the *responsiveness* of perceptions to the truth. And this depends on making aggregate comparisons between statements, rather than on the point accuracy of the majority opinion, which will tend to underestimate the truth due to positive truth bias.

Comparing the panels in Figure 1, the visual patterns suggest that the similarities and differences across waves are a function of the underlying set of statements rated, rather than the type of sample (MTurk or SSI). The magnitudes at the extremes are large in Waves 1 and 2 (which used the same set of 20 statements) but smaller in Waves 3 and 4 (which used a different set of 50-52 statements), which suggests the truthfulness of the statements in the first two waves are easier to distinguish than the statements in the latter two. Moreover, the patterns in Waves 3 and 4, which use nearly identical sets of statements, are similar even though respondents in Wave 3 are recruited from MTurk while respondents in Wave 4 are recruited by SSI. The similarities across different samples thus strengthens the external validity of the findings.

Partisan Congruence and Attribution

Once partisanship is accounted for, how robust is the finding that perceptions track the truth? Since it is well-known that partisanship shapes political attitudes and perceptions, it would not be surprising to find that partisanship affects truth perceptions. Thus, the question of interest for this part of the analysis is not so much whether partisanship affects truth perceptions, but the extent to which it does. Does reliance on partisan cues merely increase polarization of perceptions in a manner consistent with cheerleading (Hypothesis 2)? Or is the the effect more extreme: Does it diminish, or even eliminate, the relationship with the truth by crowding it out (Hypothesis 3)? To adjudicate between the cheerleading and crowding-out hypotheses, I estimate the mixed-effects model described in equation (1), separately for each wave of data.

Figure 2 presents the results of the analysis graphically, organized by separate panels for each wave and treatment.[22] Within each panel, the lines show the predicted values from the model for each of the partisan groups (independents, co-partisans, and cross-partisans). Several patterns are apparent. First, every predicted regression line has an upward slope. Evidence for the tracking hypothesis is therefore robust to learning who said the statement and whether or not they shared the partisanship of the respondent. In some cases, there is a slight diminution of the slopes in the Attribution treatment, but even when there is, the slopes nevertheless remain positive and statistically significant. This can be seen more clearly in the upper part of Figure 3, which plots responsiveness (slope coefficients) by partisan group.[23] Responsiveness is statistically lower only for cross-partisans in Waves 2 and 3, but also (unexpectedly) for independents in Waves 3 and 4. The evidence that partisan cues crowd out content-based assessments of truth is limited and insufficient to support Hypothesis 3.

It is also evident from Figure 2 that providing information about the speaker in the Attribution treatment increases partisan differences in the degree of truth bias (i.e., levels). This can be seen by comparing the gap between the lines for partisans in the Content Only condition (dotted lines for co-partisans and dashed lines for cross-partisans in the panels on the left side of Figure 2) to the corresponding gap in the lines in the Attribution treatment (on right side of the figure). Figure 4 provides another way of visualizing these differences by plotting the size of the gaps directly. Across the board, the gap is larger in the Attribution treatment than in the Content Only condition (nearly all of these differences are statistically significant, with the only exceptions being for the most false statements in Waves 2 and 3). This can also be seen in the lower panels of Figure 3, as attribution increases the truth bias for co-partisans while decreases it for cross-partisans. These results provide evidence that

[22]Numerical estimates can be found in table form in the Appendix.

[23]Responsiveness is measured as the linear combination of coefficients for the relevant condition and partisan category. For example, the slope estimate for co-partisans in the Content Only condition is $\hat{\beta} + \hat{\tau}_S$ while in the Attribution condition is $\hat{\beta} + \hat{\tau}_S + \hat{\lambda} + \hat{\lambda}_S$.

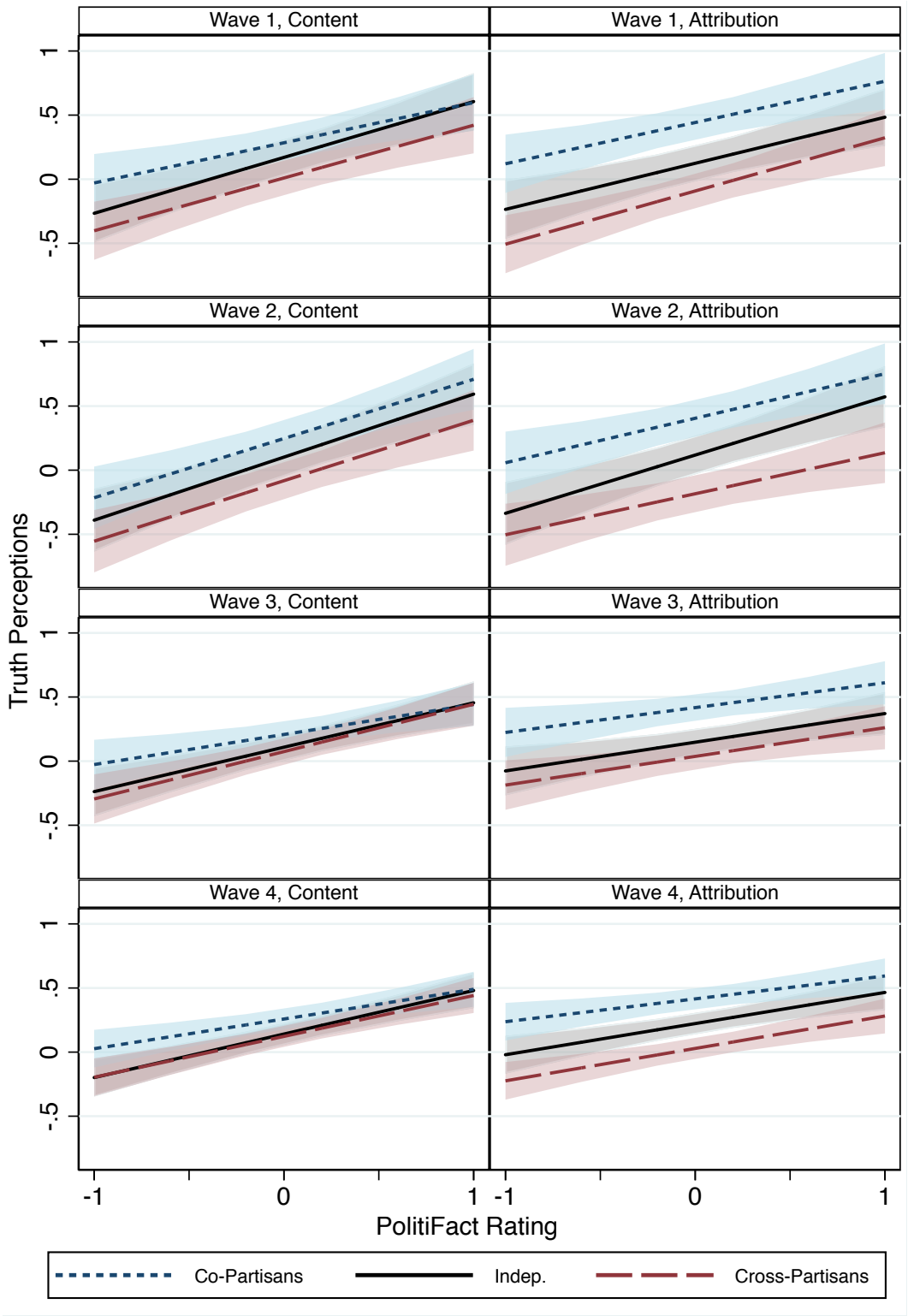

Figure 2: Perceptions vary with truthfulness

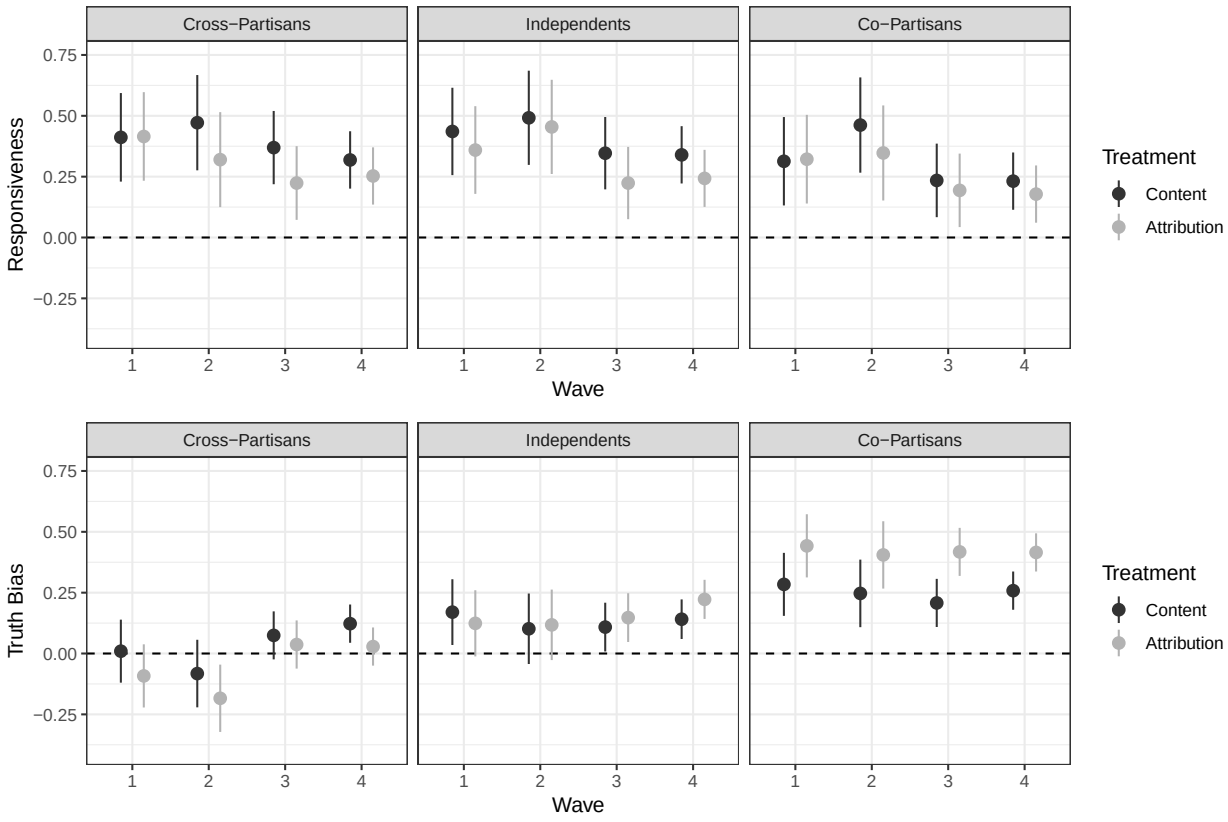

Figure 3: Responsiveness (slopes) and truth bias (intercepts)

the effect of partisanship takes the weaker form of cheerleading rather than the stronger form of crowding out, supporting Hypothesis 2 over Hypothesis 3.

Intriguingly, Figure 4 also shows there to be significant partisan gaps in the Content Only condition, when no explicit information about the partisanship and identity of the speakers is given. These gaps correspond to substantial truth bias among evaluations by co-partisans (black markers in the lower-right panel in Figure 3) compared to the near absence of such bias among cross-partisans (lower-left panel). We would not expect these gaps to exist if reliance on explicit partisan cues were the only mechanism by which partisanship influenced perceptions. Yet, the existence of such gaps suggests there may be partisan differences in how the statements are perceived, either because people know who the speakers are, pick up on the partisan tone of the statements, or possibly because they see the world differently

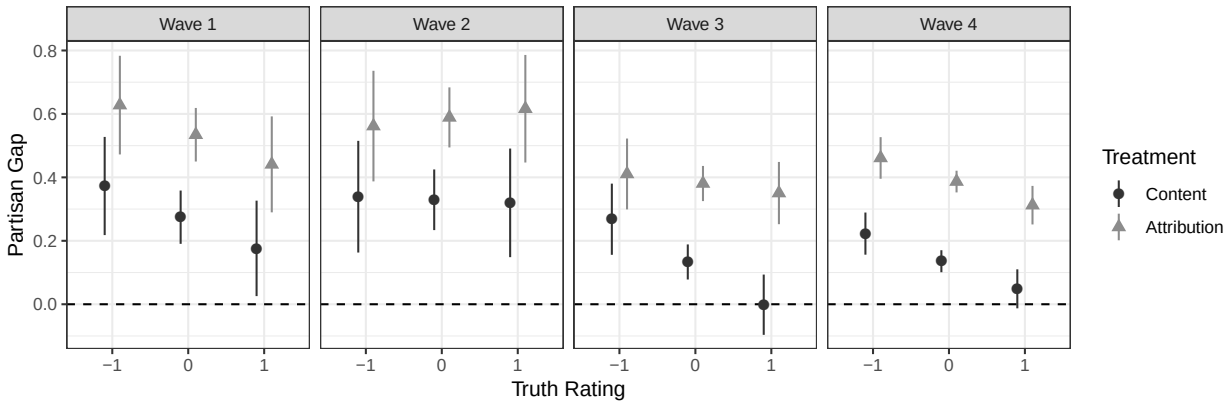

Figure 4: Partisan gaps

and believe different facts. Further investigation is warranted, so I investigate the first two of these possibilities in next section.

The key finding of the experimental analysis is that tracking is robust to reliance on partisan cues. Such reliance manifests in the form of intercept shifts: Respondents tend to say that their own party's statements are more truthful, and the opposing party's statements are less truthful. But once these biases are accounted for, the relative perceptions of true versus false statements are preserved. Opponents are more skeptical of false statements than they are of true statements, but this also holds for co-partisans, who are also more skeptical of false statements than they are of true statements by politicians in their own party. The evidence therefore strongly suggests that partisan cheerleading does little to diminish the public's aggregate capacity for lie detection.

Partisan Content

The existence of a partisan gap in the absence of explicit attribution is puzzling. What could explain it? Two possibilities come to mind. First, because the study uses real statements, respondents might have sufficient knowledge to recognize the speakers' identities and then rely on their attitudes toward those specific speakers to make inferences about the truth of statements. This mechanism requires respondents to have considerable knowledge of

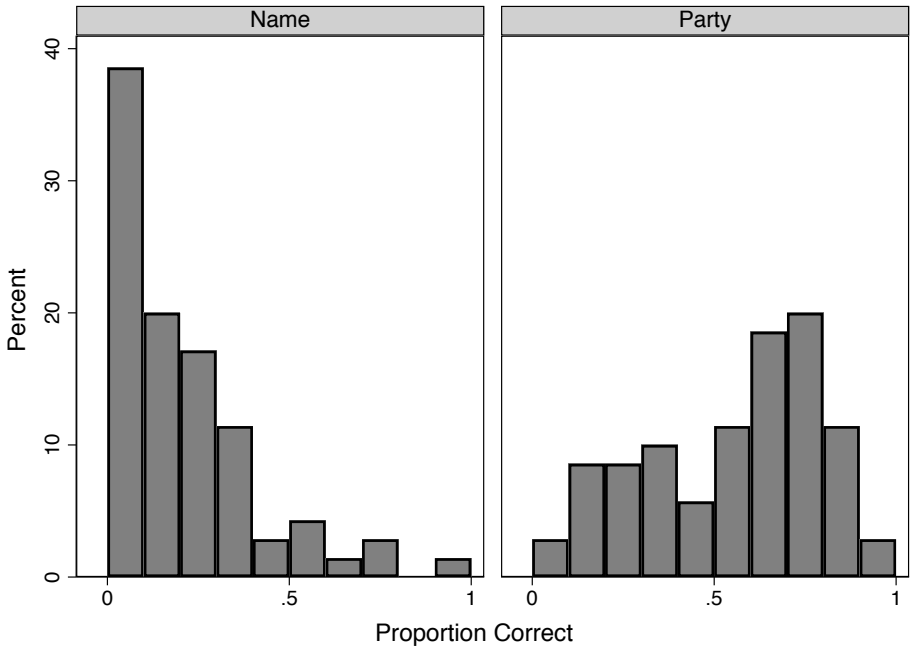

Figure 5: Accuracy of guesses

politics and seems implausible given how little citizens typically know (Delli Carpini and Keeter 1996). Second, perhaps more likely, respondents recognize the partisan tenor or slant of the statements (even if they had not heard or cannot recall the specific statements themselves) and then base their truth judgments on the degree to which the partisanship of the statements match their own. This is plausible given that the parties tend to emphasize different issues as well as speak about issues in distinctive ways.

To assess the relative plausibility of these explanations, Figure 5 presents the statement-level accuracy of respondents' beliefs about the names and partisanship of speakers in the Guess condition (combining Waves 2 and 3). Comparing the histograms shows that respondents are more likely to be able to guess the speaker's party (right histogram) than the speaker's name (left histogram). On average, only 21% of respondents correctly guessed the name of the speaker compared to 56% that correctly guessed the speaker's party.[24] Thus,

[24]Notably, there are only 6 out of 70 statements for which a majority of respondents correctly identify the speaker. One of the statements was made by Bernie Sanders (Wave 3) and the other five were made by Donald Trump (three in Waves 1 and 2, and two in Wave 3). On some level, this is not surprising given the

it seems plausible that the recognizability of the partisan content of political statements may affect the relationship between truthfulness and perceptions, while the recognizability of speakers' identities is far less of a concern.

To test the influence of partisan perceptions in generating the partisan gap, I estimate a modified version of the mixed-effects interaction model using the data from only the Guess condition. The specification pits perceived partisan congruence against actual partisan congruence by including a set of dummy variables and interactions constructed using perceived partisanship (based on respondents' guesses) as well as the actual partisan congruence variables and interactions (as in the previous section). Across both Waves 2 and 3, the results presented in Table 2 show that perceived partisanship matters much more than actual partisan congruence. The coefficients for perceived partisanship are statistically significant and larger in magnitude than the coefficients for actual partisanship (only one of which is statistically significant). Respondents rate statements as much more truthful when they guess that the statement was uttered by a co-partisan and, conversely, rate statements as much less truthful when they think statements were made by politicians from the opposing party.

The results in Table 2 also show that the tracking hypothesis survives when controlling for perceived partisanship. The interaction terms are generally not significant, providing further support that partisanship operates through cheerleading rather than by crowding-out the truth. To the extent that perceptions affect responsiveness, there is some suggestive evidence that it might strengthen it (as perceptions of cross-partisans are significantly more responsive in Wave 3). This result suggests that skepticism motivated by partisanship can be beneficial for ferreting out the truth.

Although the analysis in Table 2 provides strong evidence that perceptions of partisanship affect perceptions of truthfulness, it only indirectly explains the partisan gap in the Content Only condition. Unlike in the Guess condition, survey respondents in the Con-

linguistic distinctiveness of Trump's speech (despite using only statements rated by research assistants as having low Trump-speak scores). Even so, for Trump's five other statements in rating task, fewer than half of respondents were able to correctly recognize him as the speaker.

Table 2: Regression analysis of actual versus perceived partisanship in Guess condition

	Wave 2 (1)	Wave 3 (2)
Actual Co-Partisan	0.13	-0.08
	(0.08)	(0.04)
Actual Cross-Partisan	-0.08	-0.16**
	(0.07)	(0.04)
Perceived Co-Partisan	0.32**	0.48**
	(0.06)	(0.03)
Perceived Cross-Partisan	-0.26**	-0.27**
	(0.08)	(0.04)
Truth Rating	0.43**	0.27**
	(0.07)	(0.06)
Truth Rating	-0.12	-0.10
× Actual Co-Partisan	(0.09)	(0.05)
Truth Rating	-0.13	-0.03
× Actual Cross-Partisan	(0.09)	(0.05)
Truth Rating	0.02	0.00
× Perceived Co-Partisan	(0.09)	(0.05)
Truth Rating	-0.09	0.13*
× Perceived Cross-Partisan	(0.10)	(0.06)
Constant	0.08	0.19**
	(0.06)	(0.04)
Observations	1,440	5,140
Log likelihood	-1611.2	-5989.6
χ^2	197.8	555.4

Models include statement and respondent random effects.
Standard errors in parentehses; * $p < .05$ ** $p < .01$

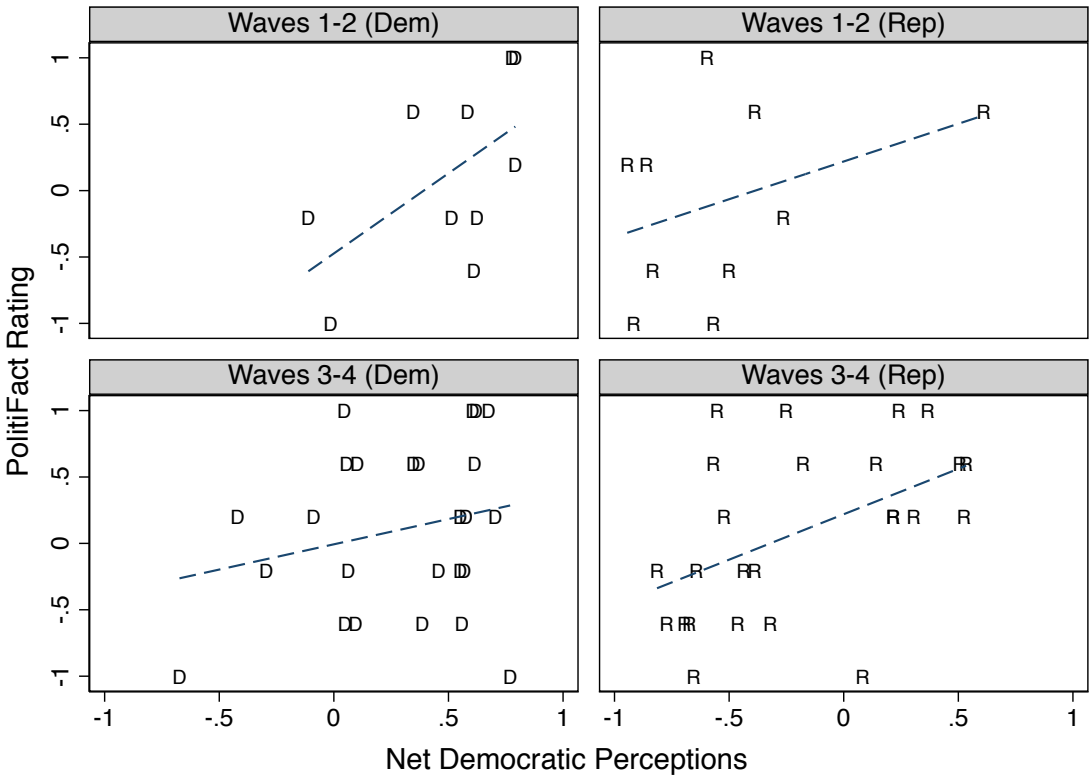

Figure 6: Truthfulness and perceptions of partisan content

tent Only condition are not explicitly asked to guess the identity and partisanship of each speaker. Thus, while it is possible many respondents implicitly make similar guesses about partisan attribution in the Content Only condition, the absence of explicit instructions to do so means that the data from the Guess condition data cannot be treated as a perfect substitute for responses in the Content Only condition.

To assess whether perceptions of partisanship affect truth judgments in the Content Only condition, I use the average guess about a statement's partisanship in the Guess condition as a measure of its partisan content. Figure 6 plots PolitiFact ratings against these statement-level guesses about partisanship (net percentage of respondents who guessed the statement's speaker was a Democrat rather than a Republican). Most of the statements used in Waves 1-2 are recognizably partisan, as are most of the Democratic statements in Waves

3-4. The most counter-stereotypical statements (in Waves 3-4) were made by Republicans but were perceived to be have been uttered by Democrats. Interestingly, the fitted (OLS) regression lines suggest that the perception that a statement is Democratic is a good predictor of a statement's truthfulness (statements perceived to be more Democratic are more likely to be truthful).

Table 3 presents results of the mixed effects models estimated using the Content Only data from each wave with and without statement-level controls for partisan perceptions. Comparing the partisan congruence coefficients in the odd-numbered columns with those in the even-numbered columns shows that statement-level perceptions of partisan content largely account for the partisan gaps observed in the baseline analysis (i.e., the left panels in Figure 2). In every wave, the gaps are large and statistically significant without controls but disappear (decrease in magnitude and are no longer significant) once these controls are included. In contrast, the truth rating coefficient diminishes only slightly in magnitude, and once again, the tracking hypothesis survives.

The partisan content coefficients can help to discriminate between different reasons why these perceptions matter. If the partisanship of a statement's content influences truth perceptions because all citizens (correctly) recognize that Democratic-sounding statements are generally more truthful (as in Figure 6), then we should observe a positive relationship between Democratic perceptions and truth perceptions regardless of a respondent's partisan identification. If, however, respondents recognize a statement's partisan slant and then judge a statement's truth based on its congruence with their own partisan preferences, then we should observe a positive relationship for Democrats and a negative relationship for Republicans. Unfortunately, the results do not point conclusively to either mechanism. The coefficient estimates for Waves 1 and 2 are consistent with the latter mechanism, where Democrats' truth ratings are increasing in Democratic perceptions and Republicans' ratings are decreasing (with the coefficient for independents positive but not statistically significant). In Waves 3 and 4, statements are perceived to be more truthful the more Democratic-sounding state-

Table 3: Mixed effects analysis controlling for statement-level perceptions of partisan content (Content Only)

	Wave 1		Wave 2		Wave 3		Wave 4	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Co-Partisan	0.11	-0.02	0.15*	-0.06	0.10**	0.05	0.12**	0.05*
	(0.06)	(0.07)	(0.07)	(0.08)	(0.03)	(0.03)	(0.03)	(0.03)
Cross-Partisan	-0.16**	-0.02	-0.18**	0.02	-0.04	0.02	-0.02	0.04
	(0.06)	(0.06)	(0.07)	(0.08)	(0.03)	(0.03)	(0.03)	(0.03)
Truth Rating	0.44**	0.39**	0.49**	0.41**	0.34**	0.25**	0.34**	0.28**
	(0.10)	(0.11)	(0.11)	(0.11)	(0.08)	(0.08)	(0.06)	(0.06)
Truth Rating	-0.12	-0.11	-0.03	-0.00	-0.11*	-0.10*	-0.11**	-0.09**
× Co-Partisan	(0.06)	(0.07)	(0.07)	(0.08)	(0.04)	(0.04)	(0.03)	(0.03)
Truth Rating	-0.03	-0.01	-0.02	0.00	0.03	-0.01	-0.02	-0.05
× Cross-Partisan	(0.06)	(0.07)	(0.07)	(0.08)	(0.04)	(0.04)	(0.03)	(0.03)
Net Democratic		0.12		0.21		0.36**		0.23**
Perception		(0.11)		(0.11)		(0.10)		(0.09)
Net Dem. Perc.		0.26**		0.34**		0.20**		0.24**
× Democrat		(0.09)		(0.09)		(0.06)		(0.04)
Net Dem. Perc.		-0.27**		-0.48**		-0.19**		-0.28**
× Republican		(0.08)		(0.09)		(0.06)		(0.04)
Constant	0.17*	0.17*	0.10	0.11	0.11*	0.10*	0.14**	0.14**
	(0.07)	(0.07)	(0.08)	(0.08)	(0.05)	(0.05)	(0.04)	(0.04)
Observations	1860	1860	1480	1480	5440	5440	12100	12100
Log likelihood	-2156.9	-2145.3	-1739.3	-1717.1	-6620.5	-6597.1	-14594.5	-14520.3
χ^2	59.66	84.27	69.81	119.2	46.37	100.9	98.12	251.7

Models include statement and respondent random effects.
Standard errors in parentheses; * $p < .05$ ** $p < .01$

ments are (with a stronger relationship among Democrats), while the relationship between statement-level partisanship and truth perceptions is weaker for Republicans (but not inverted, as we cannot reject the hypothesis that the linear combination of coefficients is zero).

The analysis in this section suggests that even in the absence of explicit cues about the identity or partisanship of political speakers, citizens make partisan inferences based on statement content which in turn color their judgments of the veracity of politicians' claims. Thus, the recognizability of partisan content appears to account for baseline levels of polarization in the Content Only condition. Although this analysis cannot definitively rule out the possibility that such partisan differences are due to differences in knowledge (without measuring and controlling for knowledge directly), when the additional analyses of the Guess condition (Table 2) and Content Only condition (Table 3) are considered together and alongside the main results (Figure 2), the evidence is most consistent with partisanship taking the form of cheerleading. Importantly, the primary finding that veracity judgments track the truth remains robust to accounting for partisan perceptions of content.

Attention

The analysis throughout this paper has focused on samples of highly attentive respondents. This is because parsing political statements to distinguish truth from lies surely requires a minimum level of cognitive effort to recall information and to engage in careful consideration. It would be surprising if quick, intuitive judgments about truth in politics yielded accurate perceptions of the truth. Indeed, Pennycook and Rand (2018) find that lazy analytical thinking increases susceptibility to fake news. However, there is ample evidence from previous research that cognitive effort is directed toward motivated reasoning rather than toward improving accuracy (Kahan et al. 2017, Taber and Lodge 2006). In this section, I examine whether truth perceptions vary with attention in order to assess whether higher levels of cognitive effort are associated with greater accuracy (higher responsiveness, lower bias) or motivated reasoning (lower responsiveness, higher bias).

Measurement issues also call for stratifying the analysis by attention. To identify attentive respondents in the MTurk samples (Waves 1-3), I relied on a single item, but Berinsky, Margolis and Sances (2014) point out that relying on this method of identifying attentive subjects can be problematic because attention is measured with noise (thus excluding some otherwise attentive subjects while also including otherwise inattentive ones). Instead, they recommend constructing a multi-item scale and stratifying analysis by levels of attention. Note that in Wave 4, I used a multi-item scale to identify highly attentive subjects, and despite different methods of measuring attention in Waves 3 and 4, the findings were similar. This suggests the single item measure of attention works well enough for my purposes. Nevertheless, it is worth considering how data quality affects the results. Inattentive subjects might contribute noise to the sample or their responses might otherwise be invalid because they did not take the survey seriously. If so, then their responses would fail to track the truth. Less attentive subjects should therefore exhibit the least responsiveness to the underlying truthfulness of statements. Thus, following the suggestion to stratify the analysis by attention level is worthwhile both for the purposes of investigating the role of cognitive effort as well as for understanding how the results might depend on data quality.

Figure 7 shows the results of the mixed effects analysis for the SSI sample stratified by attention, with the top panel showing responsiveness and the lower panel showing truth bias by partisanship and treatment.[25] The results in the upper panel clearly show that responsiveness is increasing in attention, with responsiveness close to zero for those who fail all attention checks. The magnitude of the responsiveness estimates appear to level off once respondents pass three screeners. This suggests that including inattentive respondents weakens the findings by degrading the quality of the data. The lower panel shows that truth bias is also decreasing in attention. It is doubtful that this means that inattentive subjects are gullible and believed every statement they read. Rather, a number of inattentive

[25] Although there were a total of six attention checks, only 3.5% of Wave 4 respondents correctly answered all 6 screeners, so I collapsed the top two levels of attentiveness to make the sample sizes comparable across levels.

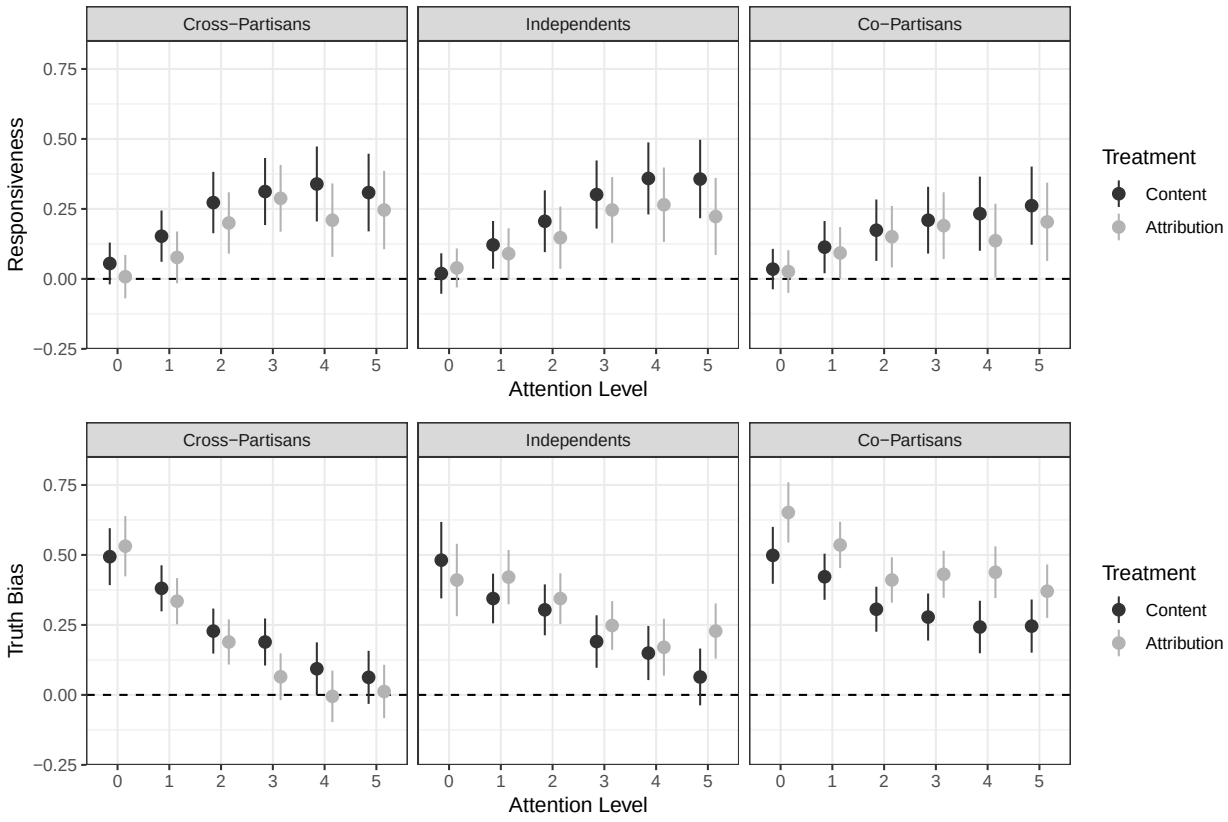

Figure 7: Responsiveness and truth bias vary by attention (SSI sample)

respondents have a tendency to satisfice and speed through the online survey by selecting the same response (i.e., true) for each statement.[26] For highly attentive respondents, truth bias disappears completely for cross partisans but persists for co-partisans regardless of whether or not the statement is given with attribution. This suggests attention alone may not be sufficient to eliminate the strong influence of partisan congruence on truth perceptions.

[26]Of the 88 respondents who rated every statement as "true," 81 of them (92%) failed at least 4 screener items. Looking at survey durations, the median duration was 10 minutes. If we define a "speeder" as a respondent who completes the survey more quickly than half the median time (in less than 5 minutes), speeders constitute 15% of attention 0 respondents and 5% of attention 1 respondents compared to an overall speeding rate of 2.9%.

Conclusion

Using an original statement rating task, I find that the public is capable of political lie detection. Statements that are "ridiculously" false are generally recognized to be false while statements that are clearly true are generally perceived to be true. This capacity for political lie detection is a function of the aggregation of many individual perceptions, reflecting the wisdom of the crowd (Landemore 2013, Surowiecki 2004), just as Galton (1907) observed the average opinion of a crowd at a country fair to accurately reflect the weight of a cow. Unlike such estimates, however, lie detection is an aggregate, comparative property: it emerges when a group judges multiple statements and aggregate perceptions of those statements are compared to one another. Although differing groups of partisans may vary in their opinion of a particular statement (often exhibiting truth bias), both groups will accurately judge the less truthful of two statements to indeed be less truthful. Furthermore, while partisanship typically exerts a powerful influence on political attitudes and beliefs, I find that reliance on partisan cues does not diminish the capacity for lie detection, although it does increase the polarization of opinion. It is significant that responsiveness is robust to partisanship despite the absence of incentives for accuracy—while it is plausible that incentives could reduce differences in opinion and promote greater accuracy, incentives are not necessary for responsiveness.

The study of political lie detection raises a number of questions for future research. One is whether there may be ways to improve accuracy. In addition to providing incentives, it may be that accuracy improves through training. Learning requires feedback, so providing feedback could be one simple approach to improving accuracy, which might be further strengthened by providing incentives. Second, accuracy might improve if teams or groups are allowed to communicate. This approach allows individuals to share facts and information while promoting heightened cognitive engagement and the careful processing of those facts through the consideration of reasoned arguments (Mercier and Landemore 2012). On the one hand, team-based forecasting sometimes outperforms simple averaging (Ungar

et al. 2012), but on the other hand, knowing others' beliefs can have the opposite effect (e.g., due to false consensus or correlation neglect), undermining the quality of group judgments (Lorenz et al. 2011).

Honesty is not a trait commonly ascribed to politicians, nor is politics a process that encourages truthfulness (Callander and Wilkie 2007, Woon and Kanthak 2018). Candidates for office and elected officials alike play fast and loose with the truth, aided and abetted by the media, especially when electoral competition is fierce and doing so appeals to core supporters or generates controversy. Yet honesty and integrity are key political virtues—valence characteristics that voters desire in representatives and public officials, and truthful communication is integral to making good policy through deliberation and the free exchange of ideas. Political lie detection is therefore an important tool of citizen competence and democratic accountability, and the evidence that the public has the ability to distinguish between true and false statements is at least encouraging given the prevalence of fake news and misinformation in today's political climate.

References

Achen, Christopher H and Larry M Bartels. 2016. *Democracy for realists: Why elections do not produce responsive government*. Princeton University Press.

Ansolabehere, Stephen, Marc Meredith and Erik Snowberg. 2013. "Asking About Numbers: Why and How." *Political Analysis* 21(1):48–69.

Arceneaux, Kevin. 2008. "Can Partisan Cues Diminish Accountability?" *Political Behavior* 30(2):139–160.

Bartels, Larry M. 1996. "Uninformed votes: Information effects in presidential elections." *American Journal of Political Science* 40(1):194–230.

Bartels, Larry M. 2002. "Beyond the Running Tally: Partisan Bias in Political Perceptions." *Political Behavior* 24(2):117–150.

Belot, M, V Bhaskar and J Van De Ven. 2012. "Can observers predict trustworthiness?" *Review of Economics and Statistics* 94(1):246–259.

Berinsky, Adam J. 2015. "Rumors and Health Care Reform: Experiments in Political Misinformation." *British Journal of Political Science* 47(2):241–262.

Berinsky, Adam J, Gregory A Huber and Gabriel S Lenz. 2012. "Evaluating online labor markets for experimental research: Amazon.com's Mechanical Turk." *Political Analysis* 20(3):351–368.

Berinsky, Adam J, Michele F Margolis and Michael W Sances. 2014. "Separating the shirkers from the workers? Making sure respondents pay attention on self-administered surveys." *American Journal of Political Science* 58(3):739–753.

Bond, Charles F and Bella M DePaulo. 2008. "Individual differences in judging deception: Accuracy and bias." *Psychological Bulletin* 134(4):477–492.

Boudreau, Cheryl. 2009. "Closing the Gap: When Do Cues Eliminate Differences between Sophisticated and Unsophisticated Citizens?" *Journal of Politics* 71(3):964–976.

Bucciol, Alessandro and Luca Zarri. 2013. "Lying in Politics: Evidence from the US." University of Verona Department of Economics Working Paper Series.

Bullock, John G, Alan S Gerber, Seth J Hill and Gregory A Huber. 2015. "Partisan Bias in Factual Beliefs about Politics." *Quarterly Journal of Political Science* 10:519–578.

Callander, Steven and Simon Wilkie. 2007. "Lies, Damned Lies, and Political Campaigns." *Games and Economic Behavior* 60(2):262–286.

Converse, Philip E. 1964. The Nature of Belief Systems in Mass Publics. In *Ideology and Discontent*, ed. David E. Apter. New York: Free Press.

Cosmides, Leda. 1989. "The Logic of Social Exchange: Has Natural Selection Shaped How Humans Reason? Studies With the Wason Selection Task." *Cognition* 31(3):187–276.

Cosmides, Leda and John Tooby. 1992. Cognitive Adaptations for Social Exchange. In *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, ed. J. Tooby J. Barkow, L. Cosmides. Oxford University Press pp. 163–228.

Crawford, Vincent and Joel Sobel. 1982. "Strategic Information Transmission." *Econometrica* 50(6):1431–1451.

Dancey, Logan and Geoffrey Sheagley. 2013. "Heuristics Behaving Badly: Party Cues and Voter Knowledge." *American Journal of Political Science* 57(2):312–325.

Delli Carpini, Michael X. and Scott Keeter. 1996. *What Americans know about Politics and Why it Matters*. Yale University Press.

Downs, Anthony. 1957. *An Economic Theory of Democracy*. HarperCollins.

Evans, J S B T and K E Stanovich. 2013. "Dual-Process Theories of Higher Cognition: Advancing the Debate." *Perspectives on Psychological Science* 8(3):223–241.

Fenno, Jr., Richard F. 1978. *Home Style: House Members in Their Districts*. Little, Brown.

Galton, Francis. 1907. "Vox Populi." *Nature* 750:450–451.

Gentzkow, Matthew, Jesse M. Shapiro and Matt Taddy. 2016. "Measuring Polarization in High-Dimensional Data: Method and Application to Congressional Speech." Unpublished manuscript.

Gigerenzer, Gerd. 2007. *Gut Feelings: The Intelligence of the Unconscious*. Penguin.

Gilens, Martin. 2001. "Political ignorance and collective policy preferences." *American Political Science Review* 95(2):379–396.

Jensen, Jacob, Suresh Naidu, Ethan Kaplan, Laurence Wilse-Samson, David Gergen, Michael Zuckerman and Arthur Spirling. 2012. "Political polarization and the dynamics of political language: Evidence from 130 years of partisan speech [with comments and discussion]." *Brookings Papers on Economic Activity* pp. 1–81.

Jerit, Jennifer and Jason Barabas. 2012. "Partisan Perceptual Bias and the Information Environment." *The Journal of Politics* 74(03):672–684.

Kahan, Dan M, Ellen Peters, Erica Cantrell Dawson and Paul Slovic. 2017. "Motivated numeracy and enlightened self-government." *Behavioural Public Policy* 1(1):54–86.

Kahneman, Daniel. 2011. *Thinking, fast and slow*. Macmillan.

Kahneman, Daniel, Paul Slovic and Amos Tversky. 1982. *Judgment Under Uncertainty: Heuristics and Biases*. Cambridge University Press.

Kuklinski, J H, P J Quirk, J Jerit and D Schwieder. 2000. "Misinformation and the currency of democratic citizenship." *Journal of Politics* .

Landemore, Hélène. 2013. *Democratic reason: Politics, collective intelligence, and the rule of the many*. Princeton University Press.

Lau, Richard and David Redlawsk. 2001. "Advantages and Disadvantages of Cognitive Heuristics in Political Decision Making." *American Journal of Political Science* 45:971–71.

Lazer, David MJ, Matthew A Baum, Yochai Benkler, Adam J Berinsky, Kelly M Greenhill, Filippo Menczer, Miriam J Metzger, Brendan Nyhan, Gordon Pennycook, David Rothschild et al. 2018. "The science of fake news." *Science* 359(6380):1094–1096.

Lengel, Edward G. 2010. *Inventing George Washington: America's Founder in Myth and Memory*. New York: HarperCollins.

Lodge, Milton and Ruth Hamill. 1986. "A Partisan Schema for Political Information Processing." *American Political Science Review* 80(2):505–20.

Lorenz, Jan, Heiko Rauhut, Frank Schweitzer and Dirk Helbing. 2011. "How social influence can undermine the wisdom of crowd effect." *Proceedings of the National Academy of Sciences* 108(22):9020–9025.

Lupia, Arthur. 1994. "Shortcuts Versus Encyclopedias: Information and Voting Behavior in California Insurance Reform Elections." *American Political Science Review* 88(2):63–76.

Lupia, Arthur and Mathew D. McCubbins. 1998. *The Democratic Dilemma: Can Citizens Learn What They Need to Know?* Cambridge: Cambridge University Press.

McCurley, C and J J Mondak. 1995. "Inspected by# 1184063113: The influence of incumbents' competence and integrity in US House elections." *American Journal of Political Science* 39(4):864–885.

Mercier, Hugo and Hélène Landemore. 2012. "Reasoning is for arguing: Understanding the successes and failures of deliberation." *Political psychology* 33(2):243–258.

Minozzi, William. 2011. "A Jamming Theory of Politics." *Journal of Politics* 73(2):301–315.

Minozzi, William and Jonathan Woon. 2013. "Lying aversion, lobbying, and context in a strategic communication experiment." *Journal of Theoretical Politics* 25(3):309–337.

Minozzi, William and Jonathan Woon. 2016. "Competition, Preference Uncertainty and Jamming: A Strategic Communication Experiment." *Games and Economic Behavior* 96:97–114.

Monroe, Burt L, Michael P Colaresi and Kevin M Quinn. 2008. "Fightin'words: Lexical feature selection and evaluation for identifying the content of political conflict." *Political Analysis* 16(4):372–403.

Nyhan, Brendan, Ethan Porter, Jason Reifler and Thomas Wood. 2017. "Taking Corrections Literally But Not Seriously? The Effects of Information on Factual Beliefs and Candidate Favorability." Unpublished manuscript.

Nyhan, Brendan and Jason Reifler. 2010. "When Corrections Fail: The Persistence of Political Misperceptions." *Political Behavior* 32(2):303–330.

Nyhan, Brendan and Jason Reifler. 2014. "The Effect of Fact-Checking on Elites: A Field Experiment on U.S. State Legislators." *American Journal of Political Science* 59(3):628–640.

Oppenheimer, Daniel M, Tom Meyvis and Nicolas Davidenko. 2009. "Instructional manipulation checks: Detecting satisficing to increase statistical power." *Journal of Experimental Social Psychology* 45(4):867–872.

Pennycook, Gordon and David G Rand. 2018. "Lazy, not biased: Susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning." *Cognition* .

Popkin, Samuel L. 1991. *The Reasoning Voter: Communication and Persuasion in Presidential Campaigns*. University of Chicago Press.

Prior, M, G Sood and K Khanna. 2015. "You cannot be serious: The impact of accuracy incentives on partisan bias in reports of economic perceptions." *Quarterly Journal of Political Science* 10(4):489–518.

Rahn, Wendy. 1993. "The Role of Partisan Stereotypes in Information Processing about Political Candidates." *American Journal of Political Science* 37:472–497.

Stone, W J and E N Simas. 2010. "Candidate valence and ideological positions in US House elections." *American Journal of Political Science* 54(2):371–388.

Surowiecki, James. 2004. *The Wisdom of Crowds*. Anchor.

Swire, Briony, Adam J. Berinsky, Stephan Lewandowsky and Ullrich K. H. Ecker. 2017. "Processing political misinformation: comprehending the Trump phenomenon." *Royal Society Open Science* 4(3).

Taber, Charles S. and Milton Lodge. 2006. "Motivated Skepticism in the Evaluation of Political Beliefs." *American Journal of Political Science* 50(3):755–769.

Thorson, Emily. 2016. "Belief echoes: The persistent effects of corrected misinformation." *Political Communication* 33(3):460–480.

Ungar, Lyle H, Barbara A Mellers, Ville Satopää, Philip Tetlock and Jon Baron. 2012. The Good Judgment Project: A Large Scale Test of Different Methods of Combining Expert Predictions. In *AAAI Fall Symposium: Machine Aggregation of Human Judgment*.

Vosoughi, Soroush, Deb Roy and Sinan Aral. 2018. "The spread of true and false news online." *Science* 359(6380):1146–1151.

Vrij, Aldert. 2008. *Detecting Lies and Deceit: Pitfalls and Opportunities*. Wiley.

Wood, Thomas and Ethan Porter. 2016. "The elusive backfire effect: Mass attitudes' steadfast factual adherence." Unpublished manuscript.

Woon, Jonathan and Kristin Kanthak. 2018. "Elections, ability, and candidate honesty." *Journal of Economic Behavior & Organization* .

Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. Cambridge University Press.

Appendix

A List of Statements

Waves 1 and 2 used statements 1-20, Wave 3 used statements 21-70, and Wave 4 used statements 19-70. Information provided about speakers in the Attribution treatment is given in brackets. PolitiFact's Truth-O-Meter rating and URL are given in parentheses.

1. [Former Republican Congresswoman Michelle Bachmann said:] Our government right now. . . . (is) spending 40 percent more than what we take in. (TRUE, http://www.politifact.com/truth-o-meter/statements/2011/oct/11/michele-bachmann/bachmann-right-spending/)

2. [Democratic presidential candidate Hillary Clinton said:] The top hedge fund managers (are) making more than all of America's kindergarten teachers combined. (TRUE, http://www.politifact.com/truth-o-meter/statements/2015/jun/15/hillary-clinton/hillary-clinton-top-hedge-fund-managers-make-more-/)

3. [Democratic Congresswoman Nancy Pelosi said:] More than 64 percent of minimum-wage earners are women. (TRUE, http://www.politifact.com/truth-o-meter/statements/2013/mar/13/nancy-pelosi/nancy-pelosi-says-64-percent-minimum-wage-earners-/)

4. [Republican Senator Mitch McConnell said:] The minimum wage is mostly an entry-level wage for young people. (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2014/jan/26/mitch-mcconnell/mitch-mcconnell-says-minimum-wage-young-people-ent/)

5. [Republican Senator Ted Cruz said:] Today the top 1 percent earn a higher share of our national income than any year since 1928. (MOSTLY TRUE, http://www.politifact.com/texas/statements/2015/jan/30/ted-cruz/ted-cruz-says-top-1-percent-earn-more-national-inc/)

6. [Democratic President Barack Obama said:] By one leading measure, what business owners pay out in wages and salaries is now finally growing faster than what they spend on health insurance for the first time in 17 years. (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2015/jun/30/barack-obama/are-wages-finally-growing-faster-health-insurance-/)

7. [Democratic presidential candidate Hillary Clinton said:] By 2006, the American people were overwhelmingly against the Iraq War. (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2014/jun/20/hillary-clinton/hillary-clinton-says-2006-americans-were-overwhelm/)

8. [Former Republican Governor Mike Huckabee said:] $700 billion was robbed (from Medicare) to pay for Obamacare. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2015/aug/07/mike-huckabee/obamacare-robbed-medicare-700-billion-says-huckabe/)

9. [Republican presidential candidate Donald Trump said:] The annual cost of free tax credits alone paid to illegal immigrants quadrupled to $4.2 billion in 2011. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2015/aug/18/donald-trump/trump-illegal-immigrants-four-two-billion/)

10. [Democratic presidential candidate Bernie Sanders said:] We are the only major country on Earth that doesn't guarantee health care to all people as a right. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2015/jun/29/bernie-s/bernie-sanders-us-only-major-country-doesnt-guaran/)

11. [Former Republican Governor Jeb Bush said:] There are over 100 pipelines between the United States and Canada right now. (MOSTLY FALSE, http://www.politifact.com/florida/statements/2014/mar/26/jeb-bush/while-talking-about-keystone-xl-pipeline-jeb-bush-/)

12. [Democratic President Barack Obama said:] The Keystone XL pipeline allows "Canada to pump their oil, send it through our land, down to the Gulf, where it will be sold everywhere else." (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2014/nov/20/barack-obama/obama-says-keystone-xl-exporting-oil-experts-disag/)

13. [Democratic presidential candidate Barack Obama said:] The average minimum wage worker is 35 years old. (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2014/apr/29/barack-obama/barack-obama-says-average-minimum-wage-worker-35-y/)

14. [Democratic presidential candidate Bernie Sanders said:] We have the highest rate of childhood poverty of any major country on Earth. (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2015/jul/08/bernie-s/sanders-child-poverty-higher-america-any-other-maj/)

15. [Former Republican Congressman Tom Tancredo said:] Between 2008 and 2014, "criminal aliens accounted for 38 percent of all murder convictions in the five states of California, Texas, Arizona, Florida and New York." (FALSE, http://www.politifact.com/punditfact/statements/2015/aug/17/tom-tancredo/tancredo-muffs-illegal-immigrant-murder-stats/)

16. [Republican presidential candidate Donald Trump said:] If you're from Syria and you're a Christian, you cannot come into this country as a refugee. (FALSE, http://www.politifact.com/truth-o-meter/statements/2015/jul/20/donald-trump/donald-trump-says-if-youre-syria-and-christianyou-/)

17. [Democratic presidential candidate Hillary Clinton said:] Hedge fund managers "pay less in taxes than nurses and truck drivers." (FALSE, http://www.politifact.com/truth-o-meter/statements/2015/may/20/hillary-clinton/hillary-clinton-says-hedge-fund-managers-pay-less-/)

18. [Republican presidential candidate Donald Trump said:] The Mexican government forces many bad people into our country. (PANTS ON FIRE, http://www.politifact.com/truth-o-meter/statements/2015/jul/09/donald-trump/donald-trump-says-mexican-government-forces-many-b/)

19. [Republican Congressman Peter King said:] Nobody suffered any lasting injuries from the CIA interrogation program. (PANTS ON FIRE, http://www.politifact.com/truth-o-meter/statements/2014/dec/15/peter-king/peter-king-says-senate-cia-report-found-detainees-/)

20. [Democratic President Barack Obama said:] The Foreign Intelligence Surveillance Court "is transparent." (PANTS ON FIRE, http://www.politifact.com/truth-o-meter/statements/2013/jun/21/barack-obama/barack-obama-says-foreign-intelligence-surveillanc/)

21. [Former Republican Congresswoman Michelle Bachmann said:] When we got the income tax in 1913, the top rate was 7 percent. By 1980, the top rate was 70 percent. (TRUE, http://www.politifact.com/truth-o-meter/statements/2011/oct/18/michele-bachmann/michele-bachmann-says-top-income-tax-rate-rose-7-p/)

22. [Republican Senator Mitch McConnell said:] More women are graduating from college now than men. (TRUE, http://www.politifact.com/truth-o-meter/statements/2014/jul/18/mitch-mcconnell/mitch-mcconnell-says-more-women-graduate-college-m/)

23. [Republican President Donald Trump said:] Forty-three million Americans are on food stamps. (TRUE, http://www.politifact.com/truth-o-meter/statements/2016/jul/21/donald-trump/trump-43-million-americans-food-stamps/)

24. [Republican Senator Marco Rubio said:] Foreign aid is less than 1 percent of our federal budget. (TRUE, http://www.politifact.com/truth-o-meter/statements/2016/mar/11/marco-rubio/marco-rubio-says-foreign-aid-less-1-percent-federa/)

25. [Former Democratic presidential candidate Hillary Clinton said:] When it comes to fighting terrorism, "Another thing we know that does not work, based on lots of empirical evidence, is torture." (TRUE, http://www.politifact.com/truth-o-meter/statements/2016/mar/30/hillary-clinton/evidence-backs-hillary-clinton-claim-torture-count/)

26. [Democratic Senator Chris Murphy said:] "Ninety percent of Americans want our background check system strengthened and expanded to cover more gun sales." (TRUE, http://www.politifact.com/truth-o-meter/statements/2016/jul/27/chris-murphy/dnc-sen-chris-murphy-says-90-americans-want-expand/)

27. [Former Democratic presidential candidate Bernie Sanders said:] The United States spends "almost three times per capita what they spend in the U.K." on health care and "50 percent more than they pay in France." (TRUE, http://www.politifact.com/truth-o-meter/statements/2015/dec/20/bernie-s/fact-checking-bernie-sanders-claim-us-spends-three/)

28. [Former Democratic presidential candidate Hillary Clinton said:] African-American children are 500 percent more likely to die from asthma than white kids. (TRUE, http://www.politifact.com/truth-o-meter/statements/2015/aug/11/hillary-clinton/clinton-accurately-says-black-children-asthma-have/)

29. [Former Democratic presidential candidate Hillary Clinton said:] Americans havent had a raise in 15 years. (MOSTLY TRUE, http://www.politifact.com/iowa/statements/2016/mar/11/hillary-clinton/hillary-clinton-ad-points-out-its-been-15-years-am/)

30. [Former Democratic Governor Martin O'Malley said:] Fifty years ago, the average GM employee could pay for a year of a son or daughters college tuition on just two weeks wages. (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2016/jan/25/martin-omalley/could-gm-worker-afford-college-tuition-just-two-we/)

31. [Former Democratic presidential candidate Bernie Sanders said:] "The top one-tenth of 1 percent" of Americans "own almost as much wealth as the bottom 90 percent." (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2016/jul/26/bernie-s/dnc-bernie-sanders-repeats-claim-top-one-tenth-1-o/

32. [Former Democratic President Barack Obama said:] Irans defense budget is $30 billion. Our defense budget is closer to $600 billion. (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2015/apr/09/barack-obama/obama-iran-spends-30-billion-defense-us-about-600-/)

33. [Former Democratic presidential candidate Bernie Sanders said:] For African-Americans between the ages of 17 and 20, "the real unemployment rate is 51 percent." (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2015/jul/13/bernie-s/bernie-sanders-says-real-unemployment-rate-african/)

34. [Republican Senator Ted Cruz said:] Today the top 1 percent earn a higher share of our national income than any year since 1928. (MOSTLY TRUE, http://www.politifact.com/texas/statements/2015/jan/30/ted-cruz/ted-cruz-says-top-1-percent-earn-more-national-inc/)

35. [Republican President Donald Trump said:] Household incomes are down more than $4,000 since the year 2000. (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2016/jul/21/donald-trump/donald-trump-largely-right-household-incomes-are-d/)

36. [Republican President Donald Trump said:] Ford is moving all of their small-car production to Mexico. (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2016/oct/23/donald-trump/donald-trump-says-ford-moving-all-small-car-produc/)

37. [Republican Senator Ted Cruz said:] We've got the lowest labor force participation in over three decades, since 1978. (MOSTLY TRUE, http://www.politifact.com/truth-o-meter/statements/2014/jan/26/ted-cruz/labor-force-participation-its-lowest-point-1978-sa/)

38. [Former Republican Governor Jeb Bush said:] There are more poor people today as a percentage of our population than the 1970s. (MOSTLY TRUE, http://www.politifact.com/florida/statements/2015/may/07/jeb-bush/poverty-rate-higher-now-1970s/)

39. [Former Democratic presidential candidate Bernie Sanders said:] The United States has "the highest rate of childhood poverty of almost any major country on Earth." (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2016/feb/12/bernie-s/comparing-us-world-childhood-poverty-rates/)

40. [Former Democratic Vice President Joe Biden said:] The vast majority of our international commitments take effect without congressional approval. (HALF TRUE, http://www.poli

tifact.com/truth-o-meter/statements/2015/mar/12/joe-biden/joe-biden-says-vast-majority-international-commitm/)

41. [Former Democratic Governor Martin O'Malley said:] 97 percent of the work that Planned Parenthood does is about mammograms and preventative health. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2015/aug/03/martin-omalley/97-planned-parenthoods-work-mammograms-preventive-/)

42. [Former Democratic Senator Barbara Boxer said:] Women take birth control, more than half of them, as a medication for other conditions. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2014/mar/26/barbara-boxer/barbara-boxer-says-more-half-women-use-birth-contr/)

43. [Former Democratic presidential candidate Bernie Sanders said:] We spend about 75 percent of the entire cost of the military aspect of NATO. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2016/apr/19/bernie-s/sanders-oversimplifies-us-share-NATO/)

44. [Republican President Donald Trump said:] Nearly half of African-American children under the age of 6 are living in abject poverty. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2016/oct/28/donald-trump/donald-trump-says-half-young-black-children-are-ab/)

45. [Former Republican Senator Tom Coburn said:] The home-mortgage deduction is widely thought to be a middle-class benefit. It's not – 73 percent of it goes to people making a quarter-million dollars or more a year. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2014/dec/17/tom-coburn/coburn-says-73-percent-benefits-mortgage-deduction/)

46. [Republican Senator Marco Rubio said:] Two-thirds of our kids cant read at grade level. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2016/feb/18/marco-rubio/marco-rubio-says-two-thirds-us-kids-cant-read-grad/)

47. [Republican President Donald Trump said:] "Weve spent $6 trillion" on the wars in the Middle East. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2016/oct/27/donald-trump/did-us-spend-6-trillion-middle-east-wars/)

48. [Republican Senator Marco Rubio said:] The states have always defined marriage. (HALF TRUE, http://www.politifact.com/truth-o-meter/statements/2015/dec/13/marco-rubio/marco-rubio-says-states-have-always-defined-marria/)

49. [Former Democratic presidential candidate Hillary Clinton said:] The Great Recession emerged "in large part because of tax policies that slashed taxes on the wealthy, failed to invest in the middle class, took their eyes off of Wall Street, and created a perfect storm." (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2016/oct/02/hillary-clinton/hillary-clintons-base-linkage-tax-cuts-and-great-r/)

50. [Former Democratic presidential candidate Hillary Clinton said:] Marijuana is a Schedule I drug, "which you understand means that you cant do any research about it." (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2016/apr/26/hillary-clinton/hillary-clintons-hazy-claim-researchers-cant-study/)

51. [Former Democratic presidential candidate Bernie Sanders said:] Very little of (the defense) budget less than 10 percent actually goes into fighting ISIS and international terrorism. (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2016/jan/18/bernie-s/less-10-percent-defense-budget-fighting-terrorism-/)

52. [Former Democratic presidential candidate Bernie Sanders said:] Increasing the minimum wage to $15 an hour would reduce spending on food stamps, public housing and other programs by over $7.6 billion a year. (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2016/may/05/bernie-s/bernie-sanders-says-minimum-wage-hike-15-would-red/)

53. [Former Democratic presidential candidate Bernie Sanders said:] We are imprisoning or giving jail sentences to young people who are smoking marijuana. (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2015/oct/14/bernie-s/bernie-sanders-says-people-are-getting-prison-sent/)

54. [Republican Senator Ted Cruz said:] The Supreme Courts views "are radically out of step with public opinion" regarding its decision to legalize same-sex marriage nationwide. (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2015/jul/01/ted-cruz/ted-cruz-says-supreme-court-same-sex-marriage-out-/)

55. [Republican White House Budget Director Mick Mulvaney said:] There's no demonstrable evidence they (after-school programs that feed kids) are helping kids do better at school. (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2017/mar/21/mick-mulvaney/wh-budget-chief-wrongly-claims-afterschool-program/)

56. [Republican president Donald Trump said:] Hundreds of thousands of (illegal immigrants are) going to state and federal penitentiaries. (MOSTLY FALSE, http://www.politifact.com/truth-o-meter/statements/2015/jul/06/donald-trump/trump-immigration-claim-has-no-data-back-it/)

57. [Republican Senator Ted Cruz said:] States not directly involved in the gay marriage lawsuits that reached the Supreme Court "are not bound" by the court's ruling. (MOSTLY FALSE, http://www.politifact.com/texas/statements/2015/jul/31/ted-cruz/ted-cruz-states-not-singled-out-supreme-court-not-/)

58. [Former Democratic presidential candidate Hillary Clinton said:] We are now, for the first time ever, energy independent. (FALSE, http://www.politifact.com/truth-o-meter/statements/2016/oct/11/hillary-clinton/clinton-claim-us-energy-independent-goes-too-far/)

59. [Former Democratic Governor Howard Dean said:] Hate speech is not protected by the first amendment. (FALSE, http://www.politifact.com/truth-o-meter/statements/2017/apr/21/howard-dean/howard-deans-wrong-tweet-constitution-doesnt-prote/)

60. [Former Democratic presidential candidate Hillary Clinton said:] The gun industry is "the only business in America that is wholly protected from any kind of liability." (FALSE, http://www.politifact.com/truth-o-meter/statements/2015/oct/16/hillary-clinton/clinton-gun-industry-wholly-protected-all-lawsuits/)

61. [Former Democratic presidential candidate Bernie Sanders said:] We spend almost twice as much per capita on health care as do the people of any other country. (FALSE, http://www.politifact.com/truth-o-meter/statements/2015/aug/16/bernie-s/bernie-sanders-repeats-flawed-claim-about-us-healt/)

62. [Republican President Donald Trump said:] We have become an energy exporter for the first time ever just recently. (FALSE, http://www.politifact.com/truth-o-meter/statements/2017/aug/23/donald-trump/donald-trump-wrongly-says-us-net-energy-exporte/)

63. [Republican EPA Administrator Scott Pruitt said:] Carbon dioxide is not "a primary contributor to the global warming that we see." (FALSE, http://www.politifact.com/truth-o-meter/statements/2017/mar/10/scott-pruitt/epa-head-scott-pruitt-says-carbon-dioxide-not-prim/)

64. [Former Republican Vice President Dick Cheney said:] Saddam Hussein "had a 10-year relationship with al-Qaida." (FALSE, http://www.politifact.com/punditfact/statements/2014/dec/14/dick-cheney/cheney-torture-report-saddam-hussein-had-10-year-r/)

65. [Former Republican Senator Rick Santorum said:] "The 97 percent figure thats thrown around" (that 97 percent of scientists believe humans are causing climate change) has been debunked by the head of the United Nations Intergovernmental Panel on Climate Change. "That number was pulled out of thin air." (FALSE, http://www.politifact.com/truth-o-meter/statements/2015/sep/02/rick-santorum/santorum-un-climate-head-debunked-widely-cited-97-/)

66. [Republican HUD Secretary Ben Carson said:] Every time we raise the minimum wage, the number of jobless people increases. (FALSE, http://www.politifact.com/truth-o-meter/statements/2015/nov/10/ben-carson/ben-carson-said-raising-minimum-wage-will-increase/)

67. [Democratic Senator Dick Durbin said:] We're going to reduce the overall debt of the United States by $3 trillion over the next 10 years. (PANTS ON FIRE, http://www.politifact.com/truth-o-meter/statements/2014/feb/25/richard-durbin/dick-durbin-says-us-debt-track-fall-3-trillion-nex/)

68. [Former Democratic Senator Harry Reid said:] Planned Parenthood is "the only health care that a significant number of women get. About 30 percent of women, that's their health care." (PANTS ON FIRE, http://www.politifact.com/truth-o-meter/statements/2015/jul/31/harry-reid/harry-reid-says-30-women-rely-only-planned-parenth/)

69. [Republican Representative Raul Labrador said:] Nobody dies because they dont have access to health care. (PANTS ON FIRE, http://www.politifact.com/truth-o-meter/statements/2017/may/08/raul-labrador/raul-labradors-claim-no-one-dies-lack-health-care-/)

70. [Republican Representative Louie Gohmert said:] Forty years ago, hardly anybody in the country had health insurance. (PANTS ON FIRE, http://www.politifact.com/truth-o-meter/statements/2014/jan/24/louie-gohmert/texas-rep-louie-gohmert-says-40-years-ago-hardly-a/)

B Sample Characteristics

Table A1: Demographics by wave

	Wave 1 MTurk	Wave 2 MTurk	Wave 3 MTurk	Wave 4 SSI	2016 ANES	2018 CPS*
Female	60%	51%	57%	53%	48%	52%
White, non-Hispanic	81%	81%	79%	75%	69%	63%
Age						
18-24	14%	14%	13%	12%	8%	12%
25-44	51%	62%	61%	36%	32%	34%
45-64	31%	20%	23%	30%	35%	33%
65+	4%	4%	3%	22%	25%	20%
Education						
Less than high school	2%	0%	1%	6%	7%	11%
High school / GED	9%	12%	11%	39%	19%	29%
Some college	26%	20%	23%	22%	21%	19%
2 year degree	12%	12%	12%	6%	14%	10%
4 year degree	37%	36%	38%	14%	22%	21%
Post-graduate degree	14%	20%	15%	13%	16%	12%
Party identification						
Democrat	31%	33%	38%	38%	35%	
Republican	34%	32%	25%	28%	29%	
Independent	35%	34%	38%	34%	36%	
N	184	221	791	2,352		

* U.S. Census Bureau, 2018 Current Population Survey,
`https://www.census.gov/programs-surveys/cps/data-detail.html`

C Testing for Bias in PolitiFact Ratings

Let X denote the unobserved truth of a statement, R denote PolitiFacts rating, and P denote citizens perceptions of the truth. Suppose that citizens perceive X accurately so that $P = X$ but that PolitiFact rates Democratic statements to be more truthful than Republican statements so that $R = X + b$ for Democratic statements and $R = X$ for Republican statements, where $b > 0$ reflects the degree of PolitiFacts pro-Democratic bias. For Democratic statements, substituting $X = R - b$ into the equation for citizens perceptions implies $P = R - b$; for Republican statements, substituting $X = R$ implies $P = R$. Hence, if citizens perceptions are unbiased while PolitiFacts statements exhibit bias in favor of Democrats, citizens average perceptions should be lower for Democratic than Republican statements.

To test for such bias, Table A2 presents mixed effects regressions of perceptions on ratings for the Content Only condition that include a dummy variable for Democratic statements (and statement and respondent random effects). A negative coefficient on the Democratic dummy variable would indicate pro-Democratic bias in ratings. However, the relevant coefficients are positive but not statistically significant, which suggests there is no evidence for pro-Democratic bias in PolitiFact ratings.

Table A2: Testing for Bias in PolitiFact Ratings

	Wave 1	Wave 2	Wave 3	Wave 4
PolitiFact Rating	0.38**	0.47**	0.32**	0.30**
	(0.10)	(0.10)	(0.08)	(0.06)
Democratic	0.03	0.07	0.09	0.01
Statement	(0.13)	(0.13)	(0.10)	(0.08)
Constant	0.14	0.05	0.08	0.17**
	(0.09)	(0.09)	(0.07)	(0.06)
N	1860	1480	5440	12100
Log likelihood	-2178.3	-1761.7	-6635.4	-14632.3
Chi-squared	16.5	24.5	16.6	22.4

Mixed effects models with question and respondent random effects
Standard errors in parentheses; * $p < .05$, ** $p < .01$

D Attention Measures

D.1 MTurk Qualification Screener

MTurk participants (Waves 1-3) took a brief demographic survey and qualified for a separate HIT to complete the rating task if they correctly answered the attention question shown in Figure A1.

D.2 SSI Attention Measures

For the SSI sample (Wave 4), attention was measured on a 6 point scale and was constructed based on responses to three attention questions (1 point each), two instruction checks (1 point each), and issue identification (1 point for correctly identifying all 20 issues). The attention questions were provided by XXX via personal communication. As described in the text, the two highest levels are collapsed in the analysis. The attention and instruction questions appeared in the following order, with all but the issues screener appearing before the rating task: news screener (Figure A2), Political interest screener (Figure A3), instruction questions (Figure A4), issues screener (Figure A5).

Table A3: Summary of Individual Attention Items (Wave 4)

Attention Measure	Pct. Correct
News screener	11.3%
Interest screener	37.8%
Instruction check (statements)	72.6%
Instruction check (task)	41.5%
Issues screener	30.0%
Correctly identify all issues	77.9%
N	2,352

Table A4: Distribution of Attention Scores (Wave 4)

Score	Frequency	Pct
0	202	8.6%
1	350	14.9%
2	556	23.6%
3	509	21.6%
4	374	15.9%
5	278	11.8%
6	83	3.5%
N	2,352	

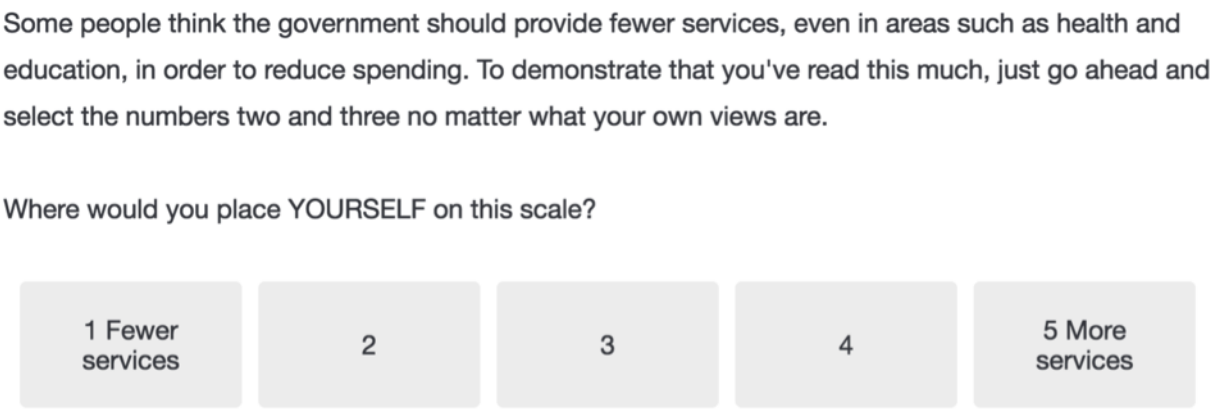

Figure A1: Services-Spending Screener (MTurk)

We are also interested in what sections people like to read in the newspaper. This might affect what they learn from articles and how they feel about the issues discussed in them. We also want to see if people are reading the questions carefully. To show that you've read this much, please mark both the classified and none of the above boxes below. That's right, just select these two options only.

Regardless of how frequently you read the newspaper, what would you say are your favorite newspaper sections to read? (please check all that apply)

- National
- Local
- Real Estate
- Comics
- Classified
- Style
- Sports
- Business
- Science and Technology
- Opinion
- None of the above
- All of the above

Figure A2: News Screener (SSI)

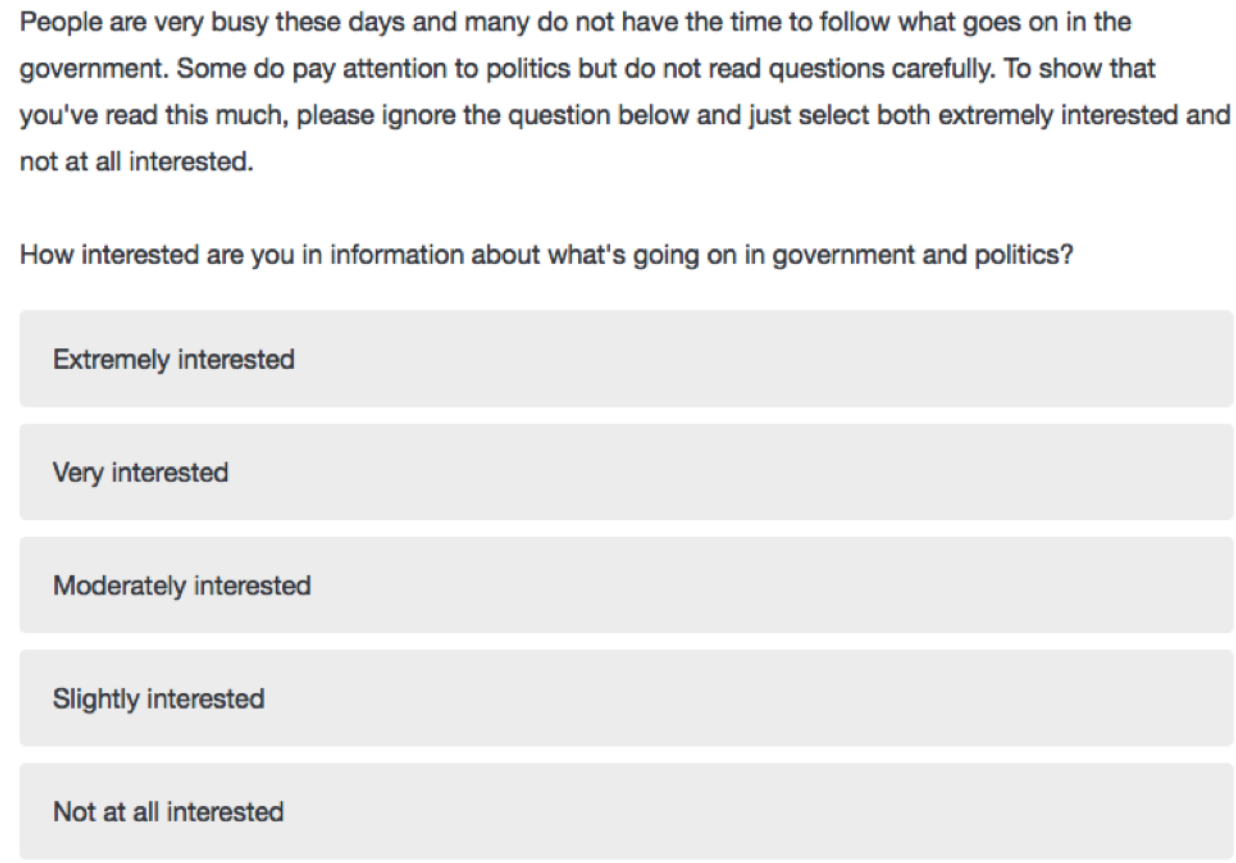

Figure A3: Interest Screener (SSI)

Next, your task is to evaluate the truthfulness of 20 statements made by politicians. For each statement, we will first ask you to identify what issue the statement is about. We will then ask you whether you think the statement is True or False. If you are unsure if a statement is True or False, it is OK to go ahead and choose "I'm not sure" as your response.

In order for your answers to be most helpful to us, it is really important that you think carefully about your answers and that you try to rate each statement as accurately as you can.

How many statements will you rate?

- 5
- 10
- 15
- 20

What will we ask about for each statement?

- The issue
- If the statement is true or false
- Both
- Neither

Figure A4: Instruction Questions (SSI)

There are many important issues facing our country today. Research shows that issues people think are important can affect their views on other issues. We also want to know if you are paying attention. Please ignore the instructions below and put "crime" in the top position and "unemployment" in the bottom position. Leave the rest of the issues in the same order.

Please rank the following issues facing the nation from 1 (most important) to 8 (least important). You can change your rankings by dragging and dropping different issues.

Health care

Unemployment

Federal budget deficit

North Korea

Russia

Crime

Education

Taxes

Figure A5: Issues Screener (SSI)

E Statistical Estimates and Robustness Checks

Table A5 provides the numerical estimates for the main analysis presented in the main text of the paper (using the 3-point dependent variable, columns 1, 2, 3, 5), corresponding to Figures 2, 3, and 4. For reference, coefficients correspond to parameters shown in equation (1). As robustness checks, estimates using the full 7-point scale are shown in columns (4) and (6), and estimates coding leaners as partisans are shown in Table A6.

Table A5: Mixed effects estimates (main analysis and 7-point scales)

	Wave 1 3pt (1)	Wave 2 3pt (2)	Wave 3 3pt (3)	Wave 3 7pt (4)	Wave 4 3pt (5)	Wave 4 7pt (6)
Co-partisans (δ_S)	0.11*	0.15*	0.10**	0.08**	0.12**	0.09**
	(0.06)	(0.06)	(0.04)	(0.03)	(0.03)	(0.02)
Cross-partisans (δ_X)	-0.16**	-0.18**	-0.03	-0.03	-0.02	-0.02
	(0.06)	(0.06)	(0.04)	(0.02)	(0.03)	(0.02)
Attribution Treat. (γ)	-0.05	0.02	0.04	0.02	0.08**	0.05**
	(0.06)	(0.07)	(0.04)	(0.03)	(0.03)	(0.02)
Attribution	0.20*	0.14	0.17**	0.12**	0.08*	0.07*
$\times$ Co-partisans (γ_S)	(0.08)	(0.09)	(0.05)	(0.04)	(0.04)	(0.03)
Attribution	-0.06	-0.12	-0.08	-0.07*	-0.18**	-0.12**
$\times$ Cross-partisans (γ_X)	(0.08)	(0.09)	(0.05)	(0.04)	(0.04)	(0.03)
Truth Rating (β)	0.44**	0.49**	0.35**	0.25**	0.34**	0.24**
	(0.09)	(0.10)	(0.08)	(0.05)	(0.06)	(0.04)
Truth Rating	-0.12	-0.03	-0.11**	-0.08**	-0.11**	-0.07**
$\times$ Co-partisan (τ_S)	(0.06)	(0.07)	(0.04)	(0.03)	(0.03)	(0.02)
Truth Rating	-0.02	-0.02	0.02	0.03	-0.02	0.00
$\times$ Cross-partisan (τ_X)	(0.06)	(0.07)	(0.04)	(0.03)	(0.03)	(0.02)
Truth Rating	-0.08	-0.04	-0.12**	-0.07**	-0.10**	-0.06**
$\times$ Attribution (λ)	(0.06)	(0.07)	(0.04)	(0.03)	(0.03)	(0.02)
Truth Rating $\times$ Attr.	0.08	-0.08	0.08	0.03	0.04	0.02
$\times$ Co-partisan (λ_S)	(0.09)	(0.10)	(0.06)	(0.04)	(0.04)	(0.03)
Truth Rating $\times$ Attr.	0.08	-0.11	-0.02	-0.03	0.03	0.01
$\times$ Cross-partisan (λ_X)	(0.09)	(0.10)	(0.06)	(0.04)	(0.04)	(0.03)
Constant (α)	0.17*	0.10	0.11*	0.04	0.14**	0.07*
	(0.07)	(0.07)	(0.05)	(0.04)	(0.04)	(0.03)
N	3,680	2,980	10,840	10,840	24,880	24,880
Log likelihood	-4211.9	-3474.2	-13218.5	-8720.9	-29903.6	-20662.9
Chi-squared	222.7	228.2	257.1	360.4	618.9	762.6

Models include statement and respondent random effects.

Standard errors in parentheses; * $p < .05$, ** $p < .01$

Table A6: Mixed effects estimates with leaners coded as partisans

	Wave 1 (1)	Wave 2 (2)	Wave 3 (3)	Wave 4 (4)
Co-partisans (δ_S)	0.15	0.18*	0.06	0.11**
	(0.07)	(0.09)	(0.05)	(0.03)
Cross-partisans (δ_X)	-0.15*	-0.14	-0.08	-0.04
	(0.07)	(0.09)	(0.05)	(0.03)
Attribution Treat. (γ)	-0.03	0.02	0.04	0.08*
	(0.09)	(0.11)	(0.06)	(0.04)
Attribution	0.14	0.10	0.14*	0.08
$\times$ Co-partisans (γ_S)	(0.10)	(0.12)	(0.07)	(0.04)
Attribution	-0.07	-0.09	-0.08	-0.16**
$\times$ Cross-partisans (γ_X)	(0.10)	(0.12)	(0.07)	(0.04)
Truth Rating (β)	0.38**	0.51**	0.25**	0.32**
	(0.10)	(0.12)	(0.08)	(0.06)
Truth Rating	-0.04	-0.06	0.02	-0.07*
$\times$ Co-partisan (τ_S)	(0.08)	(0.09)	(0.05)	(0.03)
Truth Rating	0.06	-0.03	0.13**	0.01
$\times$ Cross-partisan (τ_X)	(0.08)	(0.09)	(0.05)	(0.03)
Truth Rating	-0.10	0.02	-0.02	-0.09*
$\times$ Attribution (λ)	(0.09)	(0.12)	(0.06)	(0.04)
Truth Rating $\times$ Attr.	0.11	-0.13	-0.07	0.02
$\times$ Co-partisan (λ_S)	(0.11)	(0.13)	(0.07)	(0.04)
Truth Rating $\times$ Attr.	0.07	-0.14	-0.14	0.02
$\times$ Cross-partisan (λ_X)	(0.11)	(0.13)	(0.07)	(0.04)
Constant	0.16	0.07	0.14*	0.15**
	(0.09)	(0.09)	(0.06)	(0.05)
N	3680	2980	10840	24880
Log likelihood	-4191.4	-3468.0	-13193.1	-29841.7
Chi-squared	266.6	242.1	309.4	746.2

Models include statement and respondent random effects.

Standard errors in parentheses; * $p < .05$, ** $p < .01$